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Router Table

from the editors of **WOOD** magazine

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2005

from the editors of
WOOD
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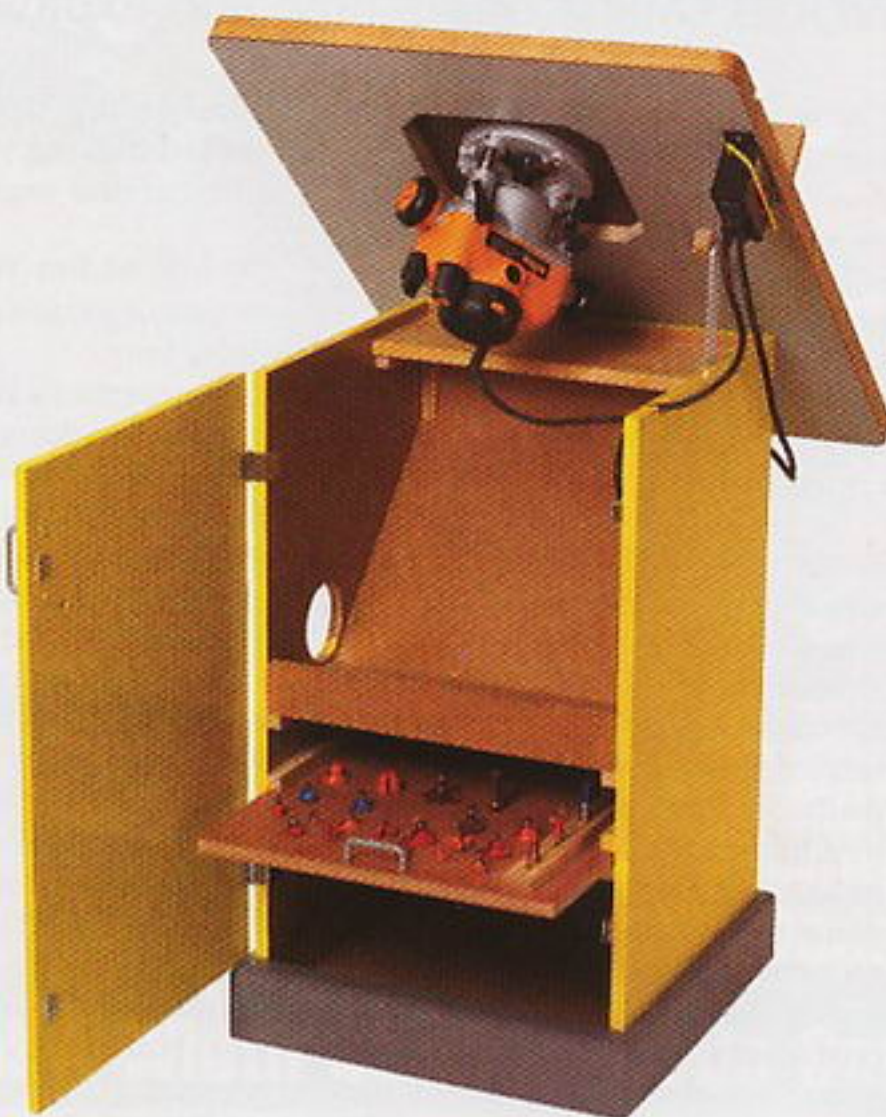
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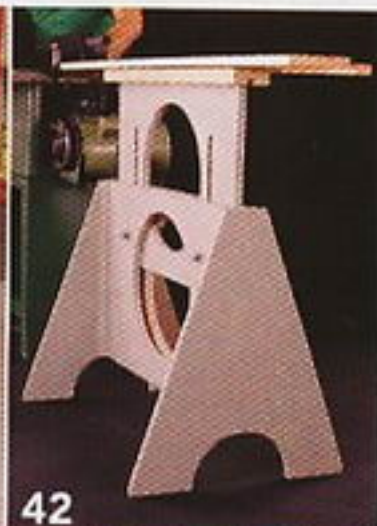
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96

one workhorse of a WORKBENCH



with laminated maple top



with banded plywood top

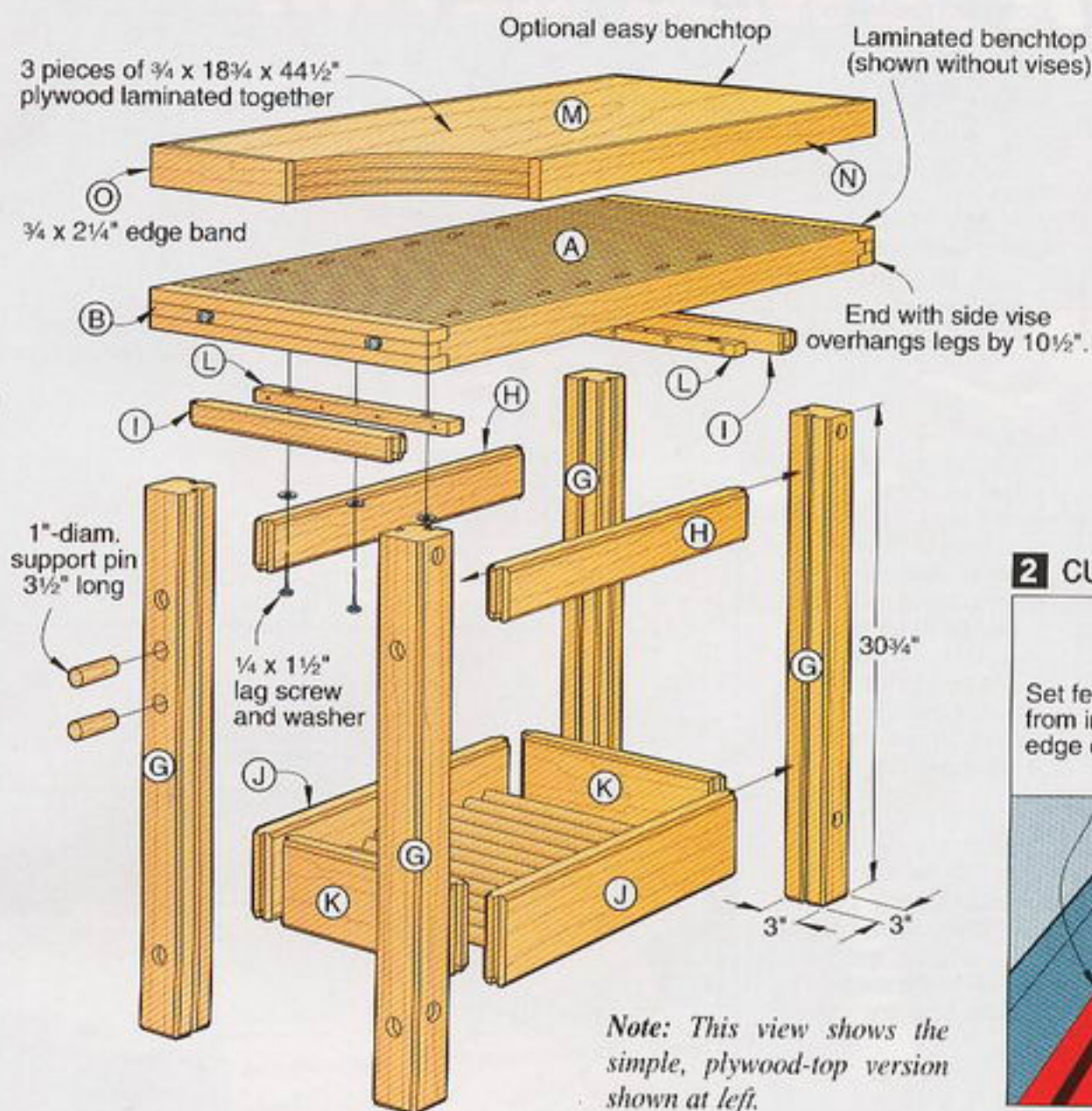
Note: We show two versions of the top for this workbench: an easy plywood top (above) and the traditional laminated style (left). The following step-by-step directions explain how to construct the laminated top. To build the plywood top, simply glue and screw three pieces of $\frac{3}{4}$ "-thick plywood face-to-face (we used birch), and then trim to $18\frac{3}{4} \times 44\frac{1}{2}$ ". Band the top with $\frac{3}{4}$ "-thick mitered strips of solid $2\frac{1}{4}$ "-wide birch stock. Select your own vise, or order one from the Buying Guide source on page 14.

A sturdy, dependable workbench belongs at the center of every hard-working home workshop. This heavy-duty, versatile model features a pair of vises that provide a variety of ways to hold workpieces. You'll also like the knock-down construction, allowing you to easily move the bench. In addition, you can choose from two tops—an indestructible laminated one, or a simpler plywood version. Both will give you years of solid service.

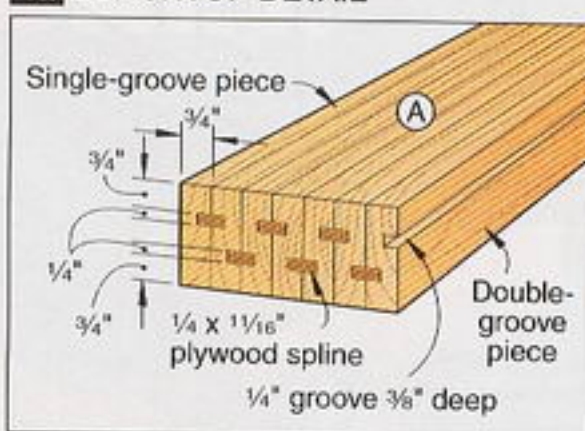
Let's begin with the top

1 Rip and crosscut 26 splines $1\frac{1}{16} \times 48$ " from $\frac{1}{4}$ "-thick plywood. Next, rip and crosscut 27 lengths of $\frac{3}{4}$ "-thick stock (we used maple) to $2\frac{5}{16} \times 48$ " to make initially oversized pieces for the top (A). Mount a $\frac{1}{4}$ " dado blade in your tablesaw, and set the rip fence $\frac{3}{4}$ " from the inside edge of the blade.

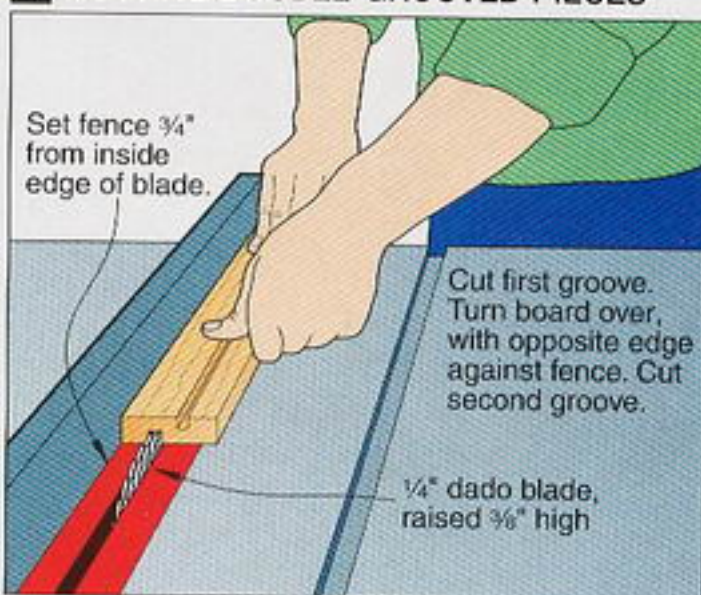
1 EXPLODED VIEW



1a BENCHTOP DETAIL



2 CUTTING DOUBLE-GROOVED PIECES



Set a $\frac{3}{8}$ " depth of cut, and make test cuts in scrapwood to ensure that the width of the groove matches your plywood splines. Also, make certain that the spline does not bottom out in the grooves, preventing the top pieces from fitting together tightly.

2 Referring to **Drawing 1a** accompanying **Drawing 1**, cut single grooves in four pieces. Then, cut double grooves in 23 pieces, as shown in **Drawing 2**.

3 Glue the top pieces together, following the sequence described on **Drawing 3** on page 6.

Note: In Step 3 on page 6, you use the completed Assembly 1 & 2 as a form to begin the glue-up of Assembly 3. This way, any irregularity in the edge of Assembly 1 & 2 will transfer to Assembly 3, ensuring a good fit when you join the two assemblies. Double-check the flatness of the top when

you glue the two assemblies together. When the glue is dry, square the ends of the top, trimming the assembly to a finished length of 44".

Now, make the end caps, and mount the vises

1 Rip and crosscut six 2x21" pieces from $\frac{3}{4}$ "-thick stock to make initially oversized blanks for the end caps (B). Glue and clamp two sets of three pieces face-to-face. When the glue is dry, joint one edge of each lamination, then rip and crosscut to finished size as dimensioned in **Drawing 4**, shown on page 6.

2 Mount a $\frac{3}{4}$ " dado blade in your table-saw, and cut a $\frac{3}{4}$ x $\frac{3}{4}$ " groove centered in one edge of the end cap lamination where shown. Add an auxiliary wooden fence to your rip fence, adjust the fence, and cut $\frac{3}{4}$ x $\frac{3}{4}$ " rabbets along both ends of the top.

Note: These rabbets will produce a $\frac{3}{4}$ x $\frac{3}{4}$ " tenon centered in both ends of the top.

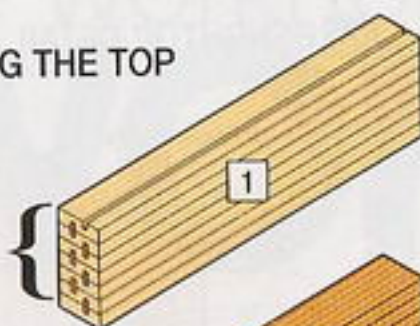
Raise the blade in small increments to get a perfect fit of the tenon into the end cap. Cut a $\frac{3}{4}$ "-wide stopped groove 11" long into the bottom of the workbench, where dimensioned on **Drawing 6**.

3 Remove stock from the end cap to make room for the end vise, as shown in **Drawing 5**. Next, trim the tenon as shown.

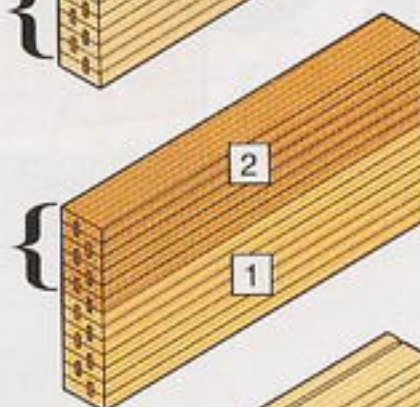
4 Drill the counterbores, slots, and center hole into the end caps where dimensioned on **Drawing 4a**. The end cap that will be used next to the end vise does not have a center hole. Hold each end cap in position, and use the hole and slots as guides to drill $\frac{3}{16}$ " pilot holes $1\frac{1}{2}$ " deep into the ends of the top. Be sure that you center pilot holes in the slots. Attach caps with lag screws and washers.

3 GLUING THE TOP

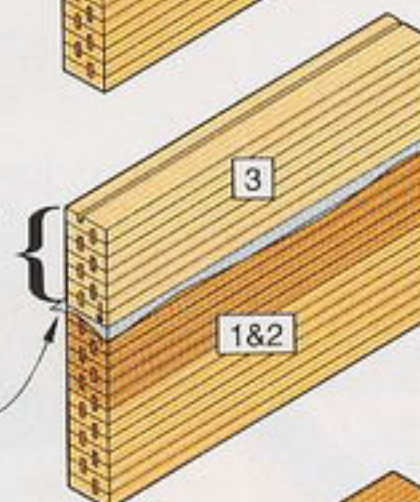
- Six double-grooved pieces
- One single-grooved piece



- One single-grooved piece
- Five double-grooved pieces

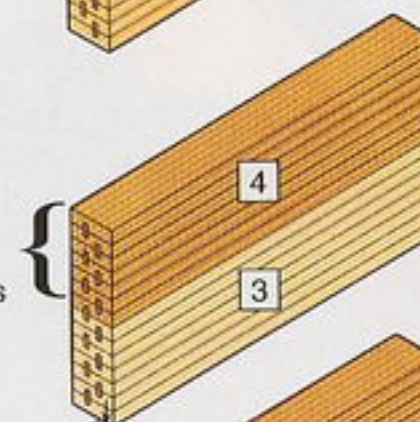


- Six double-grooved pieces
- One single-grooved piece

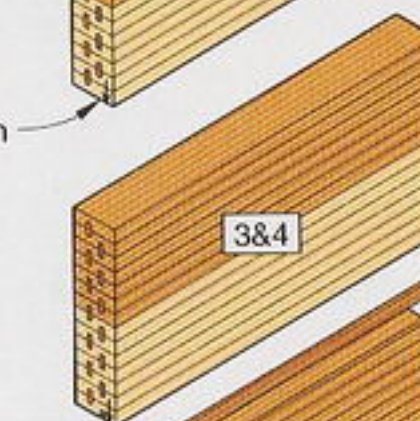


Waxed paper

- One single-grooved piece
- Six double-grooved pieces



Registration mark



Spline

Step 1
Construct Assembly 1 by gluing seven pieces, as shown. Clamp until dry.

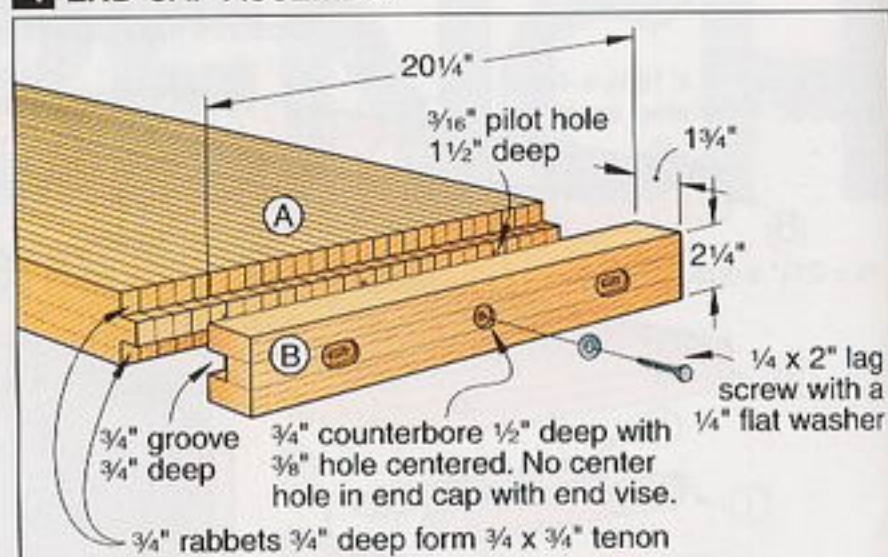
Step 2
Add Assembly 2 by gluing six more pieces, as shown. Clamp until dry.

Step 3
Place a piece of waxed paper on top of Assembly 1/2 to use it as a form for Assembly 3. Make Assembly 3 by gluing seven pieces together. Align with Assembly 1/2, and then clamp until dry. Make registration marks on one end of each assembly.

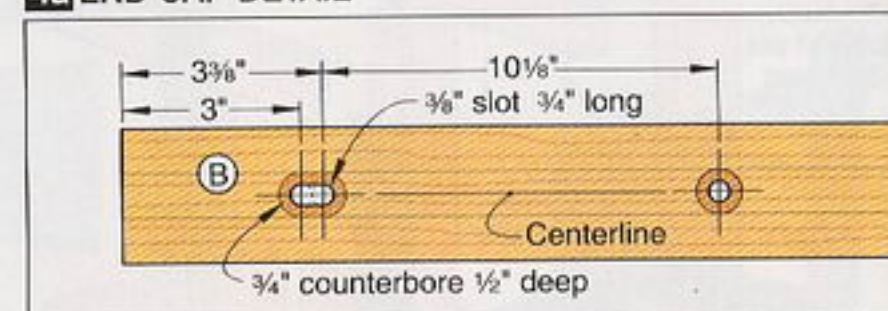
Step 4
Remove Assembly 3 from Assembly 1/2. Complete Assembly 4 by gluing the last seven pieces, as shown. Clamp until dry.

Step 5
Thickness-plane assemblies 1/2 and 3/4 to identical 2 1/4" thickness. Cut grooves for spline; glue and clamp until dry.

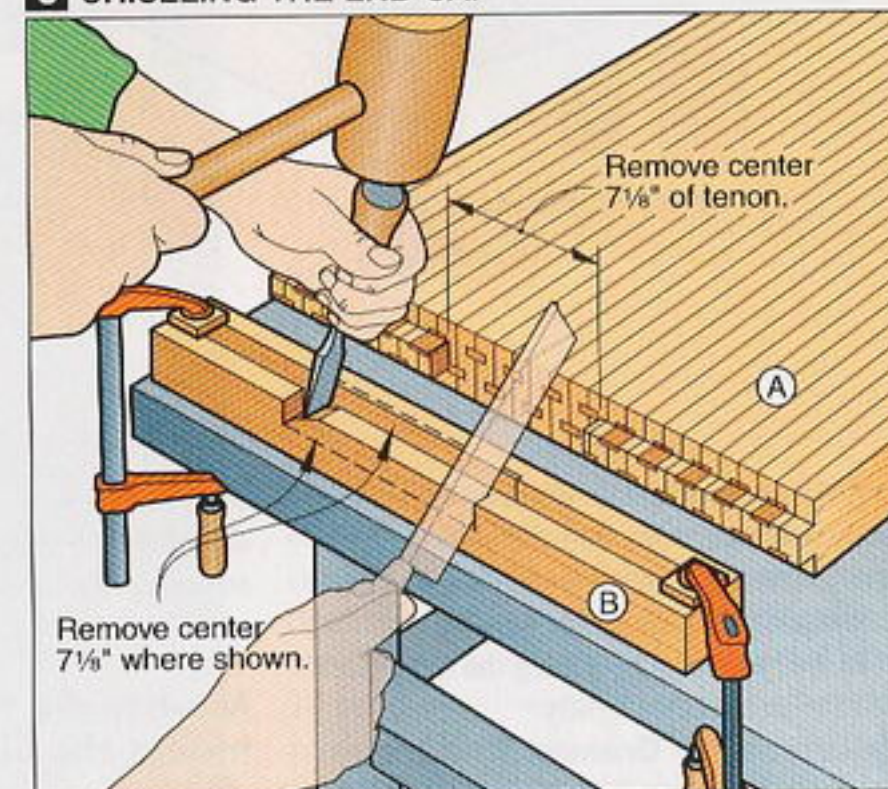
4 END CAP ASSEMBLY



4a END CAP DETAIL



5 CHISELING THE END CAP



Note: The slots in end caps (B) allow the top to expand and contract with seasonal changes in the wood's moisture content.

5 Mark the centerpoints of the bench-dog holes, where dimensioned on **Drawing 7** on page 8. Next, drill the holes, using a portable-drill guide to keep the holes vertical.

6 Rip and crosscut 3/4"-thick stock for the side-vise spacer (C) and the end-vise

spacer (D). These parts are shown on **Drawing 10**, on page 12. Make the radius cuts on the ends of the end-vise spacer with a jigsaw. Next, drill 1/2" blade-start holes, and then jigsaw the openings. Drill counter-sunk holes where shown. Remove the patterns, and then screw the parts into position where shown on **Drawing 6**, on page 8.

7 Mount the side vise, where shown on **Drawing 6**. Using the mounting

flanges in the vise's base as guides, drill 1/4" pilot holes 1 1/2" deep through the side-vise spacer (C) and into the top (A). Use a socket wrench to drive the lag screws. Rip and crosscut the side-vise cheek (E) from 3/4"-thick stock. Position it within the jaw of the vise, flush with the top's end and upper surface. Close the vise to hold the end-vise cheek in position; attach with lag screws.

Continued on page 8

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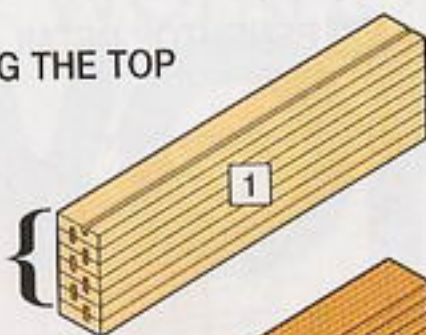
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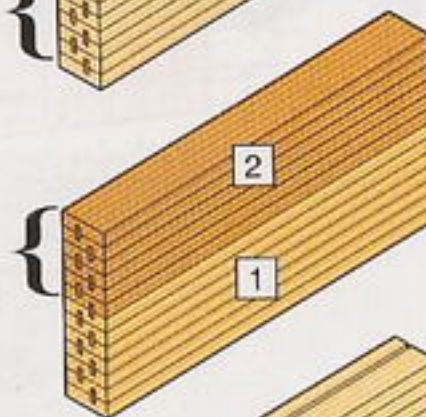
Circle No. 1497

3 GLUING THE TOP

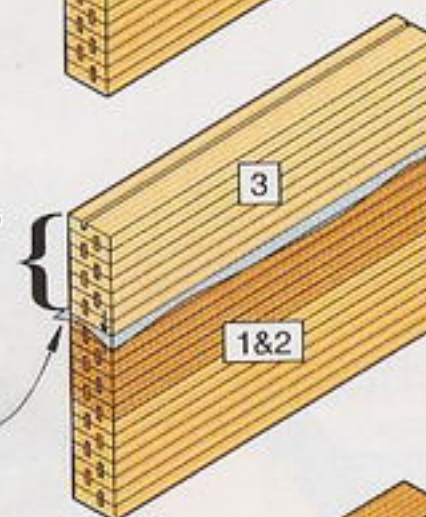
- Six double-grooved pieces
- One single-grooved piece



- One single-grooved piece
- Five double-grooved pieces

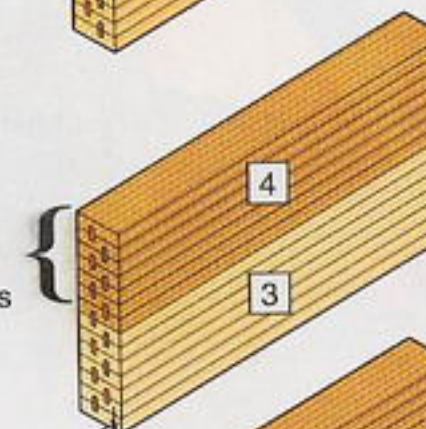


- Six double-grooved pieces
- One single-grooved piece



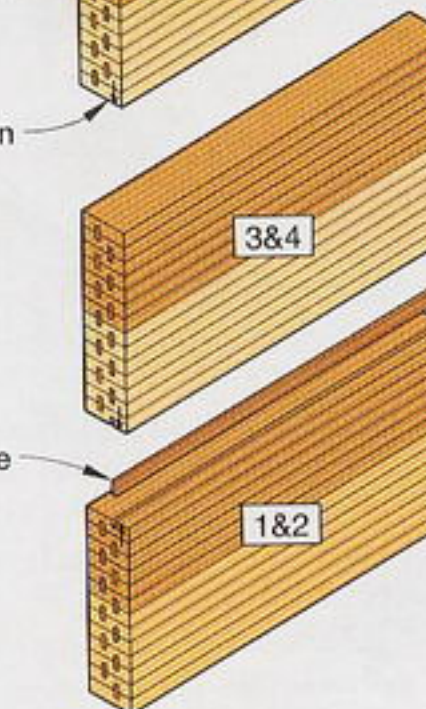
Waxed paper

- One single-grooved piece
- Six double-grooved pieces



Registration mark

Spline



Step 1
Construct Assembly 1 by gluing seven pieces, as shown. Clamp until dry.

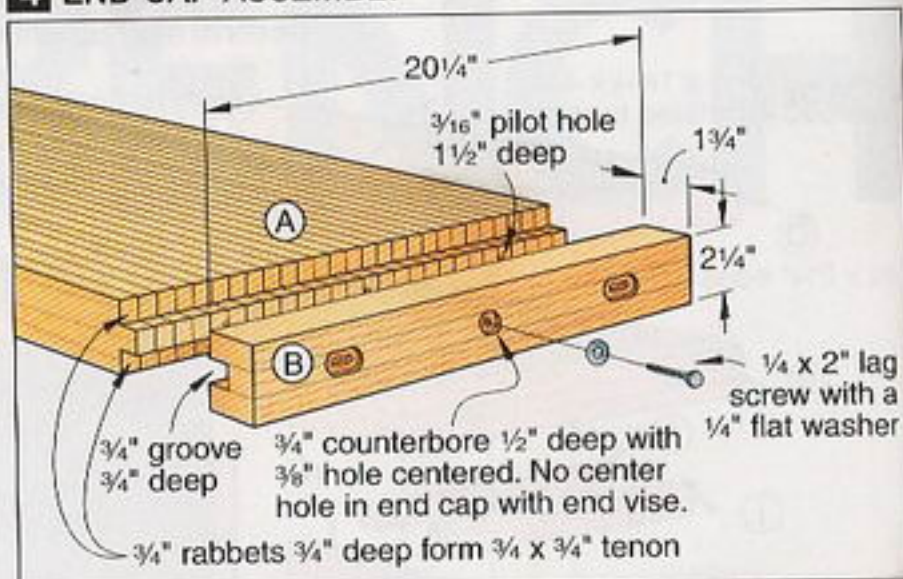
Step 2
Add Assembly 2 by gluing six more pieces, as shown. Clamp until dry.

Step 3
Place a piece of waxed paper on top of Assembly 1/2 to use it as a form for Assembly 3. Make Assembly 3 by gluing seven pieces together. Align with Assembly 1/2, and then clamp until dry. Make registration marks on one end of each assembly.

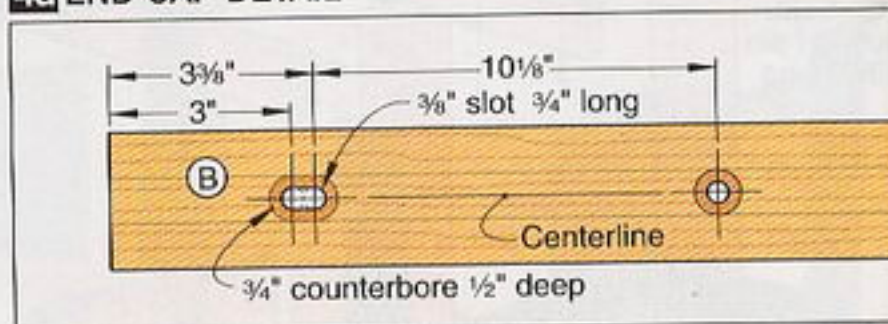
Step 4
Remove Assembly 3 from Assembly 1/2. Complete Assembly 4 by gluing the last seven pieces, as shown. Clamp until dry.

Step 5
Thickness-plane assemblies 1/2 and 3/4 to identical 2 1/4" thickness. Cut grooves for spline; glue and clamp until dry.

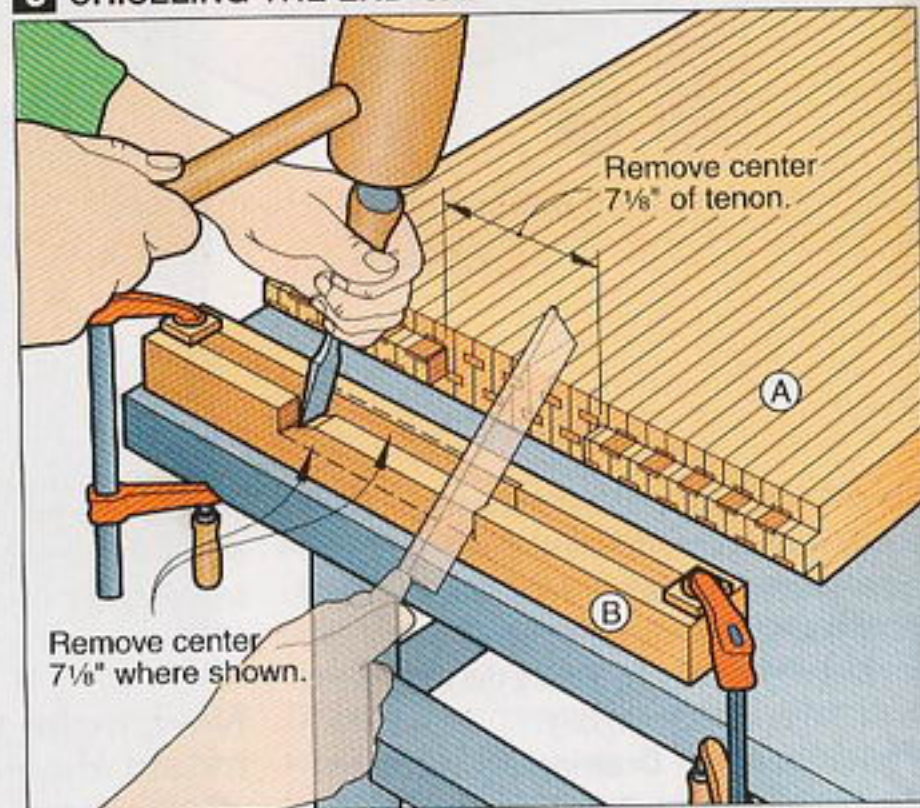
4 END CAP ASSEMBLY



4a END CAP DETAIL



5 CHISELING THE END CAP



Note: The slots in end caps (B) allow the top to expand and contract with seasonal changes in the wood's moisture content.

5 Mark the centerpoints of the bench-dog holes, where dimensioned on **Drawing 7** on page 8. Next, drill the holes, using a portable-drill guide to keep the holes vertical.

6 Rip and crosscut 3/4"-thick stock for the side-vise spacer (C) and the end-vise

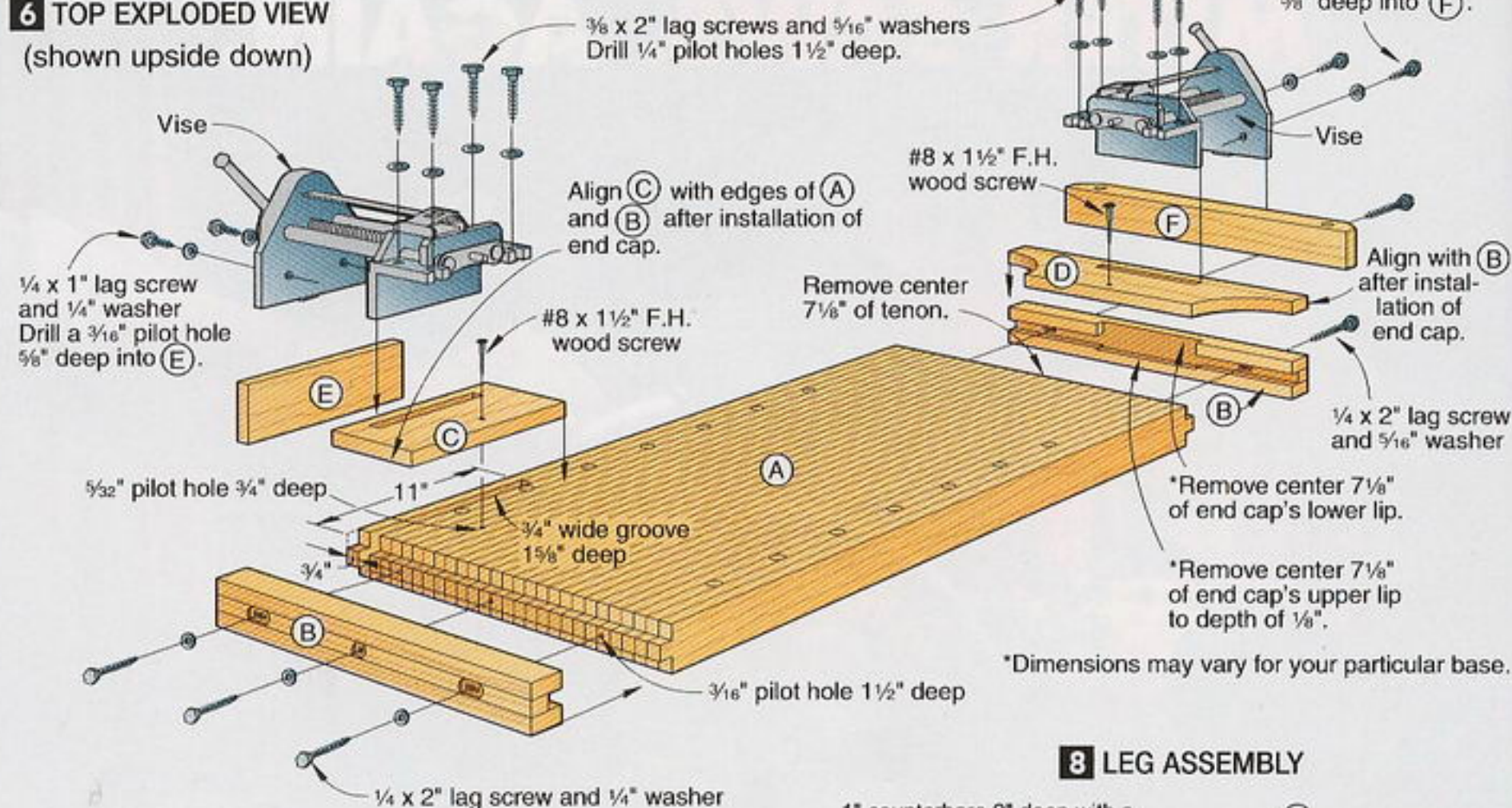
spacer (D). These parts are shown on **Drawing 10**, on page 12. Make the radius cuts on the ends of the end-vise spacer with a jigsaw. Next, drill 1/2" blade-start holes, and then jigsaw the openings. Drill counter-sunk holes where shown. Remove the patterns, and then screw the parts into position where shown on **Drawing 6**, on page 8.

7 Mount the side vise, where shown on **Drawing 6**. Using the mounting

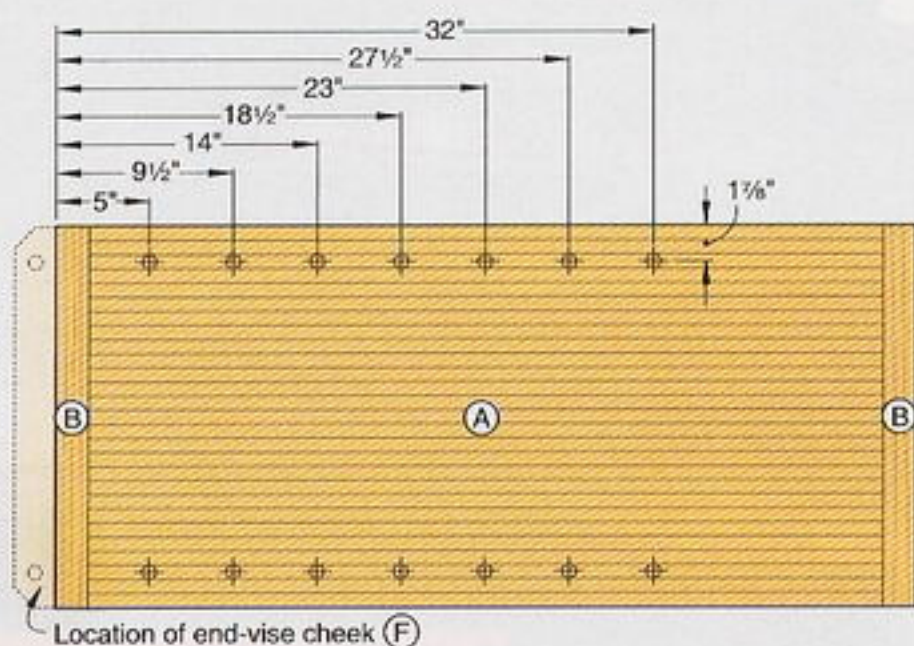
flanges in the vise's base as guides, drill 1/4" pilot holes 1 1/2" deep through the side-vise spacer (C) and into the top (A). Use a socket wrench to drive the lag screws. Rip and crosscut the side-vise cheek (E) from 3/4"-thick stock. Position it within the jaw of the vise, flush with the top's end and upper surface. Close the vise to hold the end-vise cheek in position; attach with lag screws.

Continued on page 8

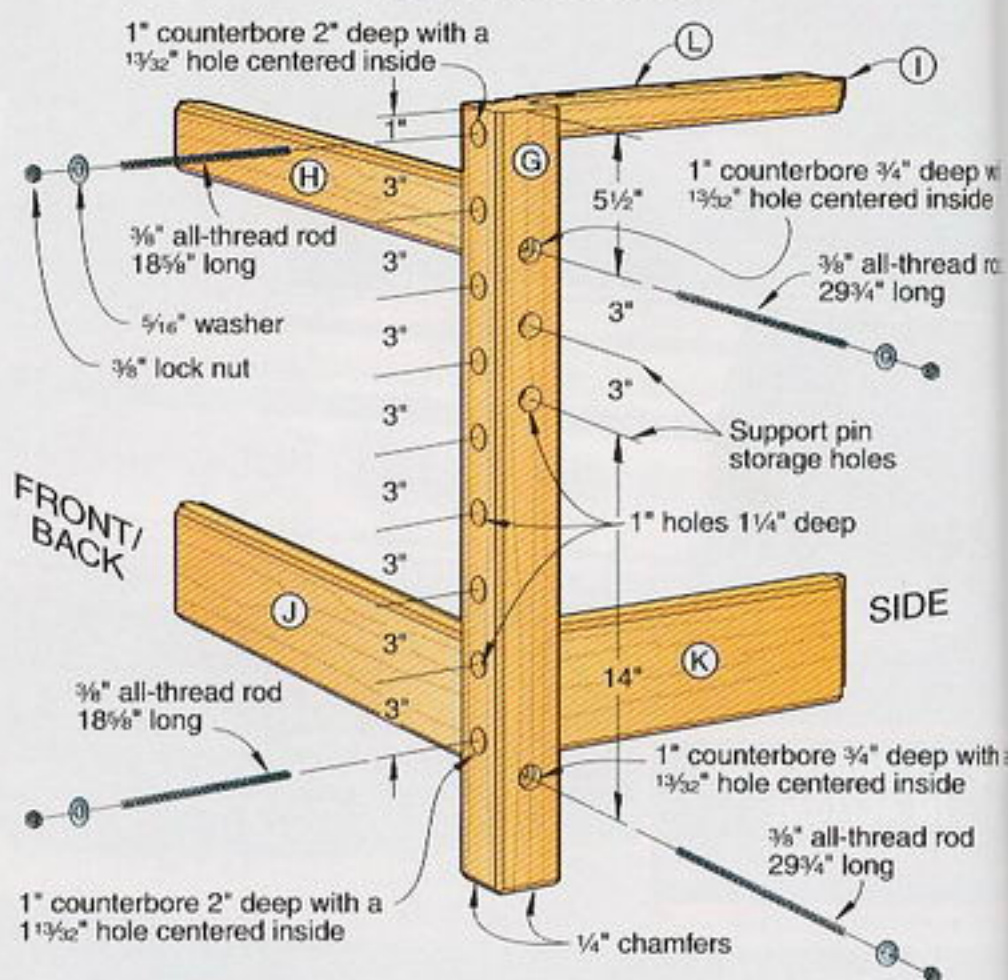
6 TOP EXPLODED VIEW
(shown upside down)



7 BENCH-DOG HOLES



8 LEG ASSEMBLY



8 Rip and crosscut three oversized pieces to $3\frac{1}{4} \times 21$ " from $\frac{3}{4}$ "-thick stock for the end-vise cheek (F). Glue and clamp them together face-to-face. When dry, joint one edge, and then rip and crosscut to finished size. Double-check the finished length of the end-vise cheek against the actual width of your workbench top. Referring to **Drawing 10**, cut 45° chamfers on the ends of part F. Drill the $\frac{3}{4}$ " bench-dog holes where dimensioned.

9 Next, following the same procedure you used earlier for the side vise, proceed by mounting the end vise and the end-vise cheek (F) with lag screws.

It's time to make the legs

1 Crosscut four pieces of 4x4 (3½x3½" actual) construction-grade lumber (we used fir) to initial lengths of 32". Use your jointer to flatten one side of each leg. Then,

rotate the piece one-quarter turn so the flattened edge is against the jointer fence, and joint the adjacent edge. Make pencil marks on the two remaining rough faces.

2 Set your table saw's rip fence $3\frac{1}{16}$ " from the inside edge of the blade. Next, cut off the two rough faces from each leg. Finish machining of each leg by thickness planing or jointing it to 3" square.

Continued on page 10

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one workhorse of a workbench

3 Crosscut the legs, squaring both ends for a finished length of 30 $\frac{3}{4}$ ".

Note: Legs of this length make a workbench that stands 33" high. Lengthen or shorten the legs to suit your personal preference.

4 Put a $\frac{1}{2}$ " dado blade in your tablesaw, and adjust for a $\frac{1}{2}$ "-deep cut. Set your rip fence $\frac{1}{4}$ " from the inside edge of the blade, and cut grooves centered in two adjacent faces of each leg, where shown on **Drawing 9**.

5 Mark the centerpoints of all holes in the legs, where shown on the **Drawing 8**.

Note: The faces of the two legs on the side with the side vise are the only ones that get the row of support-pin holes spaced 3" on center. Chuck a 1" Forstner bit into your drill press, then set up a fence so the bit is centered in the width of the leg. Drill all the 1" holes and counterbores where dimensioned. Then, change to a $\frac{1}{32}$ " bit, and complete the holes through the legs.

6 Chuck a chamfering bit into your hand-held router, and adjust it to cut a $\frac{1}{8}$ "

chamfer. Rout the edge of all 1" holes in the legs. Next, chuck the chamfering bit into your table-mounted router, and adjust it to cut a $\frac{1}{4}$ " chamfer. Then, rout the edges and bottom ends of all the legs.

Note: Save this router-table setup; you will use it again. Sand the legs to final smoothness, and set them aside.

Next, shape the aprons and stretchers

1 Rip and crosscut the aprons, (H, I) and the stretchers (J, K) from 1 $\frac{1}{2}$ "-thick stock (we used construction-grade fir) to the dimensions listed in the Materials List.

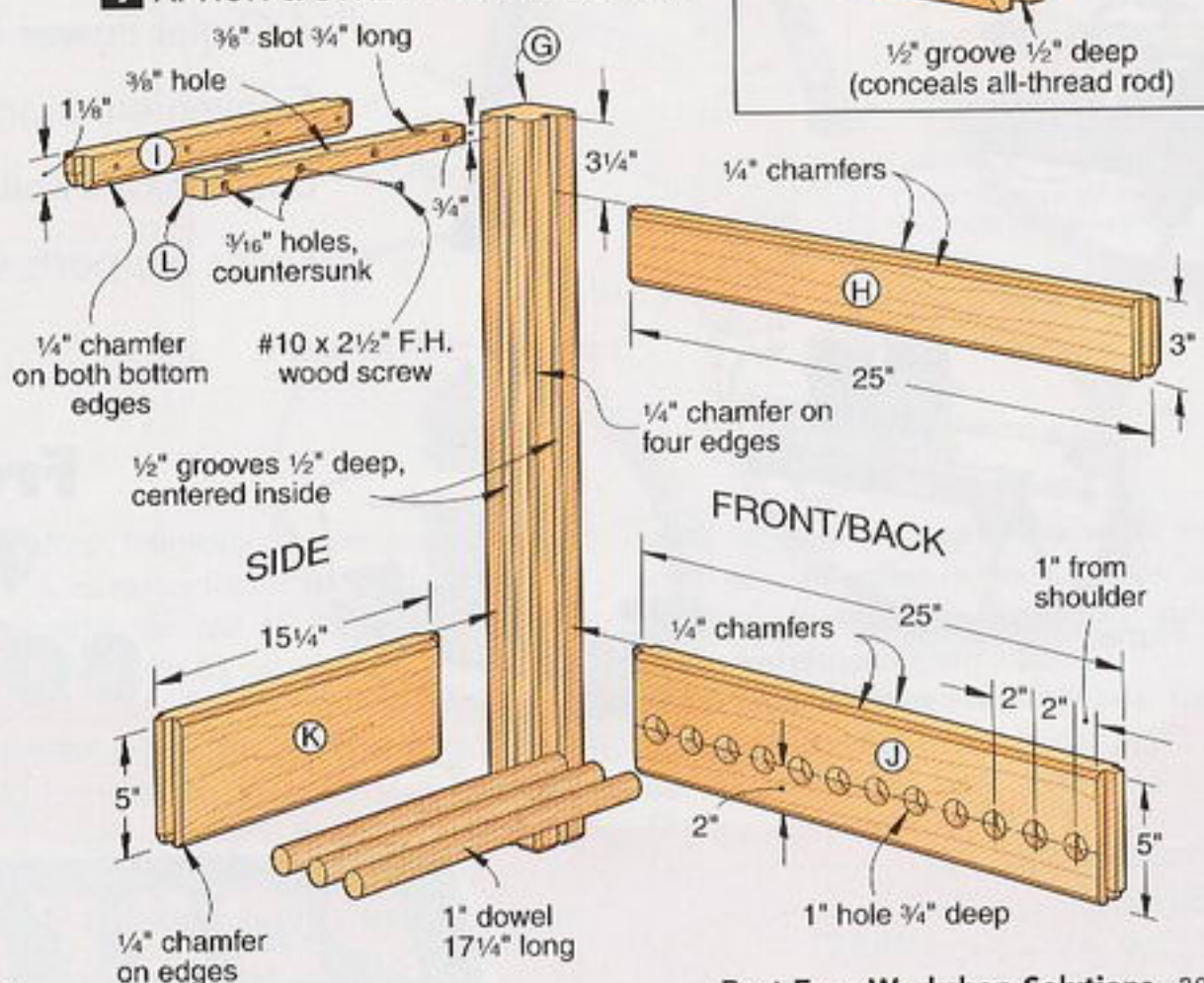
2 Put a $\frac{5}{8}$ " dado blade in your tablesaw, and raise it $\frac{1}{2}$ " above the table. Attach an extension to your tablesaw's miter gauge, and clamp a stopblock to it to make a cut $\frac{1}{2}$ " wide. (Refer to **Drawing 9a**.) Make test cuts in a piece of scrap stock, and then test the fit of the tenon in the groove in the leg. Next, cut tenons on the ends of the aprons and stretchers (H, I, J, K). Change to a $\frac{1}{2}$ " dado blade in your tablesaw, and cut grooves along the bottom edge of each apron and stretcher.

Continued on page 12

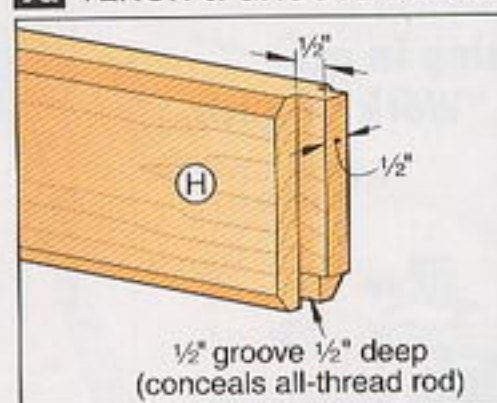
SHOP TIP

To avoid ruining the thread on all-thread rod when hacksawing to length, screw a nut onto the rod, and then cut the rod. Remove the nut to re-form the threads.

9 APRON & STRETCHER ASSEMBLY

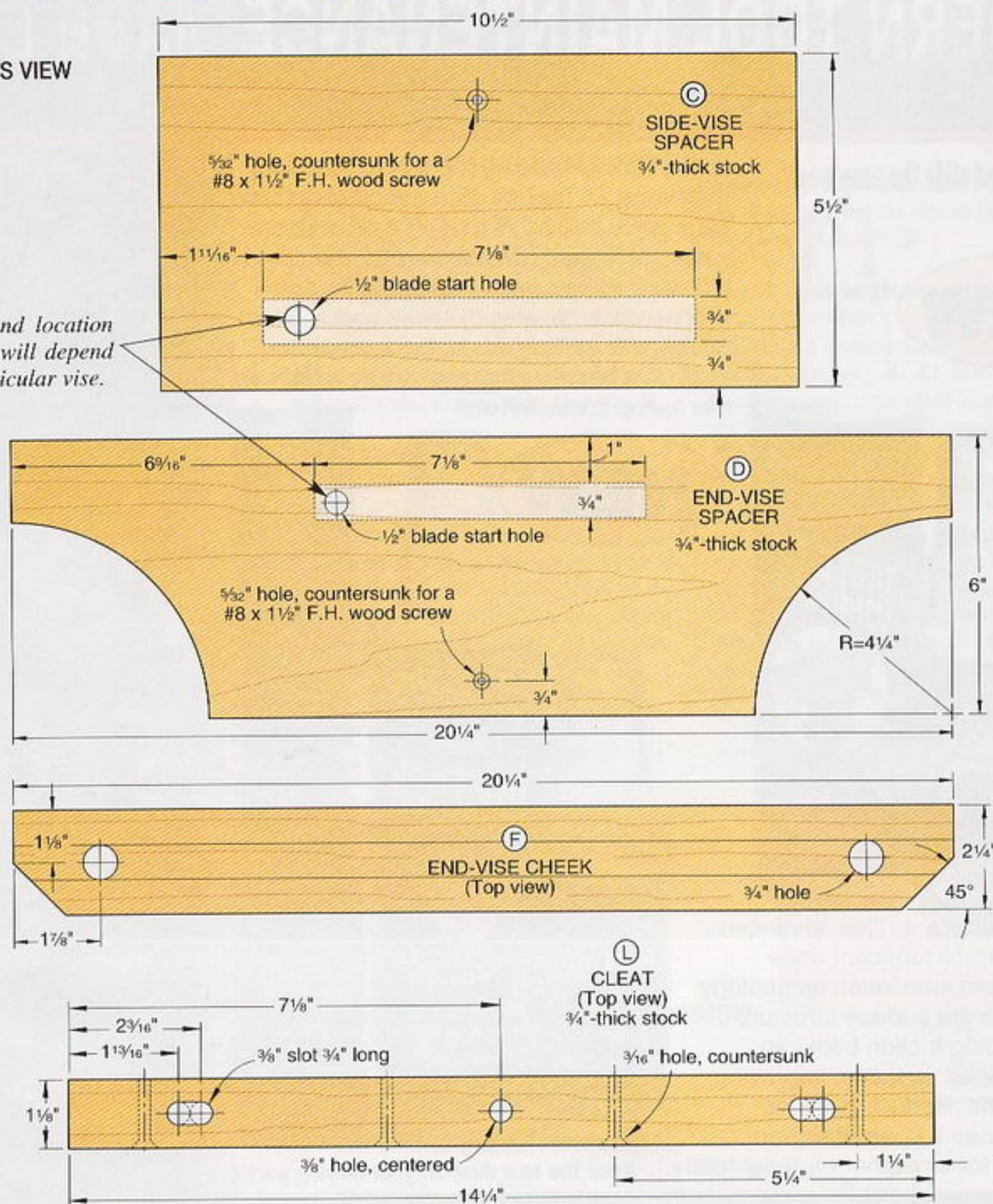


9a TENON & GROOVE DETAIL



10 PARTS VIEW

Note: Size and location of openings will depend on your particular vise.



3 Mark the centerpoints of the 1" shelf-rod holes in the side stretchers (J).

Note: The first hole is 1 1/2" from the end of the side stretcher (1" from the shoulder of the tenon).

Chuck a 1" Forstner bit into your drill press, and then clamp a fence 2" from the center of the bit. Next, drill a hole in scrapwood, and test the fit of your 1" dowel stock. You want a loose fit; these dowels will not be glued into place. Then, drill the holes.

4 Crosscut 12 pieces of 1" dowel stock to 17 1/4" long for the shelf rods. Crosscut two 3 1/2" lengths for the support pins. Sand the dowels, and then set aside.

5 Rout 1/4" chamfers along the bottom edge (with the groove) of the end aprons (I). Next, rout 1/4" chamfers along all long edges of parts H, J, and K.

6 Rip and crosscut the cleats (L) to size. Next, drill the holes and slots, where dimensioned on **Drawing 10**. Next, glue and screw the cleats to the end aprons, aligning their top edges and making certain that

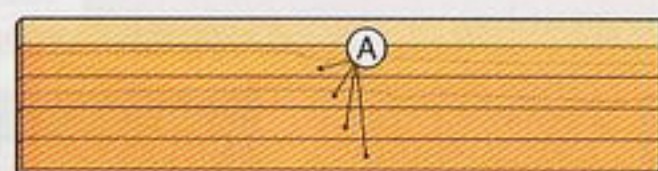
the ends of the cleat are even with the tenon shoulders of the end apron.

You're ready for the finish and final assembly

1 Remove the vises, and sand all pieces to final smoothness. We painted the base-assembly pieces with two coats of white latex exterior primer, sanding after each coat with 220-grit sandpaper. Then, we spray-painted the base assembly with two coats of a rust-inhibiting enamel, in Hunter Green. On all

Continued on page 14

Cutting Diagram



3/4 x 11 1/4 x 48" Maple (7 needed)



3/4 x 7 1/4 x 48" Maple



3/4 x 7 1/4 x 96" Maple



3 1/2 x 3 1/2 x 96" Fir (2 needed)

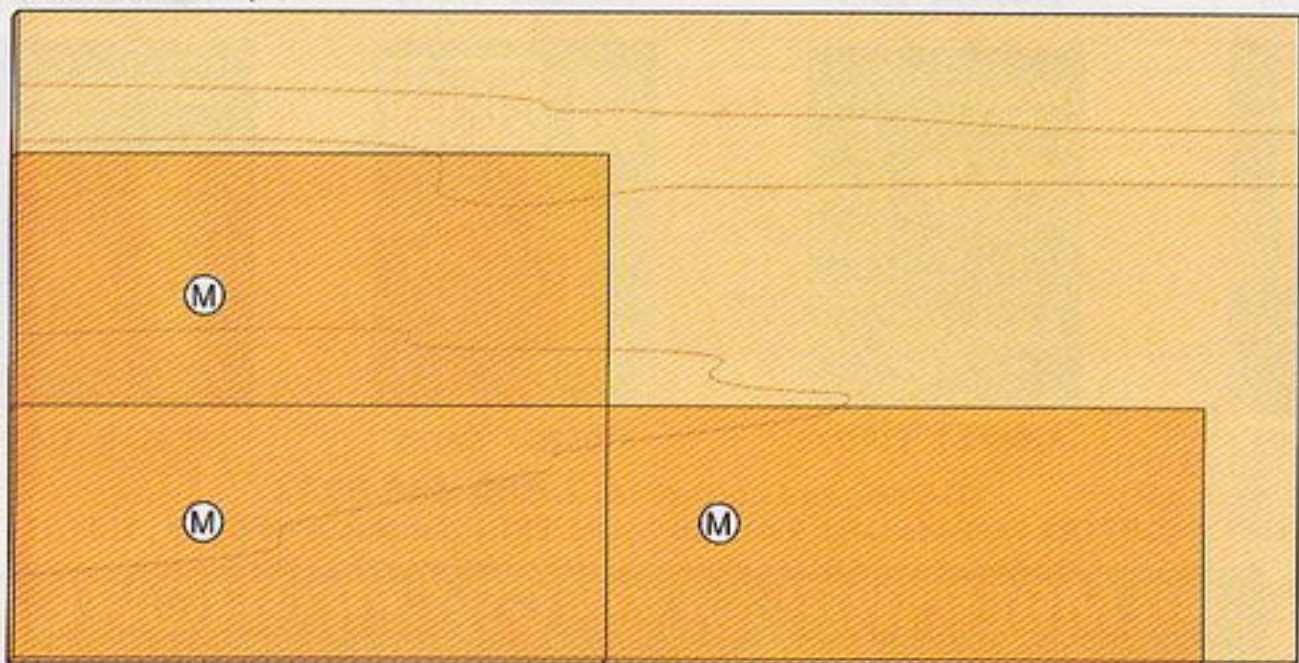


1 1/2 x 9 1/4 x 96" Fir



3/4 x 5 1/2 x 48" Maple

*Plane or resaw to the thicknesses listed in the Materials List.



3/4 x 48 x 96" Birch plywood

other pieces with a clear finish (top assembly, shelf rods, and support pins), we rubbed in two coats of Minwax Antique Oil Finish.

2 Cut four pieces of 3/8"-diameter all-thread rod 29 3/4" long, and four pieces 18 5/8" long. See the Tip on page 10 for a cutting suggestion. Referring to **Drawing 8**, make two base assemblies, each one consisting of two legs (G), one side apron (H), one side stretcher (J), two 29 3/4" all-thread rods, four washers, and locknuts. Make certain that the assemblies are square.

3 Place one of the base assemblies on a pair of sawhorses, with the holes in the side stretcher facing upward. Next, insert the end apron/cleat (I/L) assemblies, the end stretchers (K), and the shelf rods. Place the other base assembly on top, aligning all parts. Then, insert and tighten the remaining all-thread rods with washers and locknuts, carefully checking the assembly for square.

4 Place the benchtop assembly facedown on a pair of sawhorses. Re-install the vises and vise cheeks (E, F). Place the base

Materials List

Workbench	FINISHED SIZE			Matl.	Qty.
	T	W	L		
A* top	2 1/4"	20 1/4"	44"	LM	2
B* end caps	2 1/4"	1 3/4"	20 1/4"	LM	2
C side-vise spacer	3/4"	5 1/2"	10 1/2"	M	1
D end-vise spacer	3/4"	6"	20 1/4"	M	1
E side-vise cheek	3/4"	3"	10 1/2"	M	1
F* end-vise cheek	2 1/4"	3"	20 1/4"	LM	1
G* legs	3"	3"	30 3/4"	F	4
H side aprons	1 1/2"	3"	25"	F	2
I end apron	1 1/2"	1 1/8"	15 1/4"	F	2
J side stretchers	1 1/2"	5"	25"	F	2
K end stretchers	1 1/2"	5"	15 1/4"	F	2
L cleats	3/4"	1 1/8"	14 1/4"	F	2

Optional Plywood Top

M* top	2 1/4"	18 3/4"	44 1/2"	LP	1
N banding	3/4"	2 1/4"	46"	M	2
O banding	3/4"	2 1/4"	20 1/4"	M	2

*Parts initially cut oversize. See the instructions.

Materials key: LM—laminated maple, M—maple, F—fir, LP—laminated plywood.

Supplies: #8x1 1/2" flathead wood screws (2), #10x2 1/2" flathead wood screws (8), 1" dowel stock 36" long (7), 3/8"-diam. all-thread rod 29 3/4" long (4), 3/8"-diam. all-thread rod 18 5/8" long (4), 3/8" lock nuts (8), 1/4x1" lag screws (4), 1/4x1 1/2" lag screws (6), 1/4x2" lag screws (5), 3/8x2" lag screws (8), 1/4" flat washers (15), 5/16" flat washers (8), primer, green enamel spray paint, clear finish.

Buying Guide

Vises and Bench Dogs. Quick-release vise, catalog no. 144844; Veritas bench dogs, catalog no. 08X91, Woodcraft, 560 Airport Industrial Park, P.O. Box 1686, Parkersburg, WV 26102-1686; for credit card orders call 800/225-1153.

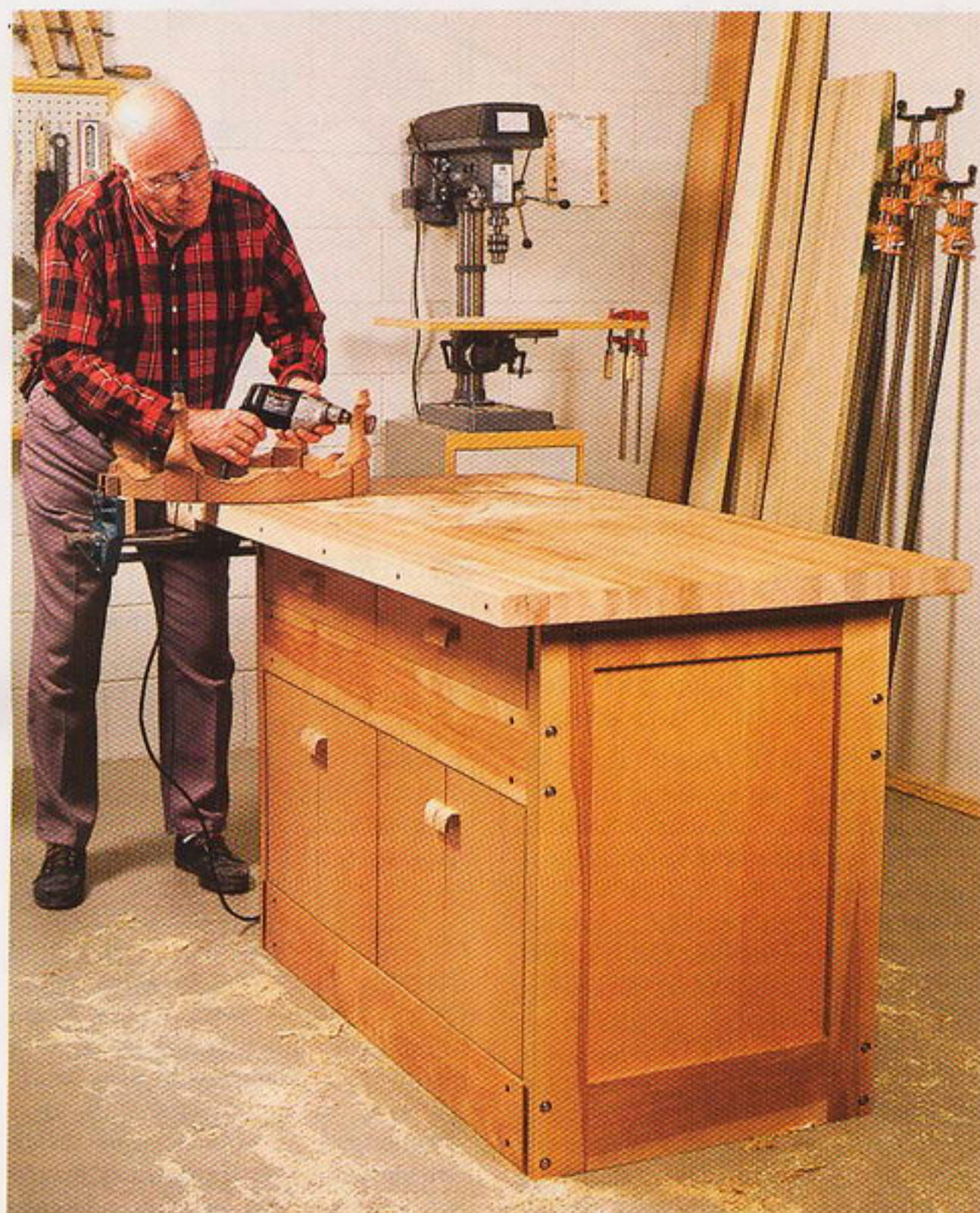
assembly upside down on the top, aligning it where shown on **Drawing 1**. Using the holes and slots in the cleats as guides, drill 3/16" pilot holes 3/4" deep into the top. Then, attach the top with 1/4x1 1/2" lag screws and 1/4" washers. Turn the completed workbench upright, and install the bench dogs. 🛠️

Project design: **Chuck Hedlund**
Illustrations: **Mike Gatzke; Roxanne LeMoine**
Photographs: **Craig Carpenter/Studio Au**

build on a strong foundation

LABOR-OF-LOVE

WORKBENCH



Note: For the frame members (parts A, B, C, E, F) we used 1½" birch. To save money, you could substitute pine, fir, or spruce 2×4s and 2×6s for these parts.

Start with the end panels

1 Cut the end panel uprights (A) and rails (B, C) to the sizes listed in the Materials List.

2 Set a stop, and cut half laps on the ends of each upright and rail. See **Drawing 1** for reference.

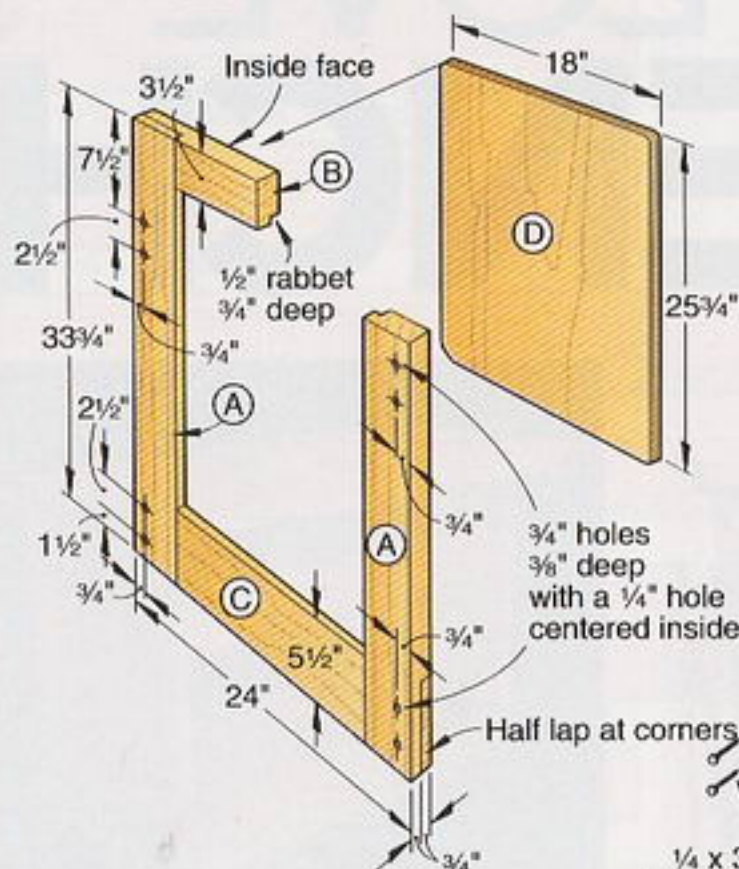
3 Glue and clamp together each end frame, checking for square. Later, scrape off the excess glue, and sand both end frames.

4 Mark the centerpoints for eight ¾" holes on the *outside* face of each end frame. (See **Drawing 1** for hole locations.) Set a stop for consistent depths, and bore ¾" holes ⅜" deep at each marked centerpoint. (See **Drawing 1a** for reference.) Switch bits, and drill a ¼" hole through the stock, centered inside each ¾" hole, backing the stock with scrap to prevent chip-out.

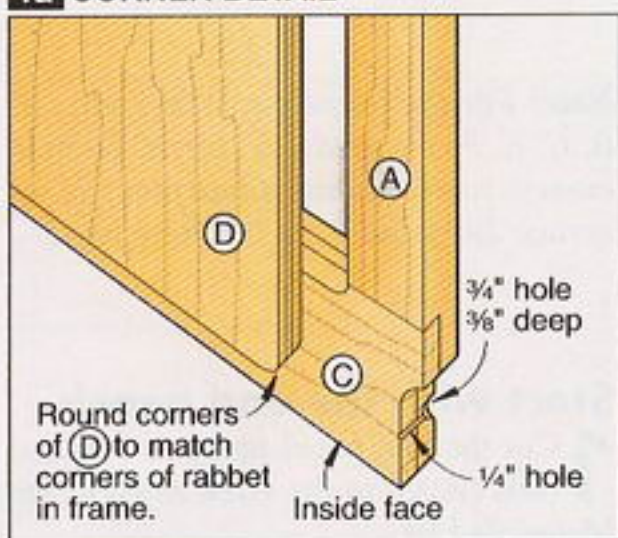
5 Rout a ½" rabbet along the *inside* face of each end frame, where shown on **Drawing 1**.

Before designing this workbench, we talked to numerous woodworkers to determine what features they wanted. With your recommendations in mind, we designed this sturdy work center. Our bench has a base that can be kept simple like the one in the photo *above right*. Or, build the one above with doors and drawers. We've also incorporated a large 30×60" benchtop and a bench-dog-and-vise system.

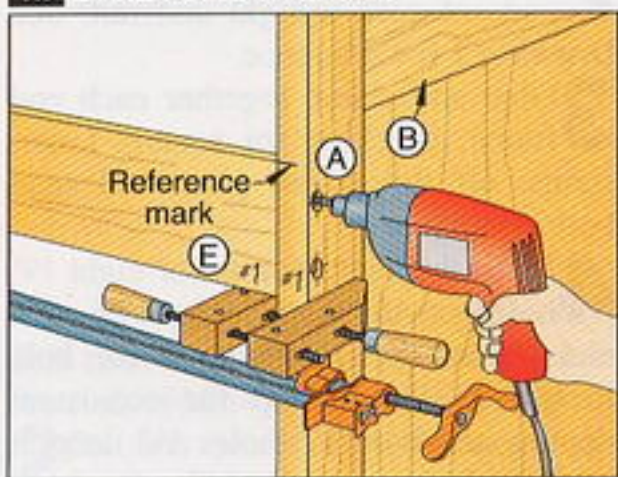
1 END PANEL



1a CORNER DETAIL



1b STRETCHER DETAIL



6 Measure the rabbeted openings, and cut two pieces of ¾" plywood (D) to size. Cut or sand the square corners of the plywood panels to fit into the rounded corners of the rabbets in the end frames. Glue and clamp the ply-

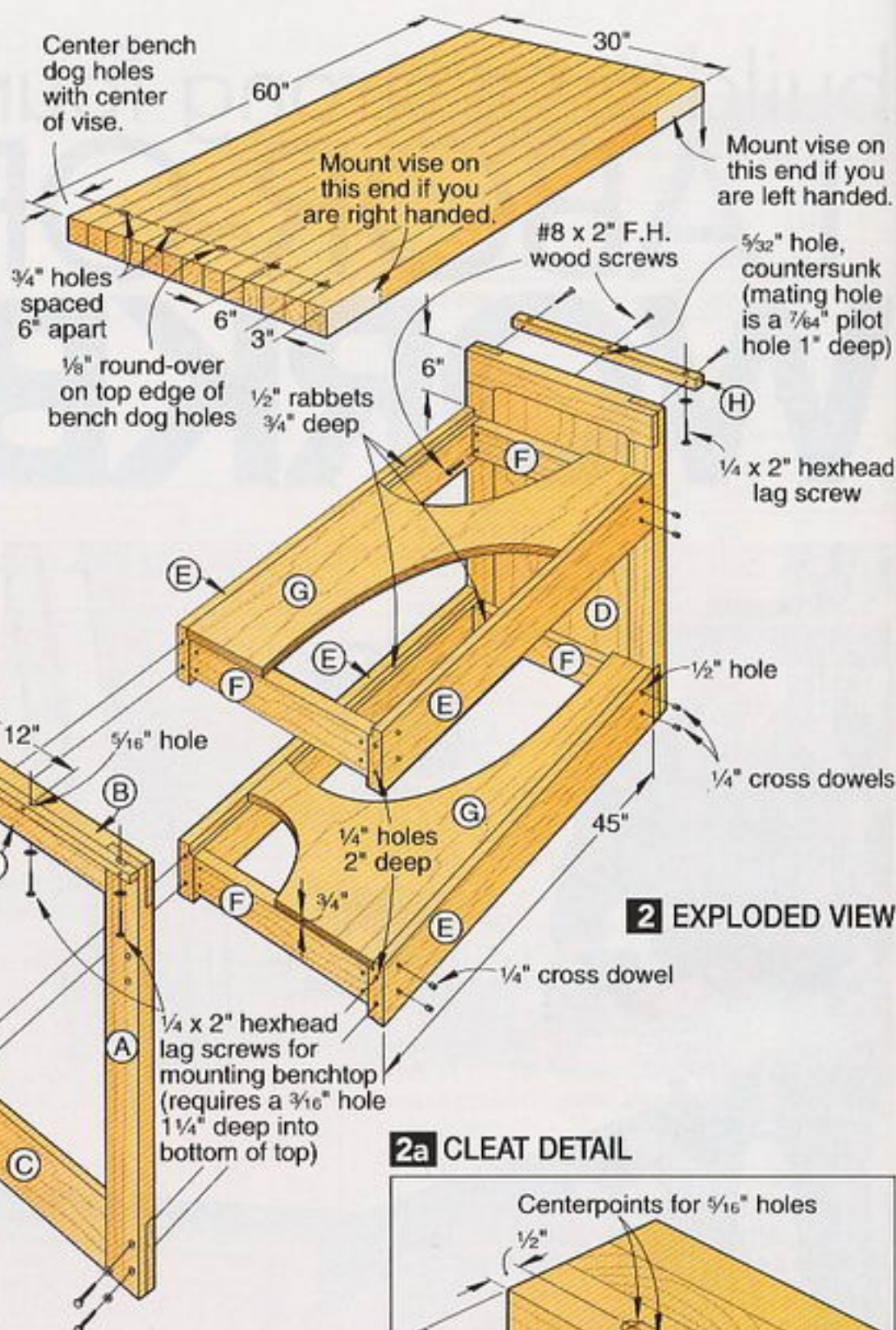
wood panels into the rabbets, and remove excess glue with a damp cloth.

Add the stretchers for stability

1 Cut the stretchers (E) to size. Cut a $\frac{1}{2}$ " rabbet $\frac{3}{4}$ " deep on the top inside edge of each stretcher. (We cut ours on the tablesaw with a dado blade; a table-mounted router fitted with a fence and straight bit also would work.)

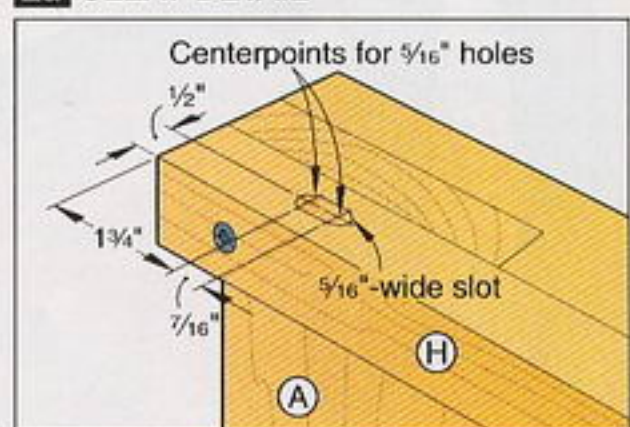
2 Mark the locations, and dry-clamp the stretchers in place between the end panels, where shown on **Drawing 1b**, at *left*.

3 Using the previously drilled holes in the end-panel uprights as guides, drill a pair of 1/4" holes 2" deep into the



2 EXPLODED VIEW

2a CLEAT DETAIL

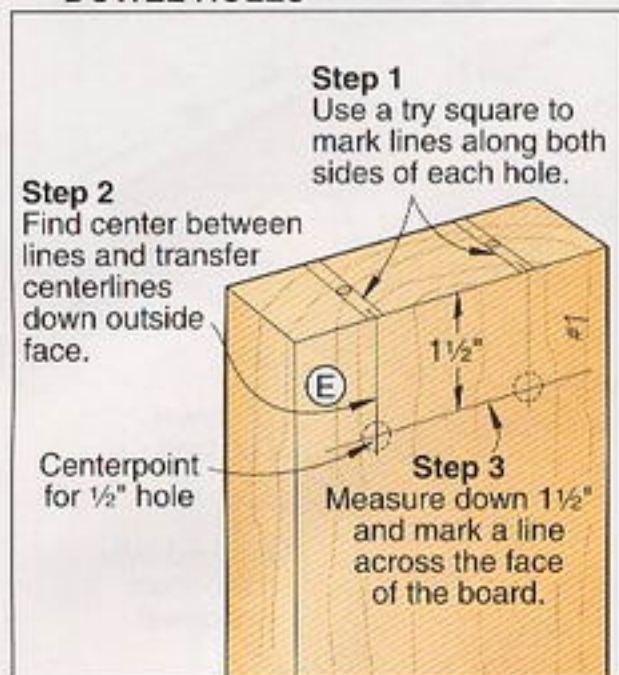


ends of each stretcher, as shown in **Drawing 1b**. (If your bit is too short, drill as deep as you can and finish drilling the holes to 2" deep after removing the clamps in the next step.)

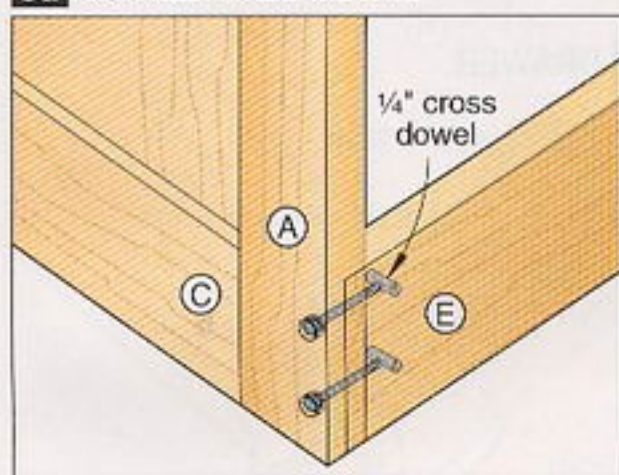
4 With the stretchers still dry-clamped in place, and using **Drawing 1b**, for reference, mark matching numbers and location reference lines on each stretcher end and mating upright for relocating the stretchers later. Remove the clamps, and finish drilling the 1/4" holes to 2" deep into the ends of each stretcher.

5 Following **Drawing 3**, mark the centerpoints for the cross-dowel holes. (When assembling the workbench later, the $\frac{1}{4} \times 3"$ bolt threads into

3 LOCATING THE THREADED DOWEL HOLES



3a DOWEL HOLE DETAIL



the cross dowels to hold the assembly together.) Then, drill 1/2" holes through the stretchers, where marked, backing the stock with scrap to prevent chip-out.

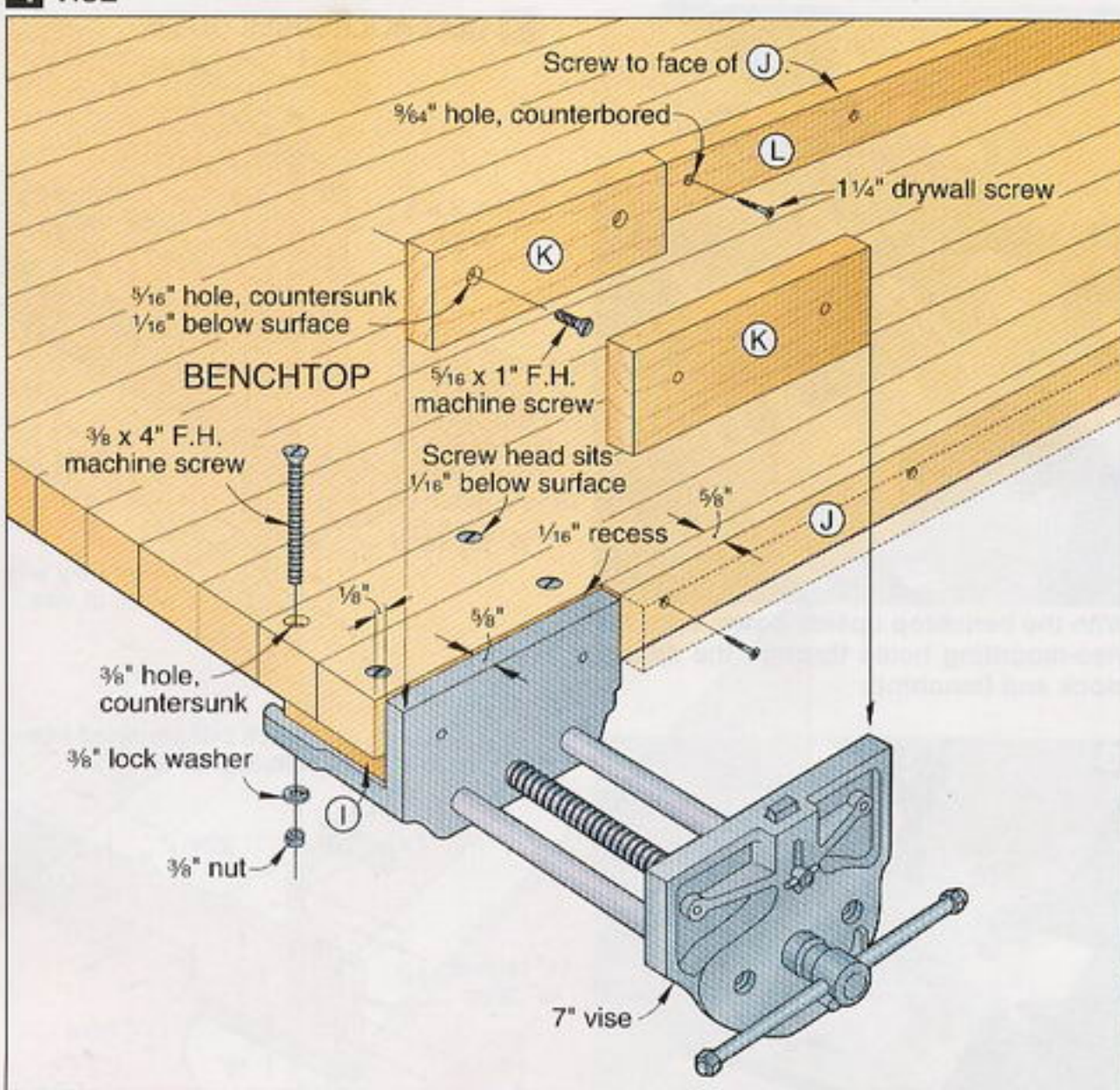
6 Dry-clamp the stretchers (in the same location as before) between the end panels. Insert 1/4" cross dowels into the 1/2" holes. (See the Buying Guide for our source of hardware.) Bolt the end panels to the stretchers with 1/4x3" hexhead bolts. (See **Drawing 3a**, above, for reference.) Thread the bolts through the cross dowels. (Be careful not to over-tighten the bolts; we snapped off the head of one bolt.)

Time to make the shelves

1 Measure the distance between the stretchers (E), and cut the shelf supports (F) to size. Glue and screw the supports between the stretchers, with the *top edge* of the supports flush with the *bottom edge* of the rabbet cut in each stretcher. (See **Drawing 2**.)

2 Measure the openings, and cut the shelf panels (G) to size. Check the fit, then glue and clamp them into place.

4 VISE



Add the cleats and locate the vise

1 Cut the cleats (H) to size. Mark the centerpoints for the 5/16" holes on the top face of each cleat. (See **Drawing 2a** accompanying **Drawing 2** for the locations of the 5/16" holes needed to form the slots.) Drill the holes where marked. With a chisel, remove material between holes to form the slots. When fastening the benchtop to the cleats later, the slots allow the benchtop to expand and contract without splitting the cleat or benchtop.

2 With the top edges flush, glue and screw the cleats (H) to the top rail (B) on the outside face of each end panel.

3 Position the benchtop on the base and allow for a 9" overhang on the end on which you mount the vise. (See "Topping it Off" on page 20 for how to build a benchtop.) If you're right-handed, mount the vise on the left-hand end. If left-handed, position the vise on the opposite end (same edge) leaving a 9" overhang on that end.

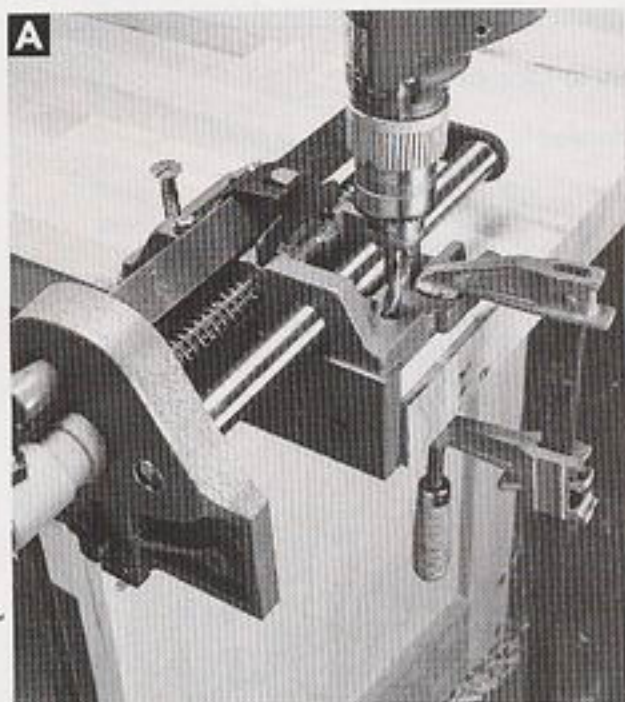
4 With the benchtop correctly positioned, trace the outline of the bench base on the bottom of the benchtop for repositioning the benchtop on the base later.

Now let's add the vise

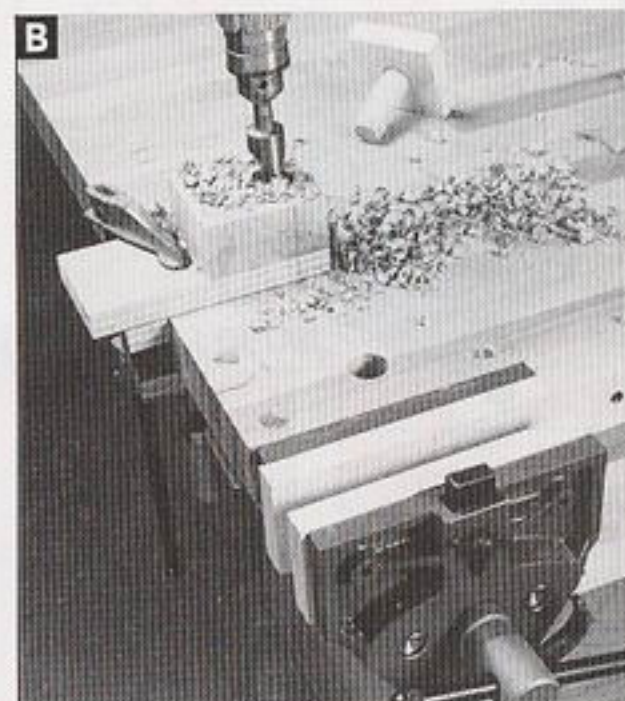
Note: If you plan on adding the doors and drawers, do that first, and then add the vise. The instructions for adding the doors and drawers start on page 19.

We cut parts I, J, K, and L to fit the vise and laminated benchtop noted in the Buying Guide. If you use a different vise and top, your dimensions may vary.

1 With the benchtop on the base, cut the spacer (I) to fit between the vise mount and the bottom surface of the benchtop. (See **Drawing 4** for reference. To accommodate the mounting bolts, we cut 3/4x3/4" notches in the back two corners of the spacer.) The thickness of the spacer should drop the top edge of the vise jaws 1/16" below the top surface of the benchtop. The thickness



A With the benchtop upside down, bore the vise-mounting holes through the spacer block and benchtop.



B Locate and clamp the drill guide to the benchtop. Drill 3/4 inch dog holes in the top.

of the spacer will depend on the thickness of your benchtop. The 1/16 inch gap prevents projects on the benchtop from contacting the metal jaws of the vise.

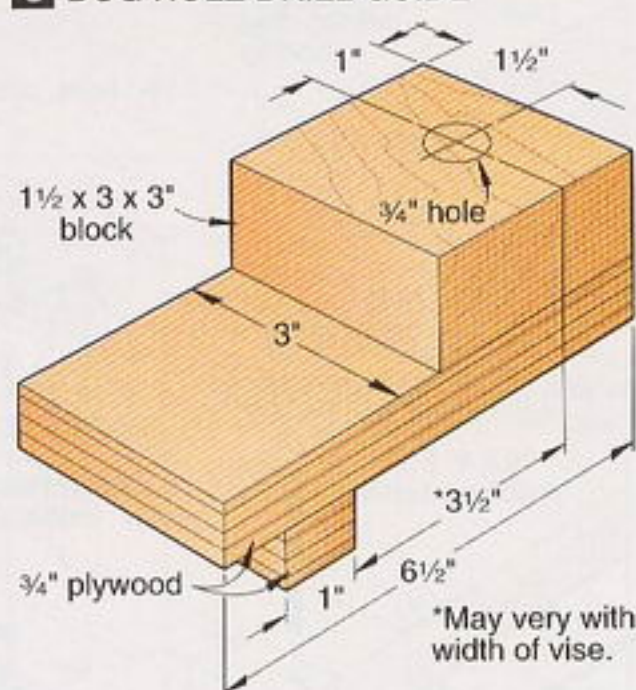
2 Clamp the vise in position on the bottom surface of the benchtop. With a helper, position the benchtop upside down on the workbench base.

3 Using the mounting holes in the vise as guides, drill through the spacer block and benchtop, backing what will be the top of the benchtop with scrap to prevent chip-out. (See **Photo A** above.) Temporarily bolt the vise in place.

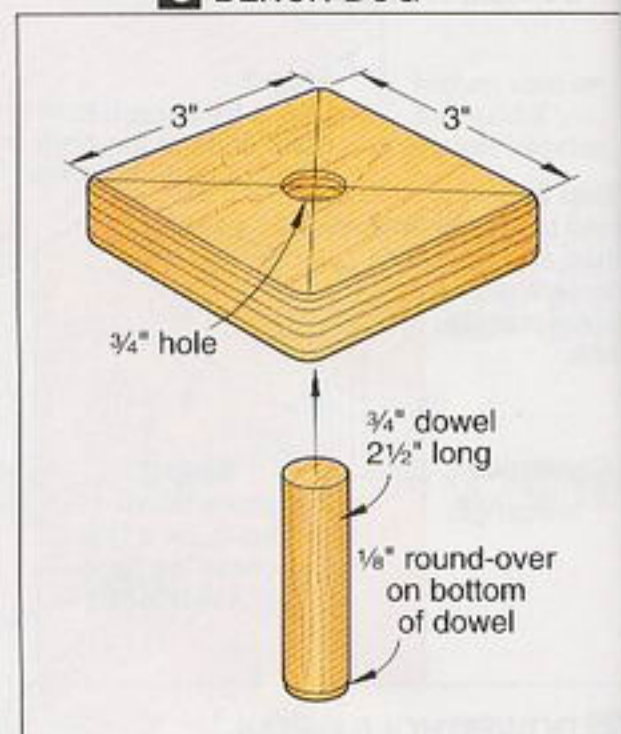
Attach the benchtop, and add the facing strips

1 With the aid of a helper, turn the benchtop right side up, and position it on the base, using the previously drawn outline for alignment.

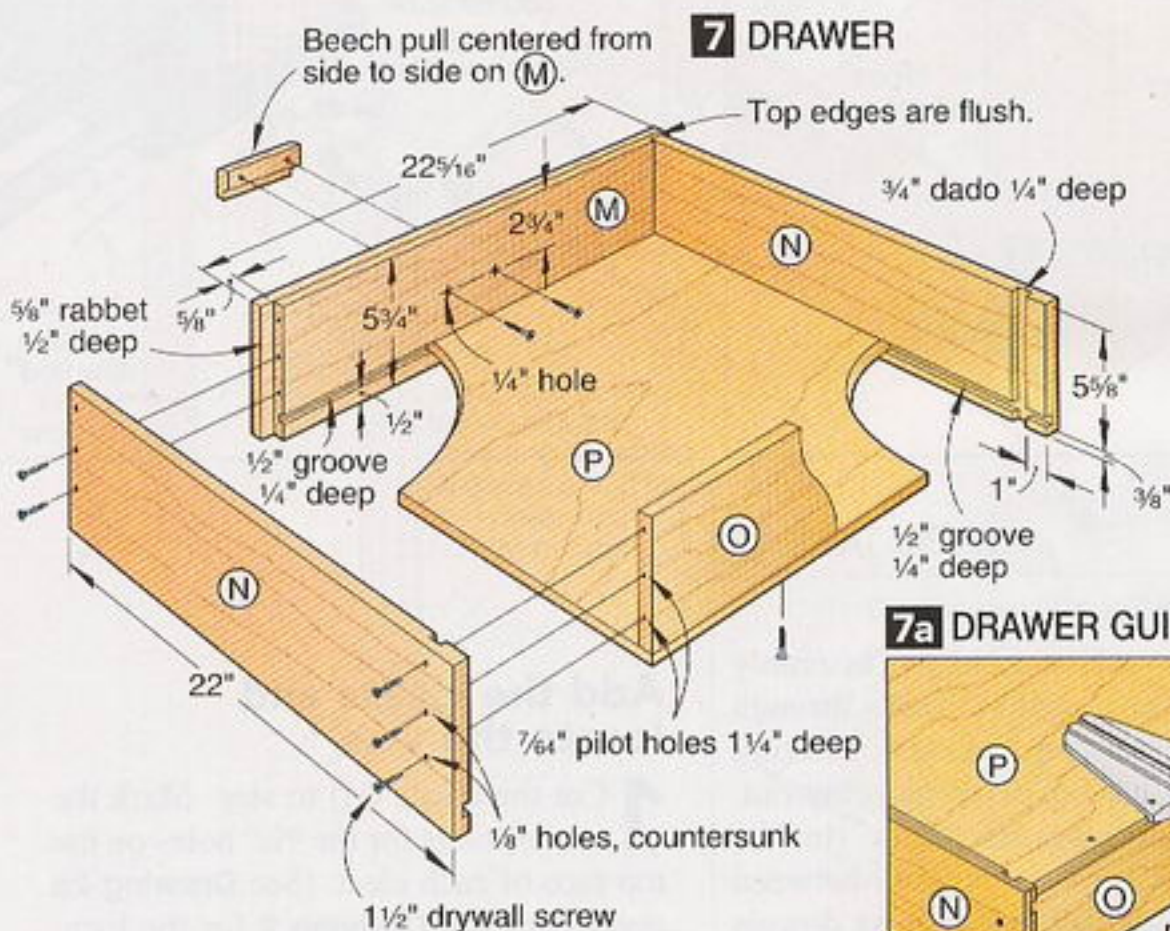
5 DOG HOLE DRILL GUIDE



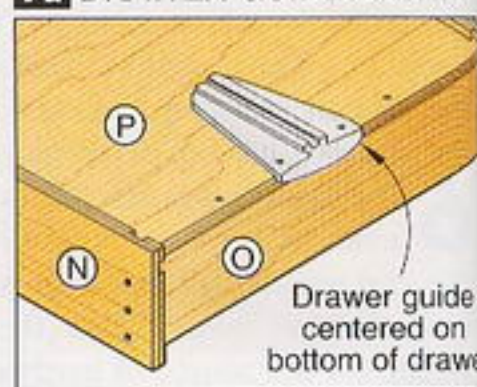
6 BENCH DOG



7 DRAWER



7a DRAWER GUIDE DETAIL



2 Using the slots and holes in the cleats as guides, drill 3/16 inch holes 1 inch deep into the bottom side of the top for the 1/4x2 inch lag screws. Be sure to center the pilot holes in the slots. Screw (but don't glue) the benchtop to the base.

3 Remove the vise, spacer, and mounting screws from the benchtop. So you won't scratch your projects, countersink the vise mounting holes so the mounting screws sit 1/16 inch below the top surface. With the spacer in place, bolt the vise to the benchtop.

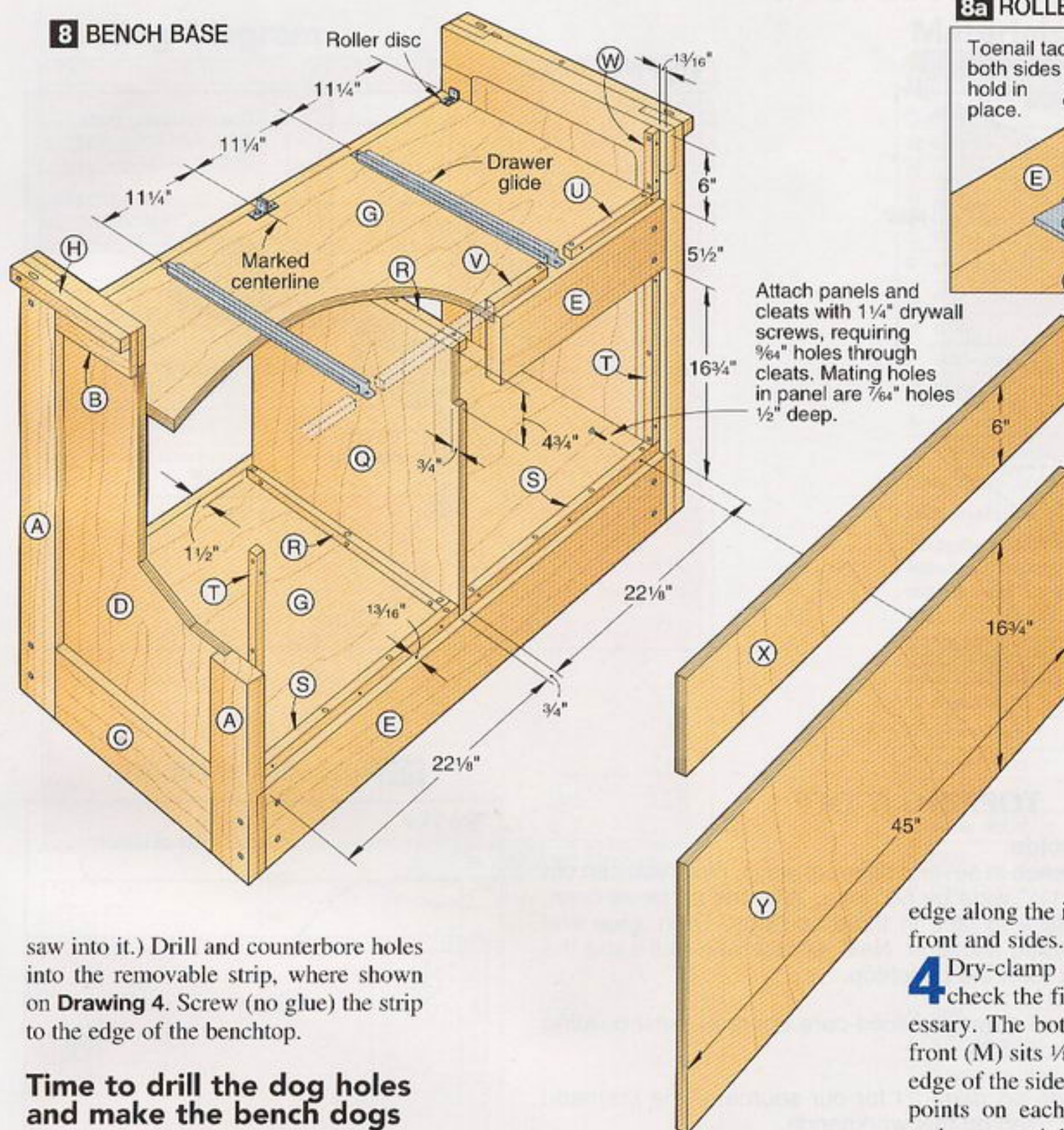
4 Measure the distance from the inside face of the metal vise jaw to the front edge of the benchtop (ours measured

5/8 inch). Resaw or plane a 60 inch-long by 1 3/4 inch-wide strip (J) to match the measured distance. See **Drawing 4** for reference. Cut the strip to length. One end of the strip should fit against the vise jaw; the other end, flush with the end of the benchtop. Glue and screw the strip to the edge of the benchtop.

5 Cut the vise-jaw liners (K) to size. Next, using **Drawing 4** for reference, drill holes and fasten the liners to the vise jaws.

6 Cut another 1 3/4 inch-wide strip from 3/4 inch stock for the removable strip (L). (We've made the strip removable so it can be replaced should you accidentally

8 BENCH BASE



saw into it.) Drill and counterbore holes into the removable strip, where shown on **Drawing 4**. Screw (no glue) the strip to the edge of the benchtop.

Time to drill the dog holes and make the bench dogs

1 Mark the dog hole centerpoints on the benchtop, where located on **Drawing 2**.

2 Build a drill guide like the one in **Drawing 5**. Then, bore $\frac{3}{4}$ \" holes into the benchtop, as shown in **Photo B** on *page 18*. The guide helps keep the holes perpendicular to the workbench surface. When boring the hole closest to the vise, bore only $1\frac{1}{2}$ \" deep to avoid hitting the vise mount and damaging the drill bit. Back the bottom of the benchtop with scrap to prevent chip-out.

3 Rout a $\frac{1}{8}$ \" round-over on the top inside edge of each hole.

4 To build a bench dog, cut a 3×3 \" square from $\frac{3}{4}$ \" plywood, as shown in **Drawing 6**. Draw diagonal lines on the block, and bore a $\frac{3}{4}$ \" hole at the marked centerpoint. Sand a slight round-over on all edges of the block.

5 Cut a $\frac{3}{4}$ \" oak dowel to $2\frac{1}{2}$ \" long. Sand a round-over on the bottom end. Glue the dowel into the hole in the plywood square.

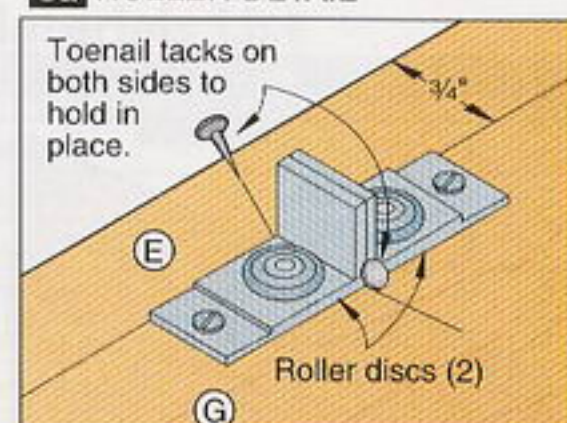
Next, build the drawers

1 Using the Cutting Diagram on *page 21* and **Drawing 7** for reference, cut a 6\" strip off the end of a sheet of $\frac{3}{4}$ \" plywood. Now cut the drawer fronts (M) to size

2 From $\frac{1}{2}$ \" and $\frac{3}{4}$ \" plywood, cut the four drawer sides (N), back (O), and bottom (P) to size.

3 Cut a $\frac{5}{8}$ \" rabbet $\frac{1}{2}$ \" deep along both ends of each drawer front. Machine a $\frac{3}{4}$ \" dado $\frac{1}{4}$ \" deep 1\" from the back edge across each drawer side. Using **Drawing 7** for reference, cut a $\frac{1}{2}$ \" groove $\frac{1}{4}$ \" deep $\frac{1}{2}$ \" from the bottom

8a ROLLER DETAIL



Attach panels and cleats with $1\frac{1}{4}$ \" drywall screws, requiring $\frac{9}{64}$ \" holes through cleats. Mating holes in panel are $\frac{7}{64}$ \" holes $\frac{1}{2}$ \" deep.

edge along the inside face of the drawer front and sides.

4 Dry-clamp the drawers together to check the fit. Trim any parts if necessary. The bottom edge of the drawer front (M) sits $\frac{1}{8}$ \" lower than the bottom edge of the sides (N). Locate the centerpoints on each drawer side, and drill and countersink the holes for the $1\frac{1}{2}$ \" screws. Remove the clamps.

5 Glue and screw the drawer together, checking for square.

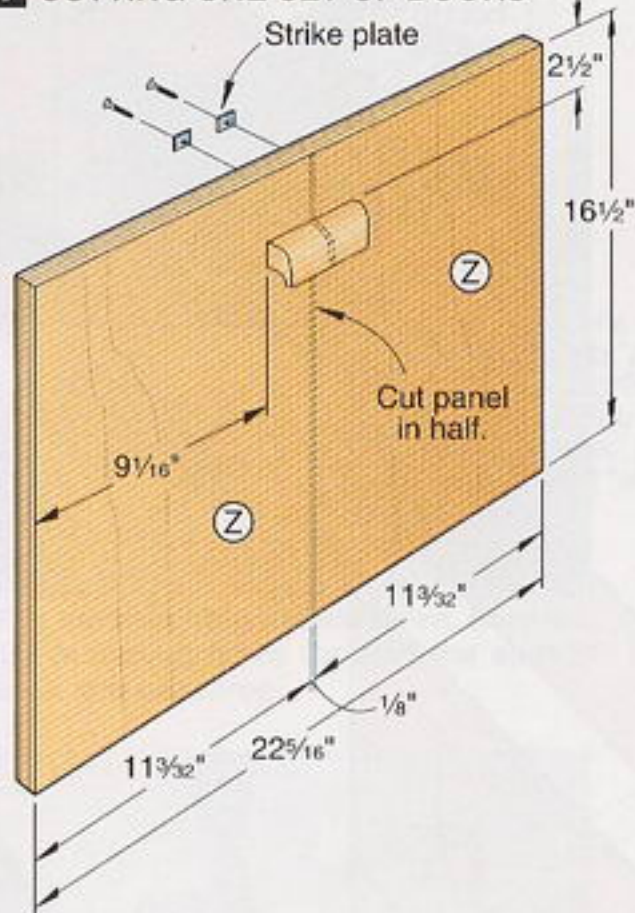
6 Mark the centerpoints for the beech pulls. Drill the holes, and fasten a pull to each drawer.

Install the drawers

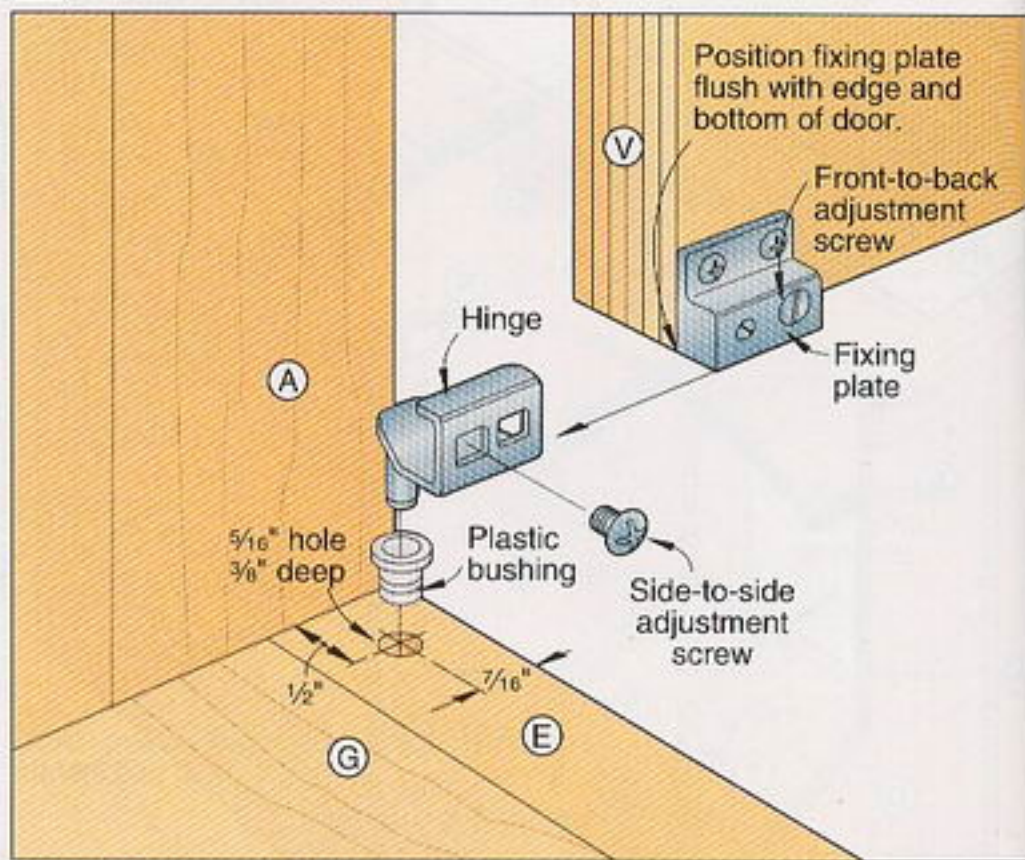
1 Mount a plastic drawer guide to the bottom back edge of each drawer, centered from side to side. (See **Drawing 7a** accompanying **Drawing 7** for reference.)

2 Measure the distance between the end panels, and mark a centerline on the top of the shelf panel (G), where shown on **Drawing 8**. Attach a roller on each side of the marked centerline, where shown on **Drawing 8a**. Now, put the drawers in position, and attach a

9 CUTTING ONE SET OF DOORS



10 PIVOT HINGE



TOPPING IT OFF

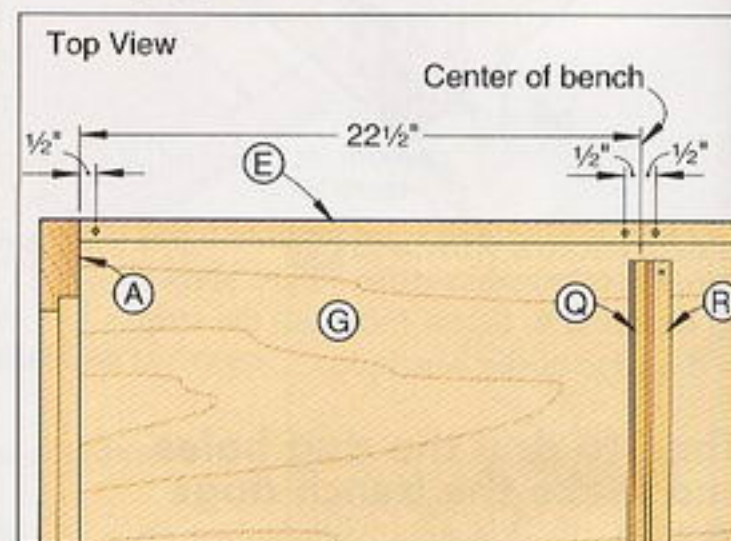
Let your budget decide

You can top a workbench in several different ways. First, you can cut forty $\frac{3}{4}$ \"-thick strips $1\frac{3}{4}$ \" wide by 60\" long. With the surfaces flush, glue them together face to face in three sections. Then, glue and clamp together the three sections. Next, scrape and belt-sand the lamination smooth to form the benchtop.

You also can purchase damaged solid-core doors at most building supply centers for under \$25.

See the Buying Guide on *page 21* for our source of the premade laminated-maple top used on this workbench.

10a HOLE LOCATION DETAIL



roller disc to the shelf panel next to the end panels, where shown on **Drawing 8**.

3 Mark a centerline between each set of rollers. Using a square, mark the centerline from the front of the shelf to the back. Position a metal drawer glide over each line, and fasten each glide with just one screw in the middle. Fit both drawers into position and check the alignment of the rollers and glides. Adjust the glides as required. Next, install the rest of the screws to hold the glides in place.

Attach the divider, cleats, and back panels

1 From $\frac{3}{4}$ \" plywood, cut the center divider (Q) to fit, cutting a notch for the back stretcher (E).

2 Cut the divider cleats (R) to size. Glue and screw the cleats to the top and bottom of the divider panel. Slip the divider into position and screw it to the shelves (G). The divider should be $\frac{13}{16}$ \" from the back side of the cabinet and $1\frac{1}{2}$ \" from the front.

3 Cut and install $\frac{13}{16}$ \" from the back-side of the cabinet.

4 Cut the back panels (X, Y) to size. Glue the panels in place.

Now add the doors and put this bench to work

1 Cut two pieces of $\frac{3}{4}$ \" birch plywood to $22\frac{5}{16}$ \" by $16\frac{1}{2}$ \" for the four front doors (Z), where shown on the Cutting Diagram. Mark a centerline down the center of each panel. Glue and screw a

pull over this centerline, where shown on **Drawing 9**.

2 Following the marked centerline, and cutting through the center of the pulls, cut each door panel in half.

3 Using **Drawing 10** for reference, fasten a fixing plate flush with the top and bottom inside corners of each door.

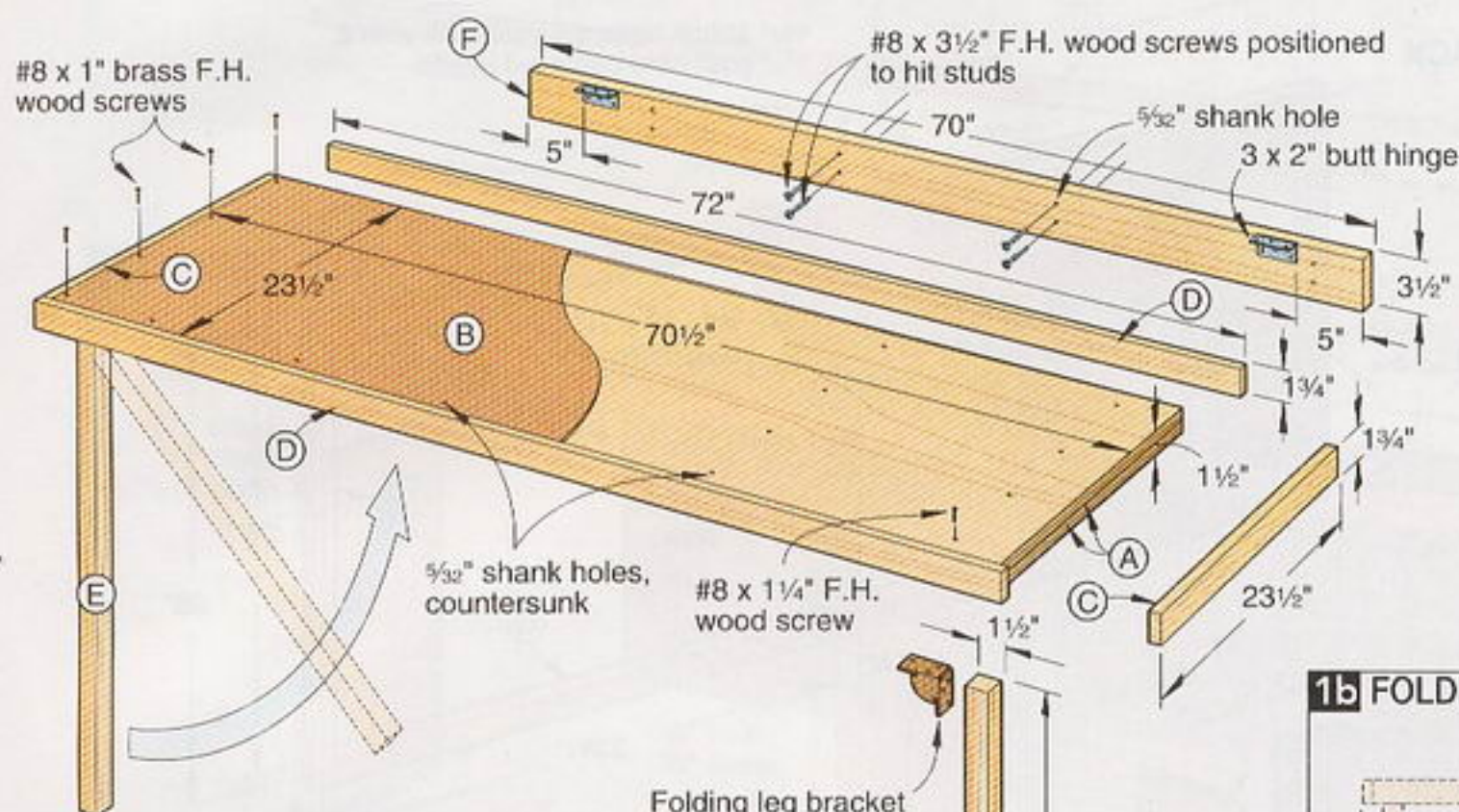
4 Drill the holes in the stretchers (E) for the bushings. (If you need more room when drilling, loosen the hexhead bolts threaded through the cross dowels.) Insert a bushing in each hole. Push the hinges into the bushings, slide the fixing plates (attached to the doors) into the hinges, and thread the side-to-side adjustment screw through the hinge and into the fixing plate. Position the adjustment screws to assure a good door fit.

Fold-Away WORK CENTER



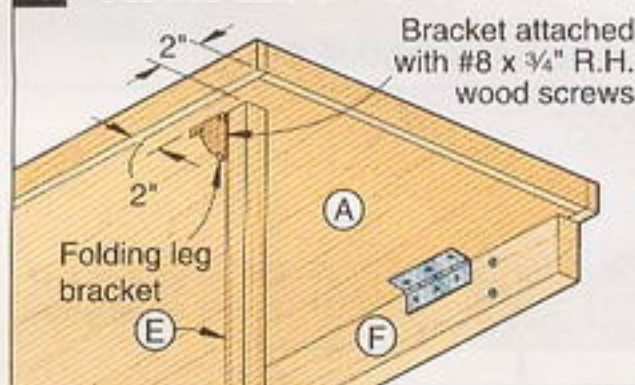
Aside from your favorite tools, a shop needs two essentials—a super solid workbench and plenty of storage. Both require space, which can be tough to find in a shop that shares the garage with cars or has to fit within the confines of a basement room. This work center provides solutions with a sturdy bench that drops out of the way when no longer needed, a roomy storage cabinet, and a perforated-hardboard tool-hanging rack.

1 WORKBENCH EXPLODED VIEW

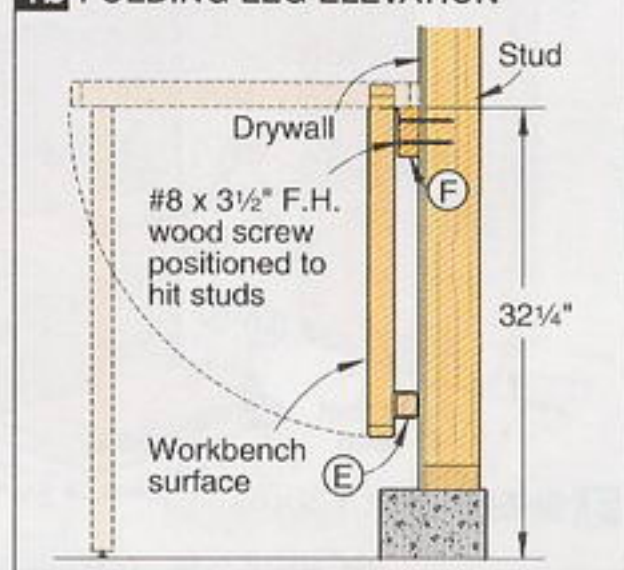


**Just fold
it down
when
you need
the floor
space**

1a FOLDING LEG BRACKET



1b FOLDING LEG ELEVATION



Begin by building a sturdy work surface

1 Start cutting one substrate (A) to the size shown in the Materials List. Then cut another piece about 1/4" wider and longer than the first.

2 Drill four rows of five countersunk shank holes through the exact-size substrate layer, where shown in **Drawing 1**. (Screw placement isn't critical, just space them fairly evenly.) Coat one face of the oversize substrate with wood glue, and lay the exact-size substrate on it. The oversize substrate should protrude on all sides. Make sure the assembly is flat, then screw the pieces together. After the glue sets, chuck a flush-trim bit in your router and trim the substrates to the same size.

3 Cut a bench skin (B) from 1/4" tempered hardboard, again making it slightly larger than the dimensions shown. Temporarily adhere it to the substrates (A) with double-faced tape, and then rout the skin flush with the substrates. Drill countersunk pilot holes around the perimeter where shown.

4 Remove the bench skin (B), and peel off the tape. Secure the skin to the substrates with screws only—no glue—where shown. This allows you to replace the skin if it gets worn. (We used solid-brass screws because they're soft and won't damage a chisel or plane iron.)

5 Cut the end edging (C) and front/back edging (D) to size. Then glue them to the bench assembly (A/B). (If you don't have long clamps, you can

also nail the end edging in place with 1 1/4" brads.)

6 Cut the legs (E) to size, and drill a hole in the end of each leg to receive a lag screw that acts as a leg leveler. Mount the locking leg brackets to the legs, and then secure the brackets to the underside of the bench, where shown in **Drawing 1a**.

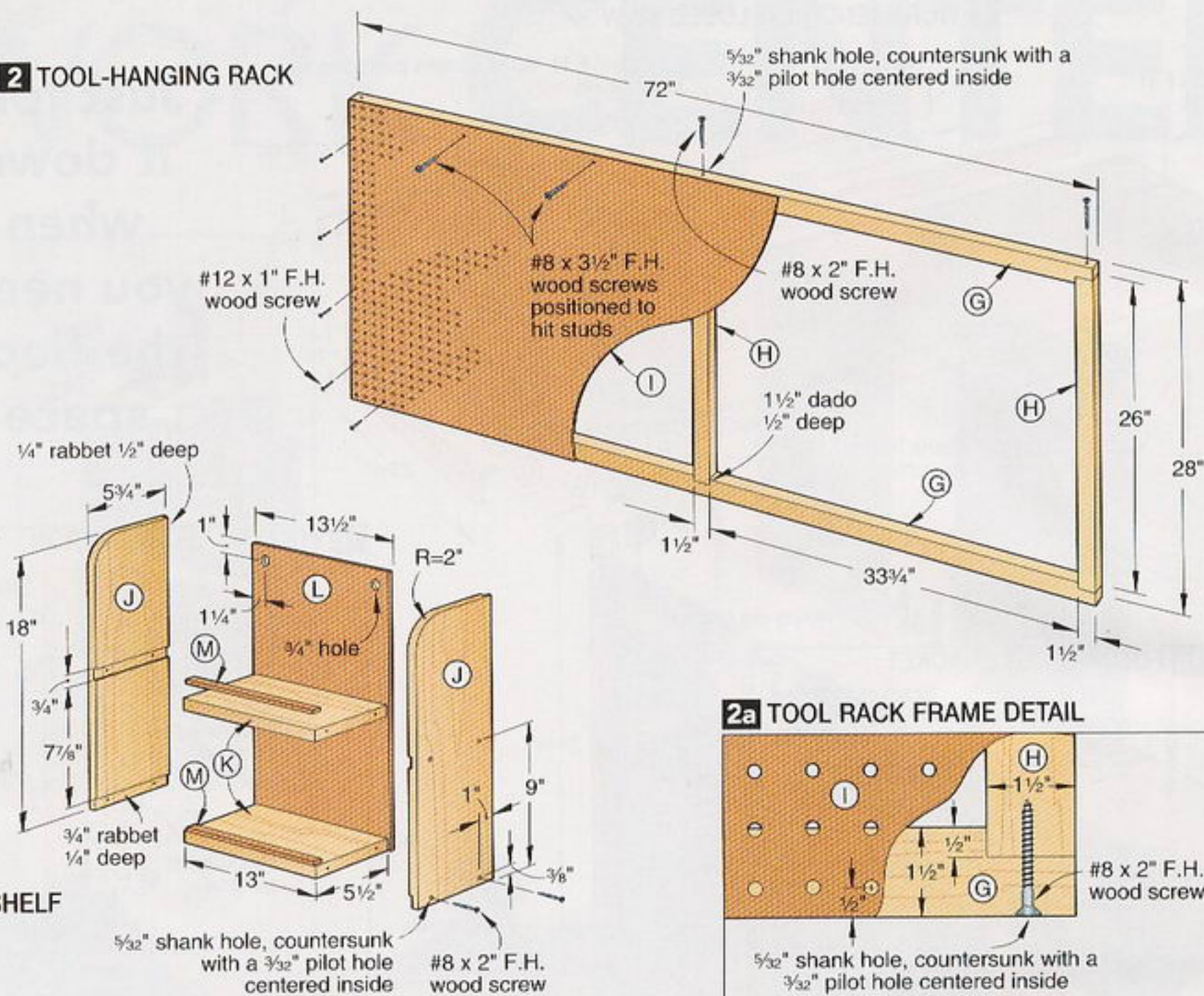
7 Cut a wall cleat (F) to size. Be sure to select a 2x4 without bow or warp.



Select a straight, warp-free 2x4 to make the wall cleat. Mark a level line, and then drive two 3 1/2" screws through the cleat and into each stud.



Clamp the bench assembly to the wall cleat, and adjust the lag screws, if necessary, to position the bench as you mount the hinges from underneath.

2 TOOL-HANGING RACK**3 SHELF****Mount the bench**

1 Locate the studs in the wall where you'll mount the bench, and attach the wall cleat (F), where shown in **Drawing 1b** and **Photo A** on the *previous page*. The cleat is long enough to span up to five studs. Make sure it is secured to at least three.

2 Lock the leg brackets open and rest the bench assembly (A through E) on the floor and wall cleat, as shown in **Photo B**. Attach the hinges, where dimensioned on **Drawing 1**. Adjust the lag screws in the legs to level the bench.

Make a tool-hanging rack

1 Cut the frame top/bottom rails (G) and frame stiles (H) to size. Then install a 3/4" dado blade in your tablesaw, and attach an auxiliary extension to your miter gauge to help support the long workpieces. Now machine the rabbets at the ends of the top/bottom rails, where dimensioned in **Drawings 2** and **2a**. Also center a 1 1/2"-wide dado on each top/bottom rail.

2 Glue and screw the frame assembly (G/H) together. Next, cut the perforated-hardboard hanging panel (I) to fit on the frame assembly (G/H), making sure the outermost rows of holes are 1/2" from each edge, where shown in **Drawing 2a**. Attach the panel to the frame by driving flathead wood screws through the holes around the perimeter, as shown.

3 Mount the tool rack (G/H/I) to the wall 1" above the workbench. Just as with the workbench, make sure the mounting screws reach into wall studs.

Add optional bin shelves

1 Cut the sides (J) and shelves (K) to the sizes shown in **Drawing 3**. Now lay out and cut a 2" radius on one corner of each side, and sand to the line. (We cut the radii with a bandsaw, and sanded to the cutline with a disc sander.)

2 Next, reinstall the 3/4" dado blade and auxiliary fence, and machine the rabbet and dado in each side (J). These will receive the shelves (K).

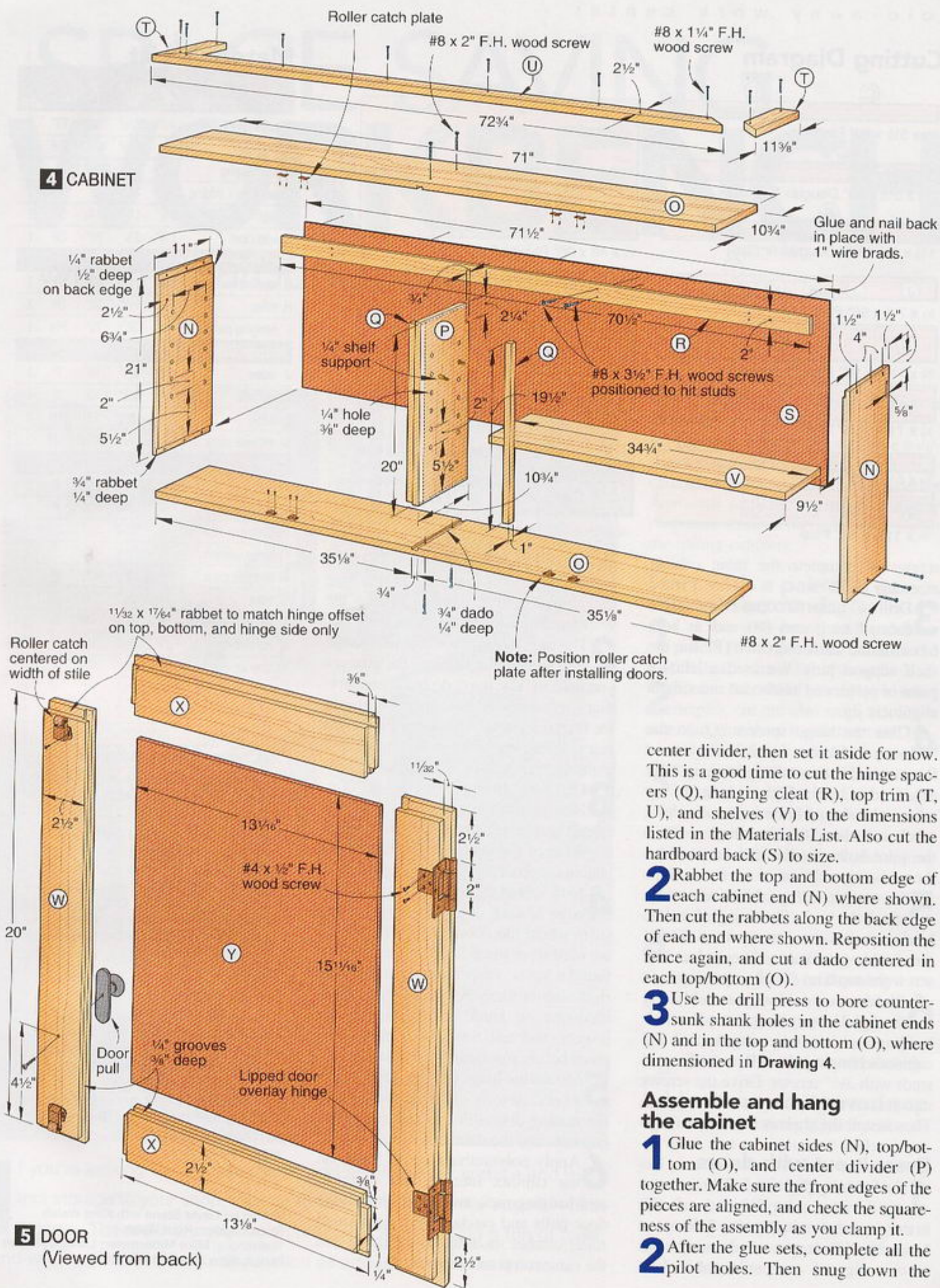
3 To create the rabbet in each side (J) that receives the back (L), bury all but 1/4" of the dado blade in the auxiliary fence, and set the blade for a 1/2"-deep cut. With these rabbets complete, use a drill press to bore countersunk shank holes for the screws where indicated. Then glue the sides (J) and shelves (K) together. After the glue sets, use the shank holes as guides to drill 3/32" pilot holes, and then add the screws.

4 Cut the tempered hardboard back (L) and retainer strips (M) to size. Bore hanger holes through the back, where shown, then attach it to the shelf assembly (J/K) with glue and 1" brads. Sand a slight round-over on the top edges of the retainer strips, and glue them to the shelves. Remove all glue squeeze-out after it first hardens, using a chisel.

Create the cabinet

1 Cut the cabinet ends (N), top/bottom (O), and center divider (P) to the dimensions shown in **Drawing 4**. Use a bandsaw or jigsaw to cut the notch in the

4 CABINET



center divider, then set it aside for now. This is a good time to cut the hinge spacers (Q), hanging cleat (R), top trim (T, U), and shelves (V) to the dimensions listed in the Materials List. Also cut the hardboard back (S) to size.

2 Rabbet the top and bottom edge of each cabinet end (N) where shown. Then cut the rabbets along the back edge of each end where shown. Reposition the fence again, and cut a dado centered in each top/bottom (O).

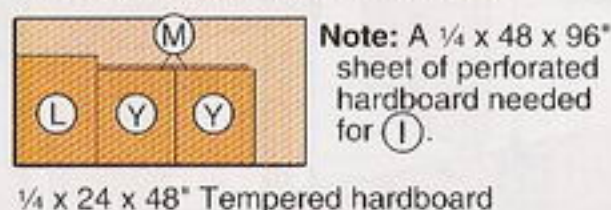
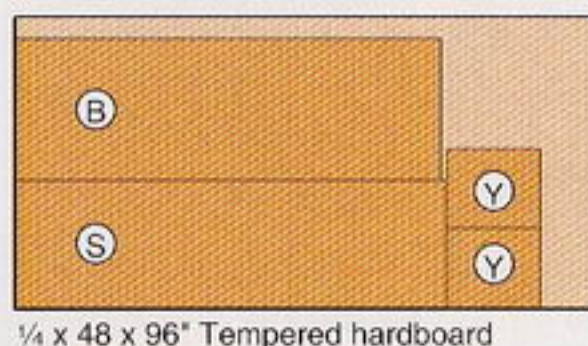
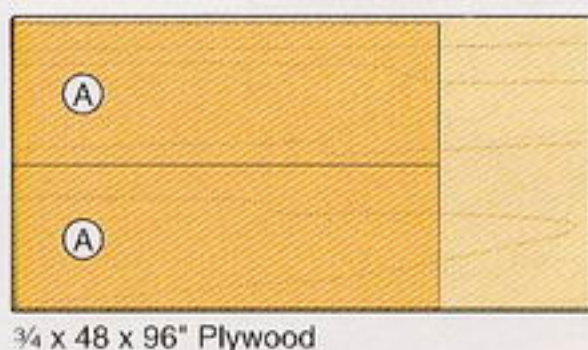
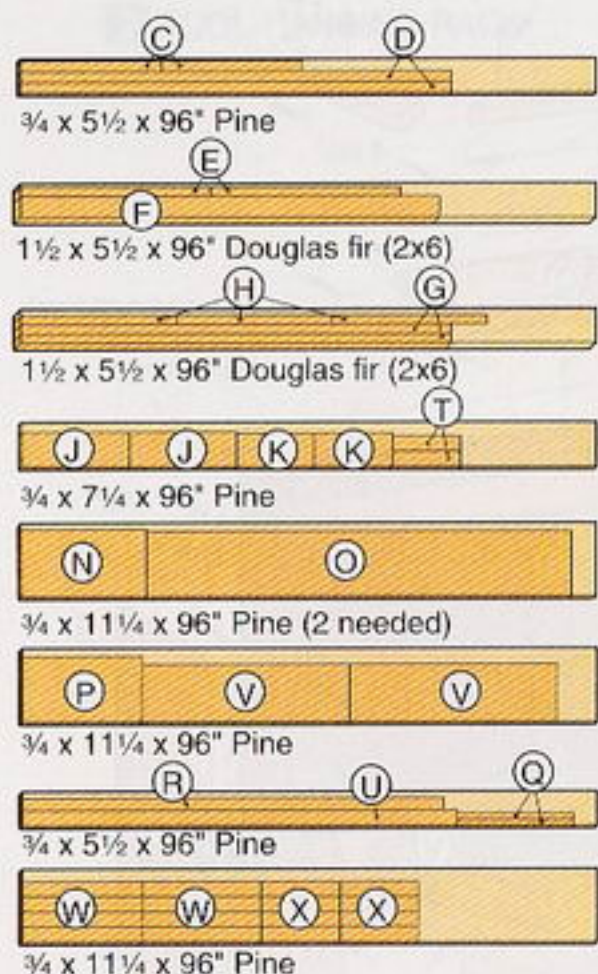
3 Use the drill press to bore counter-sunk shank holes in the cabinet ends (N) and in the top and bottom (O), where dimensioned in **Drawing 4**.

Assemble and hang the cabinet

1 Glue the cabinet sides (N), top/bottom (O), and center divider (P) together. Make sure the front edges of the pieces are aligned, and check the squareness of the assembly as you clamp it.

2 After the glue sets, complete all the pilot holes. Then snug down the

Cutting Diagram



Note: A 1/4 x 48 x 96 sheet of perforated hardboard needed for (I).

screws to complete the main cabinet assembly (N/O/P).

3 Drill 1/4" holes 3/8" deep in the inside face of each end (N) and in both faces of the center divider (P) for the shelf support pins. We used a leftover piece of perforated hardboard as a simple alignment jig.

4 Glue the hinge spacers (Q) to the center divider, where shown in **Drawing 4**. Now install the hanging cleat (R). Run a bead of glue along its top edge and ends and in the center divider's notch, and clamp the cleat in place. Drill the pilot holes for the end screws, and then drive them home.

5 To complete the cabinet assembly, attach the back (S) using glue and 1" brads, spaced about every foot around the back's perimeter. Then glue and screw the top trim (T, U) in position.

6 Mount the cabinet assembly (N through U) by resting it atop the tool-hanging rack, and screwing through the cabinet's hanging cleat (R) into the wall studs with 3 1/2" screws. Drive the screws into at least three studs for solid support. Then install the shelves (V).

Dress it out with doors

1 Select straight-grained, flat stock and cut the door stiles (W) and rails (X) to the sizes shown in **Drawing 5**. Set your blade for a 3/8"-deep cut, and cut a groove in one edge of each stile and rail to

receive the hardboard panel (Y). To ensure the grooves are centered, machine the groove in two passes, flipping the workpiece end-for-end in between.

2 The rails (X) join the stiles (W) with stub tenons that slip into the grooves you just cut. Use the dado blade and auxiliary fence once again, sneaking up on the final thickness of the tongues in a test piece. When the setup is accurate, cut a tenon on each end of all eight rails (X).

3 Cut four door panels (Y) to size. Now assemble each door with glue spread on the stub tenons and in the mating areas of the grooves. The hardboard panels can float free.

4 Now rabbet the top, bottom, and one edge of each door. Don't rabbet the stiles where the doors meet. The hinges we used were listed as 3/8" offset, but we found a 3/8x3/8" rabbet wasn't exactly the right size for them. As always, have your hardware on hand before starting the project, and test this rabbet in a scrap piece before machining your doors.

5 Mount the hinges to the doors using #4x1/2" screws. If necessary, plane the mating door stiles to achieve a 1/16" gap between the doors.

6 Apply polyurethane or oil finish on the cabinet interior and exterior, tool-hanging rack, and bench. Install the door pulls and catches. (We used small roller catches mounted to the doors and the cabinet top and bottom.)

Materials List

Folding Bench	FINISHED SIZE			Mater. Qty.
	T	W	L	
A* substrates	3/4"	23 1/2"	70 1/2"	FP 2
B* skin	1/4"	23 1/2"	70 1/2"	TH 1
C end edging	3/4"	1 3/4"	23 1/2"	P 2
D front/back edging	3/4"	1 3/4"	72"	P 2
E legs	1 1/2"	1 1/2"	31 3/4"	DF 2
F wall cleat	1 1/2"	3 1/2"	70"	DF 1
Tool-Hanging Rack				
G top/bottom rails	1 1/2"	1 1/2"	72"	DF 2
H stiles	1 1/2"	1 1/2"	26"	DF 3
I hanging panel	1/4"	28"	72"	PH 1
Storage Shelf (optional)				
J sides	3/4"	5 3/4"	18"	P 2
K shelves	3/4"	5 1/2"	13"	P 2
L back	1/4"	13 1/2"	18"	TH 1
M retainer strips	1/4"	5 1/2"	12 1/2"	TH 2
Cabinet				
N ends	3/4"	11"	21"	P 2
O top/bottom	3/4"	10 3/4"	71"	P 2
P center divider	3/4"	10 3/4"	20"	P 1
Q hinge spacers	3/4"	1"	19 1/2"	P 2
R hanging cleat	3/4"	2"	70 1/2"	P 1
S back	1/4"	21"	71 1/2"	TH 1
T top trim—ends	3/4"	2 1/2"	11 3/8"	P 2
U top trim—front	3/4"	2 1/2"	72 3/4"	P 1
V shelves	3/4"	9 1/2"	34 3/4"	P 2
W door stiles	3/4"	2 1/2"	20"	P 8
X door rails	3/4"	2 1/2"	13 1/8"	P 8
Y door panels	1/4"	13 1/16"	15 1/16"	TH 4

*Parts initially cut oversize. See the instructions.

Materials key: FP—fir plywood, TH—tempered hardboard, P—pine, DF—Douglas fir, PH—perforated hardboard.

Supplies: #8x1 1/4" flathead wood screws (25), #8x1" brass flathead wood screws (14), #8x2" flathead wood screws (30), #8x3/4" roundhead wood screws (12), #8x3 1/2" flathead wood screws (25), #12x1" flathead wood screws (20), #4x1/2" flathead wood screws (48), 5/16x2 1/2" galvanized lag screws (2), 3x2" butt hinges (1 pair), #17x1" wire brads (26), glue, finish, 36" fluorescent shop lamp, surge-protected outlet strip.

Buying Guide

Hardware. Folding leg bracket no. 00T16.01 (2); lipped door overlay hinge no. 00H59.01 (4 pr.); 2 1/2" BZ door pull no. 01W33.11 (4); spring roller catch no. 01L03.01 (2 four-packs); brass paddle shelf support no. 63Z06.04 (pack of 20). You can order these items individually, or order item no. 05KWOOD from Lee Valley Tools Ltd., PO Box 1780, Ogdensburg, NY 13669-6780; 800/871-8158; www.leevalley.com.

Written by **David Stone** with **Kent Welsh**
Project design: **Kent Welsh**
Illustrations: **Mike Mittermeier**; **Lorna Johnson**
Photographs: **Marty Baldwin**

SPACE-SAVING WORKBENCH

with roll-around storage



*Note: The plywood cabinet surrounds in **Drawing 1** are dimensioned to fit a 27"-high storage cabinet. If you choose a different size of rolling cabinet, be sure to change the dimensions of your wooden surrounds to fit. Plan for about 1/2" of clearance around the sides and top of the rolling cabinets.*

Start with a pair of cabinet surrounds

1 Cut the side panels (A) and back panels (B) to the sizes listed in the Materials List from 3/4" plywood.

2 From 3/4" solid stock (we used maple), cut the trim strips (C, D) to size, and glue them to the front and bottom edges of the plywood side panels.

3 Cut the top cleats (E) and bottom caster guides (F) to size. The caster guides center the rolling cabinet in the opening, preventing the inside of the cabinet and the outside of the rolling cabinets from rubbing against each other when moving the cabinet in and out of the surround.

4 Glue, clamp, and screw the two cabinet surrounds (A-F) together in the configuration, shown on **Drawing 1**.

5 Finish-sand both cabinets. Mask the solid stock, and paint the plywood. Then, mask the plywood, and add a clear finish to the solid-wood banding.

Add a heavy-duty worktop

1 To form a worktop (G) for your cabinets, cut enough 1 1/2"-wide strips, and glue them face to face to form a top measuring 1 1/2 x 21 x 88". You also can opt for a less-expensive worktop by laminating two pieces of 3/4" plywood and trimming the edges with pieces of 3/4 x 1 1/2" hardwood.

If you're looking for a quick way to add another work surface and more tool storage to your shop, look no further. This project fills the bill in both regards. The multi-drawer, roll-around tool cabinets hold a ton of tools, and when pulled out, they can function as additional work surfaces.

2 Sand the worktop smooth, and add a clear finish.

3 Cut the backboard (H) to size, and glue and screw it to the back edge of the worktop.

4 Position the wood cabinets exactly 28" apart (measure between the cabinet tops at front and back ends). Drill mounting holes through the cleats (E) and into the bottom side of the worktop. Screw the top in place, holding the cabinets squarely apart. You should have a 1/2" overhang on each end of the worktop.

Now add a drawer for helpful storage

1 Cut the drawer guides (I), drawer front (J), sides (K), back (L), and bottom (M) to size.

2 Cut the rabbets and dados in the drawer parts, where shown on Drawing 2. Construct the drawer, and add a 3" wire pull to its front.

3 Drill mounting holes, and screw the guides (I) in place.

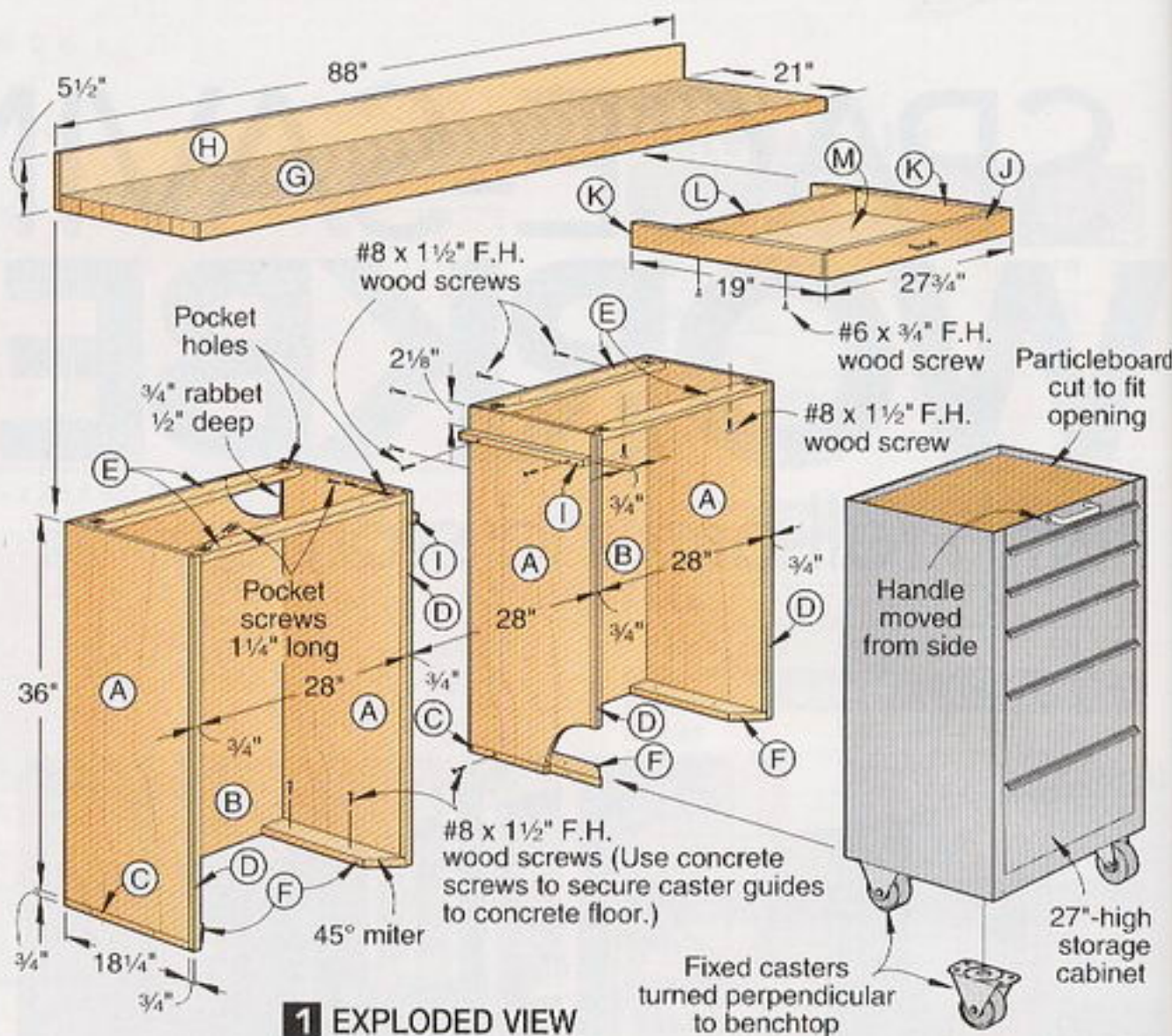
4 Fit the drawer between the cabinets on the drawer guides.

Some final fixes make it work all the harder

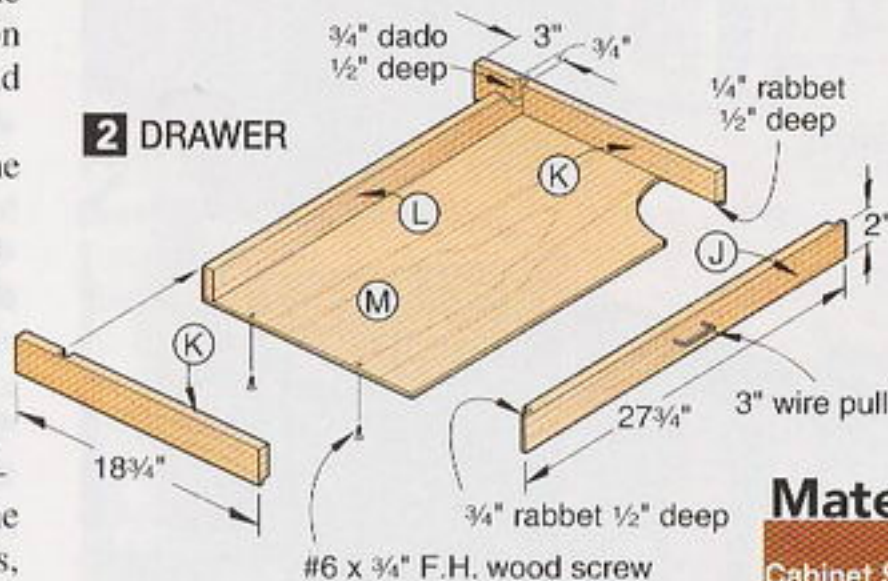
1 To make it easier to grasp the cabinets to roll them in and out of the surrounds, drill two mounting holes, and add a wire pull or handle to the front of each metal cabinet. Or, if your metal cabinet has a handle on the end, relocate it to the front of the cabinet. Next, mount the fixed casters so that they roll perpendicular to the benchtop.

2 Finally, position the workstation in your workshop. Drill a pair of mounting holes through the caster guides (F) and into the floor. (You'll probably have to use a concrete bit, depending on your floor construction). Secure the caster guides to the floor to keep the workbench stationary.

Written by **Marlen Kemmet**
Project design: **Jim Downing**
Illustrations: **Roxanne LeMoine**
Photograph: **Hetherington Photography**



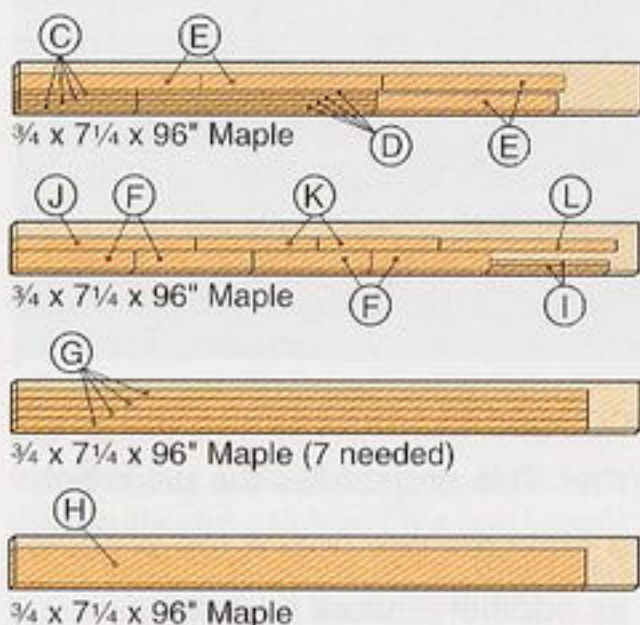
1 EXPLODED VIEW



2 DRAWER

Cutting Diagram

In addition to the boards below, you'll need two sheets of 3/4x48x96" plywood for parts (A) and (B), and 1/4" plywood for part (M).



Materials List

Cabinet Surrounds	FINISHED SIZE			Matl.	Qty.
	T	W	L		
A side panels	3/4"	18 1/4"	36"	P	4
B backs	3/4"	29"	36 3/4"	P	2
C bottom trim	3/4"	3/4"	18 1/4"	M	4
D front trim	3/4"	3/4"	36 3/4"	M	4
E cleats	3/4"	2 1/2"	28"	M	4
F caster guides	3/4"	3"	18 1/4"	M	4
Worktop					
G worktop	1 1/2"	21"	88"	LM	1
H backboard	3/4"	5 1/2"	88"	M	1
Drawer					
I guides	3/4"	1"	18 1/4"	M	2
J front	3/4"	2"	27 3/4"	M	1
K sides	3/4"	2"	18 1/4"	M	2
L back	3/4"	1 3/4"	27 3/4"	M	1
M bottom	1/4"	15 1/4"	27 3/4"	P	1

Materials key: P-plywood, M-maple, LM-laminated maple.

Supplies: 3" wire pulls (if needed) (5), 1 1/4"-long pocket screws, #6x3/4" flathead wood screws, #8x1 1/2" flathead wood screws, primer, enamel paint, clear finish.

GREAT WORKBENCH TIPS

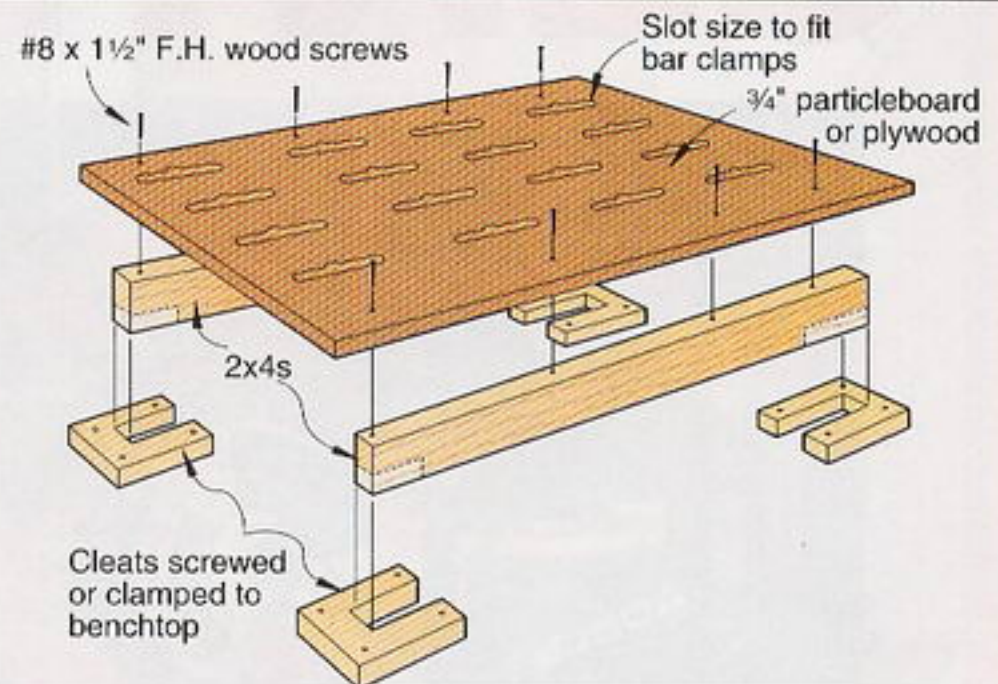
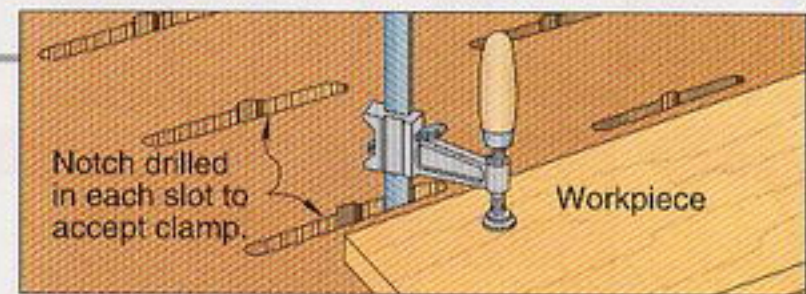
CLAMPING TABLE PUTS PRESSURE WHERE YOU NEED IT

I don't own a European-style workbench with bench dogs and holdfasts, so clamping workpieces near the center of my bench posed a challenge. My solution was to build a temporary raised top that permits me to anchor my clamps from below.

I started with a sheet of $\frac{3}{4}$ " particleboard slightly smaller than my benchtop. Next, I cut out a series of slots and notches in the particleboard just wide enough to allow the bottom fixed jaws of my clamps to slip through, as shown in the drawing, *above right*.

I elevated the particleboard with two 2x4s glued and screwed to the bottom, as shown. To keep the clamping table in place, I attached 1x6 cleats to the four corners with screws. I clamp the cleats to my regular benchtop, but you also can use screws to hold the clamping table firmly in place.

—Walter Koldan, *Streamwood, Ill.*

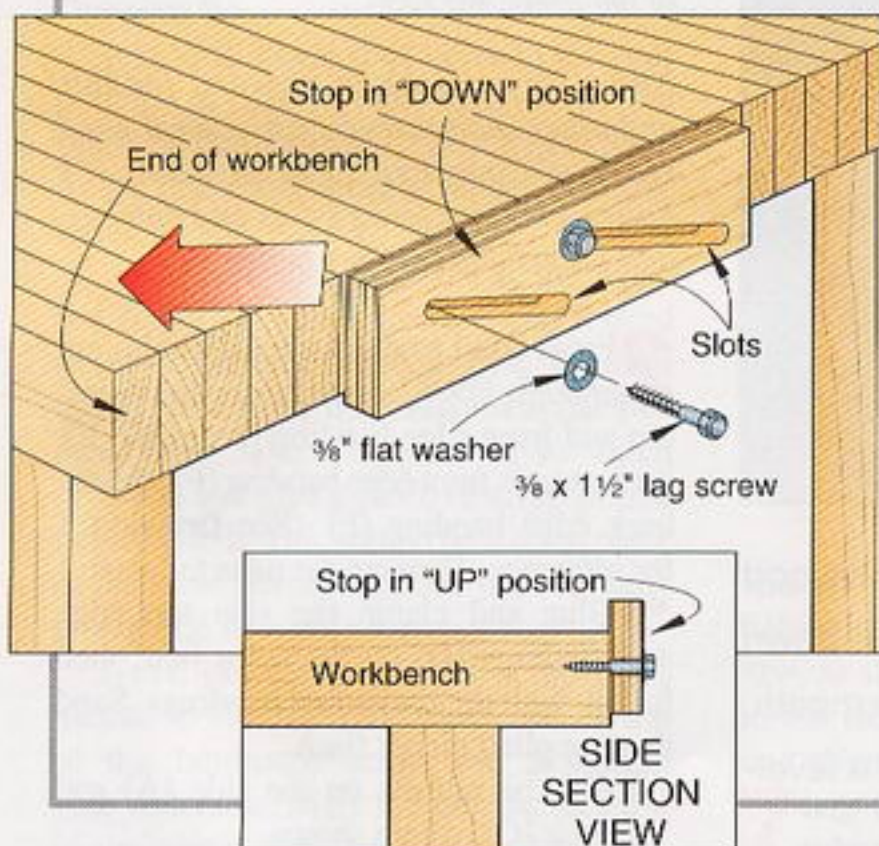


SLIDING STOP SLIPS OUT OF THE WAY

Sometimes you need a solid edge to butt your workpiece against. But clamping a temporary stop to your bench usually proves awkward and time-consuming. Mount a stop that slides up and down on the end of your bench. Make the stop from a piece of $\frac{3}{4}$ " x 2" x 10" plywood, and cut the slots at a 10° angle. Then, install two lag screws to guide the board on the angled slots. Loosen the lag screws whenever you need to raise or lower the stop.

Tighten them when you have the stop in position.

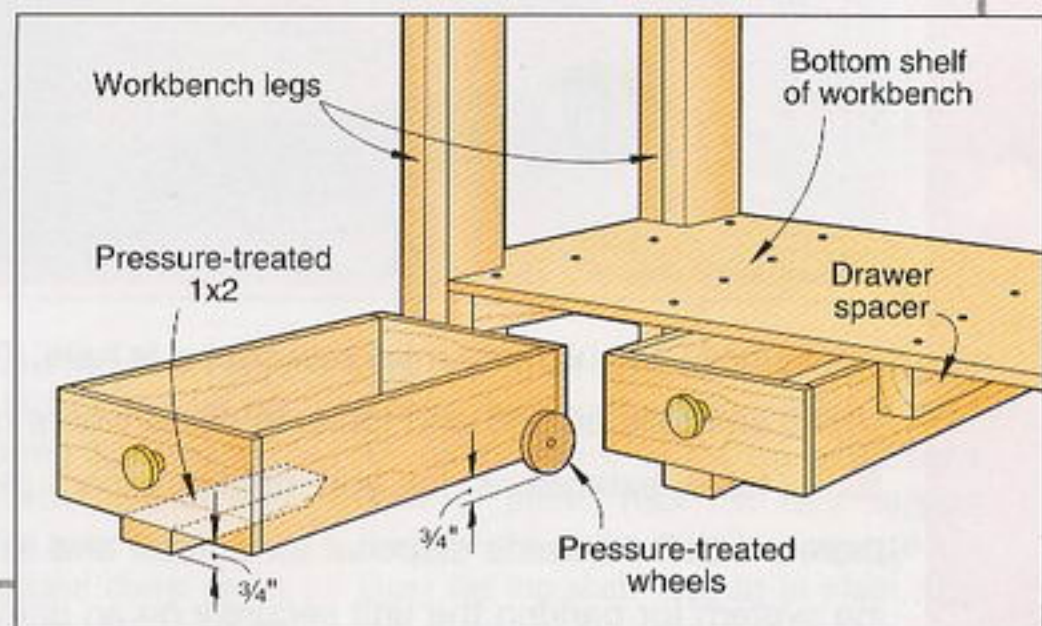
—Curran A. Johnson, *Canton, Conn.*



STORE MORE WITH ROLLING DRAWERS

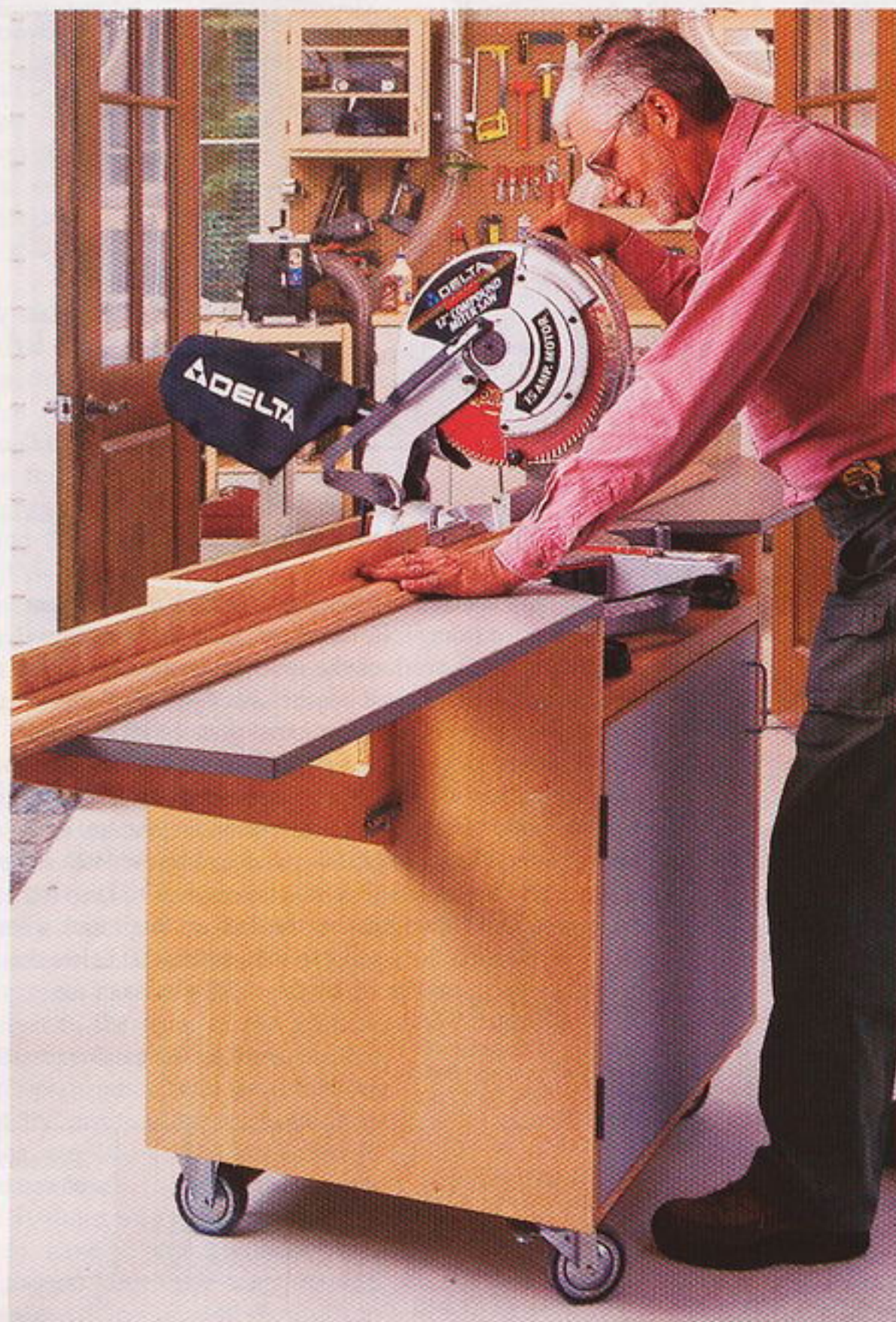
You've built shelves and racks and used up most of your wall space for storage. If, like most woodworkers, you need more, don't overlook the space under your bench. The bottom shelf on most benches sits 4–8" off the floor, giving you plenty of room for expansion. To take advantage of this space, build these simple floor drawers with pressure-treated wooden wheels at the rear and a strip of 1x2" pressure-treated wood centered on the bottom, as shown in the illustration *below*. Glue and screw 1x2" drawer spacers to the underside of the bench shelf to keep the drawers in line. To ensure that the drawers don't rock when they roll, position the wheels so they extend $\frac{3}{4}$ " below the bottom of the drawer to match the $\frac{3}{4}$ " thickness of the pressure-treated wood.

—Arthur Griggs, *Glencoe, Ill.*



MOBILE MITERSAW CENTER

FOLD-DOWN
TABLES MAKE IT
EASY TO STORE



Finally, the ultimate miter saw center is here. This sturdy plywood unit rolls around and locks in place where needed. Fold-down table extensions let you manage long pieces. Underneath, there's a built-in waste disposal for cutoffs and sawdust and a leveling system for parking the unit securely on an uneven floor.



Begin by building a sturdy carcass

1 Cut the cabinet sides (A), bottom (B), and back (C) to the dimensions found in the Materials List.

Note: We used birch plywood for this and other shop projects for several good reasons: Compared to fir plywood, it's flatter, contains fewer voids and patches, and paints and finishes better.

2 From solid stock (we used birch), cut enough $\frac{1}{4} \times \frac{3}{4}$ " material for the sides' top and front edge banding pieces (D, E), the bottom's front edge banding (F), and the back edge banding (F). (See **Drawing 1** for reference. Then cut the parts to length.)

3 Glue and clamp the side top edge bandings (D) on the sides first; then follow with the remaining bandings. Sand these applied pieces flush.

4 Cut the rabbets on the side (A) and back (C), where shown.

5 Referring to **Drawings 1** and **4**, drill the $\frac{7}{16}$ " counterbored holes for the threaded rod and the $\frac{3}{8}$ " holes for the casters in the bottom (B). (We used the casters as hole guides.) Now hammer $\frac{3}{8}$ " T-nuts in the holes for the threaded rods in the bottom side of the carcass bottom.

6 Glue and assemble the sides (A), bottom (B), and back (C). Then, drill the countersunk holes in the bottom and back, and secure the parts with screws.

Build and install a heavy-duty top shelf

*Note: The top shelf height shown is for a Delta 12" miter saw, model no. 36-235. Depending on the miter saw model you use, some dimensions and part sizes will change. These we've indicated in **Drawing 9**.*

1 Cut the top shelf supports (G) to size, and drill the countersunk holes. We'll install these later.

2 Cut two pieces of $\frac{3}{4}$ " birch plywood to 24x29" for the top shelf (H). Glue and clamp these pieces together, keeping the edges and ends flush. Then cut the lamination to size. (See **Drawing 2**.)

3 From $\frac{3}{4}$ " stock, cut the top shelf edge strip (I) to size. Determine the width by measuring the thickness of the top shelf. (Ours measured $1\frac{1}{2}$ ".)

4 Glue and clamp the top shelf edge strip (I) to the front edge of the shelf top (H). Sand smooth.

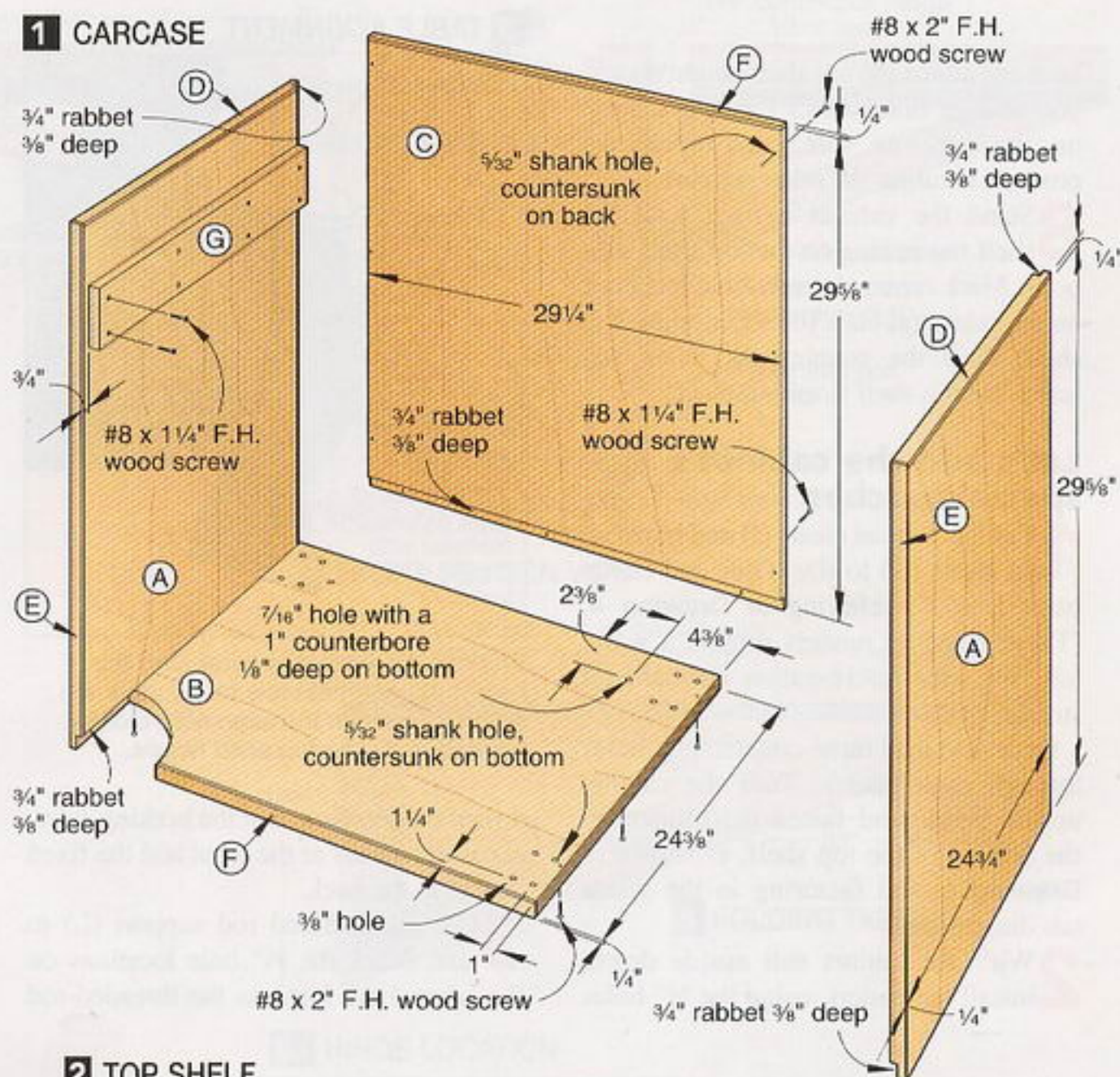
5 Place the top shelf face down and lay out the opening on the bottom surface. Also, mark the locations of the $\frac{3}{8}$ " holes for the all-thread rod and the $\frac{5}{32}$ " holes that are countersunk on the bottom. (See **Drawing 2**.)

Next, drill blade start holes in the four corners of the layout. Jigsaw out the opening, cutting just inside the line. Sand to the line using a drum sander or oscillating spindle sander.

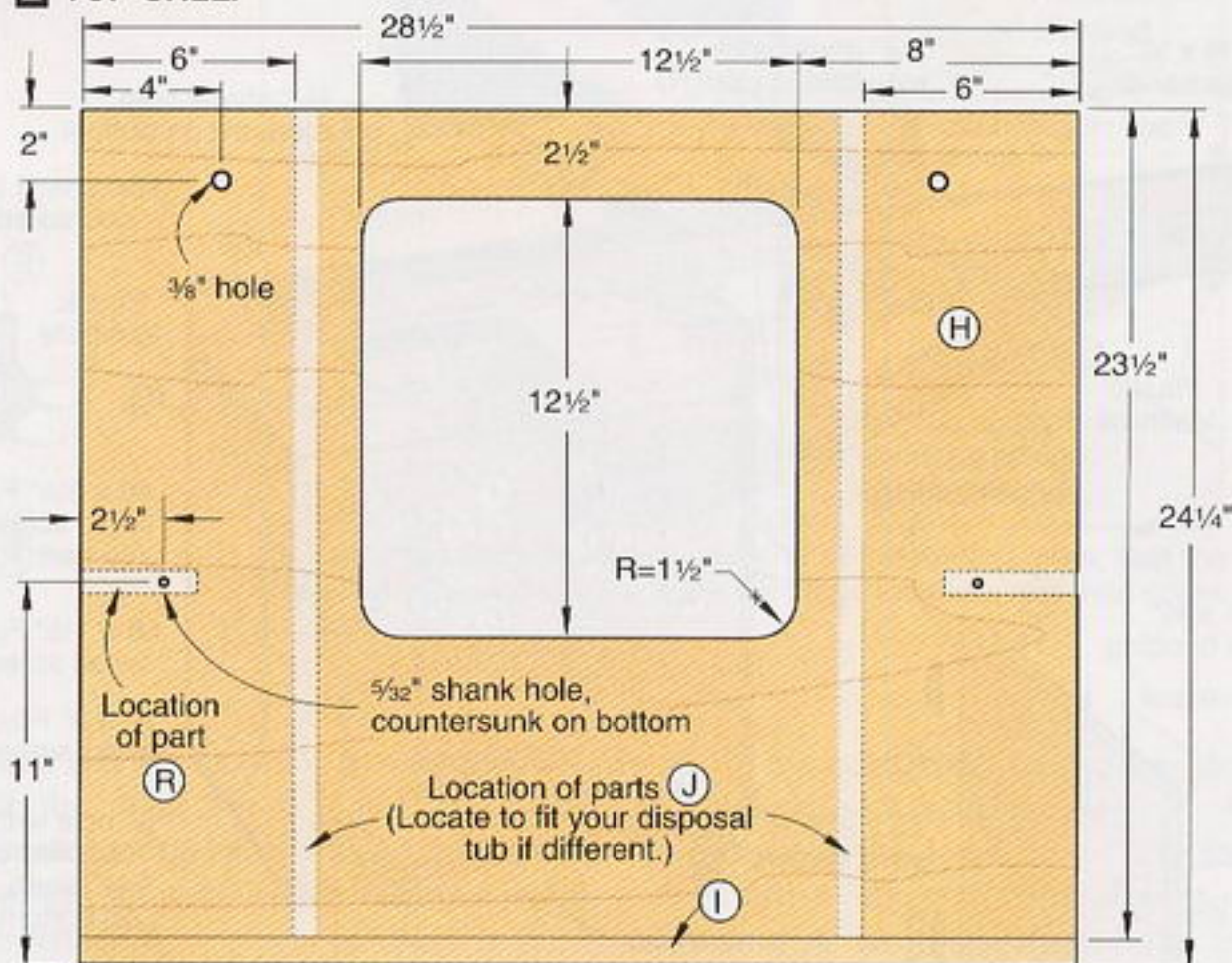
6 To locate the shelf top at the exact height for your miter saw, you'll need to cut two alignment blocks first. To make these, place your miter saw on a flat surface. Then, take a 6" piece of $\frac{3}{4}$ " birch plywood and glue a piece of scrap plastic laminate to it. This should be a scrap piece of the same plastic laminate you will later glue to the saw table surfaces.

Next, cut two pieces of scrap (ours measured $\frac{3}{4}$ x4x6") and place one on top of the laminated scrap and alongside your miter saw. Mark the precise location of the saw's table surface on the scrap,

1 CARCASE



2 TOP SHELF



and cut a $\frac{3}{4}$ " notch at this location. Now, hold this "alignment block" against the saw, as shown in **Drawing 3** on page 32, to test the fit. Once satisfied, cut the second alignment block the same way.

7 Lay the cabinet carcass down on its side; then gather the top shelf supports

(G), top shelf (H), and the alignment blocks, as shown in **Drawing 3a** on page 32, on the inside of the cabinet. Clamp these in place. With the shelf support flush to the cabinet back, screw (don't glue) the top shelf support in place. (By just screwing the supports in place, you

later can adjust the top shelf height should you change mitersaws.) Lay the cabinet on the opposite side, and repeat the process, securing the other support.

8 Stand the cabinet upright with the shelf top resting on the top shelf supports. Mark centered screw-hole locations on the sides and back for securing the top shelf. Drill the countersunk holes and screw the top shelf firmly in place.

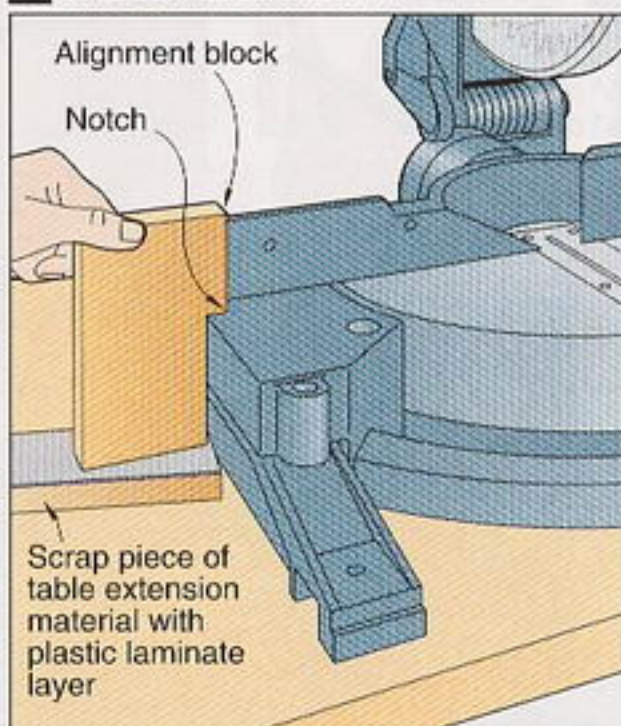
Let's add the cabinet's special touches

1 Cut the vertical cleats (J) and horizontal cleats (K) to size. Glue and clamp parts J to K, referring to **Drawing 4**. (These glued-up runners support a waste tub. We used an 18-gallon Rubbermaid storage box.)

Once dry, drill three countersunk holes through each runner. Turn the cabinet upside down, and fasten the runners to the bottom of the top shelf, as shown in **Drawing 4**, and factoring in the waste tub dimensions.

2 With the cabinet still upside down, install the casters, using the $\frac{3}{8}$ " holes

3 TABLE ALIGNMENT

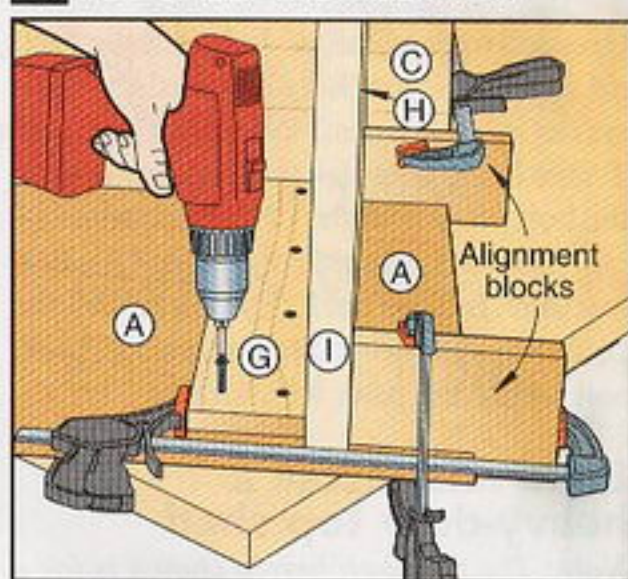


Working off laminated scrap and the height of your mitersaw table, mark the notch location in the alignment blocks needed to fix the top shelf height.

drilled earlier. Note that the braking swivel casters mount at the front and the fixed casters at the back.

3 Cut the threaded rod support (L) to size. Mark the $\frac{3}{8}$ " hole locations on (L), spaced the same as the threaded-rod

3a TOP SHELF INSTALLATION

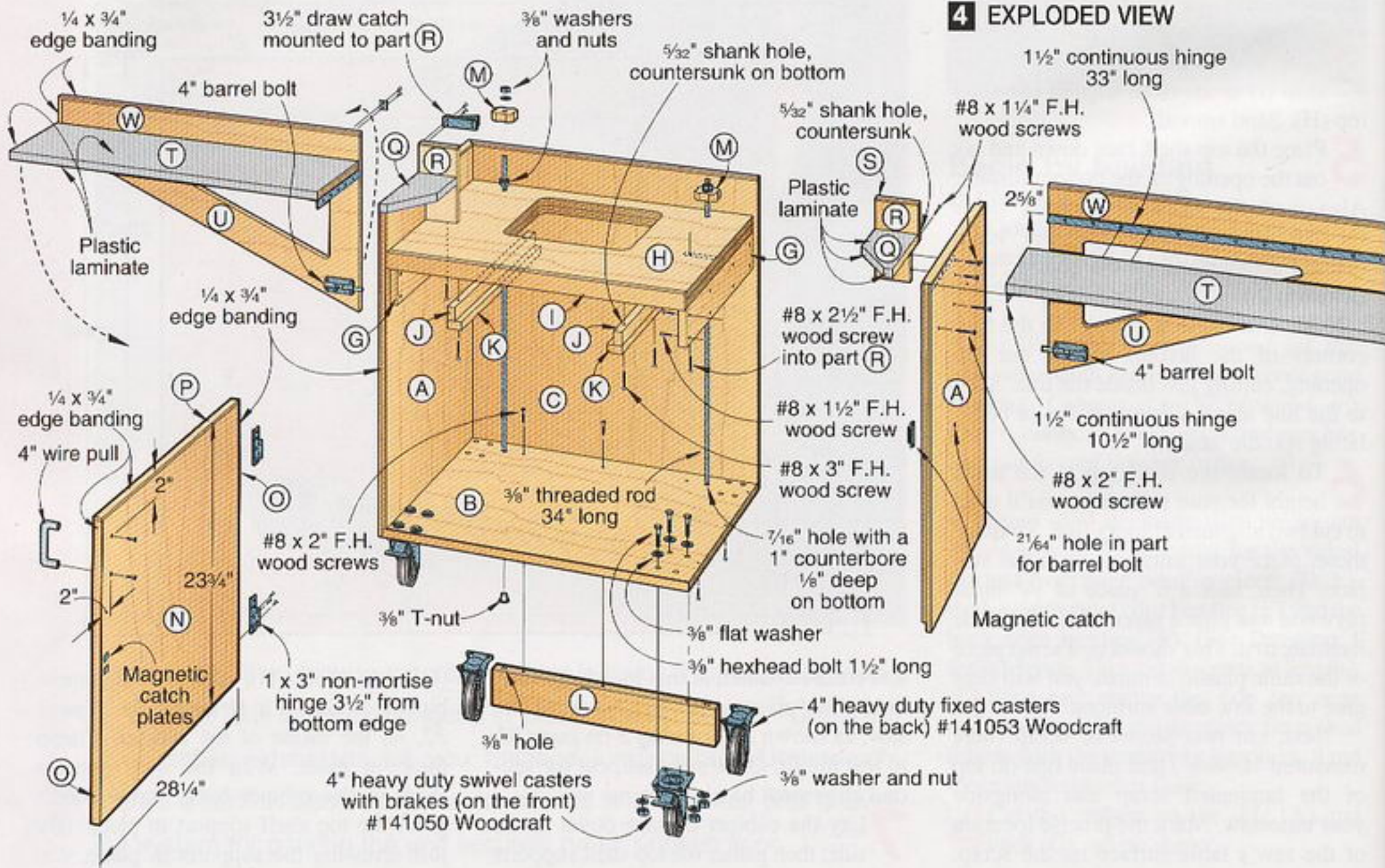


Using the alignment blocks, establish the locations of the top shelf (H) and top shelf support (G), as shown, and screw the support in place.

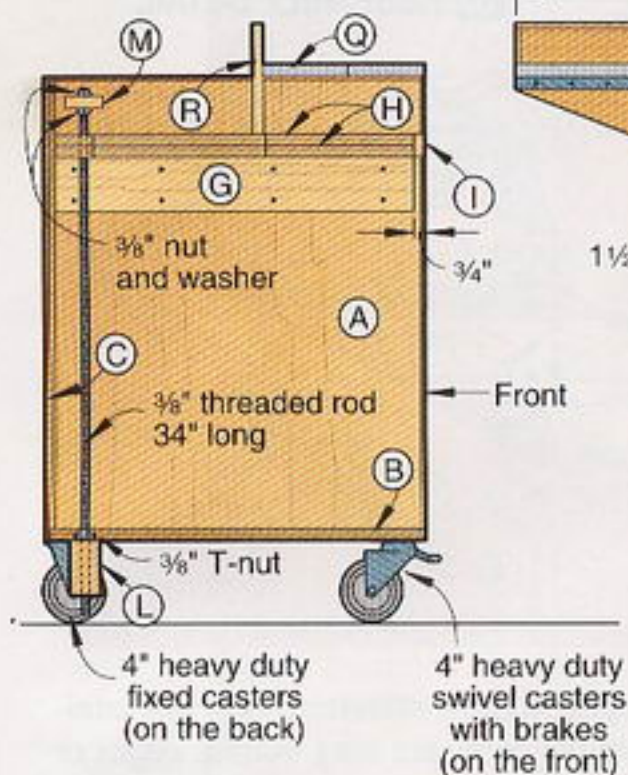
T-nut holes in the cabinet bottom (B). Drill $\frac{3}{8}$ " holes across the width of part L at these locations.

4 To secure the rod support (L) to the cabinet bottom, first establish its location by using 5"-long $\frac{3}{8}$ " bolts (or thread-

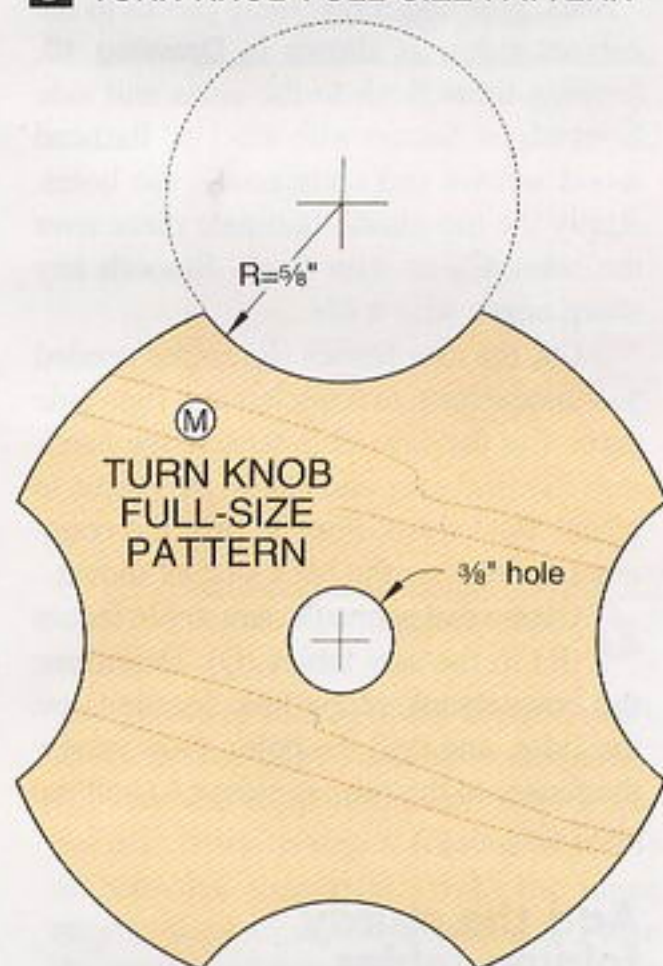
4 EXPLODED VIEW



6 SIDE SECTION VIEW



5 TURN KNOB FULL-SIZE PATTERN



ed rod) and washers and nuts to temporarily hold it firmly to the cabinet bottom. Then drill three evenly spaced counter-sunk 5/32" holes for #8x2" flathead wood screws. Glue and screw the rod support in place. Remove the extra hardware.

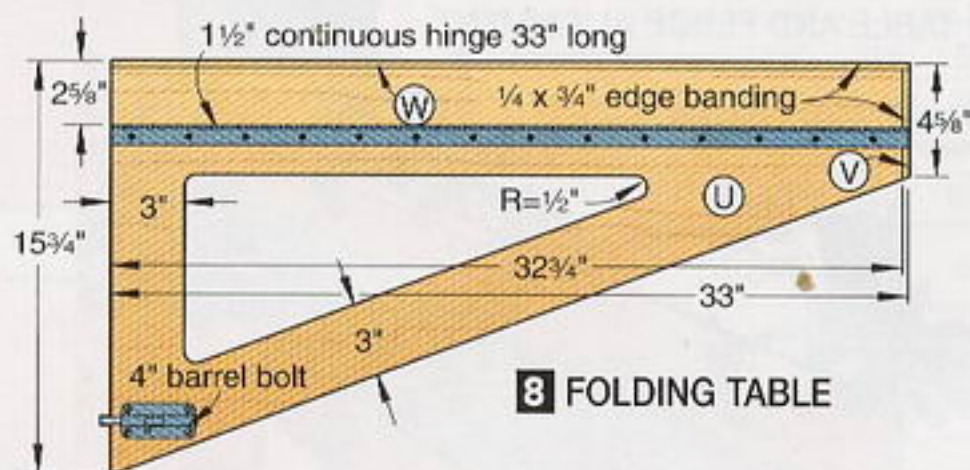
5 To make the leveling system turn knobs (M), start with a 3/4x4x8" piece of stock. Attach the knob pattern from **Drawing 5** to one half of the workpiece. Using a 1 1/4" Forstner bit, bore the 5/8"-radiused holes. Next, drill the 3/8" center hole, and bandsaw the knob to shape.

Sand, and use this knob as your template for the other knob. Now, install the threaded rod and knob in the cabinet using washers and nuts. See **Drawings 4** and **6** for reference.

Time to give your cabinet a door

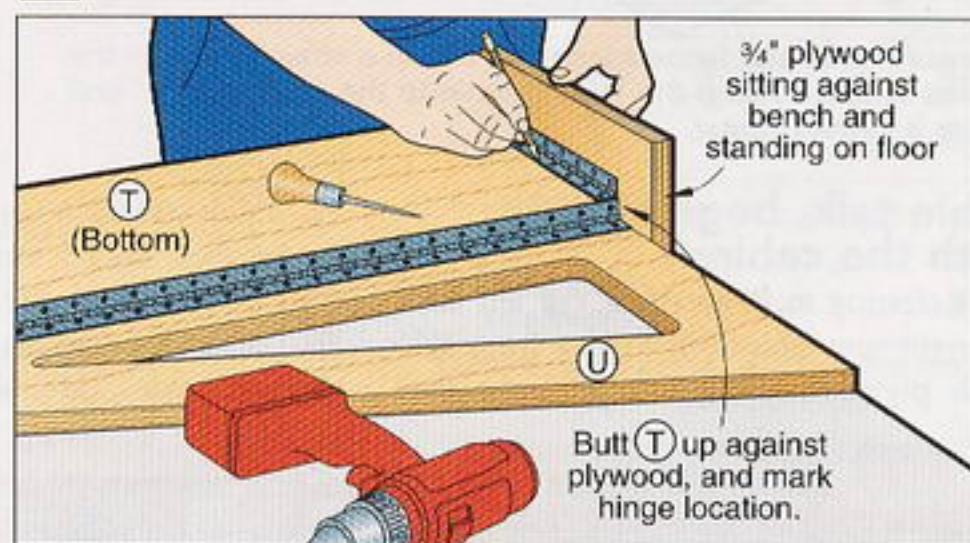
1 From 3/4" birch plywood, cut the door (N) to size. Cut the vertical edge-banding (O) for the door, and glue and clamp these in place. Now, cut and apply edge banding (P) for the

7 FRONT SECTION VIEW



8 FOLDING TABLE

8a HINGE LOCATION



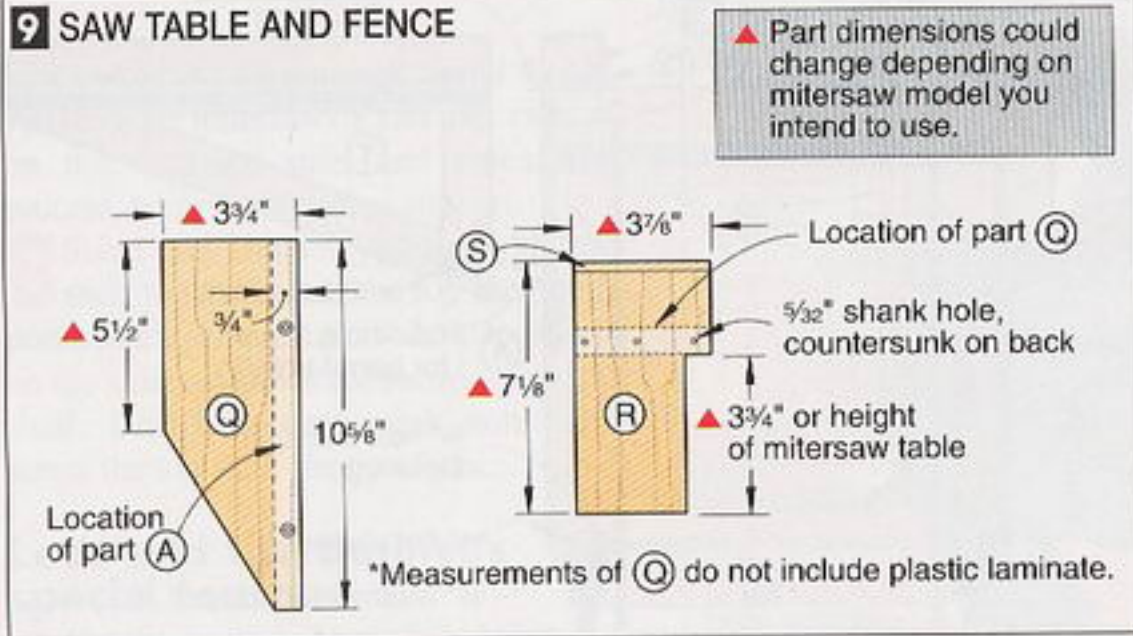
To install the hinge flush with the end of the folding table, butt the plywood against the table, mark the hinge location, and then screw in place.

door's top edge. Sand the banding flush and smooth with the door panel.

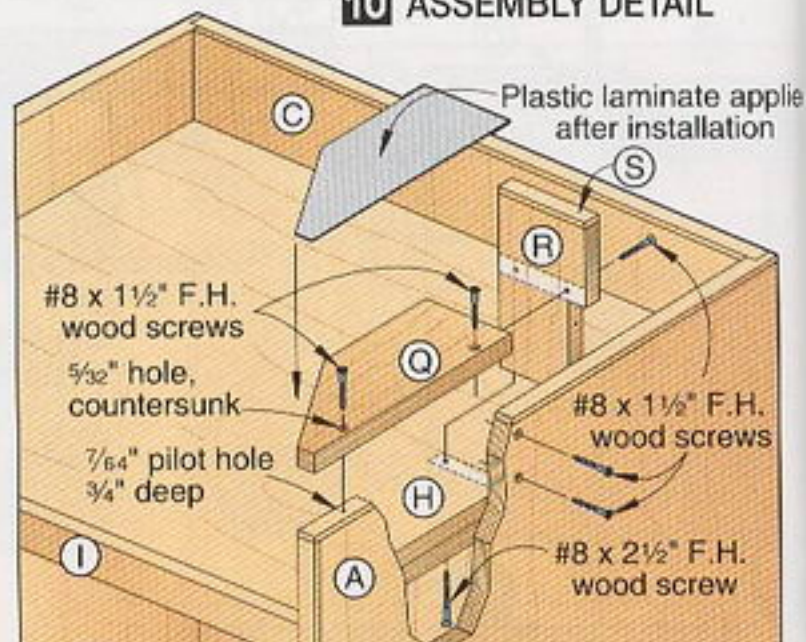
2 Lay out the locations of the non-mortise hinges, where shown on **Drawing 4**. Drill the screw holes and attach the hinges to the door. Allowing for a 1/8" reveal, attach the door to the cabinet.

3 Locate and install the wire pull on the door front. Next, screw on the magnetic catch and magnetic catch plates on the cabinet side and door back. See the Buying Guide for our source for the hinges, catches, and wire pull.

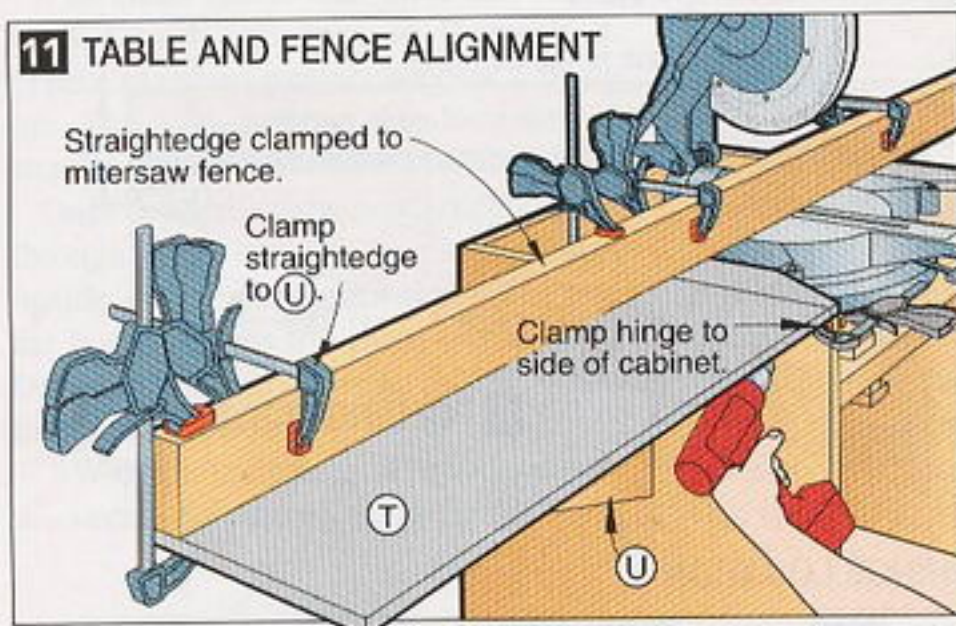
9 SAW TABLE AND FENCE



10 ASSEMBLY DETAIL



11 TABLE AND FENCE ALIGNMENT



To ensure table and fence alignment, clamp a straightedge to the cabinet fences. Clamp the folding table to the straightedge, and secure it to the cabinet.

Table talk, beginning with the cabinet

1 Referring to **Drawing 9**, cut left and right saw tables (Q) to size from $\frac{3}{4}$ " birch plywood. Note that applying the

$\frac{1}{16}$ "-thick plastic laminate will result in the finished sizes in the Materials List.

2 Cut enough plastic laminate to cover the surface and the exposed edges of the saw tables (Q). Make the laminate

pieces slightly oversized. (Do not laminate the back and long outside edges or bottom of these pieces.) Apply the edge pieces only, using contact cement. File or trim with a router and flush-trimming bit.

Next, glue and screw these pieces to the cabinet sides, as shown in **Drawing 10**, keeping them flush to the sides and side front edges. Secure with #8x $\frac{1}{2}$ " flathead wood screws and countersink the holes. Apply the top plastic laminate piece over the screws, and trim flush. Smooth any sharp edges with a file.

3 Cut the saw fences (R) to the needed dimensions, making left and right side parts. Cut the saw-table fence edge bandings (S), and glue and clamp the pieces in place. Sand flush. Finally, drill the countersunk holes on the back side as shown.

4 Clamp and screw the saw-table fences (R) to the saw tables (Q). Determine the countersunk screw-hole locations on the sides, and drill the holes. Now, screw the fences to the cabinet sides (A) and top shelf (H).

Add the sturdy folding tables

1 Cut the folding tables (T) to $\frac{3}{4}$ x $10\frac{1}{2}$ x $32\frac{1}{2}$ " . Label one left and one right. Then glue plastic laminate to the outside end of each piece and trim. Laminate the front edge and trim. Now, laminate the top surfaces and trim.

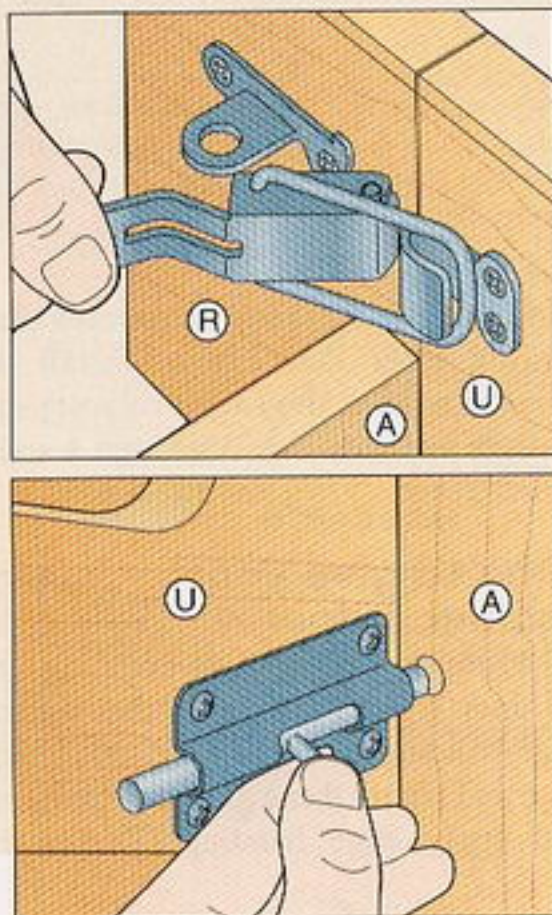
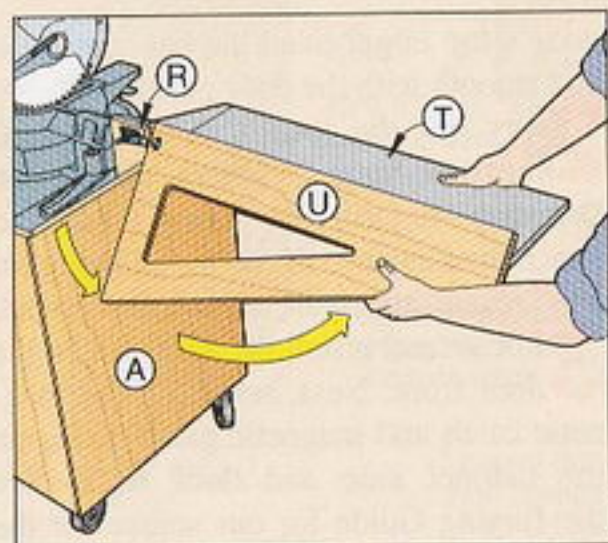
2 Cut two lengths of $1\frac{1}{2}$ " continuous hinge to 33" long. Screw one to each back edge of the folding tables (T). Make sure the hinge barrels are flush with the laminate surface.

3 Refer to **Drawing 8**, on the *previous* page, and cut the left and right folding table supports (U) to shape.

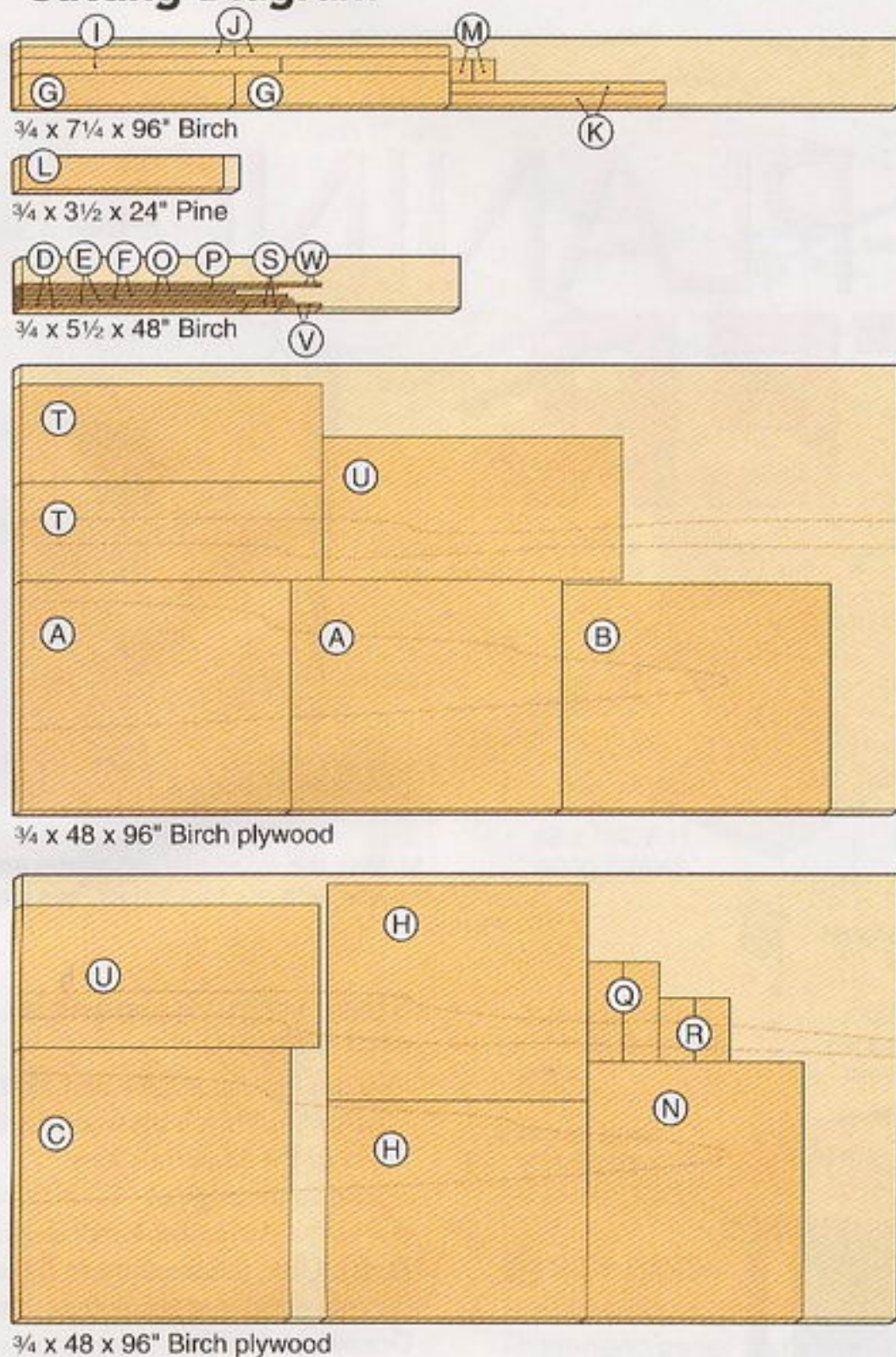
4 Cut the end and top edge banding pieces (V, W). Glue and clamp the

Raising your folding tables for action

To use the folding tables, simply lift one table up, swing down the support until it's at a right angle to the table, and lock it in place using the barrel bolt and draw catch, as shown.



Cutting Diagram



end pieces to folding table supports (U); apply the top edge banding to supports.

5 Lay the support flat on your workbench and clamp a folding table (T) on top of a support (U) with the hinge edge at the location on **Drawing 8**. Flush the ends, and screw the support to the folding table. Keep in mind that the support also serves as a saw fence; its height above the folding table should match the height of the miter saw cabinet fence (R) above saw table (Q). Make minor adjustments as needed. Repeat the process for the right folding table and support.

6 Install the barrel bolts on the front faces of the folding table supports (U). See illustrations on *page 34, bottom*.

7 Cut two more continuous hinges to fit. Screw these to the bottom of folding tables (T) and flush with their unlaminated inside ends, as shown in **Drawing 8a**.

8 To attach the folding tables, place your miter saw on the cabinet and

align its fence with the saw fences (R). Bolt the miter saw to the cabinet.

Cut and place a straight, edge-jointed 2x4 on edge and against the aligned fences. Clamp it in position. Align one folding table assembly snugly beneath the 2x4, and clamp it in place. Screw it to the cabinet, as shown in **Drawing 11**.

9 Using a square, adjust the folding table support so it angles 90° to the folding table. Mark the hole location for the barrel bolt on the cabinet side (A) and drill the hole. Repeat Steps 8 and 9 for the opposite folding table.

10 Attach draw catches to the fences to keep the tables from sagging.

11 Remove the hardware, and then finish (we used polyurethane). Once dry, re-install the hardware. 🛠️

Written by **Jim Harrold**

Project design: **Jim Downing**

Illustrations: **Roxanne LeMoine; Brian Jensen**

Photographs: **Steve Uzzell**

Materials List

Part	FINISHED SIZE			Mtl.	Qty.
	T	W	L		
A cabinet sides	3/4"	24 3/4"	29 5/8"	BP	2
B cabinet bottom	3/4"	24 3/8"	29 1/4"	BP	1
C cabinet back	3/4"	29 1/4"	29 5/8"	BP	1
D side top edge bandings	1/4"	3/4"	24 3/4"	B	2
E side front edge bandings	1/4"	3/4"	29 5/8"	B	2
F edge bandings for parts B, C	1/4"	3/4"	29 1/4"	B	2
G top shelf supports	3/4"	3 1/2"	23 1/2"	B	2
H* top shelf	1 1/2"	23 1/2"	28 1/2"	BP	1
I top shelf edge strip	3/4"	1 1/2"	28 1/2"	B	1
J vertical cleats	3/4"	1 1/4"	23 1/2"	B	2
K horizontal cleats	3/4"	1 1/4"	23 1/2"	B	2
L rod support	1 1/2"	3 1/2"	22 1/4"	P	1
M turn knobs	3/4"	2 1/2" diam.		B	2
N door	3/4"	27 3/4"	23 1/2"	BP	1
O door vertical edge bandings	1/4"	3/4"	23 1/2"	B	2
P door top edge banding	1/4"	3/4"	28 1/4"	B	1
Q** saw tables	13/16"	10 1/16"	3 13/16"	B/L	2
R** saw-table fences	3/4"	6 7/8"	3 7/8"	BP	2
S saw-table fence edge banding	1/4"	3/4"	3 7/8"	B	2
T folding tables	13/16"	10 9/16"	33"	B/L	2
U folding table supports	3/4"	15 1/2"	32 3/4"	BP	2
V folding table sup. side edge bands	1/4"	3/4"	4 3/8"	B	2
W folding table sup. top edge bands	1/4"	3/4"	33"	B	2

*Cut parts marked with an * oversized. Trim to finished size according to the how-to instructions.

**Parts are cut slightly undersized and reach finished size when plastic laminate is applied.

Part dimensions subject to change due to miter saw model used. See **Drawing 9.

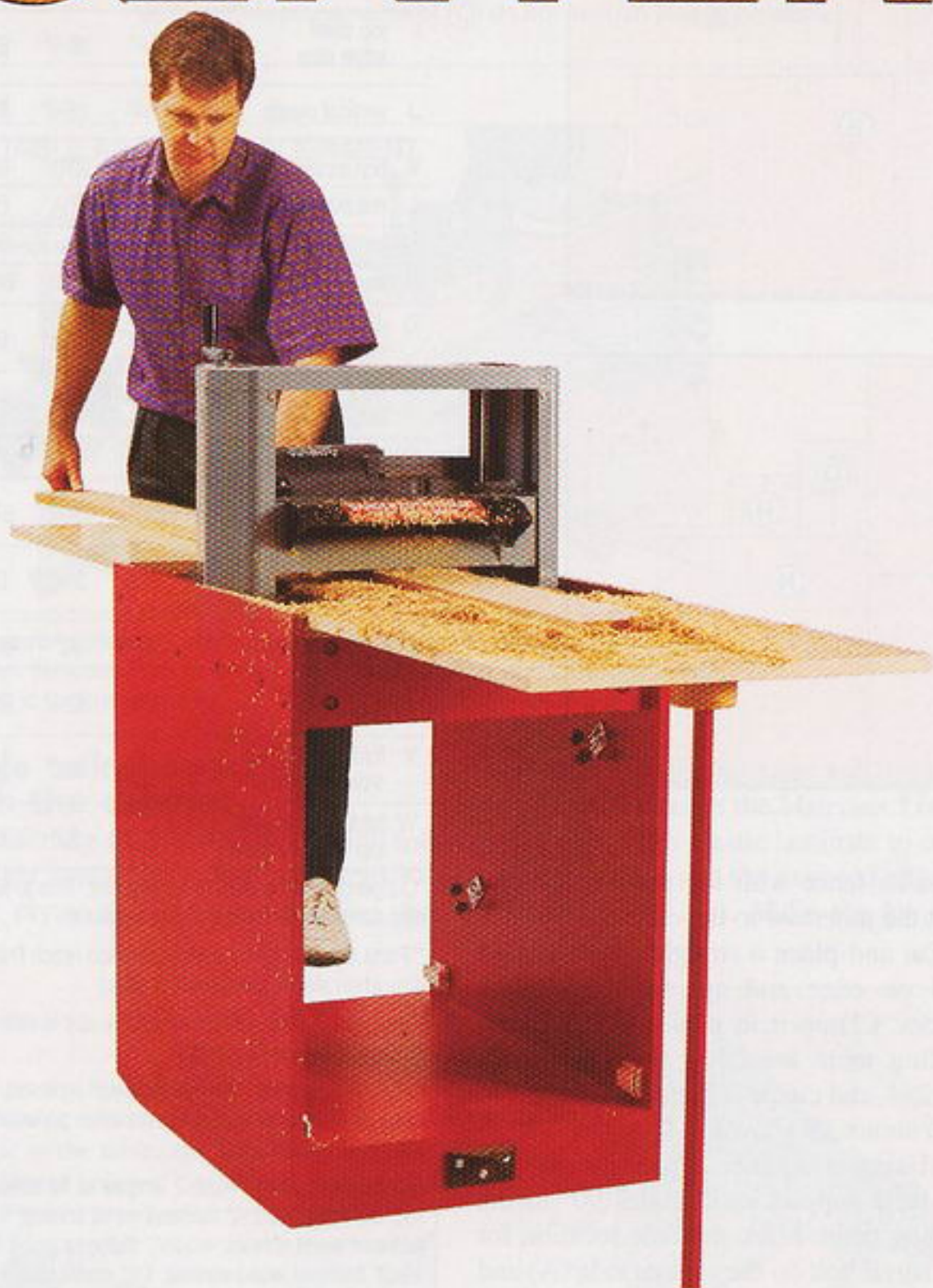
Materials key: BP-Baltic birch plywood, B-birch, P-pine or fir, B/L-Baltic birch plywood with plastic laminate.

Supplies: 2 3/8" T-nuts; 2 lengths of 3/8" threaded rod, 34" long; #8x1 1/4" flathead wood screws; #8x2" flathead wood screws; #8x2 1/2" flathead wood screws; #8x3" flathead wood screws; 1 1/2" continuous hinge, 33" long (2); 1 1/2" continuous hinge, 10 1/2" long (2); 3/8x1 1/2" hexhead bolts; 3/8" washers and nuts; 4" barrel bolts (2); 3 1/2" draw catches (2); 1 pr. 1x3" non-mortise hinges; 4" wire pull; magnetic catch and catch plates; 18-gal. Rubbermaid storage bin; clear finish.

Buying Guide

Hardware. HD 4" fixed casters (2), #141053; HD 4" double-locking (braking) swivel casters (2), #141050; 1 pr. 1x3" door hinges, #27G14; 4" wire pull, #130312; magnetic catch and strike, #27H04. Order by calling Woodcraft at 800/225-1153, or visit www.woodcraft.com.

wheel deal WOOD-PLANING CENTER



Moving the wood planing center around is a breeze with our tool mover (see page 40).

Start with the panels and edging

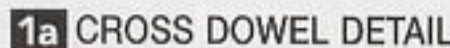
- 1** Cut the sides (A) and bottom (B) from $\frac{3}{4}$ " birch plywood to the sizes listed in the Materials List.
- 2** From the edge of $\frac{3}{4}$ "-thick birch, rip $\frac{1}{4} \times \frac{3}{4}$ " strips for banding pieces (C, D, E). Glue the banding to the edges of the plywood panels, where shown on **Drawings 1 and 2**.
- 3** Mark the location of the dado near the bottom edge of each side panel (A), and cut each dado to the size listed on **Drawing 2**.
- 4** To allow for clearance for the rigid casters when moving the stand later, mark and cut the tapered bottom corner of each side panel, where dimensioned on **Drawing 2**.
- 5** Mark the centerpoints on both side panels, where dimensioned on **Drawing 2**, and drill the holes to the sizes stated.

The crossmembers play a supporting role

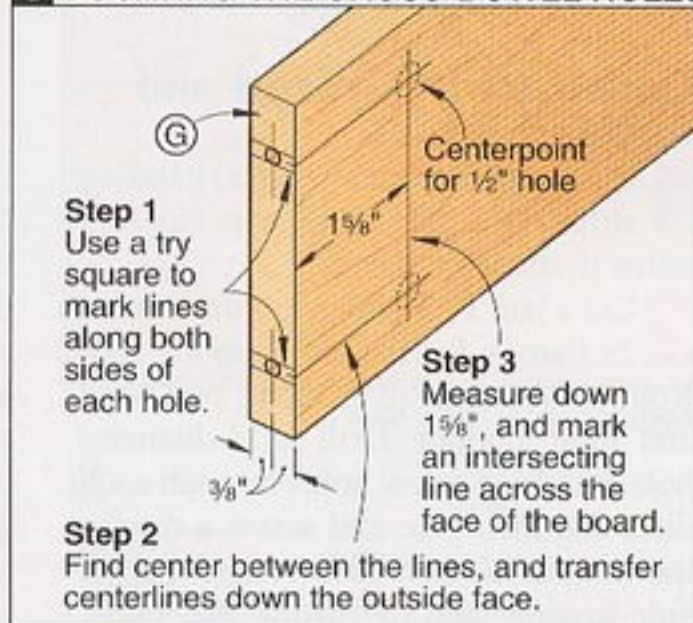
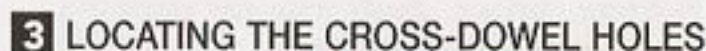
- 1** Cut the toekick (F), spreaders (G), and cleats (H) to size from $\frac{3}{4}$ " stock. Next, drill the screw holes through the cleats and screw them to the toekick (F).
- 2** For housing the cross-dowel connector bolts later, drill $\frac{1}{4}$ " holes $2\frac{1}{4}$ " deep into the spreaders (G), where shown on **Drawings 3 and 5**.

When a project requires thin stock, a portable planer saves you from having to special-order material. But lifting it onto a workbench every time you need it can be backbreaking. The wood planing center shown here offers a solution. Adjustable infeed and outfeed tables provide continuous support when thinning long boards. The planer platform raises or lowers to suit most portables, and when you're finished, the tables fold down to minimize space.

#8 x 1¼" F.H. wood screw 5/32" hole, countersunk



2 SIDE PANEL
(Inside surface of
Right-hand panel shown)

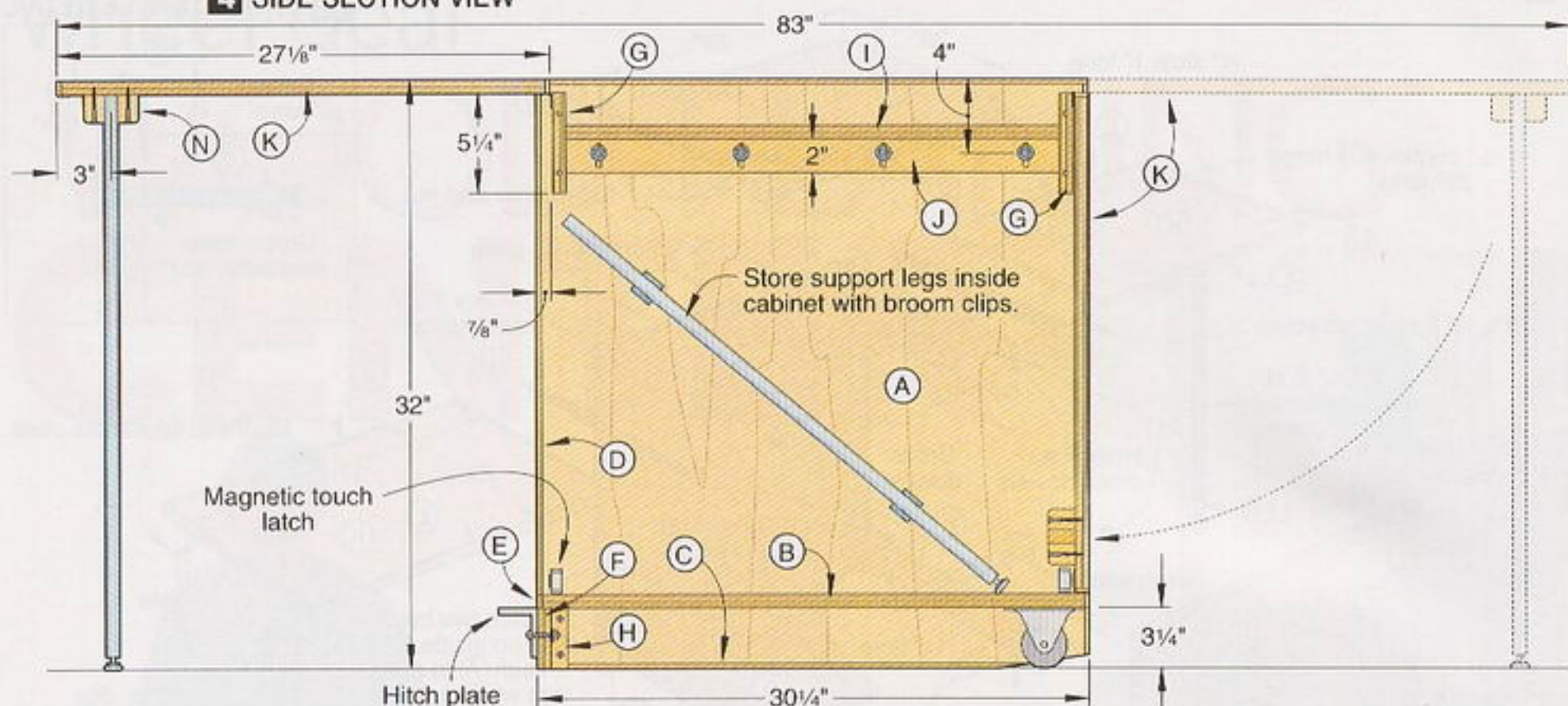


Note: Plywood is banded with 1/4 x 3/4" birch banding

4 Glue and clamp the bottom panel (B) between the side panels (A).

37

4 SIDE SECTION VIEW



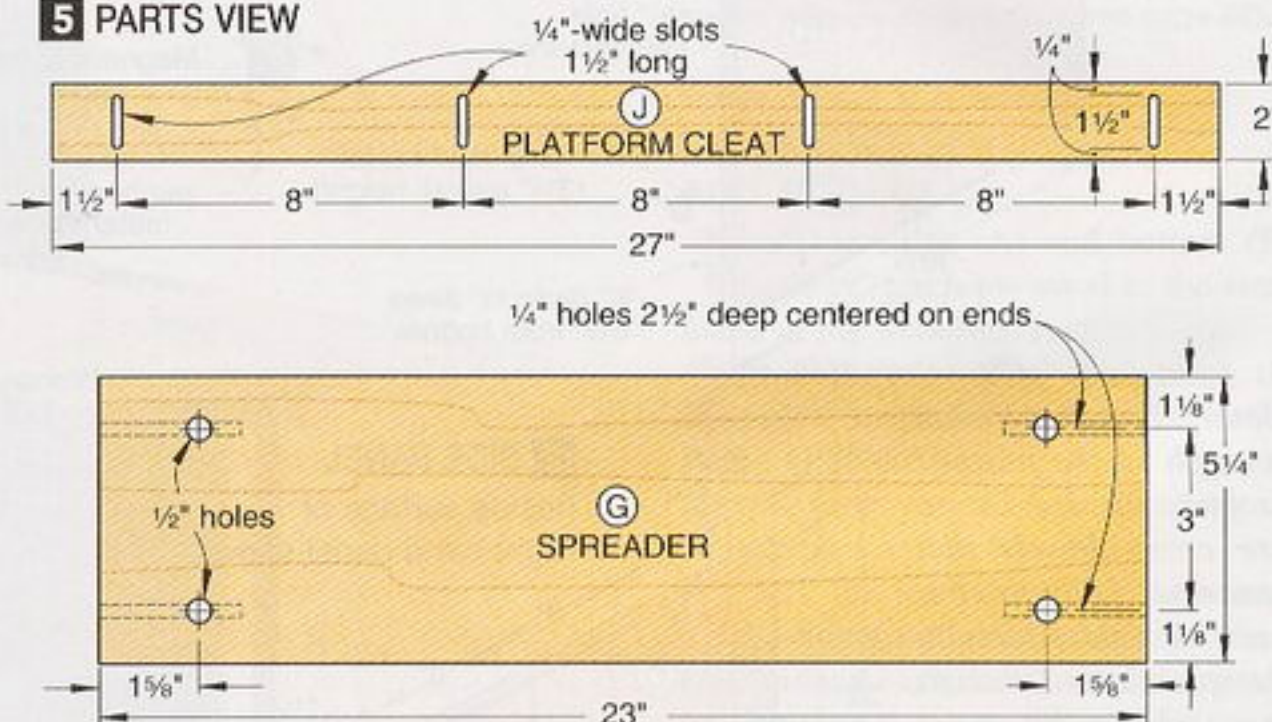
Next, add the adjustable planer platform

1 Cut the planer platform (I) and cleats (J) to size.

2 Using **Drawing 5** for reference, mark the locations and cut four 1/4"-wide slots in each cleat (J). (We drilled 1/4" holes at each end of the marked slots, and cut between them with our jigsaw.) The slots in the cleats allow you to raise or lower your planer for leveling the planer bed with the stand's infeed and outfeed tables (K).

3 Glue and screw the cleats to the bottom surface, flush with the outside edges of the platform (I).

5 PARTS VIEW



Construct the infeed and outfeed tables

1 Cut the table pieces (K) and banding strips (L, M). Glue the banding strips to the table pieces.

2 Cut a pair of 3"-diameter discs from 2x4 stock for the leg supports (N). Rout a 1/4" round-over along one edge and sand smooth. Drill a 1"-diameter hole and three screw holes through each disc, and then glue and screw a disc to the bottom of each table centered from side-to-side and 3" from the ends, where shown on **Drawing 4**.

3 Cut two pieces of 3/4" conduit to 30 1/2" long to form the infeed and outfeed support legs.

4 Use a compass to mark a pair of plugs on 3/4"-thick stock to fit into

the ends of the 3/4" conduit. See **Drawing 1** for reference. Drill a hole through each marked disc to house a 1/4" threaded insert. Cut the plugs to shape, and assemble each leg bottom end as shown. The adjustable floor glides allow you to raise or lower the ends of the infeed and outfeed tables (K).

5 Cut two pieces of 1 1/16" continuous hinge to 20" long each.

Let's finish the stand and apply the hardware

1 Sand the stand and tables, and finish them as you desire. (In our case, we painted the stand and applied a top-coat of clear polyurethane to the tables.)

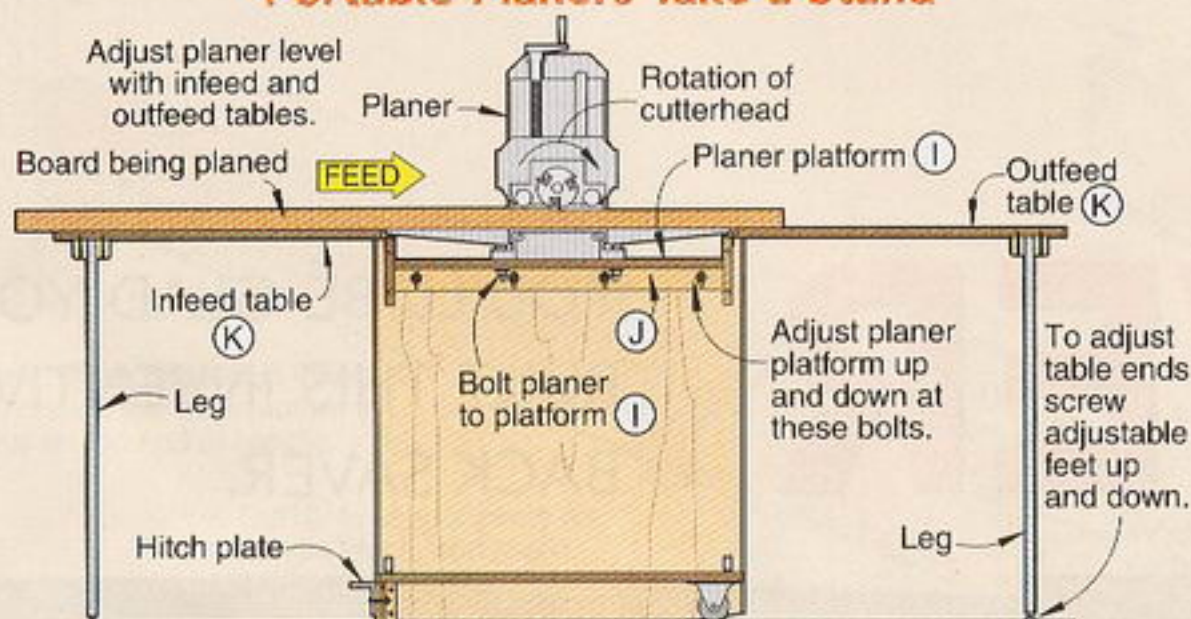
2 Connect the tables to the stand with the continuous hinge.

3 Form the hitch plate from 2" angle iron, as shown on *page 41*. Screw the hitch plate to the stand. Secure a pair of 2 1/2" rigid casters to the bottom of the stand where the tapered corners in the side panels are located. See **Drawing 4** for reference.

4 Screw two broom clips to the inside face of each side panel for holding the legs when not in use.

5 Add the magnetic touch latches to the inside face of the cabinet sides, and then add the strike plates to the mating surface of the infeed and outfeed tables.

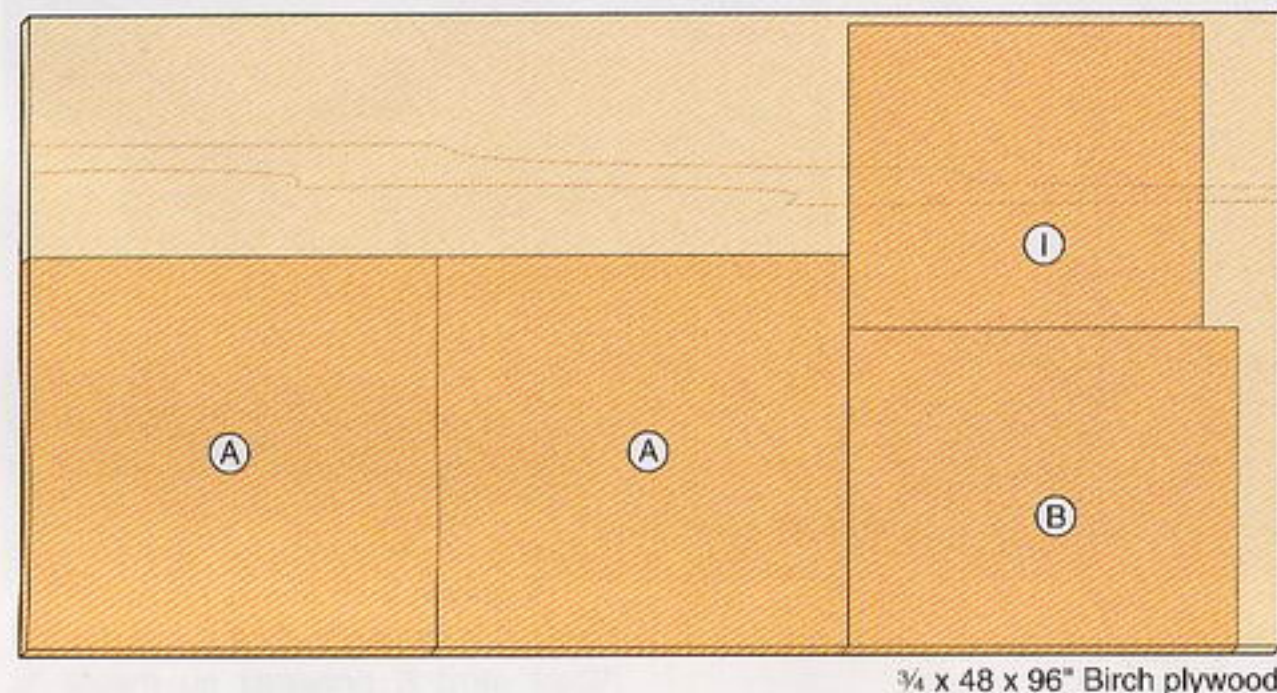
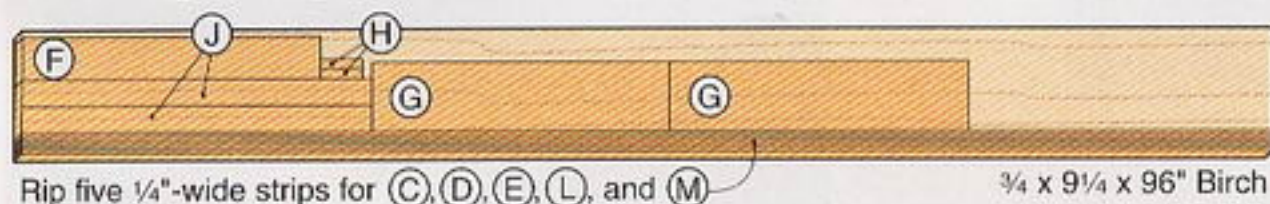
Portable Planers Take a Stand



One shortcoming of most portable planers is that the infeed and outfeed rollers don't apply enough pressure to hold long boards firmly against the planer bed. This results in gouging out or sniping the top surface at the end of a board run through the planer. Our portable stand with its 27"-long infeed and outfeed tables sup-

ports the board when being fed into the planer and at the end of the cut. In addition, the infeed and outfeed tables allow a person to plane a board without having to run from one end of the planer to the other to support the board. If sniping does occur, adjust the outfeed table leg to raise the end of the table.

Cutting Diagram



Materials List

Part	FINISHED SIZE T W L	Matl.Qty.
A sides panel	3/4" 29 3/4" 31 1/2" BP	2
B bottom panel	3/4" 23 3/4" 29 3/4" BP	1
C banding	1/4" 3/4" 30 1/4" B	4
D banding	1/4" 3/4" 31 1/2" B	4
E banding	1/4" 3/4" 23 3/4" B	2
F toekick	3/4" 3 1/4" 23" B	1
G spreaders	3/4" 5 1/4" 23" B	2
H cleats	3/4" 3/4" 3 1/4" B	2
I planer platform	3/4" 23" 27" BP	1
J cleats	3/4" 2" 27" B	2
K tables	3/4" 22 3/8" 26 5/8" BP	2
L banding	1/4" 3/4" 27 1/8" B	4
M banding	1/4" 3/4" 22 3/8" B	4
N leg supports	1 1/2" 3" diam. C	2

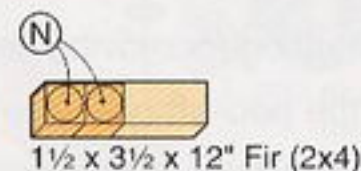
Materials key: BP—birch plywood, B—birch, C—choice (fir, pine, spruce).

Supplies: #6x1 1/2", #8x1 1/4", #8x2" flathead wood screws; #8x1 1/2" roundhead wood screws; 2 1/2" rigid casters (3 1/4" overall height) with #8x3/4" panhead sheet-metal screws (2); 1 1/8" continuous hinge 22" long (2); 1/4x2 3/4" cross-dowel connector bolts and cross dowels (8); 1/4x2" carriage bolts with 1/4" nuts and washers (8); magnetic touch latches and strike plates (4); 3/4" (I.D.) conduit 30 1/2" long (for legs) (2); 1/4" adjustable floor glides (2); 1/4" threaded inserts (2); 1/4" nuts (2), broom clips (4); 1/4x2" angle iron for hitch plate, 1/4x1 1/4" roundhead machine screws (for attaching hitch plate) (2); primer; red enamel paint; clear finish.

How to adjust the wood-planing center

Adjust the height of the planer platform (I) so the planer bed height matches the infeed and outfeed tables (K) where shown, *above*. Then, adjust the leg floor glides to raise or lower the ends of the infeed and outfeed tables, making them level with the planer bed.

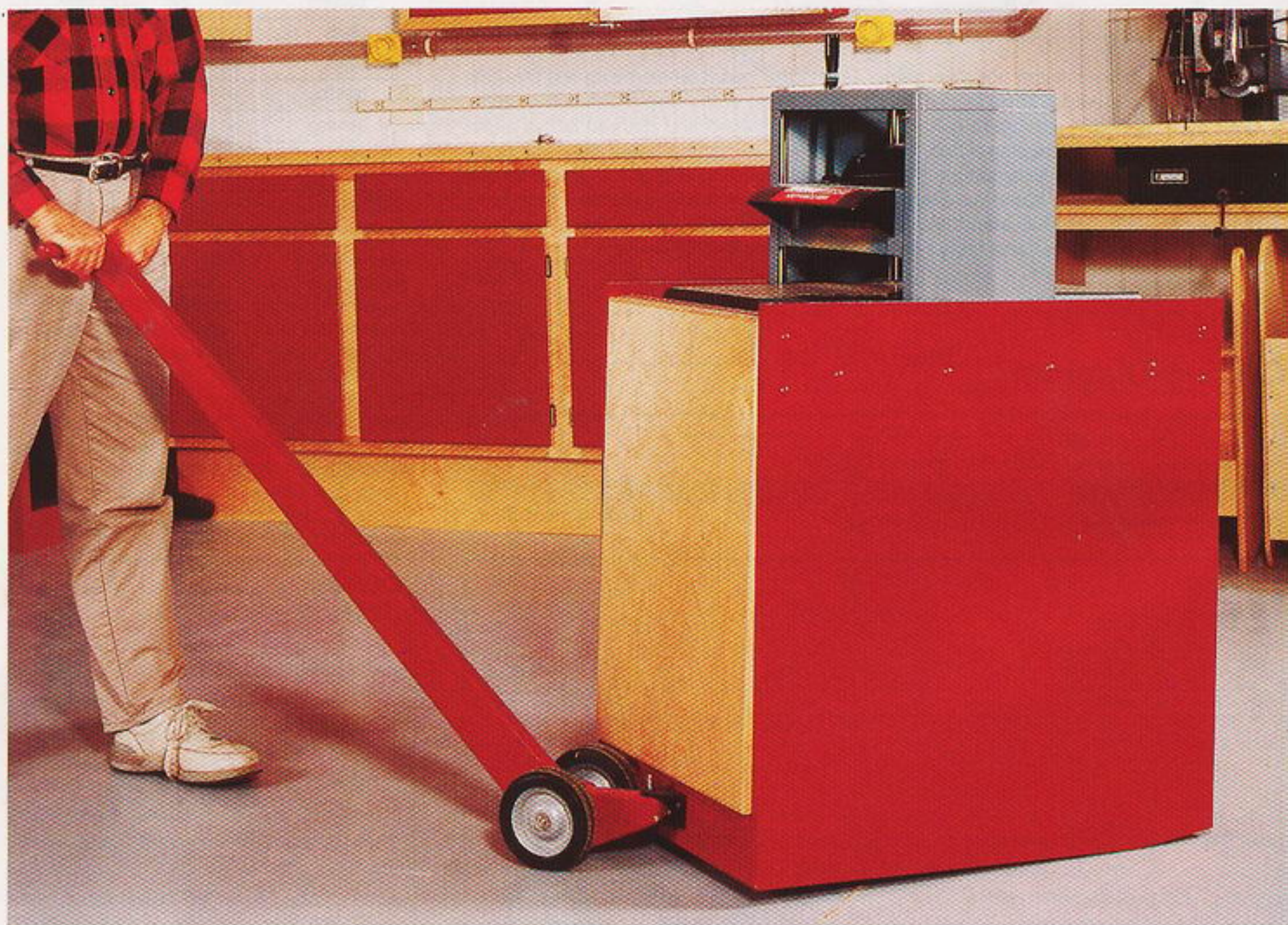
With this done, run a few pieces of stock through the planer to verify the settings. If you experience snipe on the end of the board being planed, slightly raise the end of the outfeed table. We marked the location of the planer stand and legs on the shop floor. This allows us to return it to the exact spot later, without having to readjust the legs. 🌲



Written by **Marlen Kemmet**
Project design: **Jim Downing**
Illustrations: **Kim Downing**
Photographs: **Wm. Hopkins**

easy-does-it TOOL MOVER

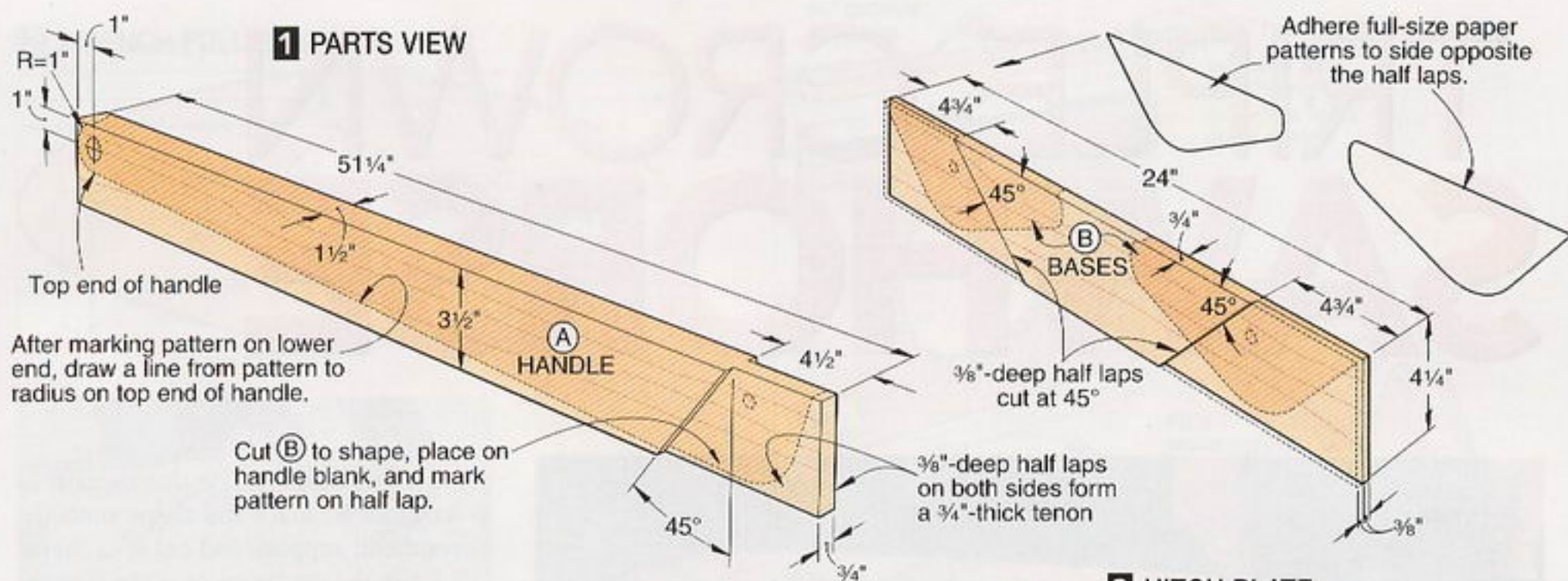
YOU'LL BE GLAD YOU
BUILT THIS INVENTIVE
BACK SAVER.



Here's a method for moving heavy tools that is as easy on the back as it is on the pocketbook. The metal pin at the end of the tool mover fits into the hole in the angle-iron tow bracket mounted to your wheeled tool base. By lowering the handle, the mover's wheels act as a fulcrum, lifting the tool base with a minimum of effort. Use it for moving heavy pieces like the planer stand *above* (featured in our previous story) or any of the more cumbersome tools you need to relocate from time to time.

1 Start by cutting the handle blank (A) to $3\frac{1}{2} \times 51\frac{1}{4}$ " from 2x4 stock. Then, from $\frac{3}{4}$ "-thick hardwood (we used maple), cut the $4\frac{1}{4} \times 24$ " blank for the bases (B).

2 Make two photocopies of the full-size base pattern on *page 128* and use spray adhesive to adhere them to the base blank in the configuration shown on **Drawing 1**. Note that you're marking a



mating pair of base parts, so you need to apply one pattern good face down. To do this, trace the pattern to the back side of the photocopy before adhering it to the base blank.

3 Mount a dado blade to your tablesaw or radial-arm saw, and cut the angled 3/8"-deep half-lap joints across the handle and base blanks. Bandsaw the bases to shape, and glue and screw them to the handle blank. Using the dimensions on **Drawing 1**, transfer the handle outline to the handle blank, and cut it to shape.

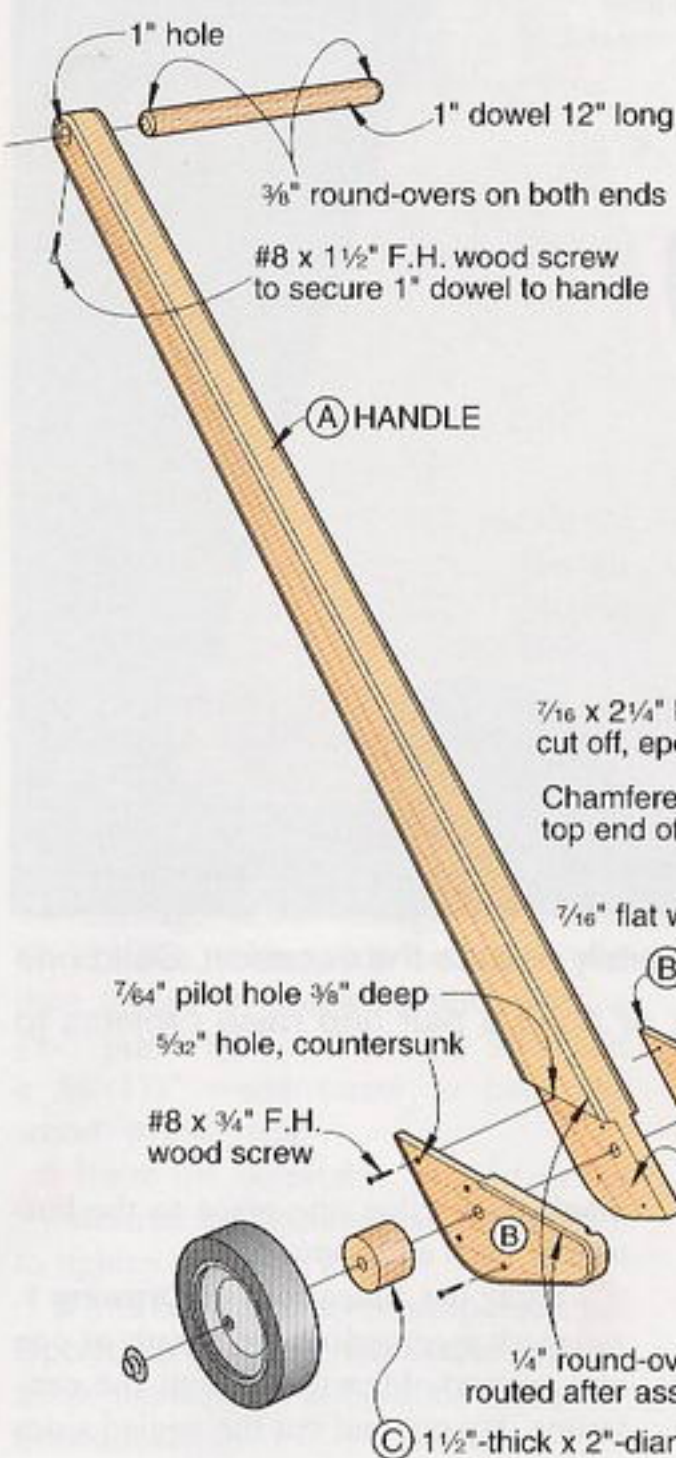
4 Drill the 1/2" axle hole through the handle and base assembly. Then, drill the hole for the 7/16x2 1/4" bolt.

5 Bandsaw the wheel spacers (C) to shape, and drill a 1/2" hole through the center of each. Hacksaw the head off a 7/16x2 1/4" bolt. Epoxy the bolt into the 7/16" hole in the end of the base.

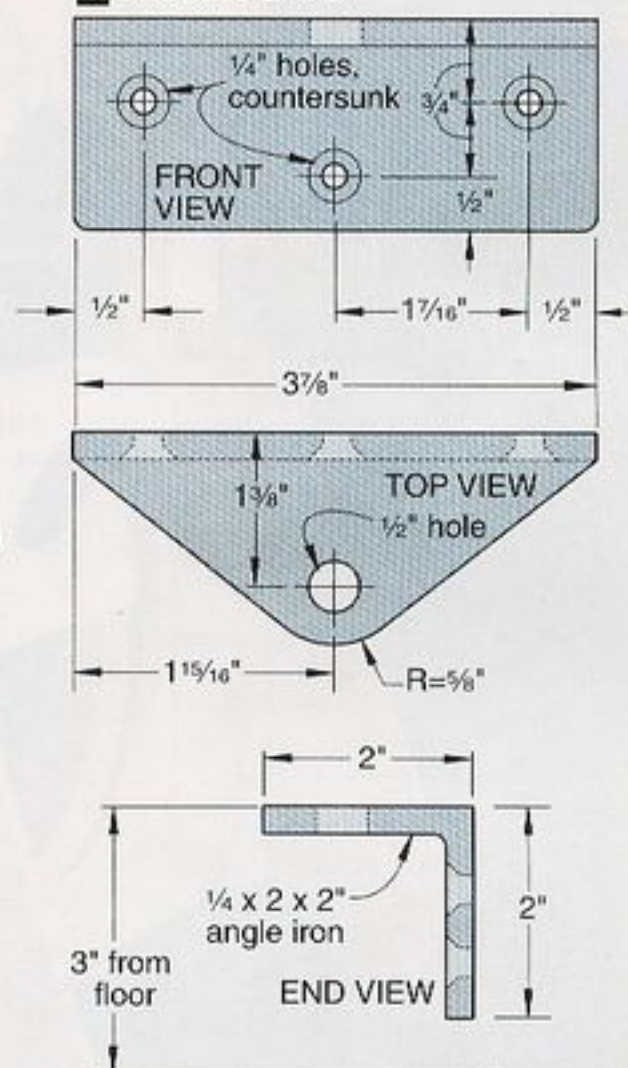
6 Assemble the tool mover in the configuration shown on **Drawing 2**.

7 Cut the tow brackets to the shape shown on **Drawing 3** from 1/4x2" angle iron. (We cut ours with a hacksaw.) Drill the holes, and then bolt them to your mobile bases. As shown on **Drawing 3**, the horizontal surface of the angle-iron tow bracket (containing the 1/2" hole) should be 3" from the floor.

2 EXPLODED VIEW



3 HITCH PLATE



Written by **Marlen Kemmet**
 Project design: **Arthur Van Den Berg**
 Illustrations: **Kim Downing; Lorna Johnson**
 Photograph: **Wm. Hopkins**

TRIPLE-CROWN SAWHORSE



This handy-to-have sawhorse literally rises to the occasion. Build one for use as a ripping support, or build a pair and raise projects to back-pleasing heights.

Form the end supports

1 Cut two pieces of $\frac{3}{4}$ " plywood (we used A-C fir plywood) to $20 \times 22\frac{3}{4}$ " for the end supports (A).

2 Cut two pieces of $\frac{3}{4}$ " maple to $\frac{3}{4}$ " wide by 20" long for the banding

blanks (B). Glue one piece to the bottom of each end support.

3 Using the dimensions on **Drawing 1**, mark a centerline the length of one end support. Measuring from the centerline, lay out and cut the angled sides

on one end support. Use this support as a template to mark the shape onto the second end support, and cut it to shape.

4 From the center point at the bottom, mark a 4" radius. Cut the arc to shape, and again use this support as a template to mark the arc onto the second support. Cut it to shape, and sand both arcs smooth.

Attach the center panels to the end supports

1 Cut the spacers (C) to size. Center the spacers on each end support, and glue and screw them into place, using the hole sizes in **Drawing 1a**.

2 Cut the two center panels (D) to size. Locate and mark the center of one panel, and mark a 14"-diameter circle. Drill a blade-start hole, cut the circle to shape with a jigsaw, and sand smooth. (The circle cutting helps reduce the total weight of the sawhorse.) Trace the circle outline onto the second panel, and cut that circle to shape.

3 On one center panel, mark the locations for the two $\frac{3}{8}$ " holes, referring to the drawing for dimensions. Clamp the two panels together with the edges flush, and drill $\frac{3}{8}$ " holes through both panels where marked. Remove the clamps.

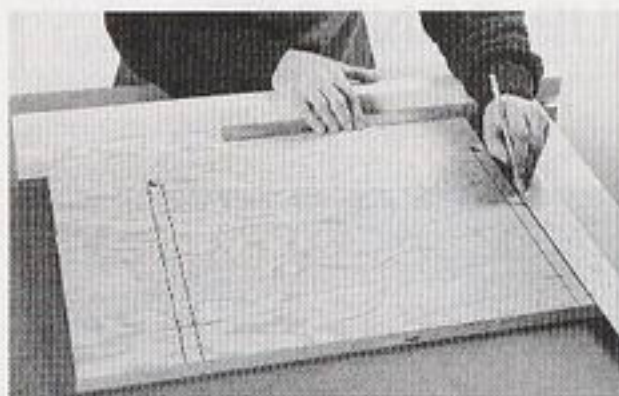
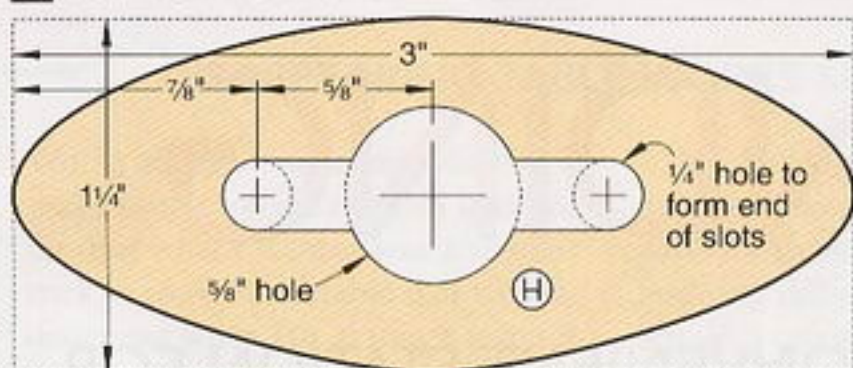
4 Cut the four maple corner braces (E) to size, bevel-ripping a chamfer along one edge of each.

5 With the top edges flush, glue and screw one center panel (D) to a spacer (C) on each end support (A). See **Drawing 1a** for hole sizes. Repeat for the second panel. Now, glue and screw the corner braces (E) into position.

Add the adjustable center support

1 Cut the adjustable support (F) to 19×29 ". Mark and cut a taper on each end of the piece (See **Drawing 1** for dimensions.)

2 WRENCH FULL-SIZE PATTERN



Mark lines on the adjustable support (F), perpendicular to the beam, on each side of each of the $\frac{3}{4}$ " holes.

2 Cut the top beam (G) to size. (We cut ours from a 2x4.) Rout a $\frac{1}{4}$ " round-over along the top edges. Cut or rout a $\frac{3}{4}$ " groove $\frac{3}{4}$ " deep down the center of the beam. Center and glue the beam to the top of the adjustable support.

3 Slide the adjustable support between the center panels. Using the two previously drilled $\frac{3}{8}$ " holes in the panels as guides, drill just far enough into the adjustable support to make a mark.

4 Remove the support, and drill a pair of $\frac{3}{4}$ " holes through the support where marked with the $\frac{3}{8}$ " bit. Now, as shown in the photo above, mark parallel lines on each side of each $\frac{3}{4}$ " hole to the bottom of the support. Center and bore a $\frac{3}{4}$ " hole between the lines 2" from the bottom of the support, where shown on Drawing 1.

5 Using a jigsaw, saw along the marked lines from hole to hole to form the slots, where shown on Drawing 1.

6 Slide the support between the center panels until the top beam rests on top of the center panel, and trace the 14"-diameter circle onto the support. Remove the support, and cut the hole to shape.

Make the wrench and add the carriage bolts

1 To make the wrench (H) for ease in loosening and tightening the wing

1 EXPLODED VIEW

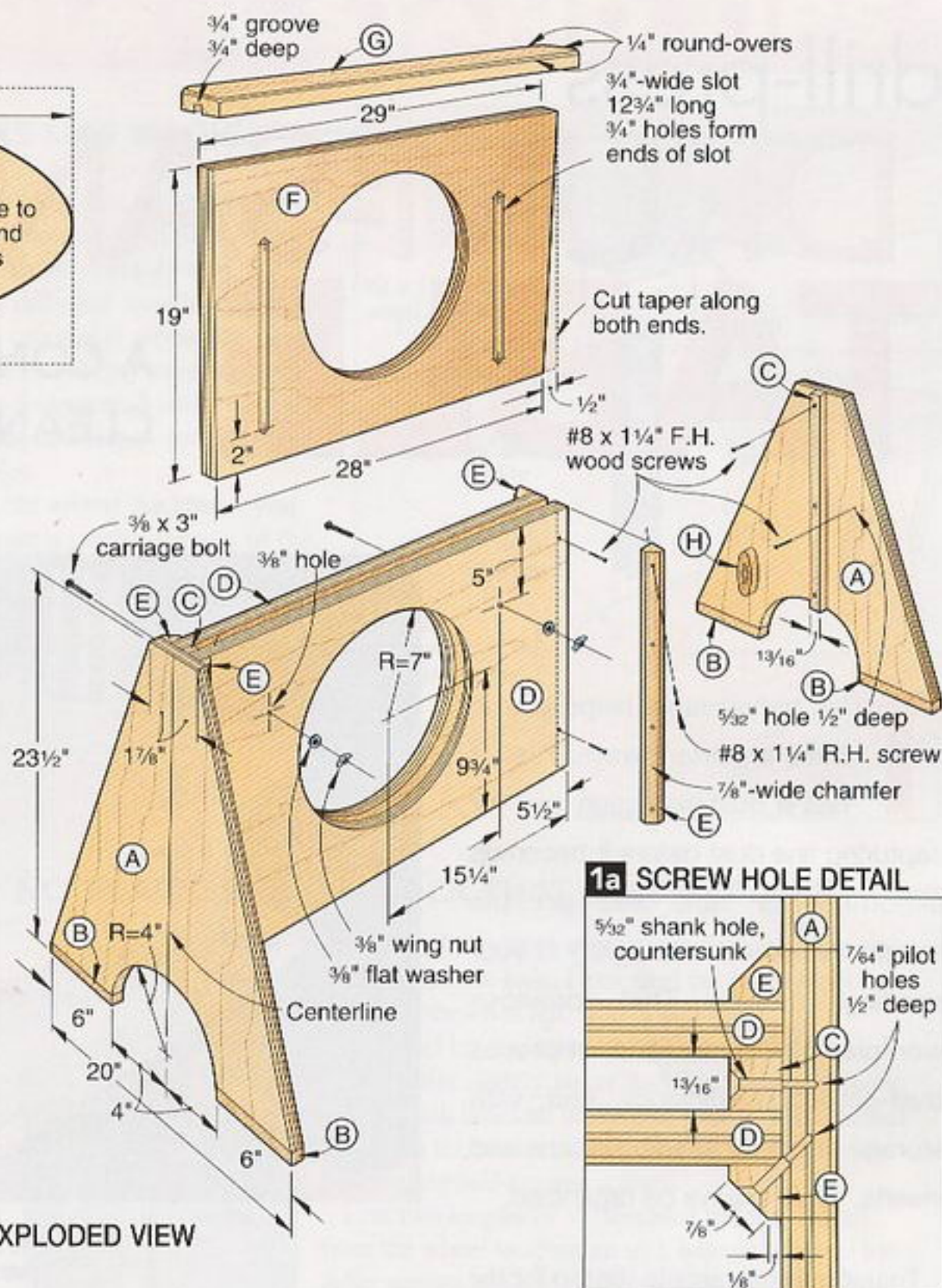
nuts, cut a piece of $\frac{3}{4}$ " maple to $1\frac{1}{4} \times 3$ ". Using tracing paper, transfer Drawing 2 onto the stock. Drill the holes where shown, and cut the wrench interior and exterior to shape.

2 Sand the parts smooth, and prime and paint as desired.

3 Position the adjustable support between the center panels. Install the carriage bolts through the holes. Slide a flat washer onto each bolt, and then thread on the wing nuts. Drill a $\frac{5}{32}$ " pilot hole $\frac{1}{2}$ " deep, and add a #8x1 $\frac{1}{4}$ " wood screw to hang the wood wrench (H).

4 Raise the adjustable support to the desired height, and use the wrench to tighten the wing nuts.

If you have an uneven shop floor, the tapered sides on the adjustable support allow the support to be tilted and positioned level.



Project design: Jim Boelling; Jim Downing
Illustrations: Kim Downing; Lorna Johnson
Photographs: Bob Calmer

Materials List

Part	FINISHED SIZE				Matl. Qty.
A end supports	$\frac{3}{4}$ "	20"	22 $\frac{1}{4}$ "	BP	2
B* banding blanks	$\frac{3}{4}$ "	$\frac{3}{4}$ "	20"	M	2
C spacers	$\frac{3}{4}$ "	1 $\frac{3}{16}$ "	19 $\frac{1}{2}$ "	M	2
D center panels	$\frac{3}{4}$ "	19 $\frac{1}{2}$ "	30 $\frac{1}{2}$ "	BP	2
E corner braces	$\frac{3}{4}$ "	$\frac{3}{4}$ "	19 $\frac{1}{2}$ "	M	4
F* adjustable support	$\frac{3}{4}$ "	19"	29"	BP	1
G top beam	1 $\frac{1}{2}$ "	3 $\frac{1}{2}$ "	34"	C	1
H* wrench	$\frac{3}{4}$ "	1 $\frac{1}{4}$ "	3"	M	1

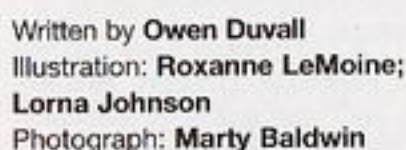
*Part initially cut oversize. See the instructions.

Materials key: BP—birch plywood; M—maple; C—choice (fir, pine, spruce).

Supplies: #8x1 $\frac{1}{4}$ " flathead wood screws, #8x1 $\frac{1}{4}$ " roundhead screw (1), $\frac{3}{8}$ x3" carriage bolts with flat washers and wing nuts (2), primer, paint.

A CONVENIENT STATION FOR CLEANING UP CONTOURS

To use the table, install the applicable hardboard insert, and position the table so that the sanding drum is centered with the hole in the insert. Clamp the table in place, and adjust the drill-press table, if necessary, to square the sanding surface with the drill-press spindle. Attach the hose from your vacuum, and you're set to go. 🍌



GREAT TABLE & STAND TIPS

DISAPPEARING TABLE WORKS LIKE MAGIC

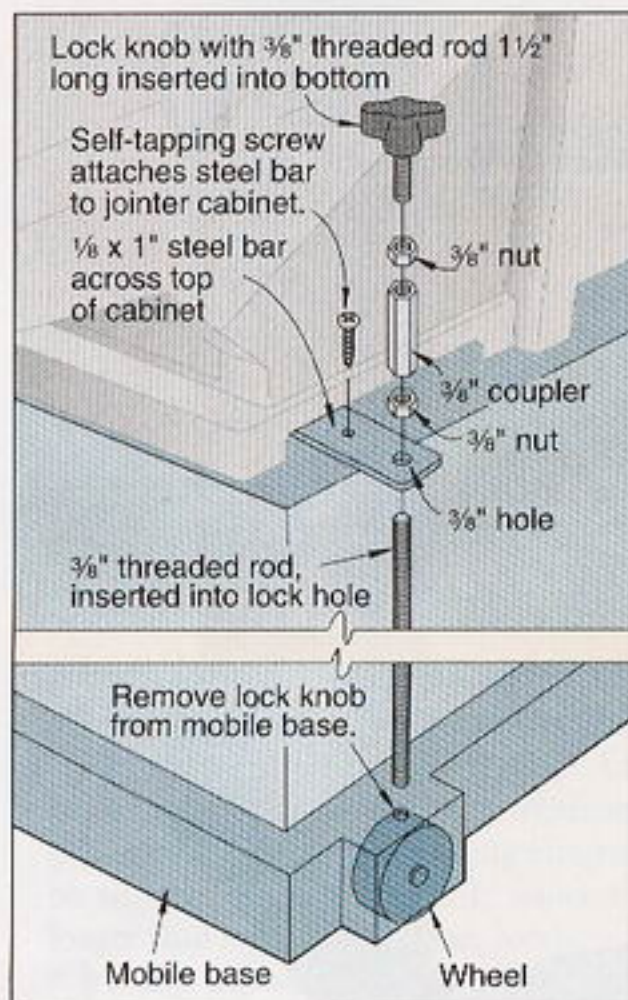
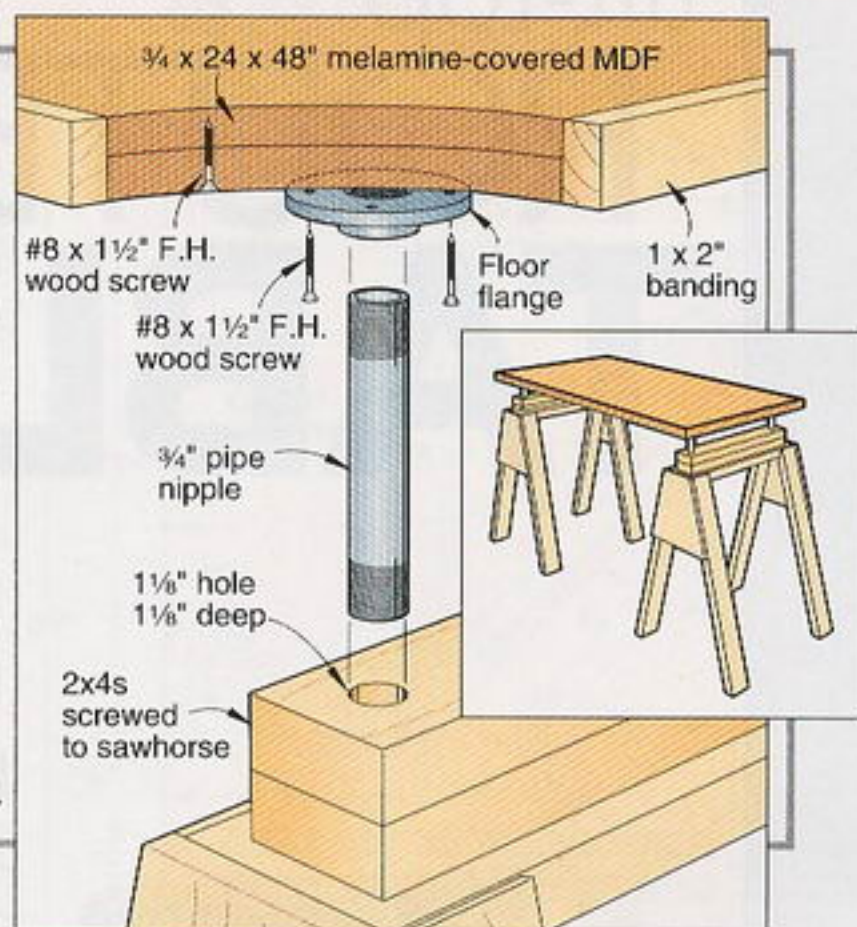
We've all seen magicians who can make even elephants vanish into thin air. But what I wanted was a smaller trick: a sturdy worktable that would disappear when I'm through using it. Although my design isn't magic, it sure does the job.

I made my tabletop from two thicknesses of melamine-covered medium-density fiberboard (MDF), screwed face to face. Glue drips won't stick to the melamine, and that's a real plus when I use my table as an assembly bench. Edge-banding dresses up the tabletop, and also makes it a bit more rigid.

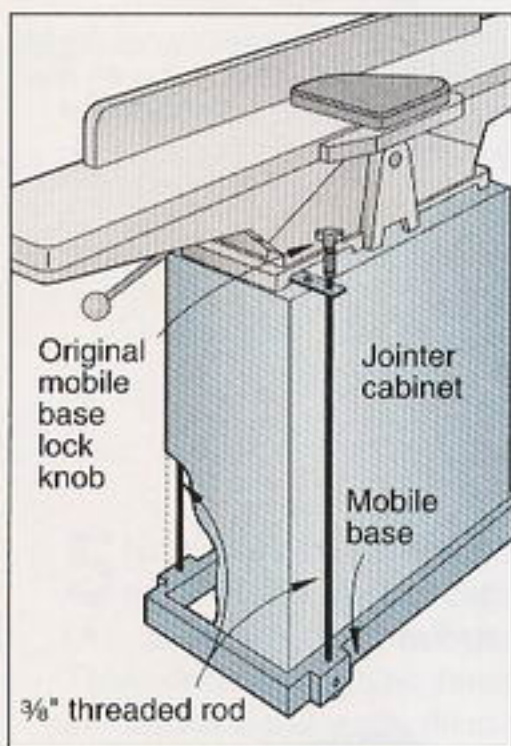
The drawing at *right* shows how I used inexpensive steel plumbing parts for the support system. By inserting different lengths of pipe nipple, I can easily adjust the height of the table. When I need to make the table disappear, I simply lift the top off the sawhorses and unscrew the nipples.

If you can afford the space, you could make a jumbo version of the design by using a solid-core door. I sometimes see a slightly damaged door at a bargain price in the reject bin at the home center.

—Bruce Stahl, Lincoln, Neb.



NO HEADSTANDS TO LOCK THAT BASE IN PLACE



To eliminate bending over to lock the casters on my jointer's mobile base, I extended the factory locking knobs as shown at *left*. Here's how.

In a steel bar the same width as the mobile base, I drilled holes slightly larger than, but spaced the same as, the knob holes on the mobile base. I then attached the bar to the jointer cabinet directly over the knob holes, using self-tapping screws.

I cut two lengths of 3/8 inch threaded rod that extend from the wheel to about an inch beyond the steel bar. After turning one end of the rod into the base's lock-knob hole, I put a jam nut and coupler onto the free end of the rod and a jam nut on the shaft of the factory locking knob. Finally, I threaded the factory knob into the coupler, as shown, and tightened the jam nuts against the coupler.

—Jan Svec, WOOD® magazine projects editor

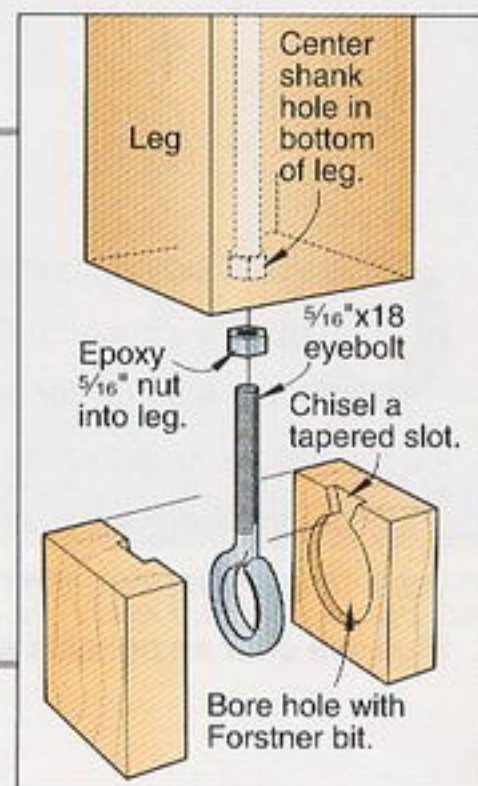
TO KEEP LEGS LEVEL, TRY FLOATING FEET

In addition to looking better than most store-bought leveling feet, my shop-made version has a "floating" feature that makes it work better, too. Many commercial feet are rigid, so only an edge touches an uneven floor. But I engineered some play into my design that keeps the entire bottom of the foot firmly planted.

Referring to the drawing at *right*, you'll see that making the foot blocks is a simple

matter. To get the desired looseness into the finished block, drill each half slightly more than half the thickness of the eyebolt, and chisel a tapered slot for the shank. These feet work great for tool stands and tables in the shop, but you also could use the same idea for furniture throughout the house.

—Chuck Steeger, Bossier City, La.



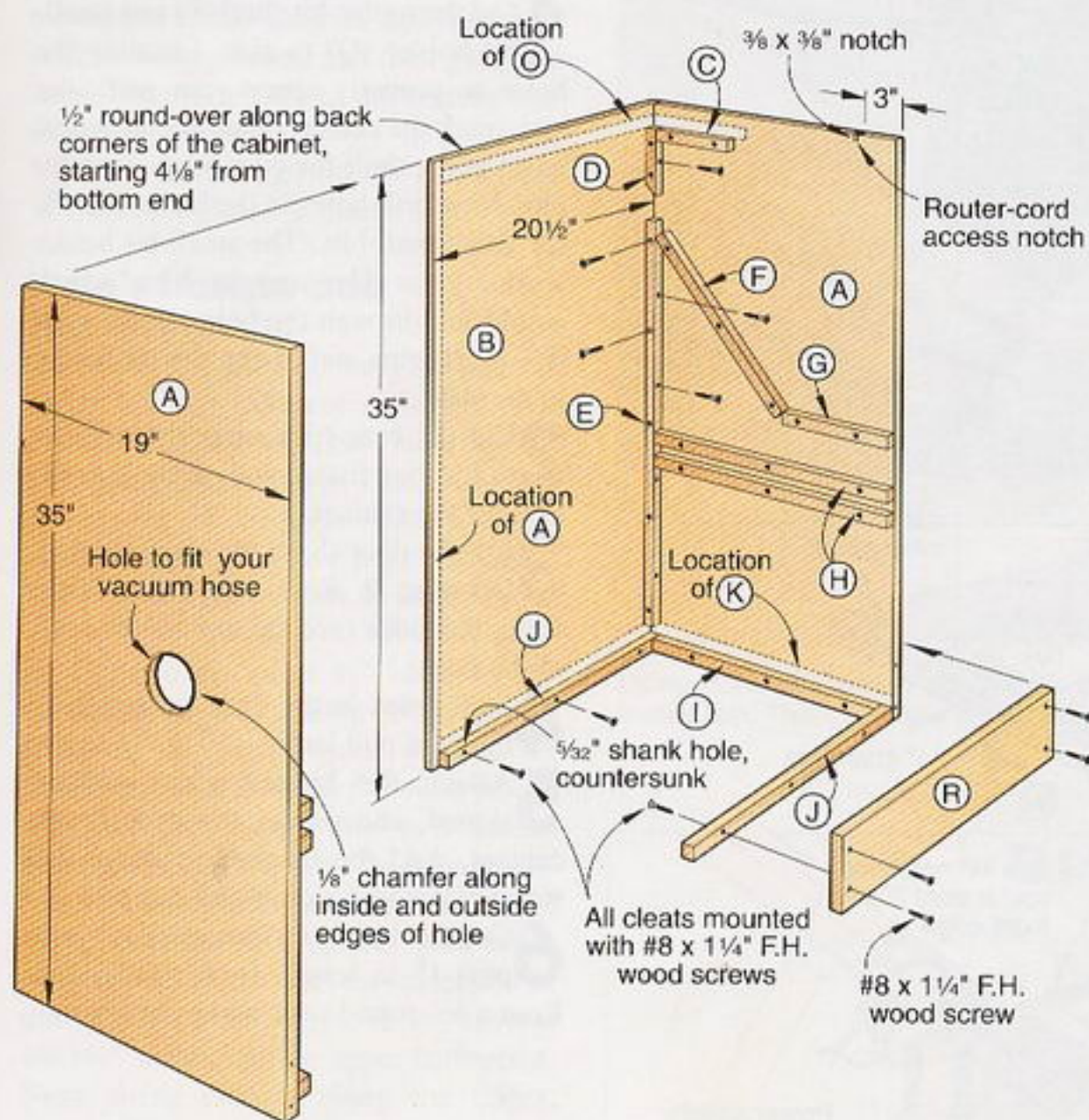
tilt-top ROUTER TABLE

AN OPEN-AND-CLOSE
SHOP TOOL DESIGNED
FOR CONVENIENCE

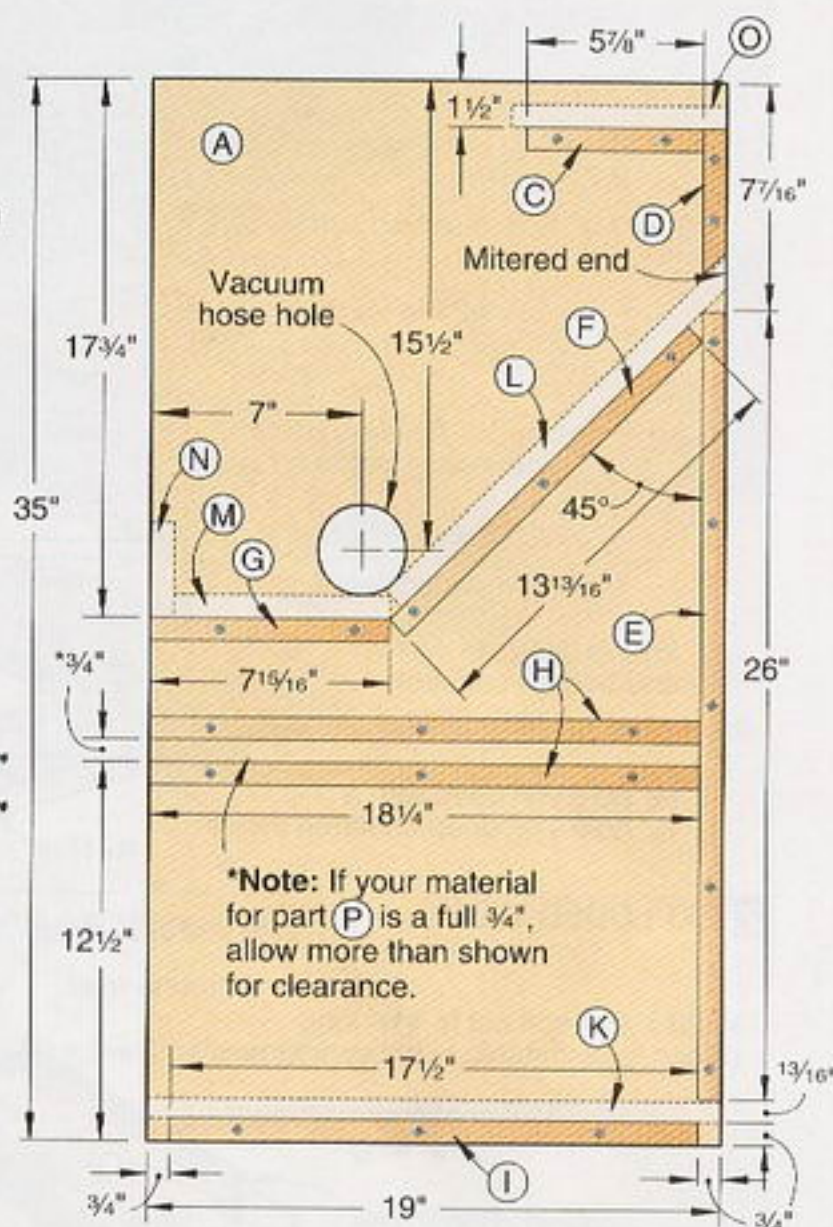


Count the features of this fully loaded router table, and you'll quickly conclude that you've got to have one. For starters, the table flips up for easy changing of bits and checking bit height. It's topped by an accurate, easy-to-build fence. A sealed compartment underneath, fitted with a vacuum port, takes care of sawdust. Below that, you'll find a slide-out shelf for storing all kinds of bits and accessories. Plus, we offer an optional table design for use with an aftermarket fence.

1 CABINET



1a SIDE PANEL (Left-hand panel shown)



First, build the cabinet

1 Cut the cabinet sides (A) and back (B) to sizes listed in the Materials List from $\frac{3}{4}$ " medium-density fiberboard (MDF). As noted on the Cutting Diagram on page 53, MDF measures 1" wider and longer than regular 4x8' sheet goods.

2 Using Drawings 1 and 1a for reference, mark the centerpoint, and cut the vacuum hose hole in the left-hand side panel (A) to fit your vacuum hose. (We drilled a blade start hole, and cut the hole to shape with a jigsaw.) To prevent chipping, rout a $\frac{1}{8}$ " chamfer along the inside and outside edges of the hose hole.

3 Mark and cut a notch in the right-hand side panel for the cord from the router to exit the cabinet.

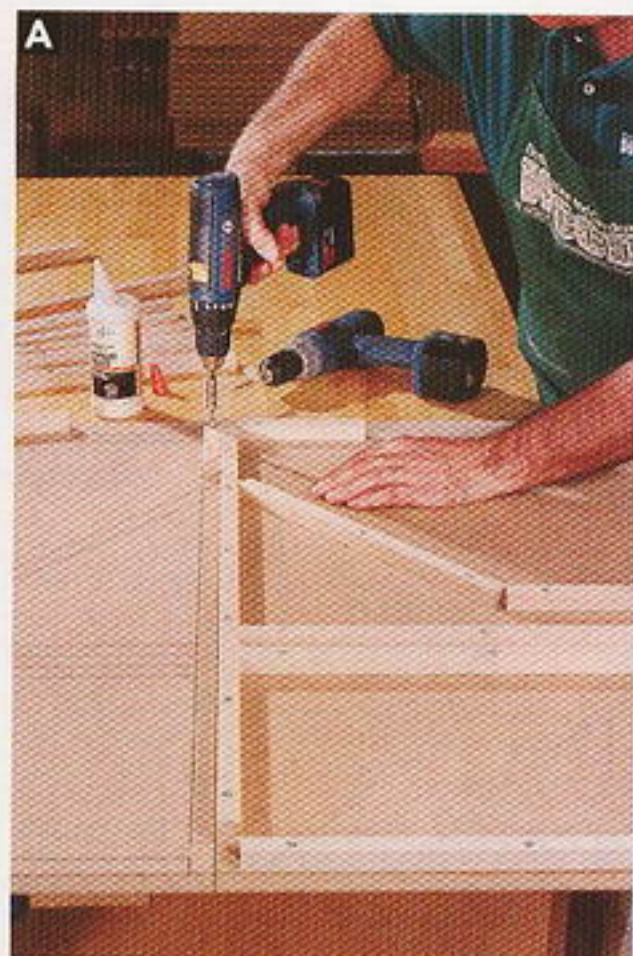
4 From $\frac{3}{4}$ " solid stock (we recommend maple or birch), cut the $\frac{3}{8}$ x $\frac{3}{8}$ " cleats (C-J) to the lengths listed in the Materials List.

5 Next, mark the locations of the cleats on the inside face of each side panel (A), as shown in Drawings 1 and 1a. Then, drill countersunk mounting holes in the cleats, and screw them in place, as shown in Photo A.

6 Cut the bottom (K), dust-chute pieces (L, M, N), and support (O) to size from MDF. For a tight fit, miter-cut one edge of part L and one end of each D.

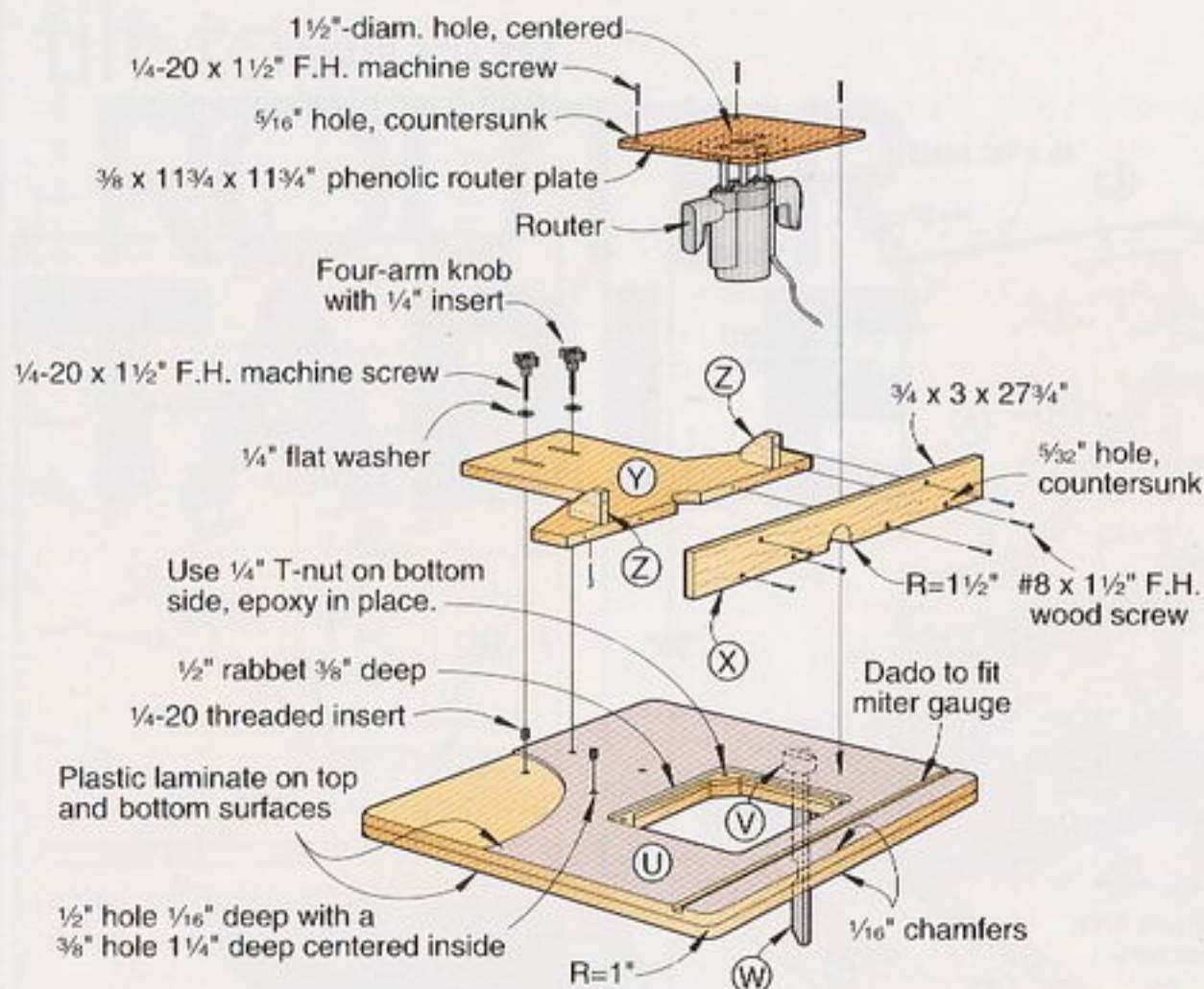
7 Glue and clamp the basic cabinet assembly (A, B, K, O) together in the configuration shown on Drawing 2 on the following page. Check for square. Then, drill the countersunk holes, and screw the dust-chute pieces (L, M, N) in place.

8 Working on the outside of the cabinet, sand the joints between the two side panels (A) and back panel (B) smooth. Then, rout a $\frac{1}{2}$ " round-over along the back corners of the cabinet, starting $4\frac{1}{8}$ " from the bottom ends.

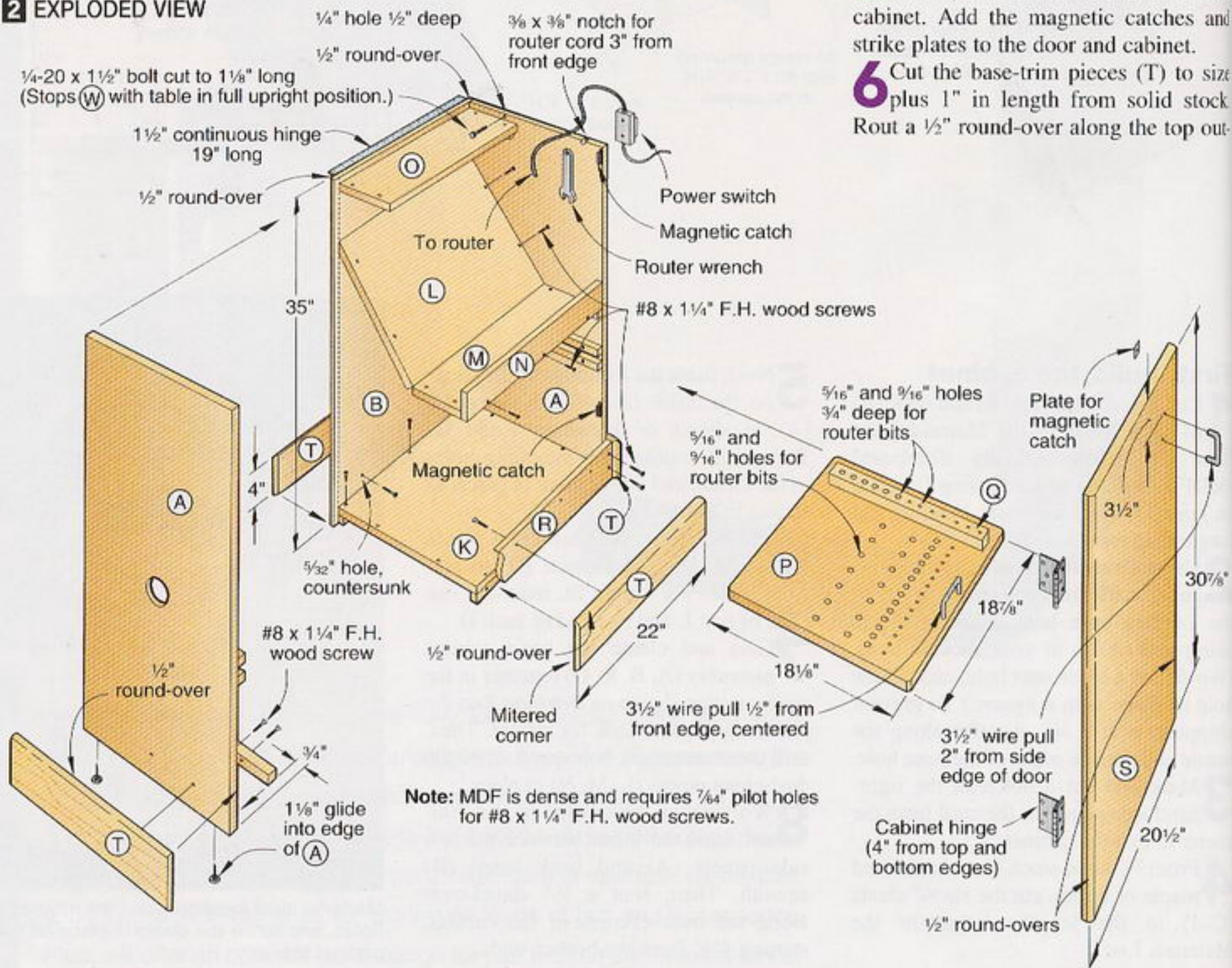


Mark the cleat locations, drill the mounting holes, and screw the cleats in place on the cabinet sides.

tilt-top router table



2 EXPLODED VIEW



Add the shelf, door, and base trim

1 Cut the router-bit shelf (P) and small bit holder (Q) to size. Locating the holes to properly space your particular bits, mark the centerpoints, and then drill holes in the shelf for your large-diameter bits. Now drill holes in the bit holder (Q) for your small bits. The small-bit holder works great for straight bits, which would fall through the holes in the shelf (P). Next, glue and clamp the bit holder to the shelf.

2 Cut the base-trim support piece (R) to the size listed, and screw it to the front of the cabinet.

3 Cut the door (S) to the size shown in **Drawing 2**. Rout a $\frac{1}{2}$ " round-over along the sides (not the top and bottom) of the door.

4 Drill holes in the door for attaching the wire pull later.

5 Attach the hinges where dimensioned, and mount the door to the cabinet. Add the magnetic catches and strike plates to the door and cabinet.

6 Cut the base-trim pieces (T) to size plus 1" in length from solid stock. Rout a 1/2" round-over along the top out-

side edge of each trim piece. Miter-cut the trim pieces to length. Working from the inside of the cabinet, drill counter-sunk mounting holes, and then glue and screw the trim pieces to the bottom outside of the cabinet.

7 Turn the cabinet upside down, and nail four glides in place.

Here's how to add the tilting top

Note: On this project, we give you the option of two different tabletops. The instructions below detail building the 28" square standard top. You'll also find dimensions for the larger 28x36" table, shown in the photo on page 53, that's designed to work with an Incra Jig Ultra.

1 Cut two pieces of $\frac{3}{4}$ " MDF to 29" square for the tabletop (U), shown in **Drawing 3**, right, and detailed in **Drawings 5** and **6** on the following pages.

2 Glue and clamp the two pieces together face-to-face. To achieve uniform clamping pressure in the center of the lamination, drill several pilot holes from what will become the underside of the tabletop, and then drive several #8x1 $\frac{1}{4}$ " screws into the upper lamination. Next, using clamps along the edges, secure the two pieces tightly together until the glue dries. Now remove all the screws so you won't hit them in the following steps.

3 Cut the laminated router top (U) to finished size (28" square), radiusing the corners at 1".

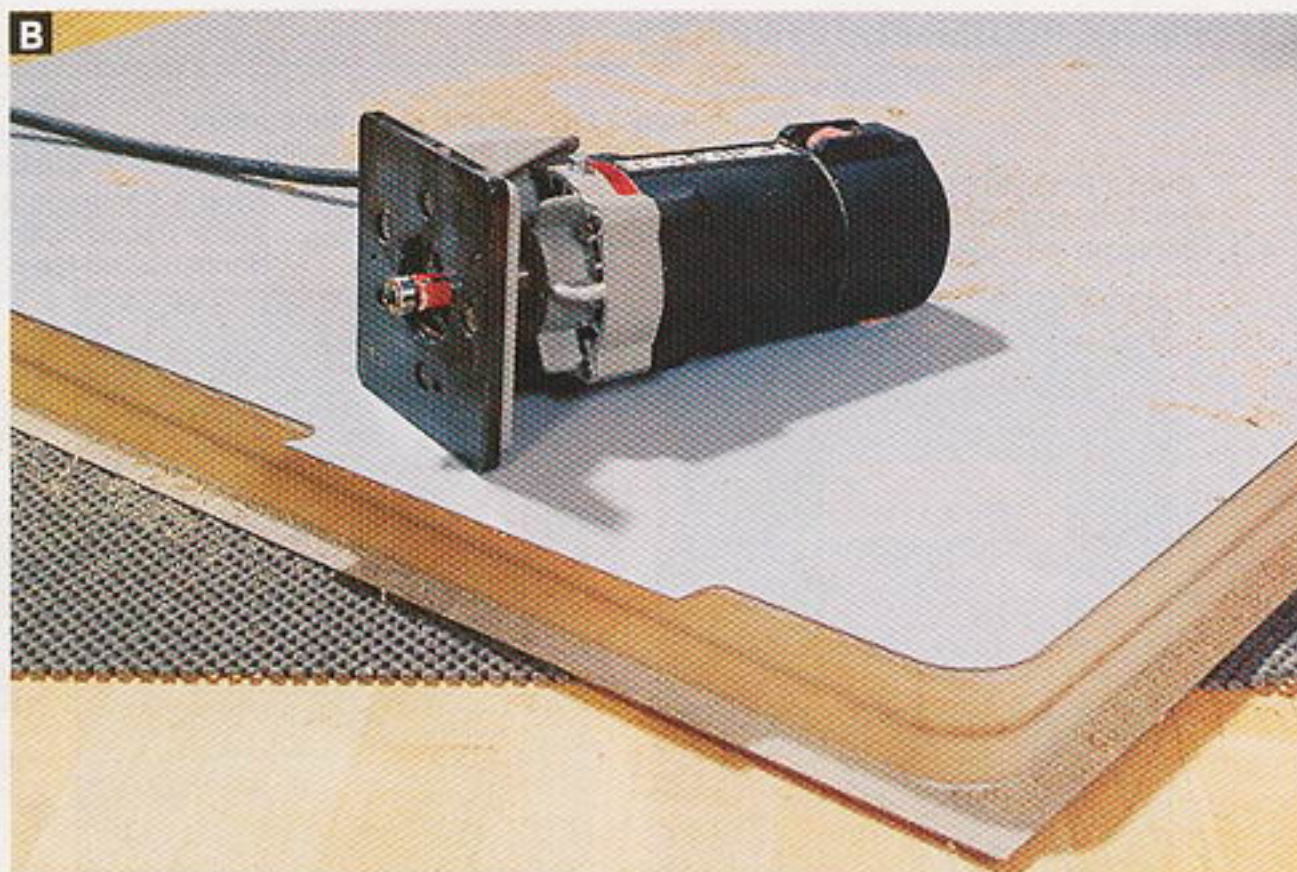
4 Cut two pieces of plastic laminate to 30" square. Apply contact cement to all mating surfaces, and adhere the laminate to both surfaces of the tabletop (U). Use a rubber roller to ensure a good bond between the laminate and MDF.

5 Using a trimming bit, rout the edges of the laminate flush with the edges of the tabletop as shown in **Photo B**, top right.

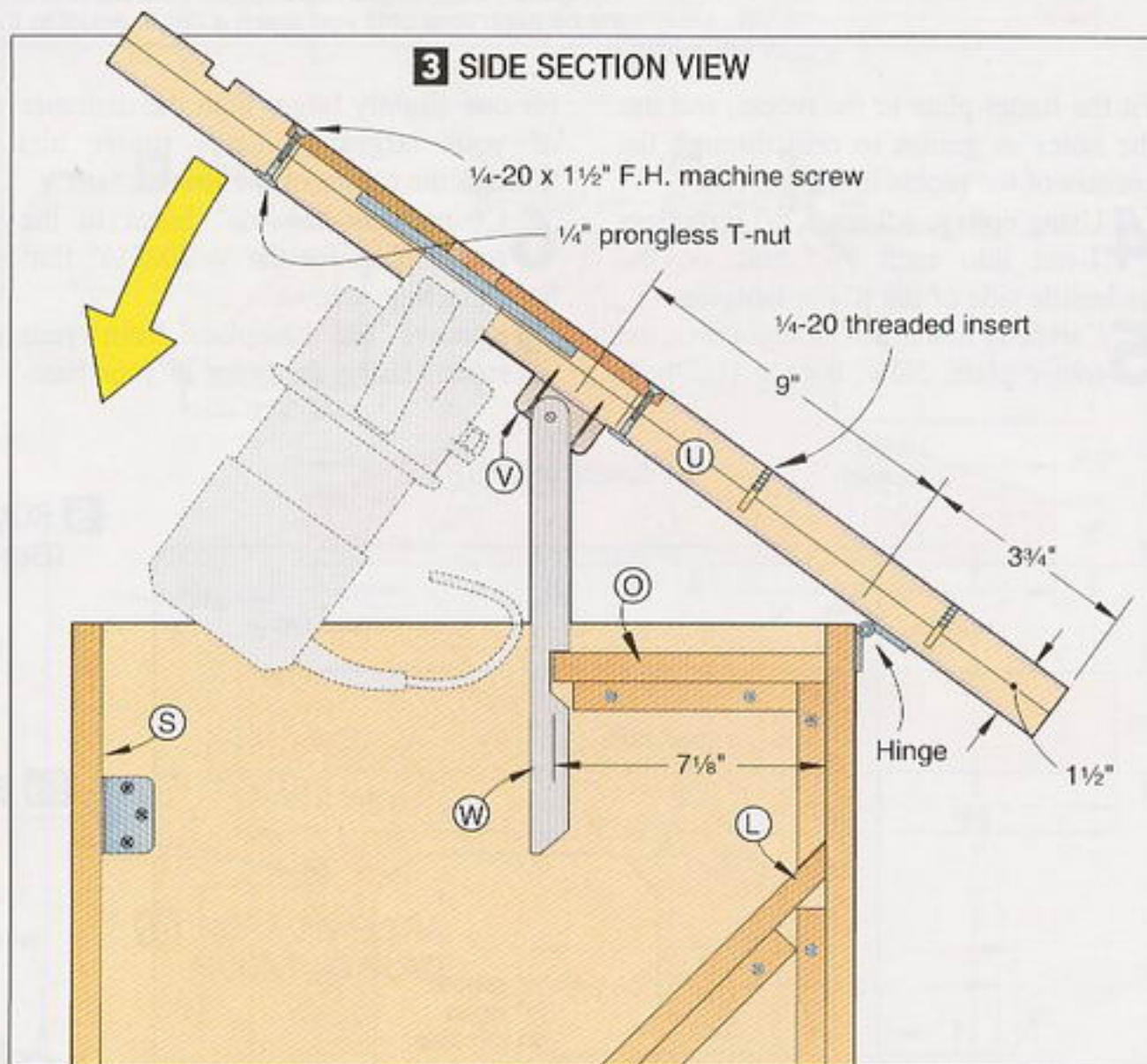
6 Cut or rout a dado in the top (U) where dimensioned to form a slot that fits your miter-gauge guide bar.

Cut the table insert into the top

Note: We secured the router plate to the tabletop with screws and T-nuts so that the plate (with the router attached) can't fall out when tipping the tabletop back. See the Buying Guide for our source for the router plate and hardware.



Using contact cement, adhere the two oversized pieces of plastic laminate to the laminated top. Then, rout the edges of the laminate flush.



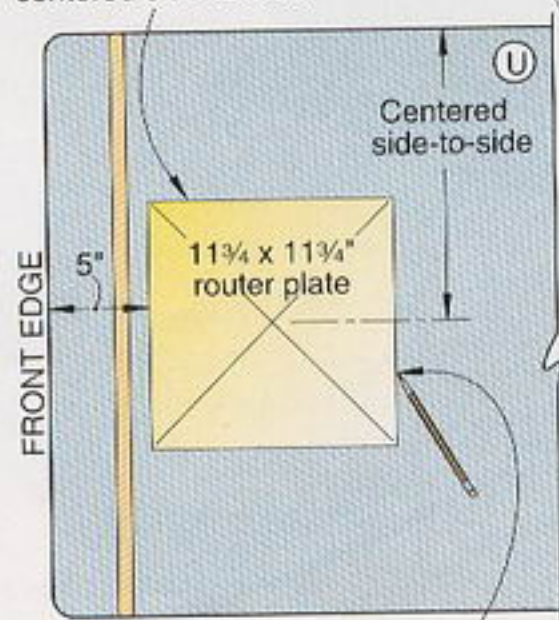
1 The router plate we used (see the Buying Guide) is listed as a 12"-square plate, but actually measured a bit less. Using a tablesaw, cut adjoining edges to square up the plate, then trim it to 11 $\frac{3}{4}$ " square.

2 Follow the seven-steps, described in **Drawing 4** on the following page, to form the router-plate recess in the top (U).

3 Mark the centerpoints, and then drill $\frac{5}{16}$ " holes in the corners of the router plate, where dimensioned in **Drawing 7**.

4 FORM THE ROUTER-PLATE RECESS

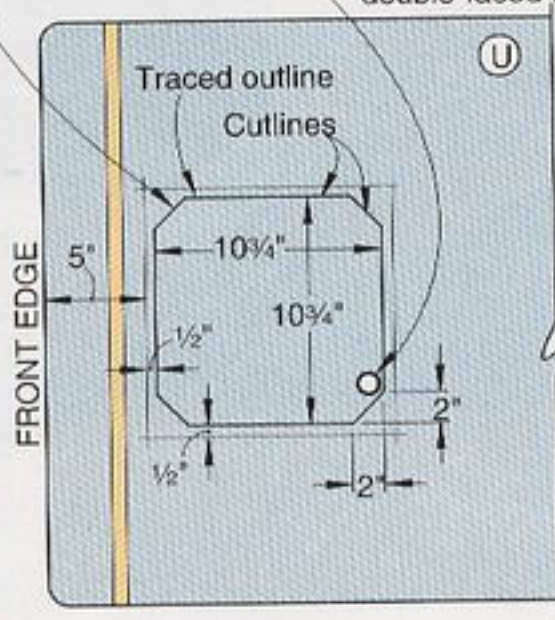
Step 1 Position the plate 5" from the front edge on top of (U) and centered side-to-side.



Step 2 Trace outline of the plate onto the top of (U).

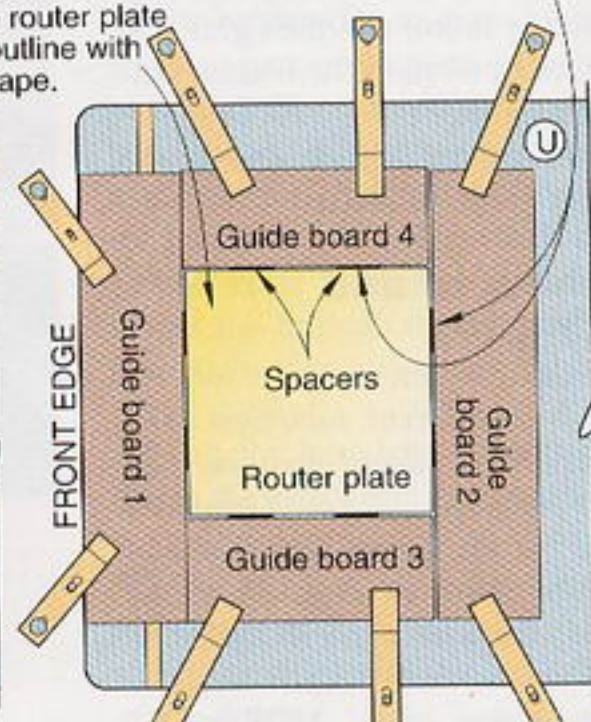
Step 3 Lay out and mark the opening cutlines inside the traced outline.

Step 4 Drill a blade start hole, and cut the opening.



Step 5 Secure router plate inside traced outline with double-faced tape.

Step 6 Clamp the guide boards around the plate, spacing each board away from the plate 1/32" with business-card shims.



Step 7 Remove the router plate and shims. Use a portable router and straight bit with a top-mounted pilot bearing. With the router base resting on the surfaces of the guide boards, adjust the cutting depth to rout 1/8" deep into the tabletop. Then, guiding the bit's pilot bearing along the inside edges of the guide boards, rout the recess. Make additional passes, lowering the bit each time until you reach a depth equal to the thickness of the router plate.

Fit the router plate in the recess, and use the holes as guides to drill through the corners of the recess in the top (U).

4 Using epoxy, adhere a 1/4" prongless T-nut into each 5/16" hole on the underside side of the router tabletop.

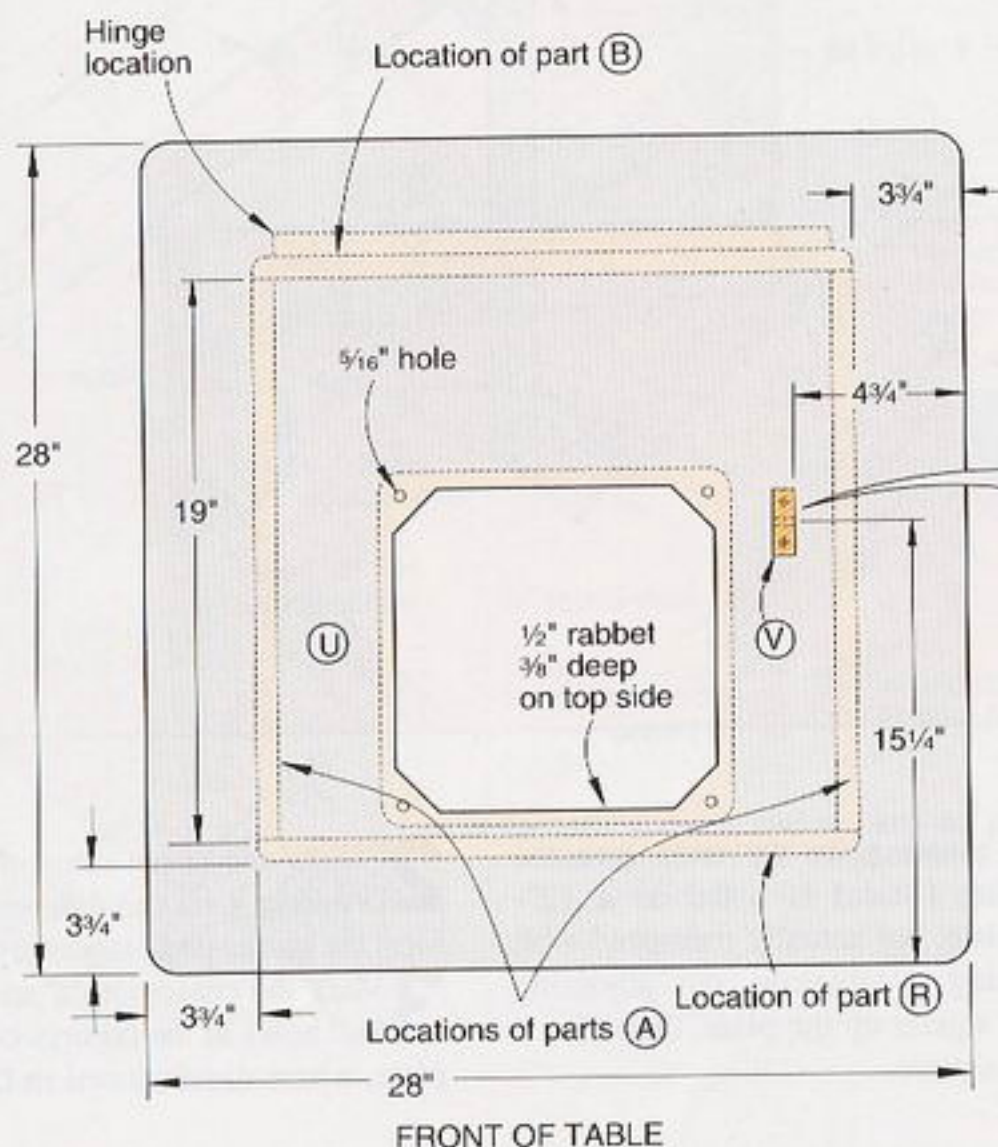
5 Carefully mark the centerpoint on the router plate. Now, bore a 1 1/2" hole

(or one slightly larger than the diameter of your largest-diameter router bit) through the center of the router plate.

6 Countersink the 5/16" holes in the router plate for the 1/4-20x1 1/2" flat-head machine screws.

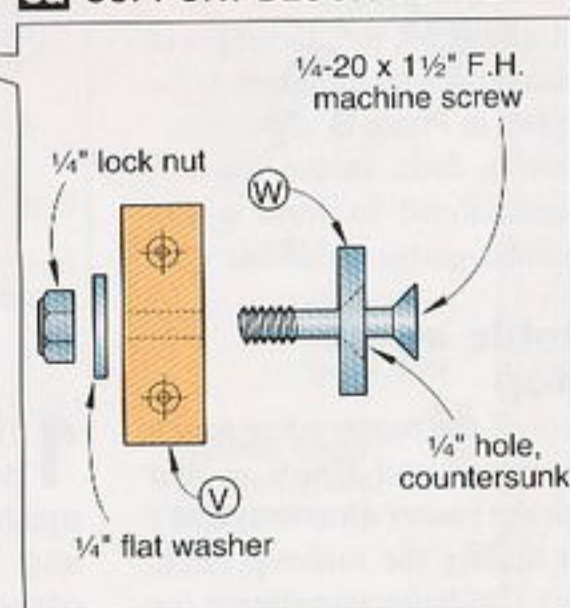
7 Remove the baseplate from your router. Using the holes in your base-

plate as guides, mark and drill corresponding holes in the router plate. Countersink or counterbore the holes, as required for your router, then mount your router to the router plate. Place the router and router plate into the tabletop recess, and secure the plate with machine screws.



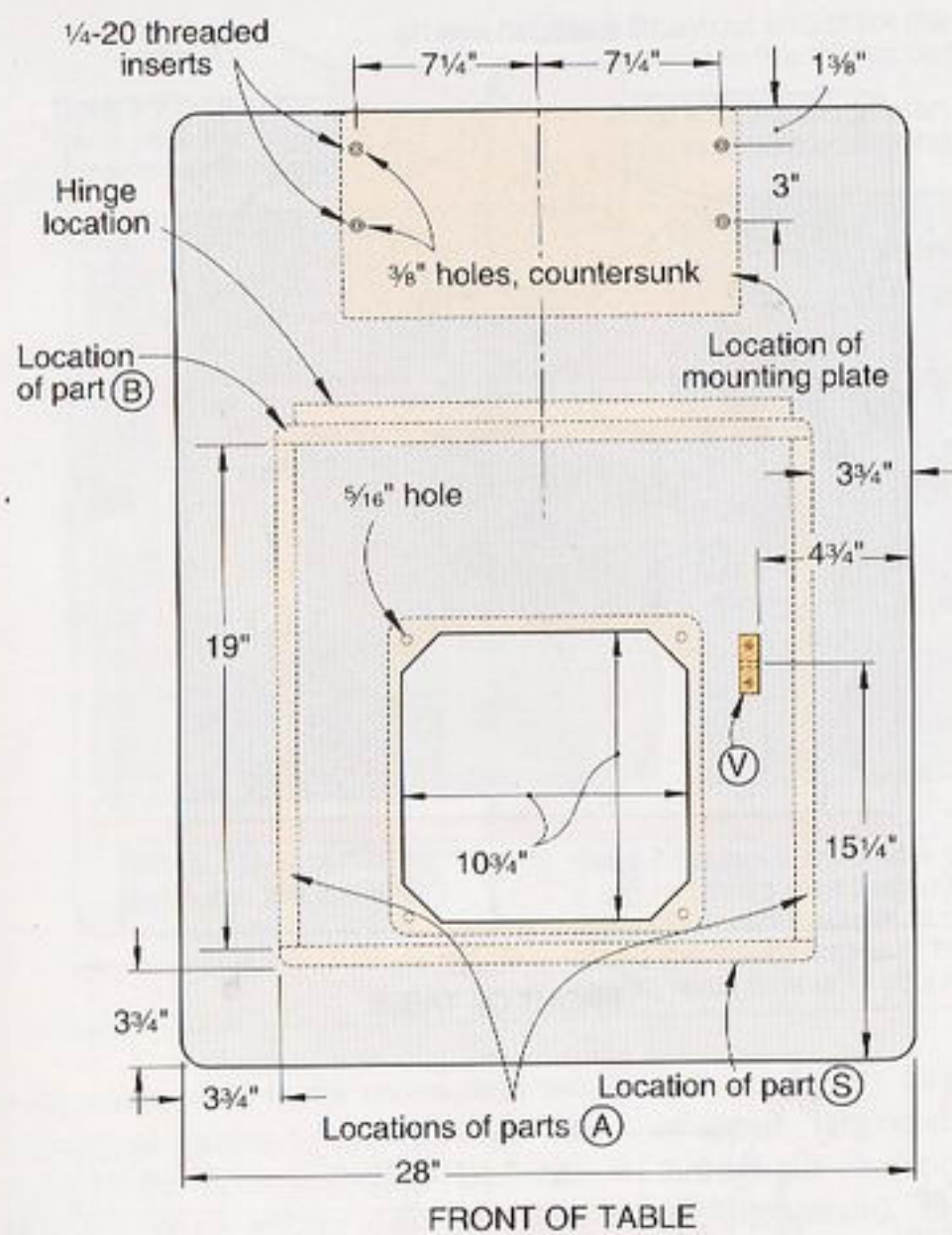
5 ROUTER TABLETOP (Bottom view)

5a SUPPORT BLOCK DETAIL

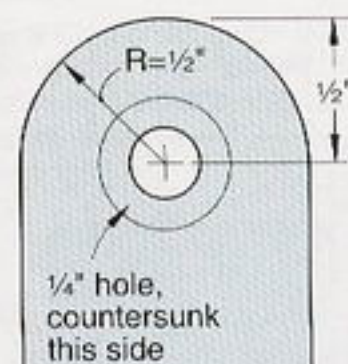
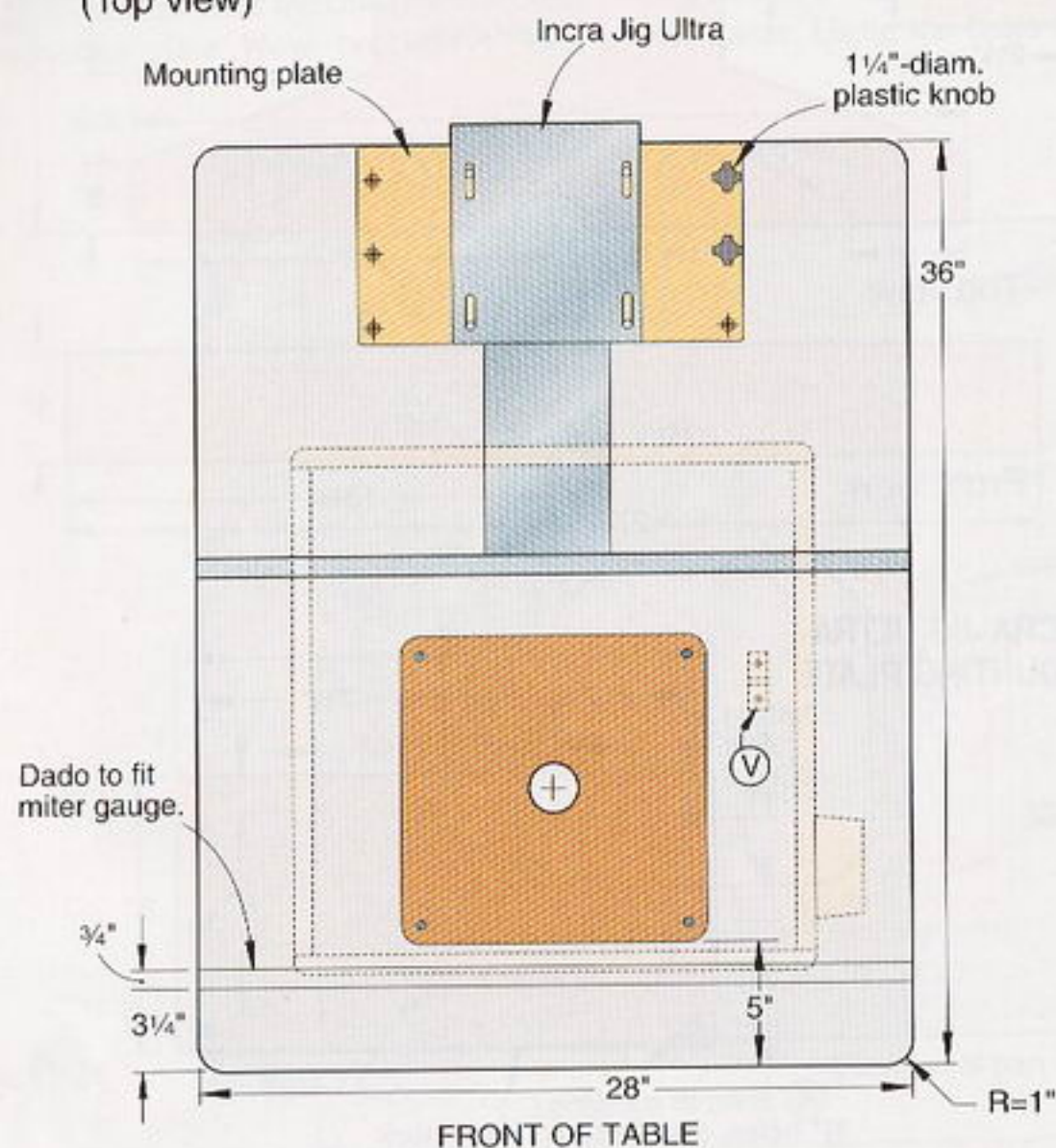


tilt-top router table

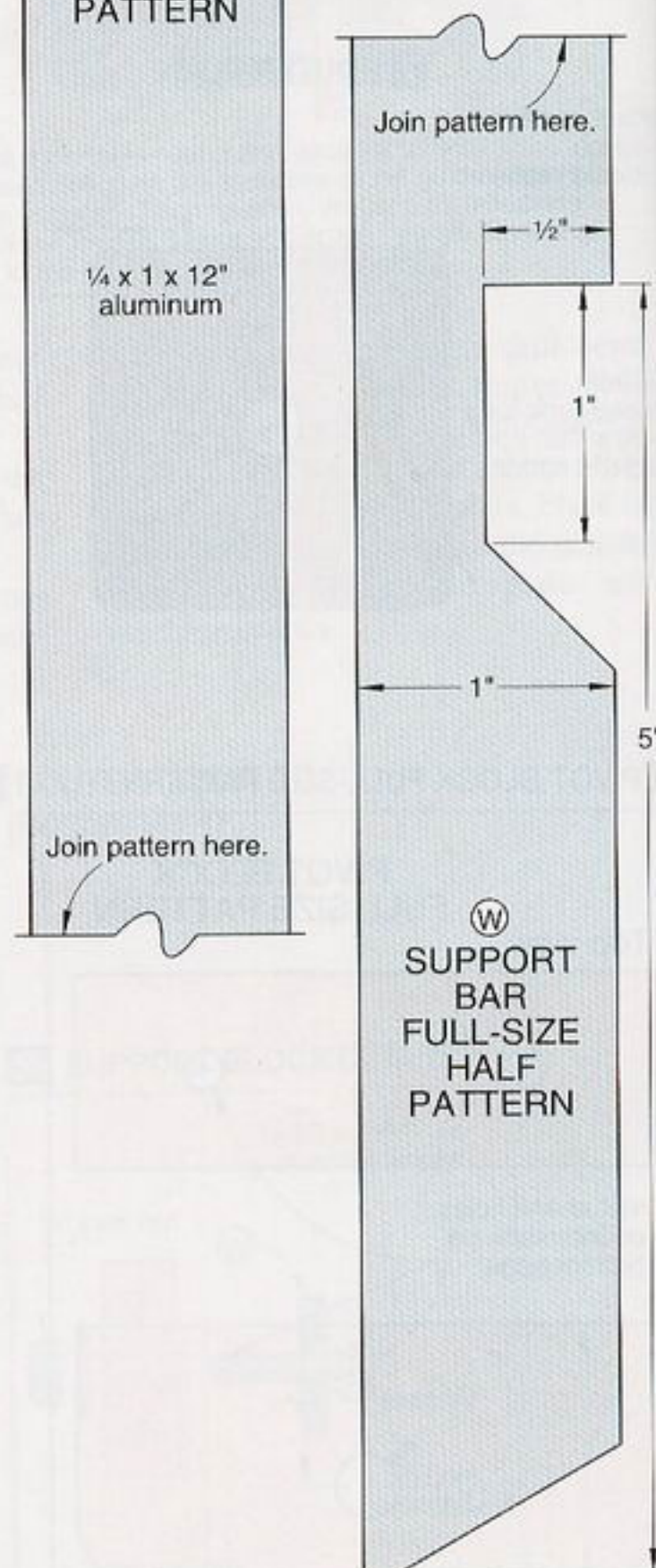
11 OPTIONAL LARGE ROUTER TABLETOP (Bottom view)



12 OPTIONAL LARGE ROUTER TABLETOP (Top view)



13 SUPPORT BAR FULL-SIZE PATTERN



Adding a fence system

Note: In addition to the accurate, easy-to-build fence shown, we designed this router tabletop to be compatible with a number of fence systems, including the Incra Jig Ultra, bottom. Before installing another brand fence, check the manufacturer's mounting requirements.

1 Cut the fence (X), base (Y), and braces (Z) to the sizes listed in the Materials List and shown in **Drawing 8** on page 51. Cut the mounting slots in the base (Y), where shown.

2 Lay out and cut the 1"-radius bit-clearance openings in the fence and base. Now glue and screw these parts together, and add the braces to form the completed fence assembly.

3 Mark the centerpoints for the threaded inserts on the router top (U) where dimensioned in **Drawing 6a** on page 51.

4 Drill a 1/2" hole at each marked centerpoint just through the laminate (1/16" deep). (We used a Forstner bit to make this recess.) Switch bits, and drill a 3/8" hole 1 1/4" deep centered in each 1/2" hole. (If you are using the Incra Jig, follow the dimensions on **Drawings 10, 11, and 12.**)

5 Double-nut a bolt, and use it to drive a threaded insert into each hole.

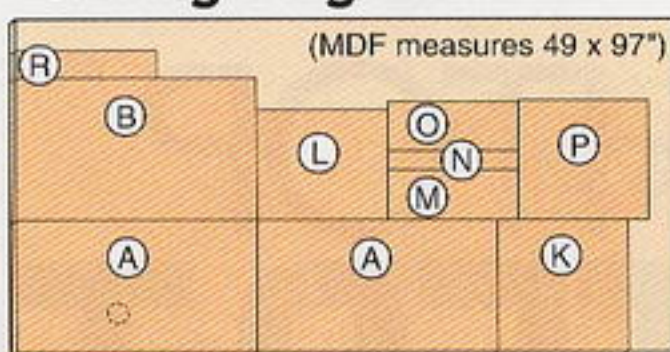
Now attach the tabletop support

1 From 3/4" maple, drill the holes and cut the pivot block (V) to shape, as dimensioned in **Drawing 9** on page 51.

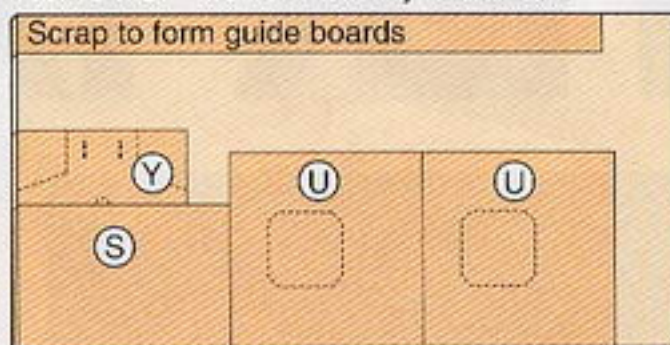
2 Transfer the support bar (W) pattern from **Drawing 13** to 1/4x1" aluminum bar stock. Cut the piece to shape, and drill a hole through one end where marked.

3 Drill pilot holes, and glue and screw the pivot block (V) to the bottom of the router top, where shown on **Drawing 5**. Then, attach the support bar to the pivot block.

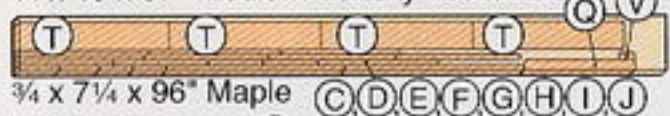
Cutting Diagram



3/4 x 49 x 97" Medium-density fiberboard



3/4 x 49 x 97" Medium-density fiberboard



3/4 x 3 1/2 x 48" Maple

Finishing and final assembly

1 Remove the router plate and router from the router tabletop. Separate the top from the base cabinet. Remove the hardware, and sand the cabinet and tabletop edges smooth. Fill any imperfections and finish-sand.

2 Prime the base cabinet. (We did this in several coats, using a sanding block with 220-grit sandpaper between coats to smooth the primer.) Paint the base cabinet as desired. Apply a clear finish to edges of the router tabletop.

3 Hinge the router top and door to the cabinet. Reattach the magnetic catches and pulls. Then, reattach the router with attached plate to the router tabletop.

4 Attach the fence system of your choice. Attach a power switch to the cabinet, and plug the router cord into the opening, and you're ready for business. 🌟

Materials List

Cabinet	FINISHED SIZE			Matl.	Qty.
	T	W	L		
A side	¾"	19"	35"	MF	2
B back	¾"	20½"	35"	MF	1
C* cleats	¾"	¾"	5⅞"	M	2
D* cleats	¾"	¾"	4⅞"	M	2
E* cleats	¾"	¾"	26"	M	2
F* cleats	¾"	¾"	13⅓⅛"	M	2
G* cleats	¾"	¾"	7⅓⅛"	M	2
H* cleats	¾"	¾"	18¼"	M	4
I* cleats	¾"	¾"	17½"	M	2
J* cleats	¾"	¾"	19"	M	2
K bottom	¾"	19"	19"	MF	1
L sloped dust panel	¾"	15⅞"	19"	MF	1
M bottom dust panel	¾"	7⅞"	19"	MF	1
N dust bin front	¾"	3"	19"	MF	1
O support	¾"	7⅛"	19"	MF	1
P shelf	¾"	18⅛"	18⅞"	MF	1
Q bit holder	¾"	1½"	16¾"	M	1
R support	¾"	4"	20½"	MF	1
S door	¾"	20½"	30⅞"	MF	1
T* base trim	¾"	4"	22"	M	4
Router Table					
U* top	1½"	28"	28"	LMF	1
V pivot block	¾"	1"	2¼"	M	1
W support bar	¼"	1"	12"	A	1
Fence					
X base	¾"	10½"	24"	MF	1
Y fence	¾"	3"	27¾"	M	1
Z braces	¾"	2¼"	2¼"	M	2

*Parts initially cut oversize. See the instructions.

Materials key: MF—medium-density fiberboard, M—maple or birch, LMF—laminated medium-density fiberboard, A—aluminum.

Supplies: 3/8x12x12" phenolic router plate, #8x1 1/4" flathead wood screws, 1 1/2" continuous hinge 19" long with mounting screws, 1/4-20x1 1/2" flathead machine screws (6), 1/4" flat washers (2), 1/4" prongless T-nuts (4), power switch, one pair of cabinet hinges (we used Amerock #BP-5988-M26), 1 1/8" glides (4), 3 1/2" wire pulls (2), pair of magnetic catches and strike plates, plastic laminate, contact cement, 1/4-20 threaded inserts (4), four-arm knobs (2), 1/4-20x1 1/2" bolt trimmed to 1 1/8" long, 1/4x1" aluminum bar stock for support bar (part W), primer, paint, and clear finish.

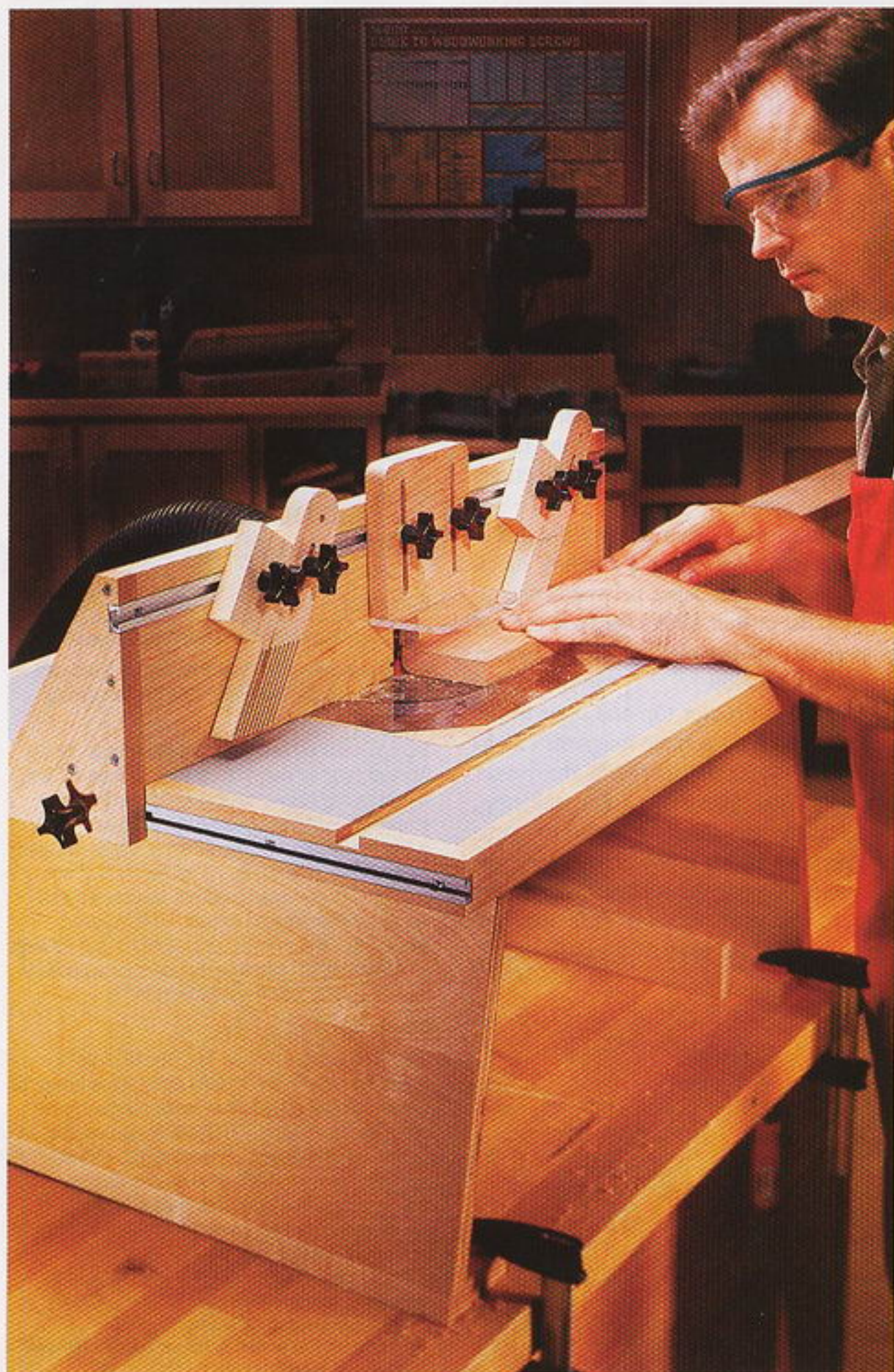
Buying Guide

Tilt-top router-table kit. The kit contains everything noted in the Supplies listing above except the plastic laminate, power switch, contact cement, primer, paint, and finish. Kit no. TTRT, \$54.95 plus shipping. Schlabaugh and Sons Woodworking, 720 14th St. Kalona, IA, 800/346-9663, or www.schsons.com.

Incra Jig. Several models are available. For more information, contact Incra at 972/242-9975 or www.incra.com.

Written by **Marlen Kemmet**
Project design: **Jim Downing**
Illustrations: **Roxanne LeMoine; Lorna Johnson**
Photographs: **Hetherington Photography**

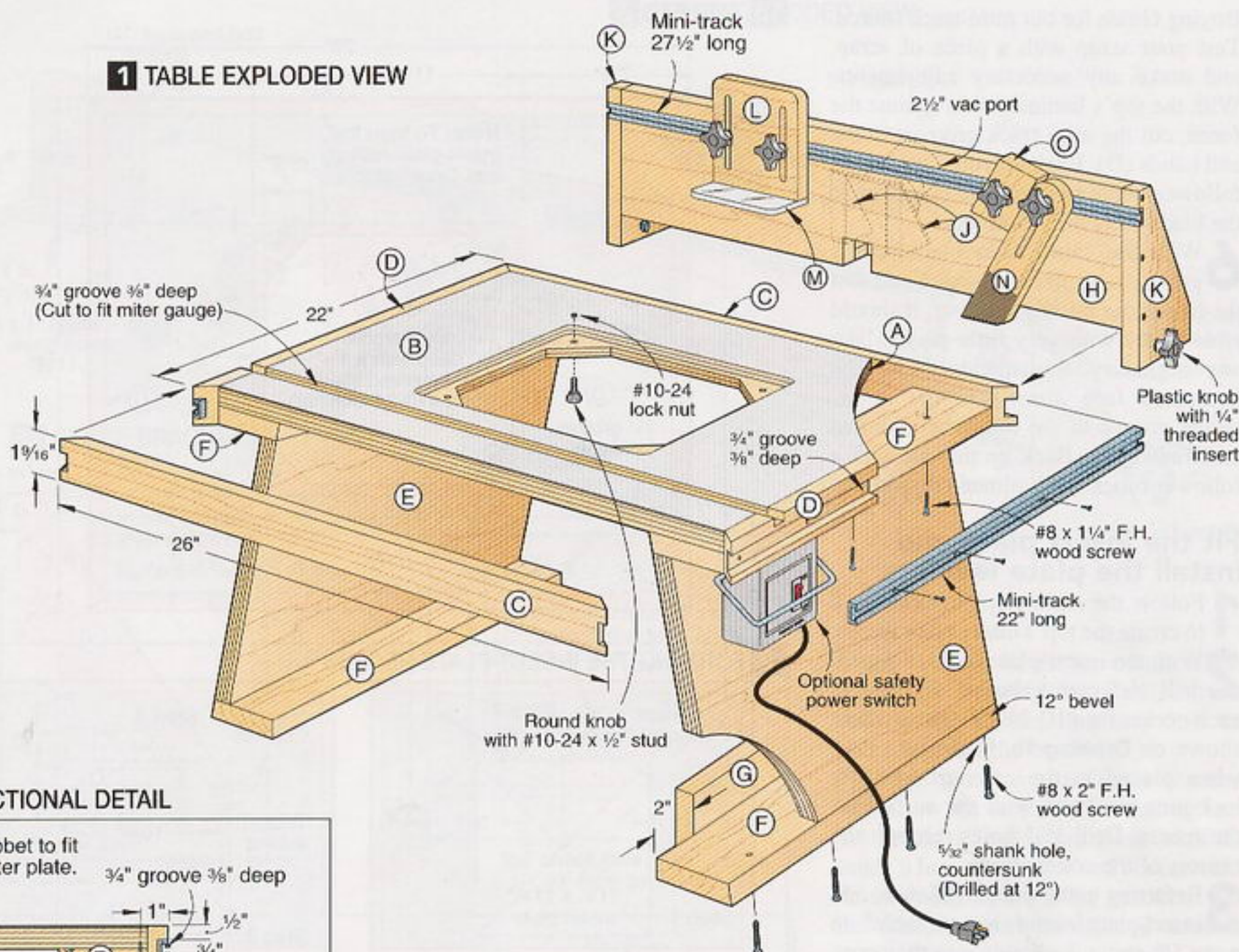
full-service BENCHTOP ROUTER TABLE



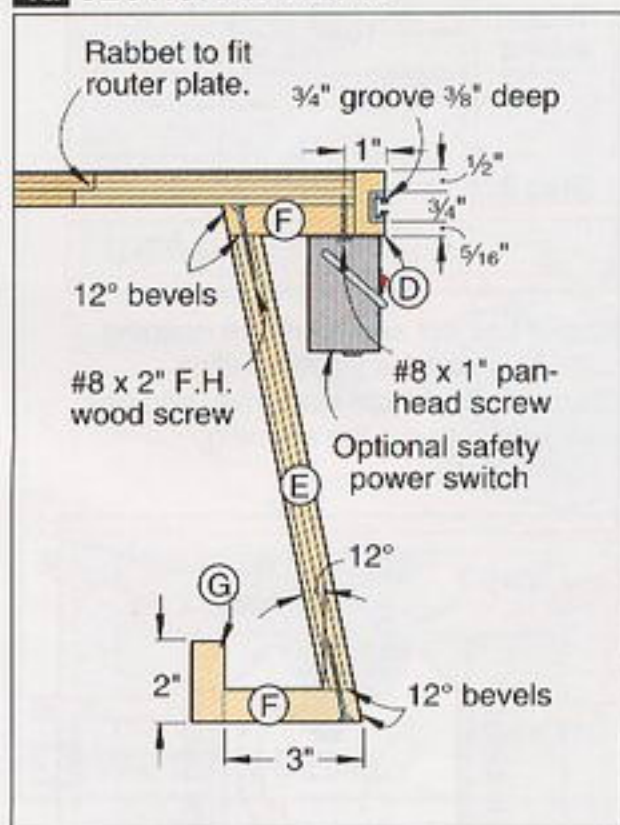
HERE'S WHY THIS PROJECT BELONGS IN YOUR SHOP.

- You can put it together in a weekend for less than \$100, plus the cost of your own wood.
- Its fence adjusts in a flash and locks into T-slotted mini-tracks with the quick twist of two knobs.
- A mini-track built into the fence makes for lightening-fast and solid positioning of homemade feather boards and a bit guard.
- Insert-plate levelers ensure a perfectly aligned tabletop.
- The handy, built-in dust-collection port keeps debris at a minimum.
- It's easily portable, weighing only 36 pounds (without router), and you can grip the tabletop edges for comfortable carrying.

1 TABLE EXPLODED VIEW



1a SECTIONAL DETAIL



SHOPTIP

Flush trimming with your tablesaw

When applying plastic laminate to a part like the router-table top's panel, start with oversize pieces of plywood and laminate. Apply contact cement to the laminate and the plywood. Position the laminate just shy of one edge and end of the plywood, as shown in the photo. Run these edges, free of overhanging laminate, against your tablesaw fence first when trimming the top to its finished size. Cutting both plywood and laminate at the same time avoids router flush trimming.



Start at the top

1 Cut a piece of birch plywood for the panel (A) and a piece of plastic laminate for the skin (B) an inch larger in length and width than the sizes listed in the Materials List.

2 Following the directions on the can, apply contact adhesive to the back of the laminate and the face of the plywood. Bond the laminate to the plywood, holding the laminate about 1/8" back from one edge and one end of the plywood, as

shown in the shop tip above. Apply pressure with a rubber laminate roller.

3 With the plywood's exposed end and edge in turn against your tablesaw's rip fence, trim about 1/4" off the panel's opposite end and edge, cutting through both the plywood and laminate. Now with the just-trimmed end and edge in turn against the fence, cut the panel/skin (A/B) to finished size.

4 Cut the edge bands (C) and the end bands (D) to width, but about 1"

longer than the lengths listed. Miter-cut them to fit around the top, as shown on **Drawing 1**. Glue and clamp them in place keeping their top edges flush with the laminate's surface, as shown in the shop tip on page 58.

5 Install a 3/4" dado blade in your table-saw, and attach a tall (about 10") auxiliary fence to the rip fence. Adjust the blade and fence to cut the grooves in the end bands (D) for the mini-track, where shown on **Drawing 1a**. See the

benchtop router table

Buying Guide for our mini-track source. Test your setup with a piece of scrap, and make any necessary adjustments. With the top's laminate side against the fence, cut the mini-track grooves in the end bands (D). Back up your cuts with a follower block to eliminate chipping as the blade exits the workpiece.

6 With the same dado blade, cut a groove in a piece of scrap, and test the fit of your miter-gauge bar. It should slide freely with very little play. Make any necessary adjustments. With the laminated face down, cut the miter-gauge groove in the top, where shown on **Drawing 1b**. Back up the cut with a follower block to eliminate chipping.

Fit the insert plate and install the plate levelers

1 Follow the eight steps in **Drawing 2** to create the top's insert-plate recess.

2 With the insert-plate recess formed, drill $\frac{7}{16}$ " counterbores $\frac{1}{4}$ " deep in each corner for #10-24 lock nuts, where shown on **Drawing 1b**. Make sure that, when placed in the counterbores, the lock nuts are flush with the surface of the recess. Drill $\frac{3}{16}$ " holes through the centers of the counterbores.

3 Referring to the sidebar "How to add insert-plate levelers to your table" on page 58, epoxy lock nuts into the counterbores. Finish-sand the bands (C, D) to 220 grit. Ease the sharp laminate edges of the miter-gauge slot and insert-plate recess with a cabinet scraper.

Build a sturdy base

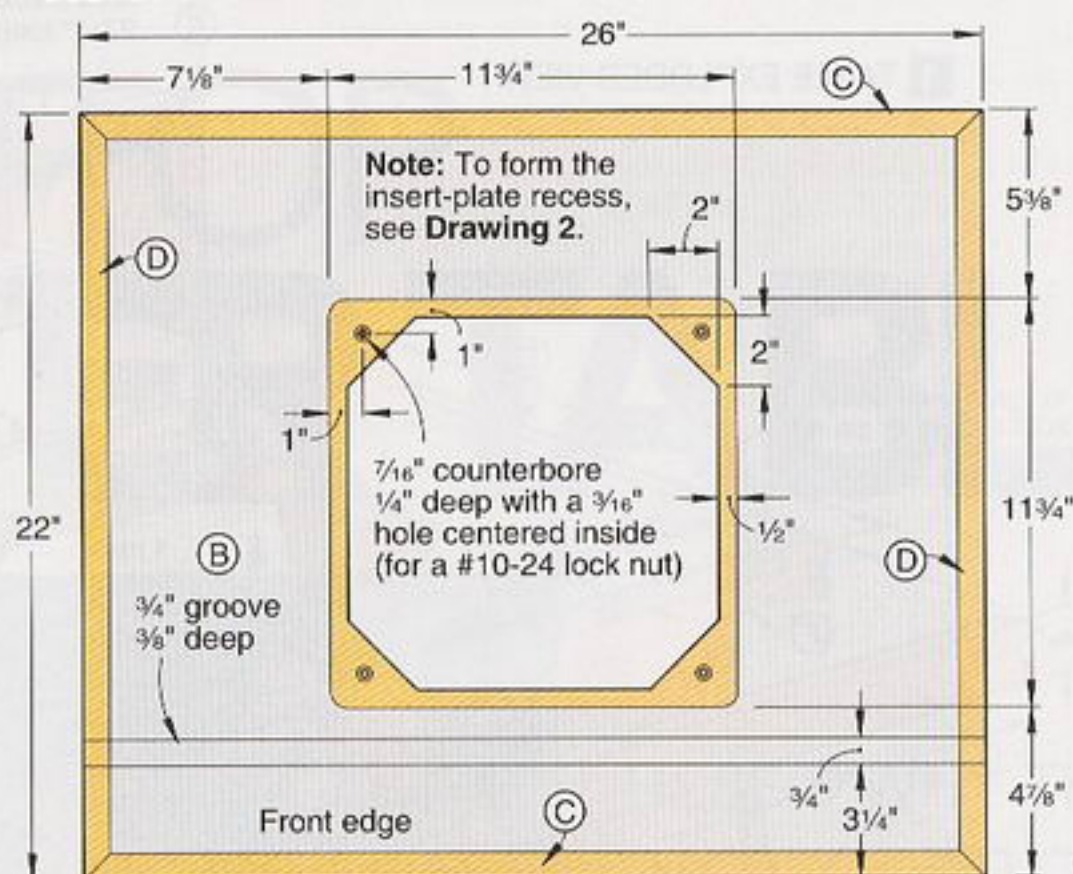
1 Cut the legs (E) and leg cleats (F) to length, but about 1" wider than listed. Tilt your tablesaw blade 12° , and bevel-rip the edges of the legs and leg cleats, where shown on **Drawing 1a**. Cut the cord cleat (G) to size.

2 Glue and clamp the leg cleats (F) to the legs (E). Then drill pilot and countersunk shank holes through the leg cleats into the legs. Drive in the screws, and remove the clamps. Glue and clamp the cord cleat to the leg cleat. Finish-sand the leg assemblies to 220 grit.

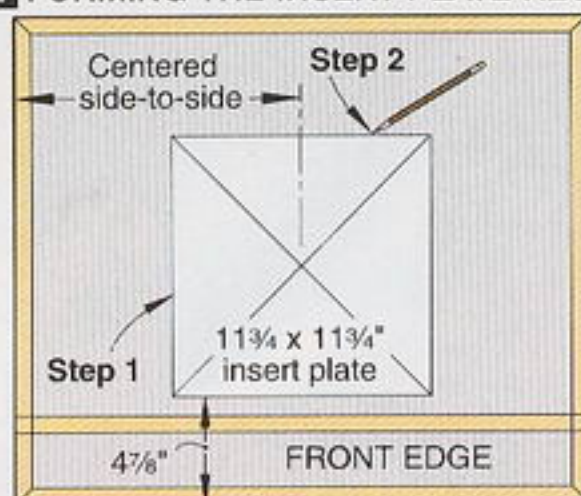
Note: When storing the router table, coil the router and switch cords and stow them under the table, wedging them between the leg and the cord cleat.

3 Place the top assembly upside down on your bench. Glue and clamp the

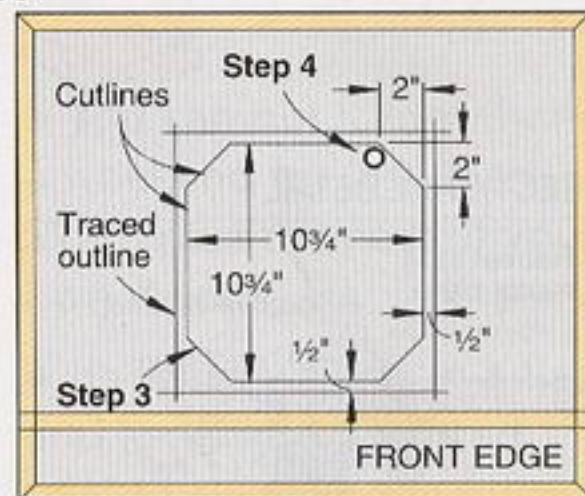
1b TABLETOP



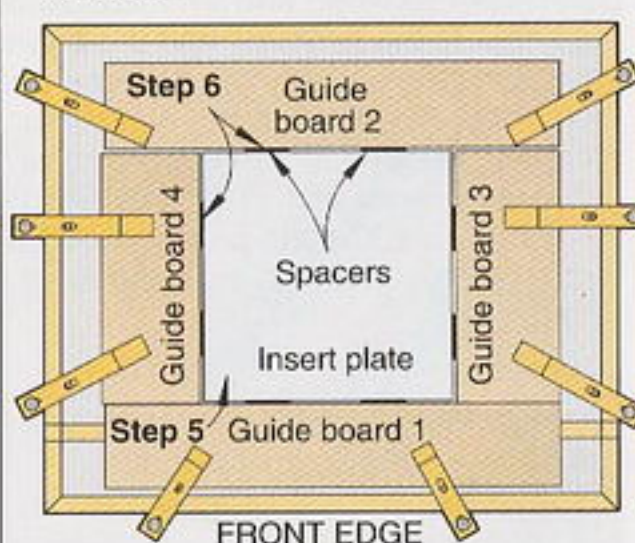
2 FORMING THE INSERT-PLATE RECESS



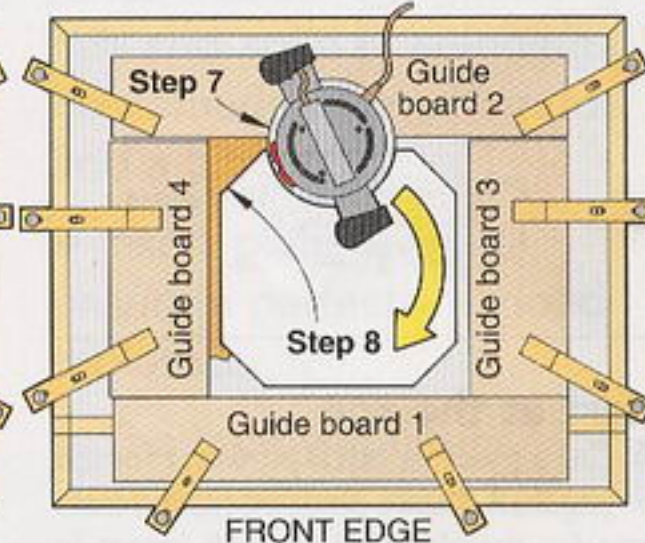
Step 1 Trim the insert plate to size, and position it $4\frac{7}{8}$ " from the tabletop's front edge and centered side-to-side.
Step 2 Trace outline of plate onto the tabletop.



Step 3 Lay out and mark the opening cutlines inside the traced outline.
Step 4 Drill a blade-start hole, and use your jigsaw to cut the opening.

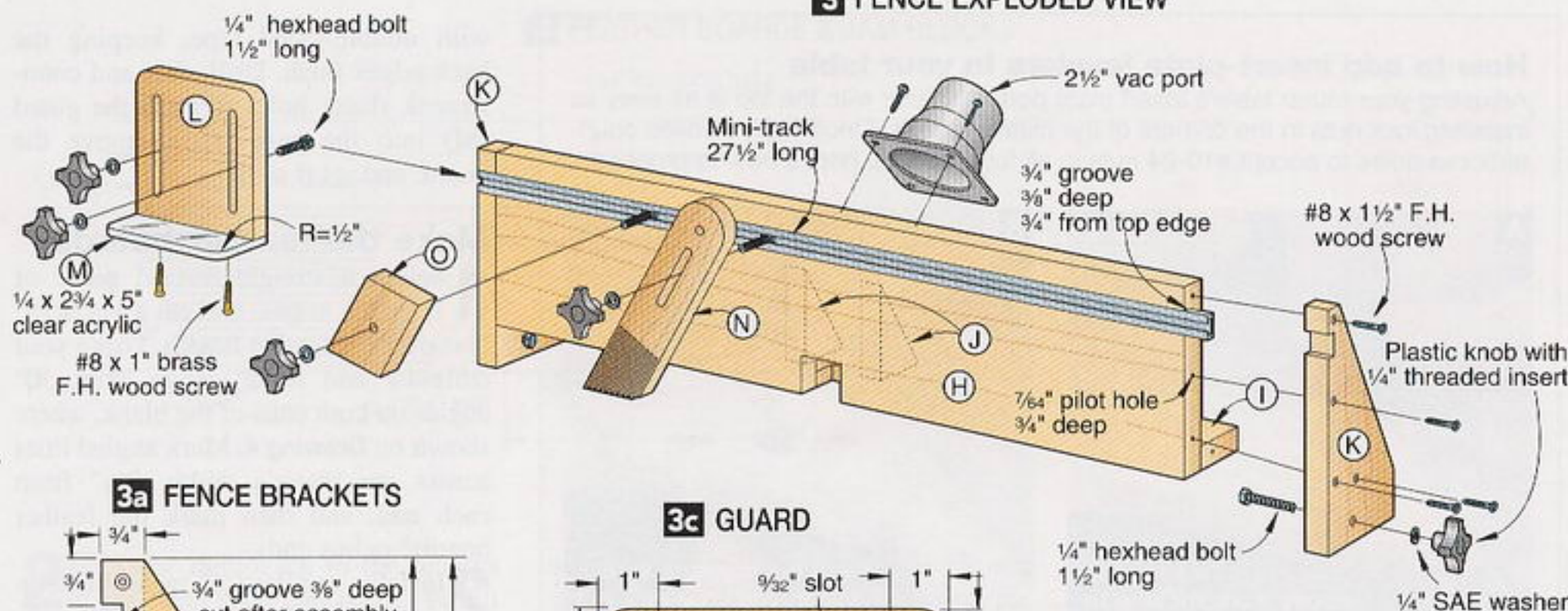


Step 5 Secure the insert plate inside traced outline with double-faced tape.
Step 6 Clamp the guide boards around the plate, spacing each board away from the plate with business-card shims.
Step 7 Remove the insert plate and shims. Chuck a straight bit with a top-mounted pilot bearing (pattern bit) into your handheld router. With its base rest-

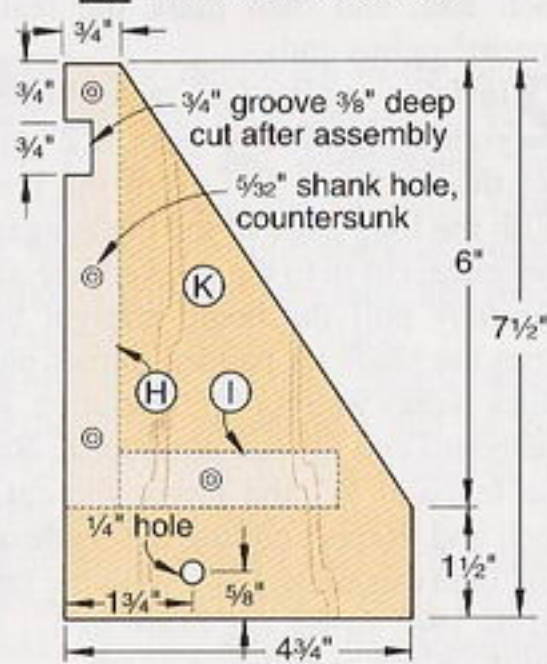


ing on top of the guide boards, adjust the router to cut $\frac{1}{8}$ " into the tabletop.
Step 8 Guiding the bit's pilot bearing along the guide board's inside edges, begin routing the recess. Make additional passes, lowering the bit each time until you reach a depth of about $\frac{1}{32}$ " greater than the thickness of the insert plate.

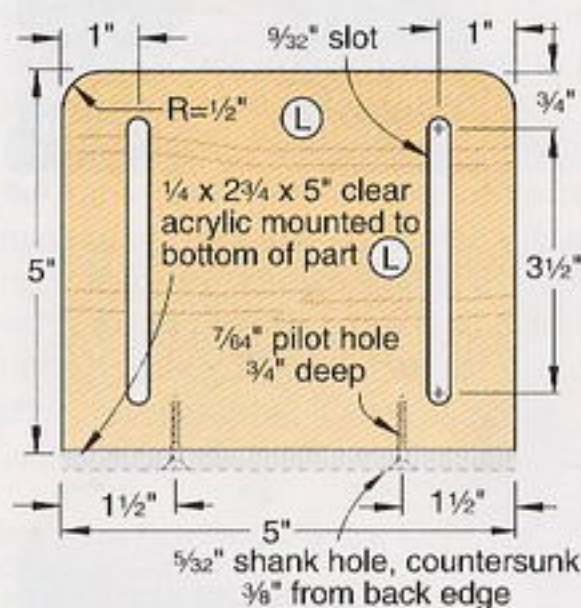
3 FENCE EXPLODED VIEW



3a FENCE BRACKETS



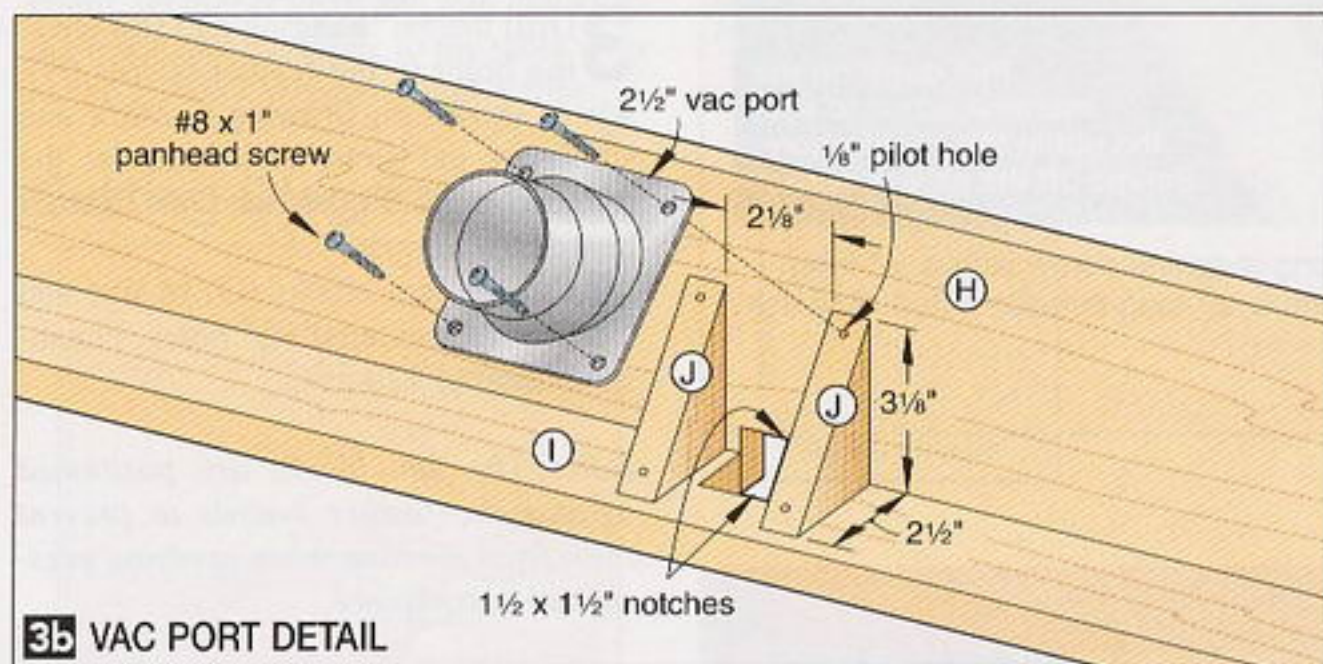
3c GUARD



of the 1/4" hole on the top blank, where shown on **Drawing 3a**. Bandsaw and sand to the marked line, and drill the hole. Separate the brackets.

3 Glue and clamp the fence brackets (K) to the fence (H/I), making sure the brackets' edges are flush with the fence's face. Drill pilot and countersunk shank holes through the brackets into the fence, where shown, and drive in the screws. With your dado blade adjusted to the width of the mini-track, cut the dado in the fence (K/H/K), where shown on **Drawing 3**. Finish-sand the fence assembly to 220 grit.

4 Cut vac port mounts (J) to the size and shape shown on **Drawing 3b**. Dry-position the mounts and check their placement with your vac port. See the Buying Guide for our vac port source. Glue and clamp the mounts in place. With the glue dry, use the port to mark the mounting screw locations. Drill screw pilot holes, and set the vac port aside.



3b VAC PORT DETAIL

leg assemblies to the top. Drill pilot and countersunk shank holes through the leg cleats into the top. Drive in the screws.

Build an accurate fence

1 Forming straight, square edges on your fence parts is essential for making a straight fence. Start by cutting the fence (H) and the fence base (I) 1/2" wider and 1" longer than the sizes listed. Joint one edge of each board. Next set the fence on your tablesaw 1/32" over the finished width, and rip the parts. Set

your jointer's depth to 1/32" and joint the freshly cut edge. Check the length of your tabletop and add 1/32" to this measurement. Cut the fence and fence base to this length. (The added 1/32" allows the fence to slide easily.) Bandsaw centered 1 1/2 x 1 1/2" bit-clearance notches in both parts. Glue and clamp the fence and fence base together.

2 Cut two 3/4 x 4 3/4 x 7 1/2" blanks for the fence brackets (K). Fasten the two blanks together with double-faced tape. Mark the diagonal cut and the location

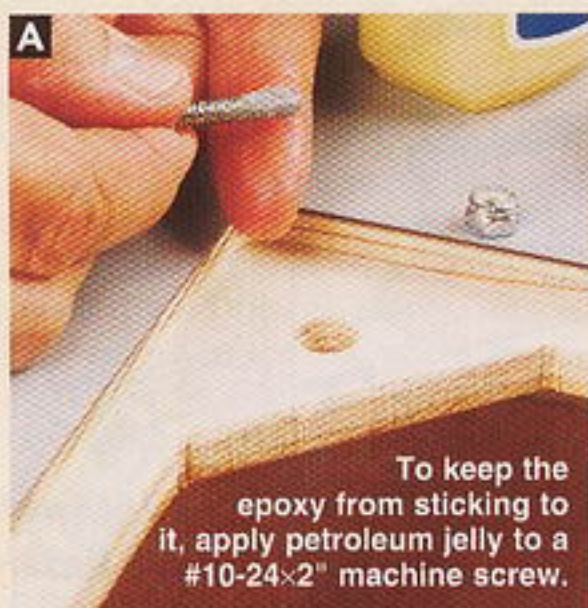
Now, get your guard up

1 Cut the guard base (L) to size. Sand the 1/2" radii on the top corners, where shown on **Drawing 3c**. To form the mounting slots, drill 9/32" holes where shown, draw lines from hole to hole, and scrollsaw along the lines. Finish-sand the base to 220 grit.

2 Cut 1/4" acrylic to size for the guard (M). Disc-sand 1/2" radii on the outside corners, where shown on **Drawing 3**. Adhere the guard to the base

How to add insert-plate levelers to your table

Adjusting your router table's insert plate perfectly flush with the top is as easy as installing lock nuts in the corners of the plate's recess. Once you've drilled counterbored holes to accept #10-24 nuts in all four corners, here's how to proceed.



To keep the epoxy from sticking to it, apply petroleum jelly to a #10-24x2" machine screw.



Insert the machine screw, and thread on a lock nut until the end of the screw is flush with the top of the nut.



Mix some 5-minute epoxy. Fill the counterbore with epoxy while pulling up on the lock nut.



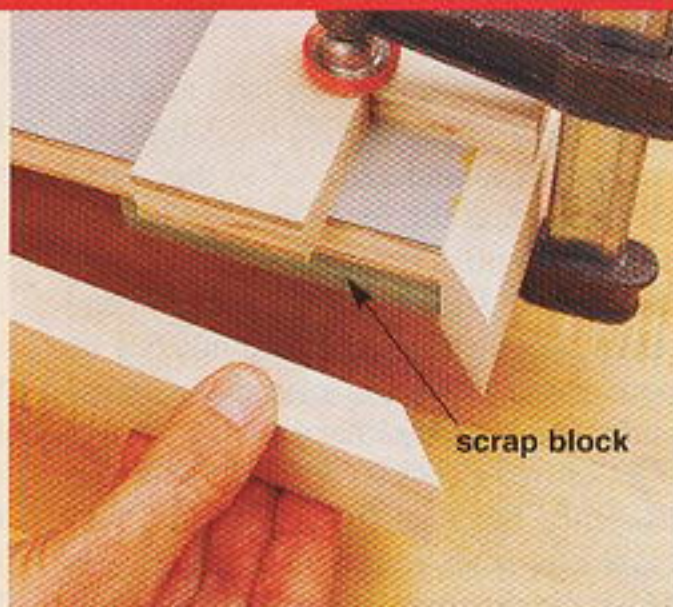
Pull down on the machine screw to seat the nut in the counterbore. Scrape off the excess epoxy.

When the epoxy hardens, replace the 2"-long machine screw with a 1/2"-long one. For no-tool adjustment, use a knob with a 1/2"-long threaded stud. See the Buying Guide for our knob source.

SHOPTIP

Keep your banding flush and corners aligned

Make alignment blocks by cutting 2x2" notches out of four 4x4" pieces of 3/4" plywood. (The notches let you see the mitered corners.) Clamp them to the top, as shown in the photo. Use scrap blocks underneath the top to space the clamps away from the banding. Now, glue and clamp the banding to the top, keeping it tight against the alignment blocks.



scrap block

with double-faced tape, keeping the back edges flush. Drill pilot and countersunk shank holes through the guard (M) into the base (L). Remove the guard, and set it aside.

Make the feather boards

1 Select a straight-grained piece of 3/4"-thick maple, and cut a 3/4x2x18" blank for the feather boards. Using your tablesaw and miter gauge, trim 30° angles on both ends of the blank, where shown on **Drawing 4**. Mark angled lines across the blank's width, 2 5/8" from each end, and then mark the feather boards' radius ends.

2 Install a regular (1/8" wide) blade in your tablesaw and raise it 2" high. Set the rip fence 1/16" from the blade. With the long edge of the blank against the fence, cut in to the marked line, then *carefully* pull the board straight back from the blade. A padded jointer push-block works well for this operation. Flip the board end for end and repeat. Reset the fence at 1/4" and repeat the cut on each end. Repeat cutting the feathers at 3/16" intervals up to 1 3/4". With the fence set at 1 3/4", lower the blade to 1", and cut the blank to finished width.

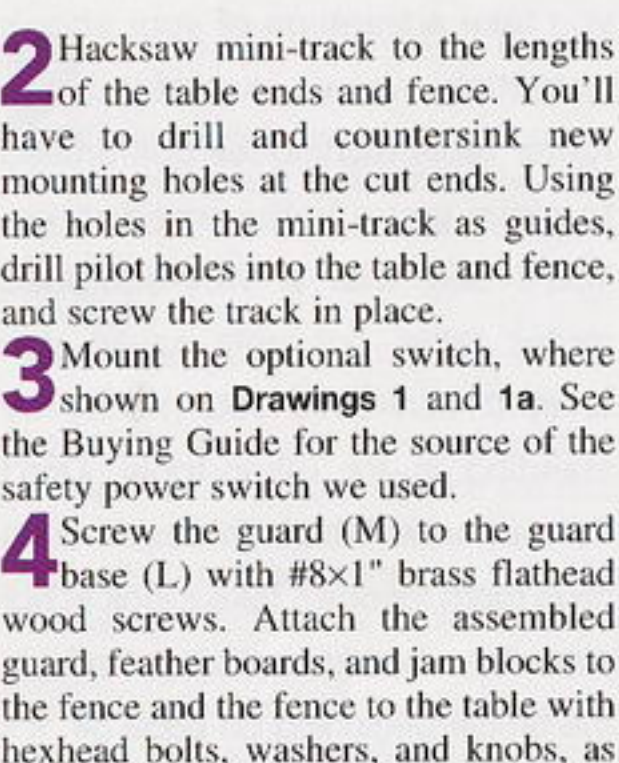
3 Drill the 5/32" hanging and slot-starting holes in the feather boards (N), where shown on **Drawing 4**. Mark and scrollsaw the slots, and bandsaw the rounded ends. Finish-sand the feather boards to 220 grit.

4 Cut the jam blocks (O) to size and drill the centered 5/32" holes. Finish-sand them to 220 grit.

Note: The jam blocks are positioned against the feather boards to prevent them from pivoting when applying pressure to a workpiece.

Apply a finish, and install the hardware

1 Touch up the finish sanding where needed. Apply two coats of a penetrating oil finish to all the wood parts, including the miter-gauge slot and the insert-plate recess, following the instructions on the can. (We used McCloskey Tung Oil Finish. An oil finish is easier to reapply after the finish is worn than paint or varnish. It also seals the miter-gauge slot and insert-plate recess without building up and interfering with the fit.)



5 Screw the insert-plate leveling knobs into the lock nuts. Sand the insert plate's corners to match the corners of the insert recess. See article, "5 ways to get the most out of your router table," which follows next for instructions on mounting your router on the insert plate. 🌲

See more . . .
...shop projects at

Materials List

Table	FINISHED T	SIZE W	SIZE L	Matl.	Qty
A* panel	¾"	20½"	24½"	BP	1
B* skin	1/16"	20½"	24½"	PL	1
C* edge bands	¾"	1¾"	26"	M	2
D* end bands	¾"	1¾"	22"	M	2
E* legs	¾"	11½"	20½"	BP	2
F* leg cleats	¾"	3"	20½"	M	4
G cord cleat	¾"	2"	16½"	M	1
Fence					
H* fence	¾"	6"	26½"	M	1
I* fence base	¾"	3"	26½"	M	1
J vac port mounts	¾"	2½"	3½"	M	2
K fence brackets	¾"	4¾"	7½"	M	2
Guard & Feather board					
L guard base	¾"	5"	5"	M	1
M guard	¼"	2¾"	5"	A	1
N* feather boards	¾"	1¾"	8"	M	2
O jam blocks	¾"	1¾"	3"	M	2

Materials key: BP—birch plywood, PL—plastic laminate, M—maple, A—acrylic.

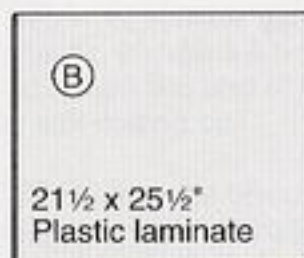
Supplies: #8x1¼" flathead wood screws, #8x1½" flathead wood screws, #8x2" flathead wood screws, #8x1" panhead screws, #8x1" brass flathead wood screws (2), ¼" SAE flat washers, contact adhesive, 5-minute epoxy, #10-24 lock nuts (4).

Buying Guide

Hardware. 1/4" hexhead bolts 1 1/2" long (8), knobs with 1/4" threaded inserts (8), miniature knobs with #10-24x1/2" studs (4), 36" mini-track with screws (1), 24" mini-tracks with screws (2), 2 1/2" vac port (1), 3/8x12x12" acrylic insert plate (1), order kit no. 131238, from Woodcraft. Call 800/225-1153, or visit www.woodcraft.com for pricing or to order.

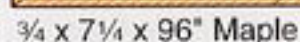
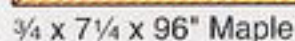
Switch. Safety power switch no. 141938, from Woodcraft, as listed above.

Cutting Diagram



 $\frac{1}{4} \times 2\frac{3}{4} \times 5"$
Acrylic

$\frac{3}{4}$ x 48 x 48" Birch plywood



5 ways to get the most out of your ROUTER TABLE



Cut the workpiece close to your template with a bandsaw before going to the router table. Trim bits are designed to handle light cuts only.

A TEMPLATE MEANS NEVER HAVING TO SAY "OOPS"

1 Let's say you want to make four table legs with matching curves. A table-mounted router and template enable you to produce as many identical legs as you want.

Using $\frac{1}{4}$ " hardboard or medium-density fiberboard, make a template to the shape you want. Use a bandsaw or scrollsaw to cut close to the line, and then sand right up to it. Attach the template to your stock with cloth-backed, double-faced tape, orienting the grain for best effect. Bandsaw within $\frac{1}{8}$ " of the template, all the way around.

Turning to your router table, you have two choices for router bits—a flush-trim bit and a pattern-cutting bit. In some situations, you might need both.

A flush-trim bit has a ball-bearing pilot mounted at the tip. To use it, place your workpiece on the table with the template on top. Adjust the bit's height to make sure that the pilot runs on the edge of the template.

On pattern-cutting bits, the pilot sits between the shank and the cutter. Your template rests on the table.

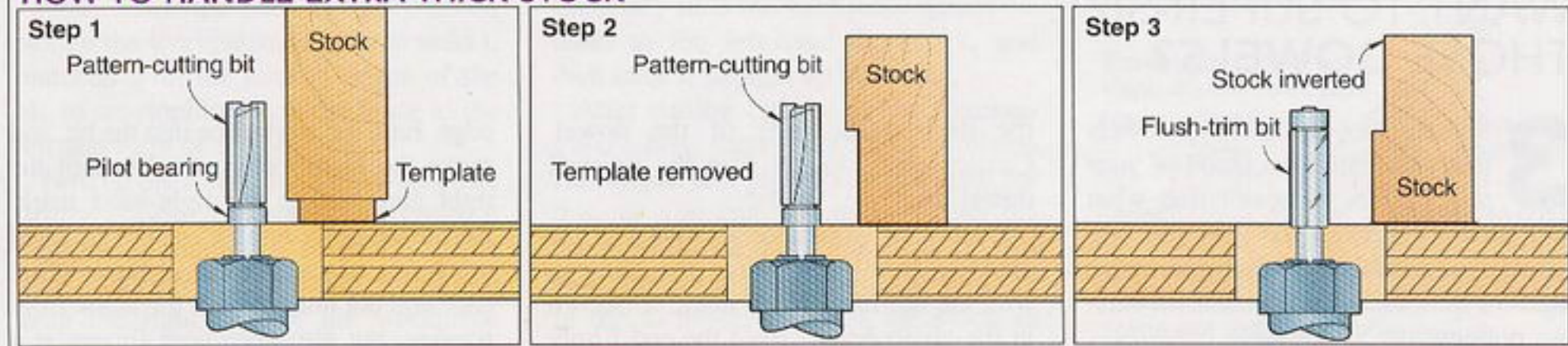
Whichever bit you use, keep a firm grip on the workpiece, and ease it into the bit until it contacts the pilot, then move the piece from right to left, as shown *above*. If you've left more than $\frac{1}{8}$ " of excess material in some spots, trim it to size with a couple of shallow passes. Don't pause too long in any spot, or you'll burn the wood.

Your shop capabilities are expanded when you mount a router on a table. To help you take advantage of your shop's potential, we've assembled five router table techniques guaranteed to make you a better woodworker. You'll see that a well-equipped router table not only saves you time, it can save you money by standing in for other tools. Don't have a router table? Think you don't have room for one? Take a look at our plans for a handy benchtop model in the article beginning on *page 54*. It's easy to build and a breeze to use.

Double-check the surfaces you've just routed before you remove the template. Sometimes another pass will smooth out a rough spot. Finally, slide a putty knife blade between workpiece and template, pop them apart, and remove the tape.

When you have a workpiece that's thicker than the cutting length of your bit, use a pattern-cutting bit and a flush-trim bit in sequence, as shown in **Steps 1, 2, and 3 opposite top**. Make one pass with the pattern-cutting bit, template side down. Remove the template, and then make another pass with the pilot bearing riding on the surface you just machined. Flip the workpiece over and use the flush-trim bit, with the pilot bearing riding on the milled surface.

HOW TO HANDLE EXTRA-THICK STOCK



SINK YOUR TEETH INTO SOME BISCUITS

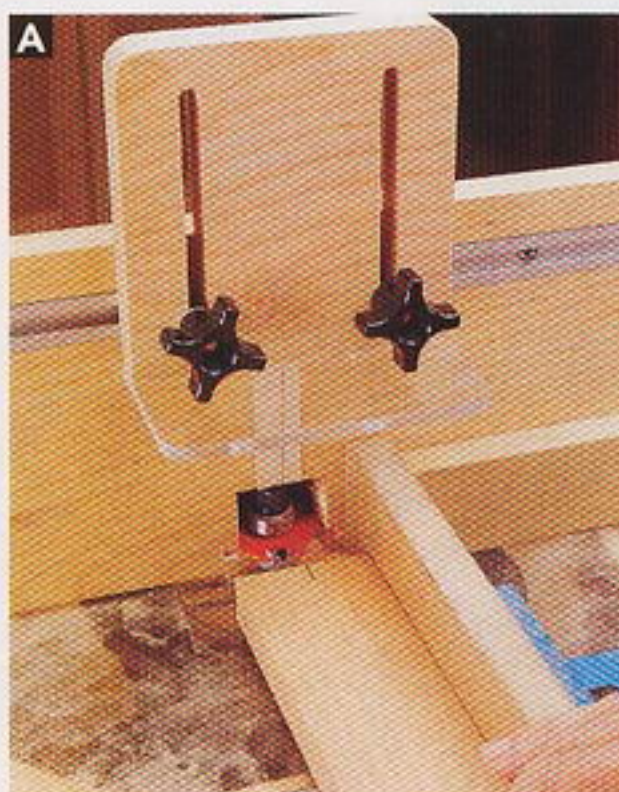
2 Biscuit joiners are great tools, but you also can do a lot of biscuit joinery right on your router table. All you need is a slot-cutting bit that matches the standard biscuit thickness of $\frac{5}{32}$ " and a miter gauge with an auxiliary fence.

Every time you set up to make a joint, center the cutter on the thickness of your stock, and make a test cut to double-check it. To further reduce the risk of misalignment, mark the face of each component, and then keep that side up.

Plunging a workpiece into a standard slot-cutting bit produces a slot that's shorter than a standard biscuit. You can lengthen the slot by moving the workpiece and making additional cuts. However, if you're going to make only a few joints, it's quicker and easier to shorten the biscuits. Here's how to cut slots for a rail-and-stile frame.

Use a steel rule to align the face of your router table fence with the front of the bit's pilot bearing. Place a piece of masking tape on the fence above the bit. Then, use a square and a pencil to mark the center of the bit on the tape. Now, mark the center of a rail. Hold the length of the rail against your miter gauge, equipped with an auxiliary fence that nearly touches the router table fence, as shown in **Photo A**. Align the two center marks, and clamp a stopblock on the router table fence so it meets the back of the miter-gauge fence. Using the miter-gauge fence as a support, plunge the workpiece squarely into the bit. Then cut until it contacts the bearing.

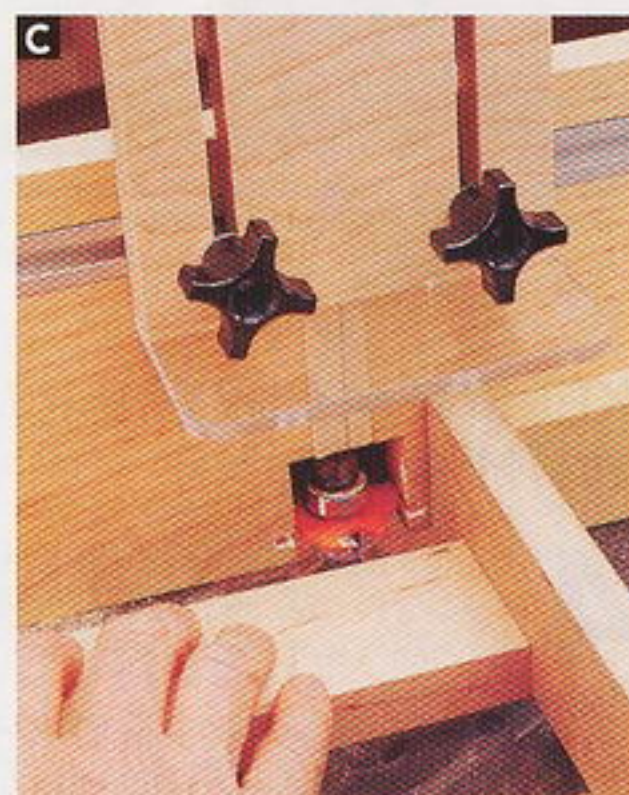
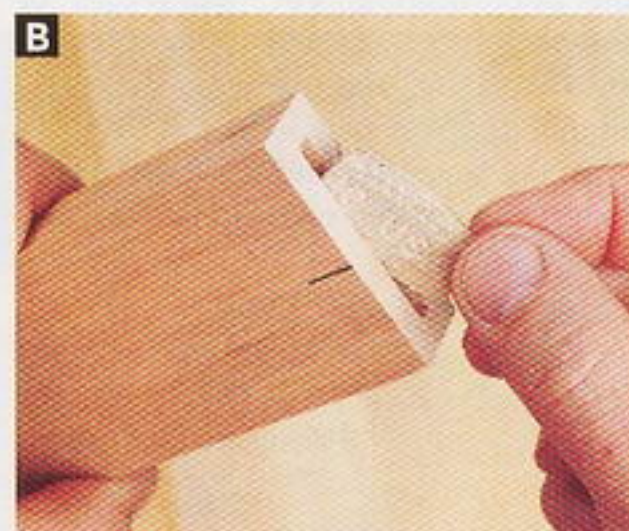
Mark a biscuit at both ends, making it slightly less than the slot length. Slice off the ends with a bandsaw. Test the



STEP A: Your miter gauge, backed by a stopblock, provides a solid, square guide as you push the end of a rail into the spinning slot-cutting bit.

STEP B: Trim the biscuit, slip it into the slot, then test the fit before gluing. If a gap shows, take just a bit more material off each end of the biscuit.

STEP C: Your setup remains the same when you cut a biscuit slot for a stile. This slot will match perfectly the slot in the previously milled rail.



fit, as shown in **Photo B**, to make sure that at least half of the biscuit's width slides into the slot.

You can cut a slot in the other end of the stile with the same setup, but you have to flip the stock over, putting the face side down. If the slots are perfectly centered in the stock's thickness, that will work fine. The alternative is to measure the distance from the center of

the bit to the miter gauge, and then clamp a stopblock at that same distance to the left of the bit. Remove the miter gauge and right-hand stop, and then cut a slot at the opposite end of the stile, still keeping the face side up.

To cut a matching slot on a stile, leave the miter gauge and stopblock in place. Carefully push the workpiece into the cutter, as shown in **Photo C**.

WANT TO SUPER-SIZE THOSE DOWELS?

3 Sometimes you need big dowels that will match the wood of your project, but you can't find what you need at the store. To help you out, here's a router table technique that we've used for quilt racks and handles on various projects.

You'll need a round-over bit with the same radius as the dowel's radius. For example, use a $\frac{1}{2}$ " round-over bit to make a 1" dowel. Chuck the bit in the router, and position the fence flush with the pilot bearing. Put two pieces of masking tape on the fence, one on either side of the bit, and mark two points 3" from the bit's center.

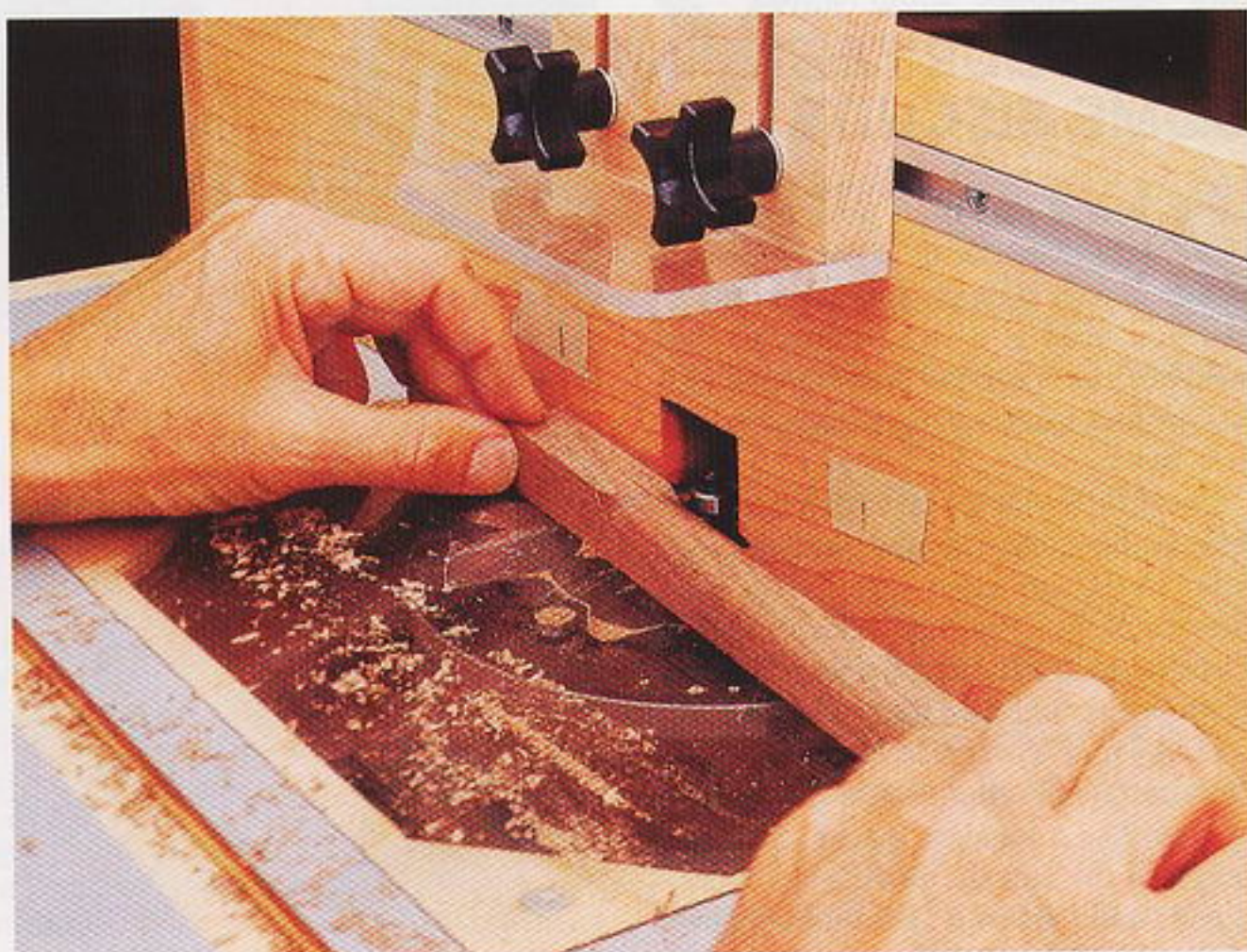
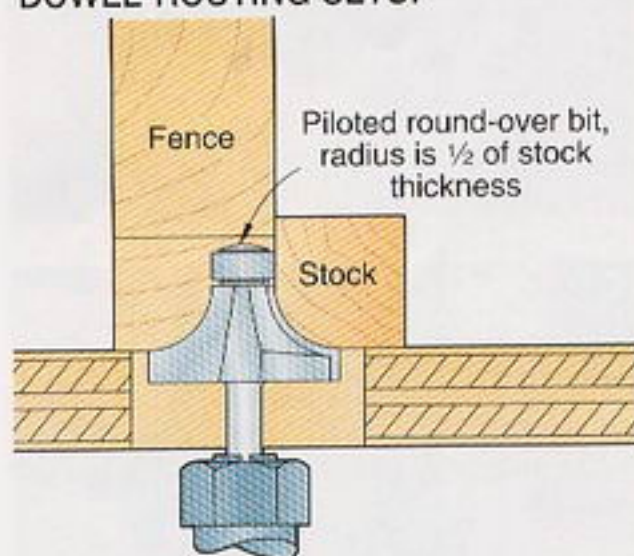
On the tablesaw, rip each dowel blank to a square profile equal in thickness to

the desired diameter of the dowel. Crosscut it 6" longer than the finished dowel length.

Place your workpiece as shown in the drawing *below left*. Align the left end with the left-hand fence mark, as shown in the photo *below*. Hold the end firmly against the fence, and begin routing any

edge. Ease the workpiece into the bit, and move the blank across the bit until the right end reaches the right-hand mark. Repeat the procedure for each of the three remaining edges. The flat surfaces left at each end not only prevent the blank from rotating, but also keep your fingers at a safe distance from the bit.

DOWEL-ROUTING SETUP



We raised the guard for clarity in this photo. Keep it low while you're making dowels, to ensure that your fingers stay well away from the router bit.

KEEP THAT MITER IN LINE WITH A SPLINE

4 Here's a handy method for beefing up long, mitered joints in jewelry boxes and the like. You can make slots for hidden splines with a straight bit, two stopblocks, and a simple support block.

Set your $\frac{1}{8}$ " straight bit to project $\frac{1}{4}$ " above the router table. Clamp an auxiliary fence to your router table fence, so your workpiece won't slide into the bit-clearance notch. Set this fence the same distance from the bit's center as the thickness of your stock, or slightly farther. In the drawing, *opposite page top*, we're cutting spline slots in $\frac{1}{2}$ "-thick pieces.

Miter-cut your box sides to length. Take the two ends of the box, or the front and the back, place them face-to-face, align the edges, and join them with cloth-backed, double-faced tape.

Bevel-rip a scrap piece at 45° to make a support board. Hold the taped-together assembly in the corner formed by the router table and fence, and use it to position the support board parallel to, and the proper distance from, the fence. Next, clamp both ends of the support board to the router table.



Cutting a spline slot is simple with this setup. Start at the right-hand stopblock, lower the workpiece onto the support guide, and slide it to the left stopblock.

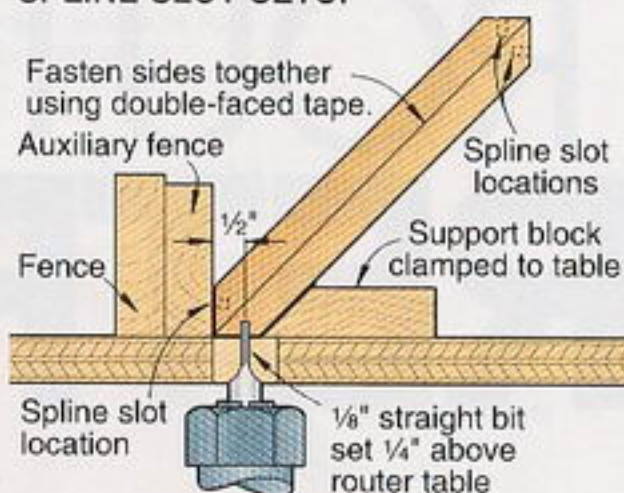
Now, mark the ends of the planned slot on the workpiece. Use those marks, matched with the cutting edges of the bit, to set stopblocks on the fence to the left and right of the bit.

Turn on the router, hold the workpiece firmly against the fence, and lower it onto the spinning bit, as shown in the photo *opposite page, bottom*. Be sure to keep the right side of the workpiece against the right-hand stopblock.

Carefully slide the workpiece across the table to the left-hand stopblock, and then raise it straight up the fence.

After cutting eight slots for a rectangular box, cut matching splines. Hardboard and plywood work great for this, or you can cut splines from the same wood used for the box. In that case, the grain of the splines should run in the same direction as the sides, to avoid problems with wood movement.

SPLINE SLOT SETUP

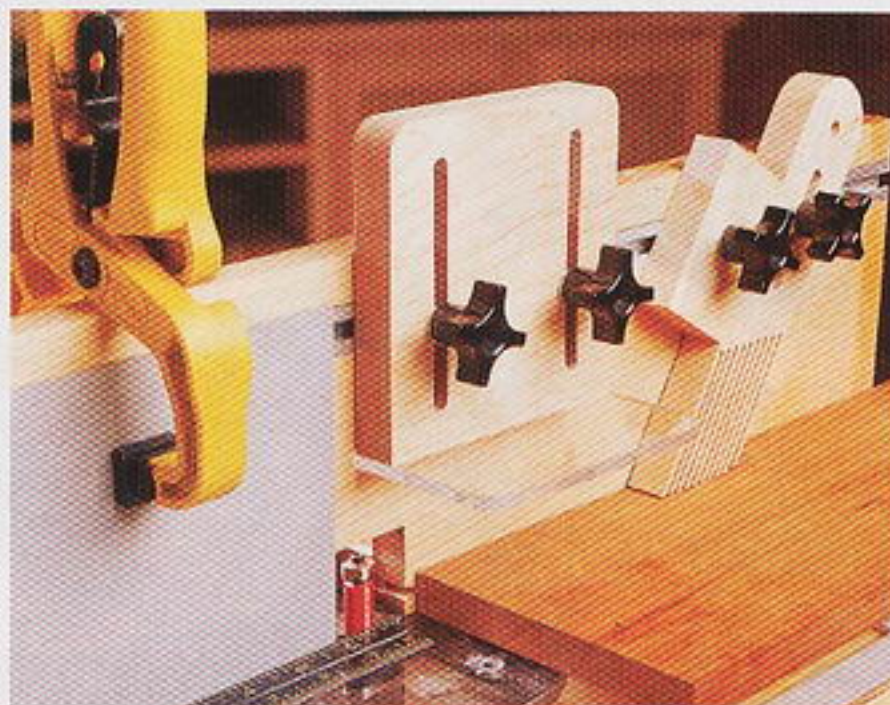


MAKE YOUR ROUTER TABLE THINK IT'S A JOINTER

5 You can equip your table with a split fence for edge-jointing, or you can take the low-tech route shown here. We simply clamped a piece of plastic laminate on the left-hand, outfeed end of the fence. Use sandpaper to ease the edge nearest the router bit, so it won't catch your workpiece as the board slides past. As seen in the photograph *right*, we used a steel rule to align the laminate with the cutting edge of a straight bit mounted in the router.

Set the bit high enough to trim the entire edge of the board in one pass. Turn on the router, and move the board across the table from right to left. You'll remove $\frac{1}{16}$ " with each pass, and leave a perfectly straight, square edge. Repeat the procedure with a second board, and the two pieces can be glued together without a gap anywhere. 🌲

Written by **Jim Pollock** with **Chuck Hedlund**
Illustrations: **Roxanne LeMoine**
Photographs: **Baldwin Photography**



Place your laminate piece at the left-hand edge of the bit-clearance notch in the router table fence. The solid backing will keep it from flexing.



Clamp your insert-plate blank and a backer board to your drill-press table, centered under the bit of your holesaw. Drill slowly, and you'll get a clean cut.

Set your table with custom plates

Router table work goes smoother and more safely when the hole in your insert plate is only slightly larger than the diameter of the bit. You can buy a plate with removable rings, which gets you close enough in most situations—or you can make a custom plate to match a bit exactly. Use Baltic birch plywood for the least expensive plate, or choose polycarbonate for a clear plastic plate. You can buy a 12×12" piece of $\frac{3}{8}$ " polycarbonate from Woodcraft. Call 800/225-1153 to order part number 16L72.

Place the insert plate faceup on a flat surface. Remove the subbase from your router, and adhere it to the plate, faceup, with double-faced tape. Be sure it's centered, and oriented so that your router will be convenient to operate once it's mounted under the table. Select a drill bit the same size as the holes in the subbase, and chuck it in your drill press. Using the holes in the subbase as guides, drill matching holes through the insert plate. Remove the subbase, and countersink the holes.

Now, attach the insert plate to your unplugged router, and set it flat on your workbench. Chuck a $\frac{1}{4}$ " drill bit in the router, and lower it until the bit touches the insert plate. Turn the collet by hand to mark the centerpoint.

Remove the insert plate from the router. Chuck a holesaw or adjustable circle cutter in your drill press to cut a center hole of the diameter needed, as shown at *left*.

ROUTER RETROFIT

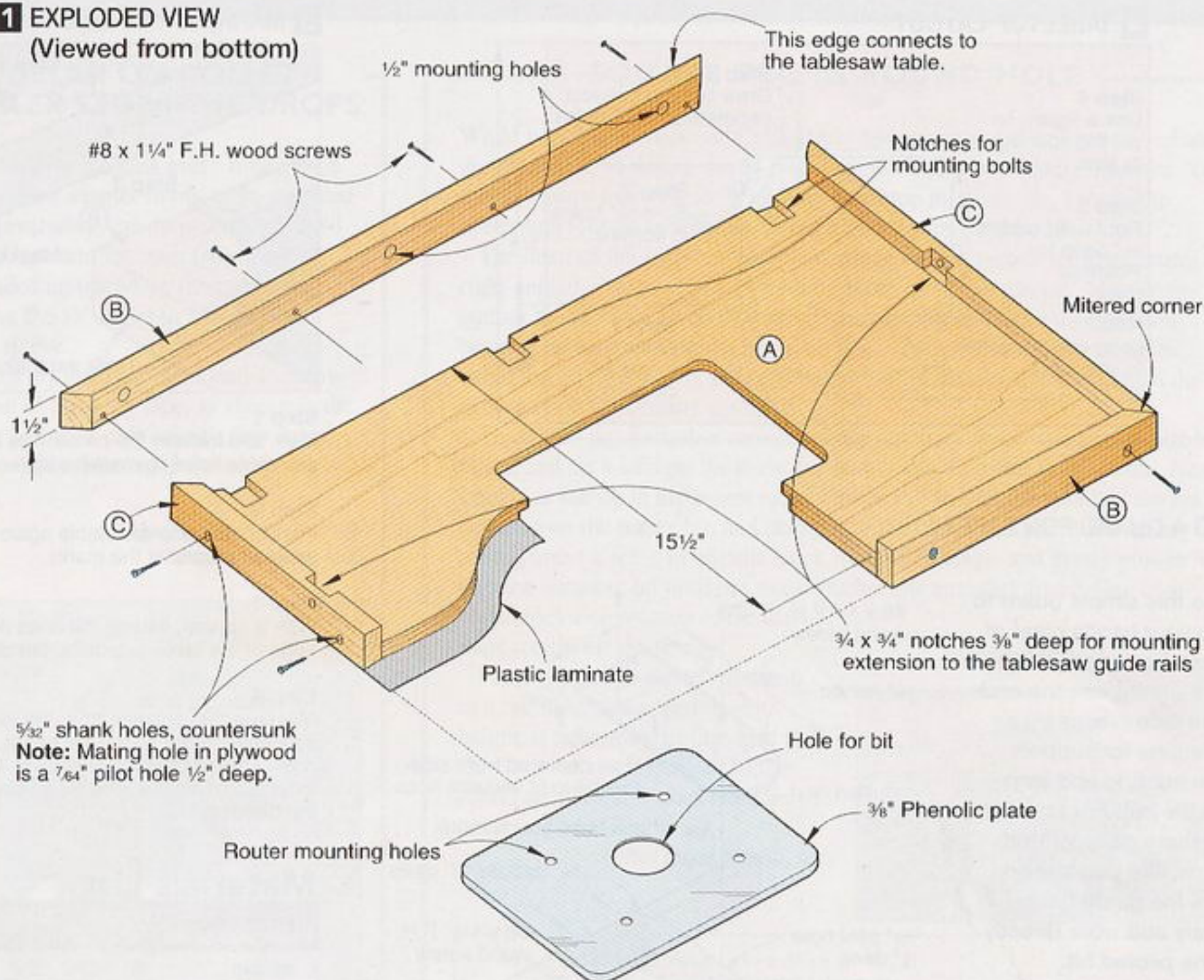
A PRACTICAL,
EASY-TO-MAKE
EXTENSION TABLE



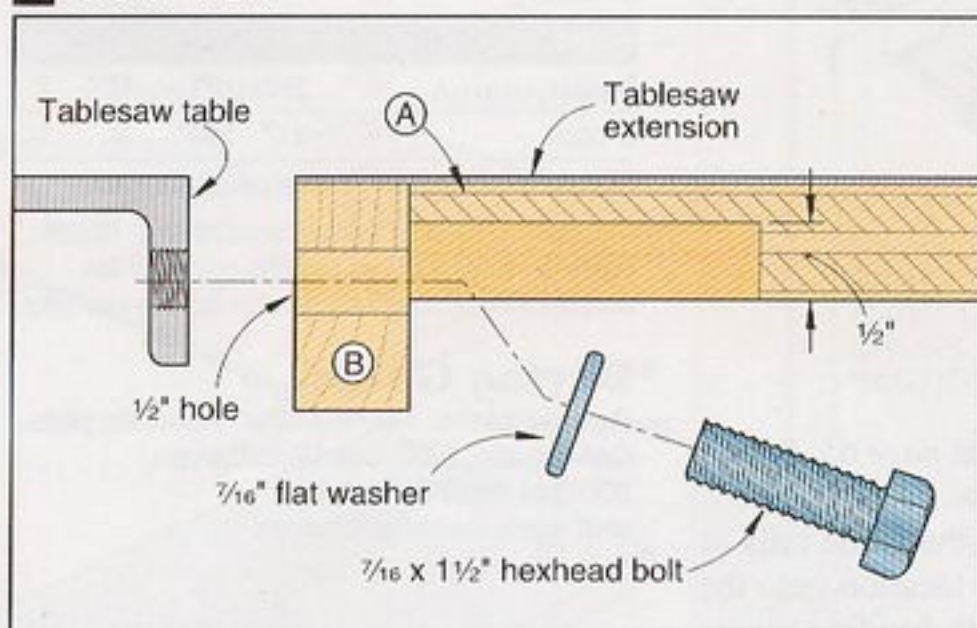
If you haven't already done so, you owe it to yourself to add a router-table extension like this to your tablesaw. Just remove the right-hand extension wing that's on your saw now, and then build and bolt this one in place. The extension allows you to make good use of already-available space, and it puts your router at a comfortable height.

Note: We made our extension table to fit a Delta 10" contractor's saw. Dimensions and connection assembly may vary for your saw. For other tablesaws, we recommend making the tabletop as wide as the extension being replaced and as long as the front and rear rails can sturdily support. Often, the extension table can be longer than the metal extension it's replacing.

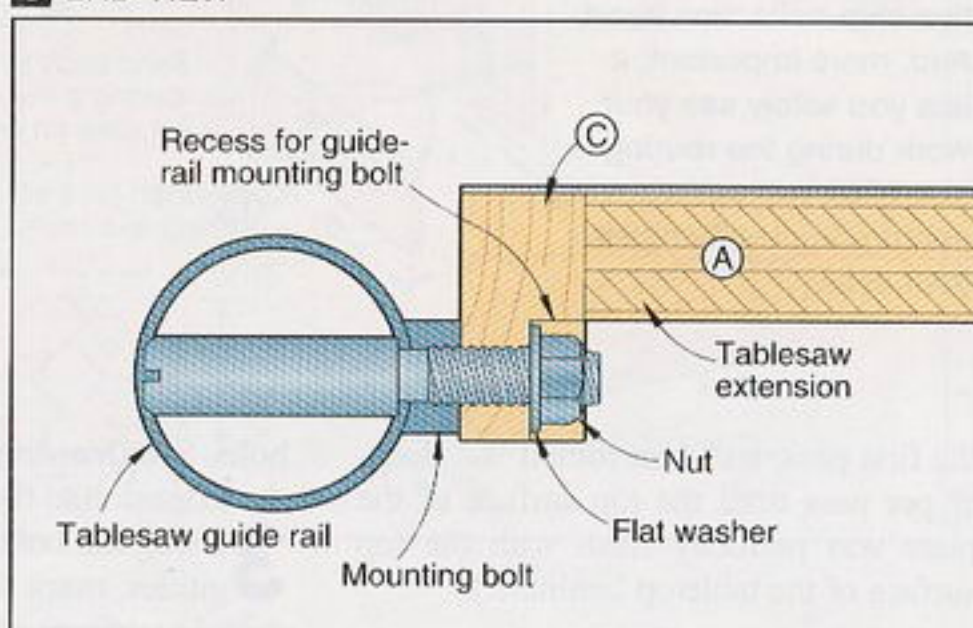
1 EXPLODED VIEW (Viewed from bottom)



2 FRONT VIEW



3 END VIEW



Construct the tabletop assembly first

- 1** Cut the extension tabletop (A) to the size shown in the Materials List from 3/4" plywood. (We used birch plywood.)
- 2** Cut the banding strips (B, C) to size, mitering the ends.
- 3** To mount the banding strips to the plywood, drill and counter-sink mounting holes through the strips and

into the tabletop edges. With the top edges flush, glue and screw the strips to the tabletop. Sand the top surface of the banded top, as shown in **Drawing 1**.

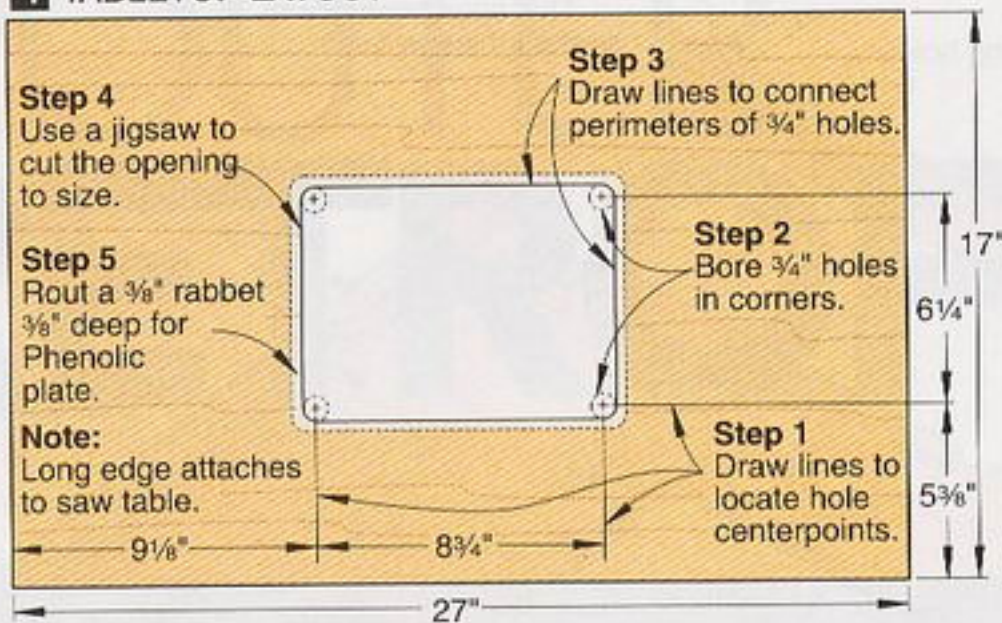
- 4** Measure the length and width of the banded top, and cut a piece of plastic laminate to the measured size plus 1" in length and width. Using contact cement, center and adhere the plastic

laminate to the top of the tabletop assembly (A, B, C).

- 5** Fit your router with a flush-trimming bit, and rout the edges of the laminate flush with the edges of the banding.

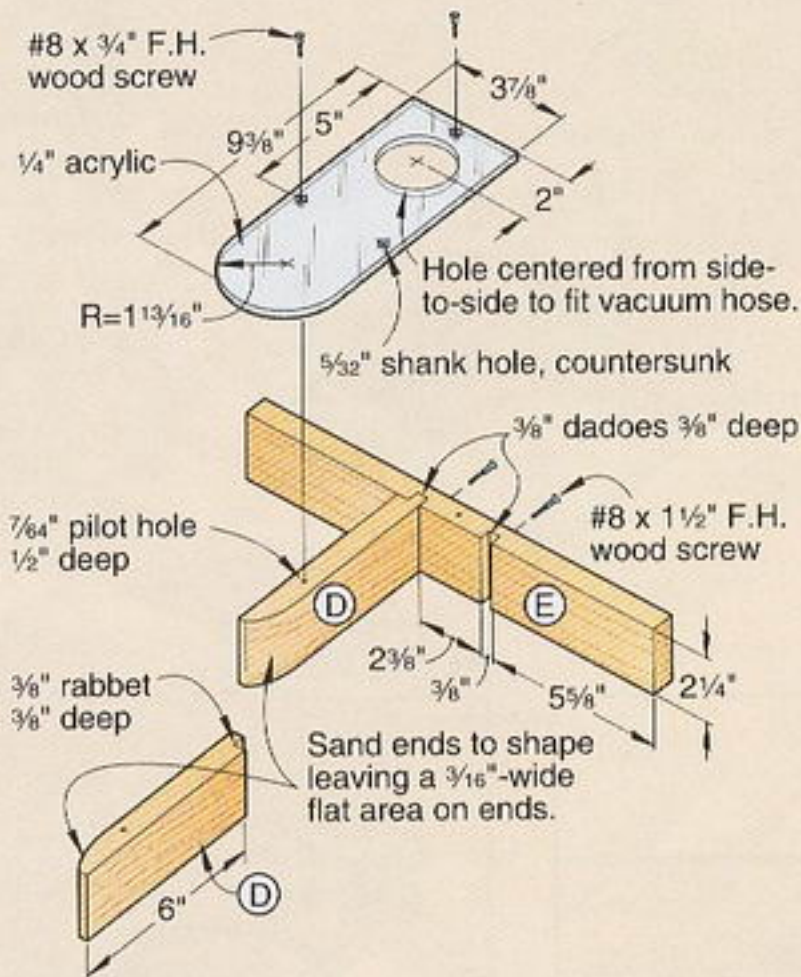
- 6** Follow the steps in **Drawing 4** on page 66 to form the opening in the tabletop for the router plate. (When routing the 3/8" rabbet 3/8" deep in Step 5 of the drawing, we routed to 5/16" deep on

4 TABLETOP LAYOUT



6 ADD A GUARD FOR SAFETY

Make this simple guard to keep your hands clear of the bit. For edges that curve gently, use the ends of the side pieces (A) as guide pins for support when starting and stopping the cut. For an edge with more exaggerated curves, like that shown, move the guard back slightly and work directly off the piloted bit. Beyond its basic uses, our guard excels as an effective chip-collection hood. And, more important, it lets you safely see your work during the routing operation without worrying about particles flying into your eyes.



the first pass, and then routed 1/64" deeper per pass until the top surface of the plate was perfectly flush with the top surface of the tabletop laminate.)

Now, mount the extension

1 Follow the four steps shown in **Drawing 5** to mark and drill the mounting holes in the tablesaw extension. Before drilling, double-check that the top surface of the extension table will be perfectly flush with the top surface of your saw table.

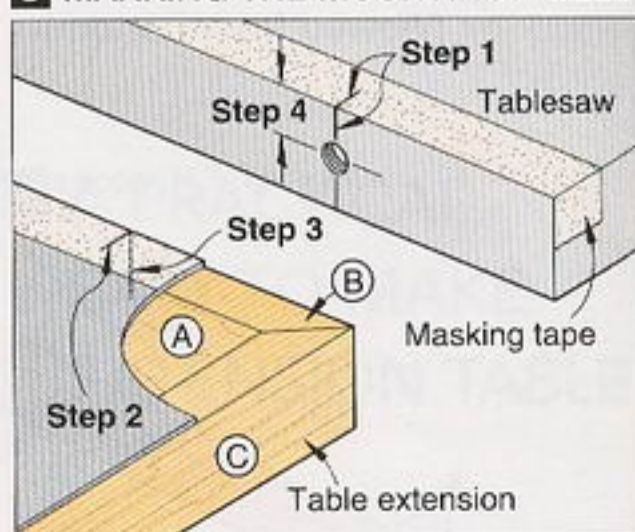
2 Chisel the 1 1/2"-wide by 1 3/4"-long by 1/2"-deep notches on the underside of the extension for housing the hexhead

bolts. See **Drawing 2** on page 65. Fasten the extension to the saw.

3 Using the holes in the guide rails as guides, mark their location onto the outside surfaces of both banding pieces (C). Remove the extension table from the saw table, and drill the guide-rail mounting holes where marked. See **Drawing 2** for reference. Chisel a 3/8"-deep notch on the inside face of the banding strips (the mounting bolts aren't long enough to go completely through the 3/4"-thick banding).

4 With the top edges perfectly flush, fasten the extension table to the saw table and rails, as shown in **Drawing 3**.

5 MARKING THE MOUNTING HOLES



Step 1
Mark and transfer the centerlines from the saw-table holes to masking tape.

Step 2
Position the extension table against the saw table, and transfer the marks.

Step 3
With a square, extend the lines down the edge of the table extension banding (B).

Step 4
Measure the distance from the top of the saw table to the centerline of the existing hole. Transfer that dimension to the table extension. Drill the mounting holes through the banding.

Materials List

Extension table	FINISHED SIZE			Matl.	Qty.
	T	W	L		
A tabletop	3/4"	15 1/2"	25 1/2"	BP	1
B banding	3/4"	1 1/2"	27"	M	2
C banding	3/4"	1 1/2"	17"	M	2
Guard					
D sides	3/4"	2 1/4"	6"	M	2
E back	3/4"	2 1/4"	14 3/8"	M	1

Materials key: BP—birch plywood, M—maple.

Supplies: #8x1 1/4" flathead wood screws, 18x28" plastic laminate, contact cement, bolts and flat washers for mounting the extension table to saw table.

Buying Guide

Router plate. 3/8x7 3/4x10 1/4" Phenolic plate. Catalog no. 131. Call Woodhaven, 800/344-6657 to order, or visit www.woodhaven.com.

5 Build the guard (D, E) shown in **Drawing 6**. Beyond its basic uses, our guard excels as an effective chip-collection hood. And, it lets you safely see your work while routing.

Written by **Marlen Kemmet**
Project design: **Jim Downing**
Illustrations: **Kim Downing; Lorna Johnson**
Photograph: **Wm. Hopkins**

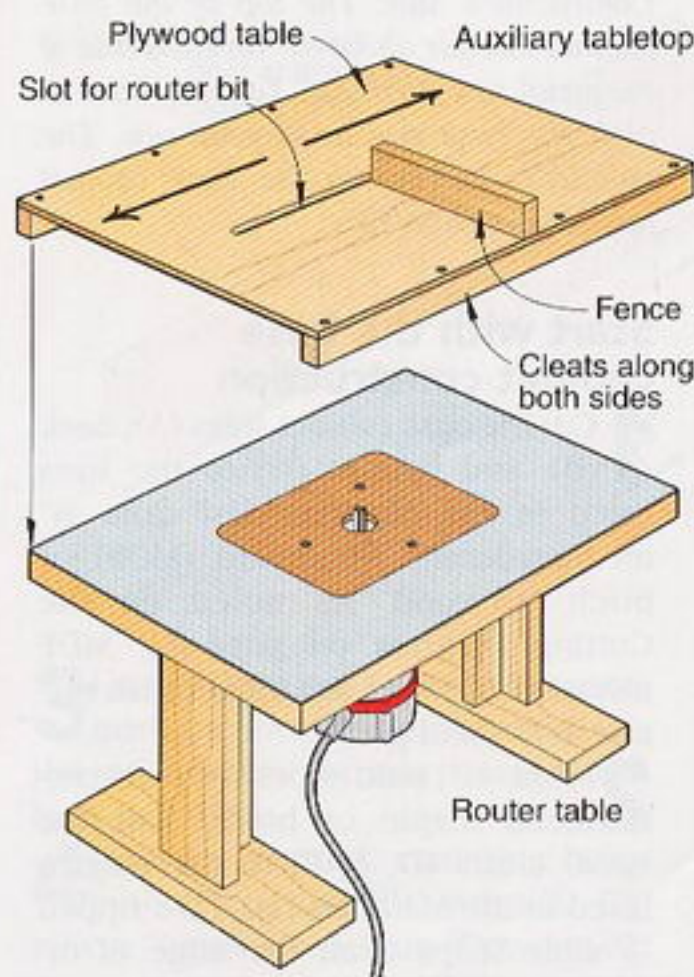
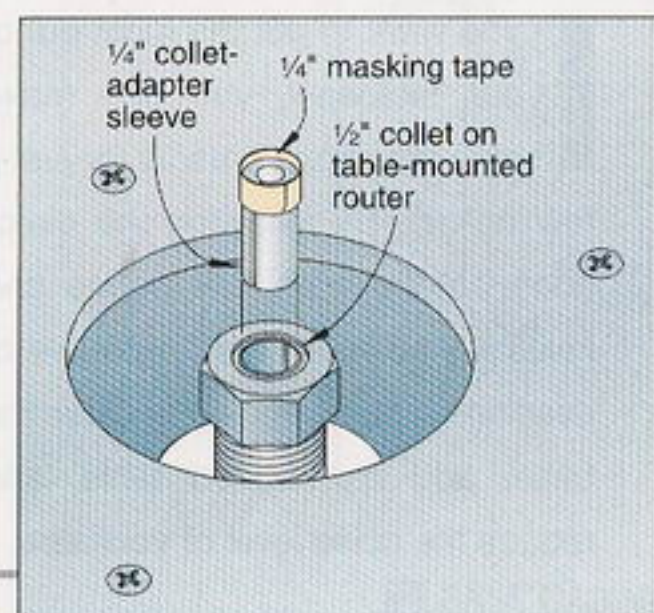
GREAT ROUTER TIPS

COLLAR ON COLLET ADAPTER STOPS THE DROPS

It used to drive me nuts every time I used the $\frac{1}{4}$ " sleeve adapter in my table-mounted router. Invariably, the darned thing would drop too low into the router's $\frac{1}{2}$ " collet, and I ended up upending the router or removing the $\frac{1}{2}$ " collet to fish out the adapter sleeve.

To save my sanity, I fashioned a narrow collar out of masking tape, as shown in the drawing below. It only takes a few wraps of tape to keep the adapter from slipping through.

—Jim Downing,
West Des Moines, Iowa



SQUARE PEG IN ROUND HOLE

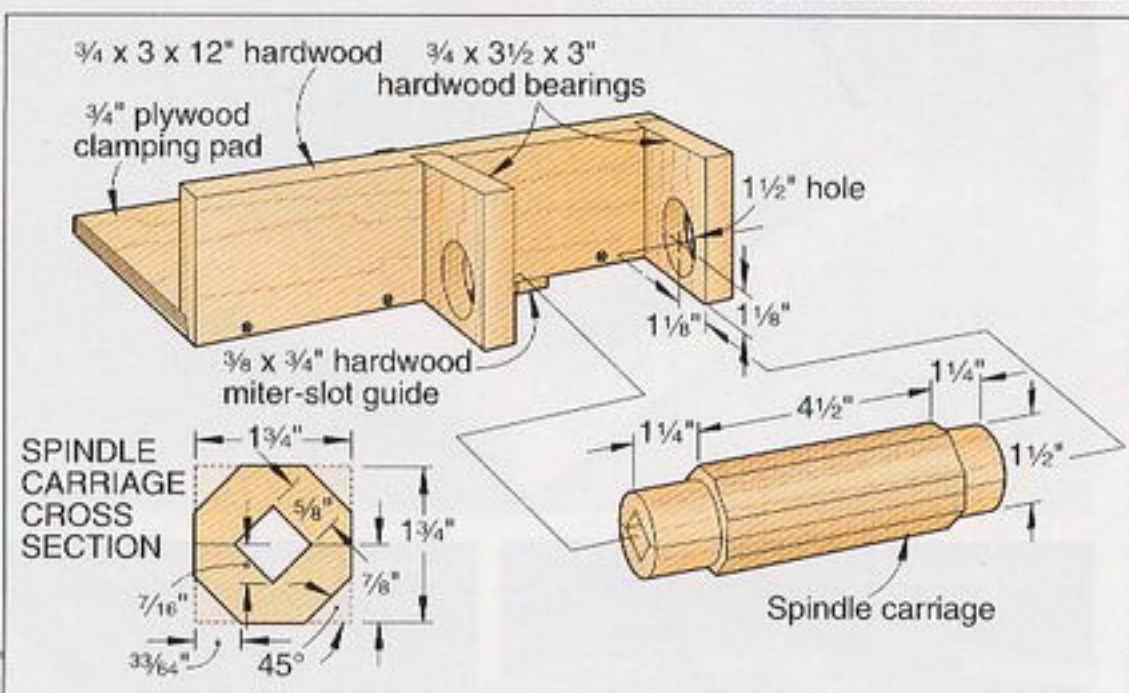
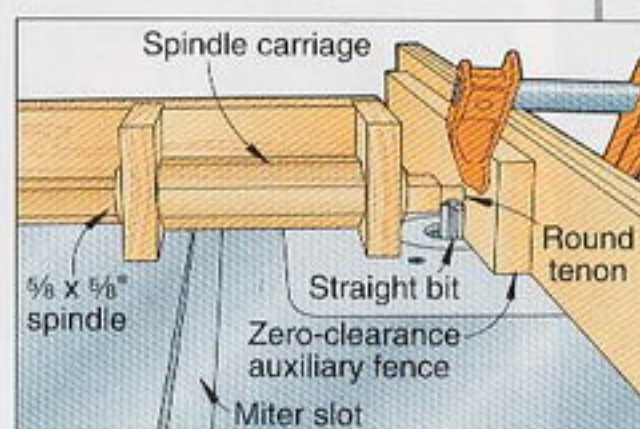
While building an Arts and Crafts-style bed recently, I didn't exactly relish the thought of chiseling the 54 round spindle holes into square mortises. Yet the rails were too wide to fit into my benchtop mortiser. So, I made the router-table jig, shown below, to cut round tenons on the square rails.

The heart of the jig is the spindle carriage, which I made by first cutting a right-angled V-groove in a $14\frac{1}{2}$ "-long piece of $\frac{3}{8}$ " hardwood. After cross-cutting the grooved piece into two 7" lengths, I glued them together and beveled the edges as shown in the drawings below. Finally, I went to the lathe, turned each end of the carriage to $1\frac{1}{2}$ " in diameter, and mounted the carriage into the bearing assembly.

To use the jig, I attach a zero-clearance auxiliary fence to my router-table fence, and set a straight bit to cut the length and diameter of the tenon. Next, I position the jig in my router table's miter slot so that the spindle carriage is centered on the router bit, and clamp it to the tabletop. Then, I fire up my router, insert a scrap of spindle stock into the carriage, and gently plunge it into the spinning bit until the stock touches the auxiliary fence. One complete clockwise rotation of the carriage rounds off the spindle.

Finally, I test-fit the round tenon in a rail hole, and adjust the bit height, if necessary, to fine-tune the fit. Once satisfied, I switch to the actual spindles and start cranking out round tenons.

—Tom Freyer, Phoenix, Ariz



NO MITER SLOT IN YOUR ROUTER TABLE? TRY AN AUXILIARY TABLETOP

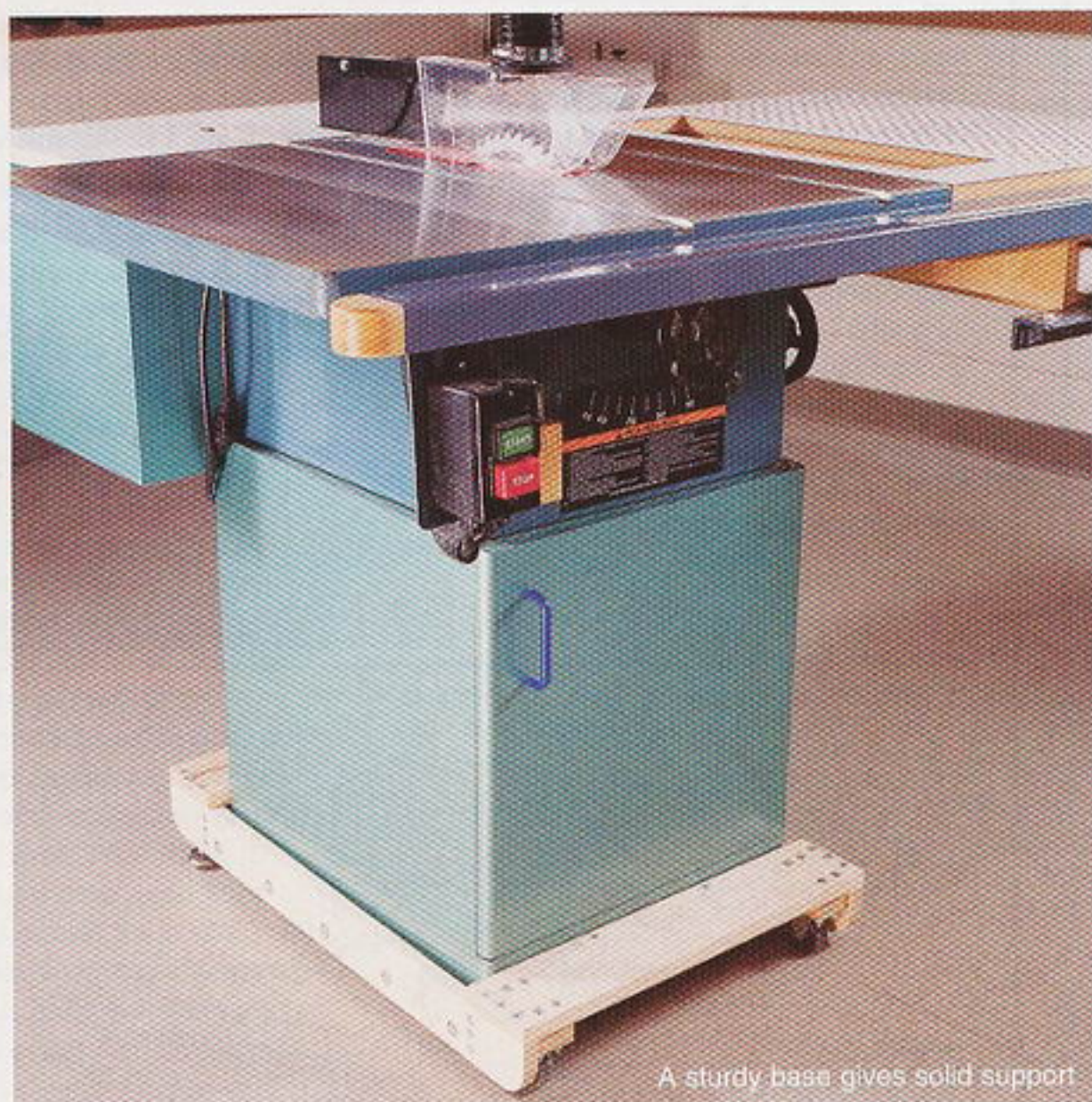
Sometimes you need to rout across the end of a narrow workpiece. If you have a miter slot in your router table, you'd simply use a miter gauge. But what if you don't have a slot? You could index off the router table itself.

Build an auxiliary tabletop to straddle

the router table and attach a fence to it as shown at left. To rout across the end of a piece of stock, slide the table to the right, put the stock against the fence, and slide both the auxiliary top and the stock across the router bit.

—Chuck Hedlund, WOOD® magazine

3-in-1 TABLESAW BASE



A sturdy base gives solid support



On-board dust collection



Outfeed table/motor enclosure

If you want to get the most out of your table saw, you can make some big improvements for just a few dollars. By following the directions on the next few pages and investing no more than a couple of evenings, you can easily enclose the base, add an outfeed table, and reduce the noise level of your saw.

Note: Our base and outfeed table were designed and built to fit a 10" Jet Contractor's Saw. The top of the base cabinet extends about $\frac{3}{4}$ " on each side of the metal saw surround. You may have to alter the base size to fit your saw. The mobile base beneath the base cabinet appears on page 72.

Start with the base cabinet construction

1 Cut the base cabinet sides (A), back (B), and bottom (C) to the sizes listed in the Materials List from $\frac{3}{4}$ " medium-density fiberboard (MDF) or birch plywood. As noted on the Cutting Diagram on page 71, MDF measures 1" wider and longer than regular 4x8' sheet goods.

2 From $\frac{3}{4}$ " solid stock (we recommend maple or birch), cut the $\frac{3}{4}$ "x $\frac{3}{4}$ " cleats (D, E, F) to the lengths listed in the Materials List. (We ripped $\frac{3}{4}$ "-wide strips from the edge of $\frac{3}{4}$ " stock, and then crosscut the strips to length.) Cut the filler strips (G) to size.

1 BASE CABINET EXPLODED VIEW

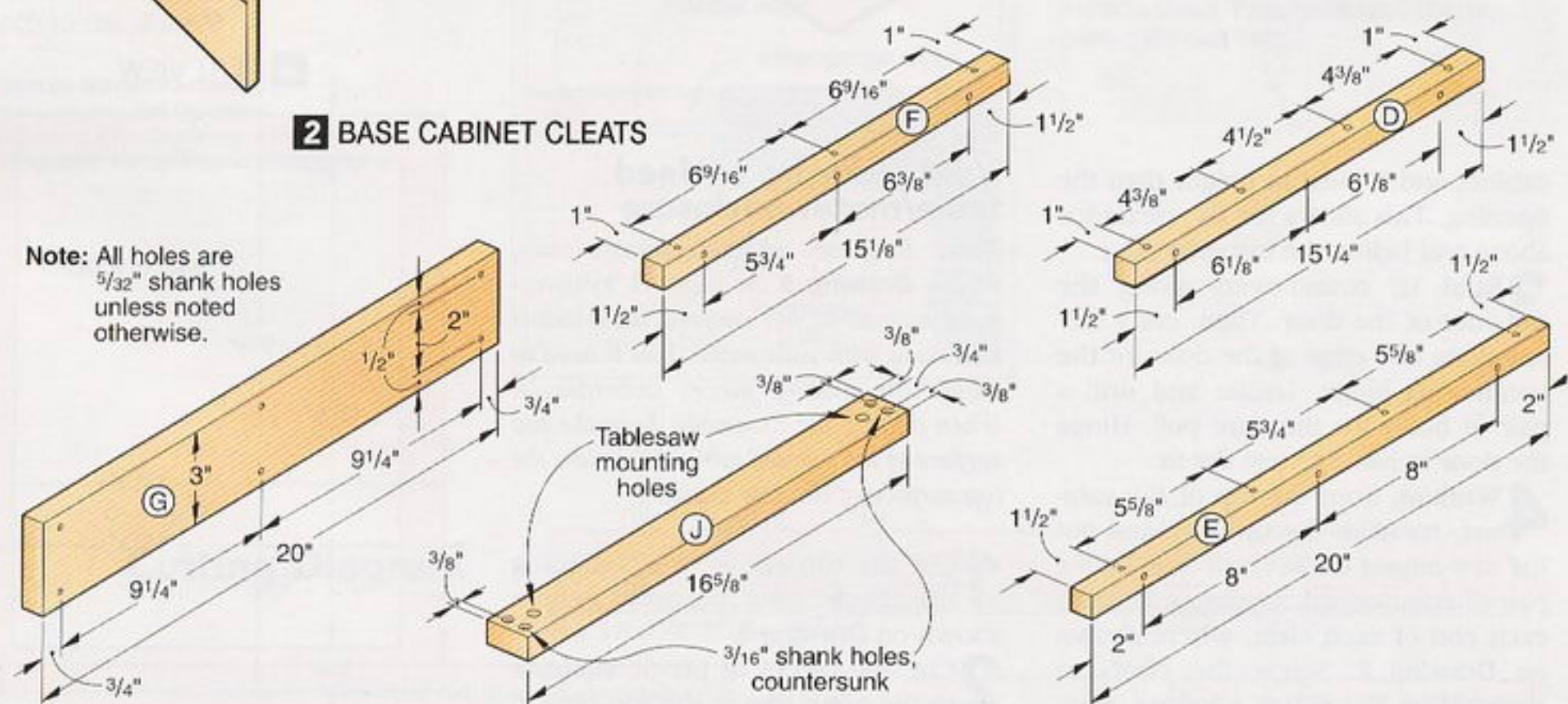
This diagram illustrates the exploded view of a base cabinet assembly, showing the following components and dimensions:

- Front Panel (A):** 22" x 20".
- Back Panel (B):** 18 1/8" x 16 5/8".
- Side Panel (C):** 20" x 16 5/8".
- Top Panel (D):** 18 1/8" x 16 5/8".
- Bottom Panel (E):** 18 1/8" x 16 5/8".
- Door (F):** 17 7/8" x 18 1/8".
- Door Frame (G):** 18 1/8" x 16 5/8".
- Door Pull (H):** 3" wire pull.
- Door Catch (I):** Magnetic catch strike plate.
- Door Holder (J):** Bag holder.
- Door Frame (K):** Back face of door.
- Garbage Bag (L):** Garbage bag.

Assembly Details:

- #8 x 1 1/4" F.H. wood screws:** Used for securing the front panel, back panel, side panel, top panel, bottom panel, and door frame.
- #10 x 2" F.H. wood screw:** Used for securing the door pull.
- 1 1/2" continuous hinge 17 7/8" long:** Used for the door.
- 1/2" round-over:** Used for the door frame.
- 3/4" rabbet 1/8" deep:** Used for the door frame.
- 1/8" hole:** Used for the door pull.
- 1/2" round-over:** Used for the door pull.
- 3/4" rabbet 1/8" deep:** Used for the door pull.
- 1" x 4 3/8" L-shaped piece:** Used for the door pull.

Note: All holes are $\frac{5}{32}$ " shank holes unless noted otherwise.

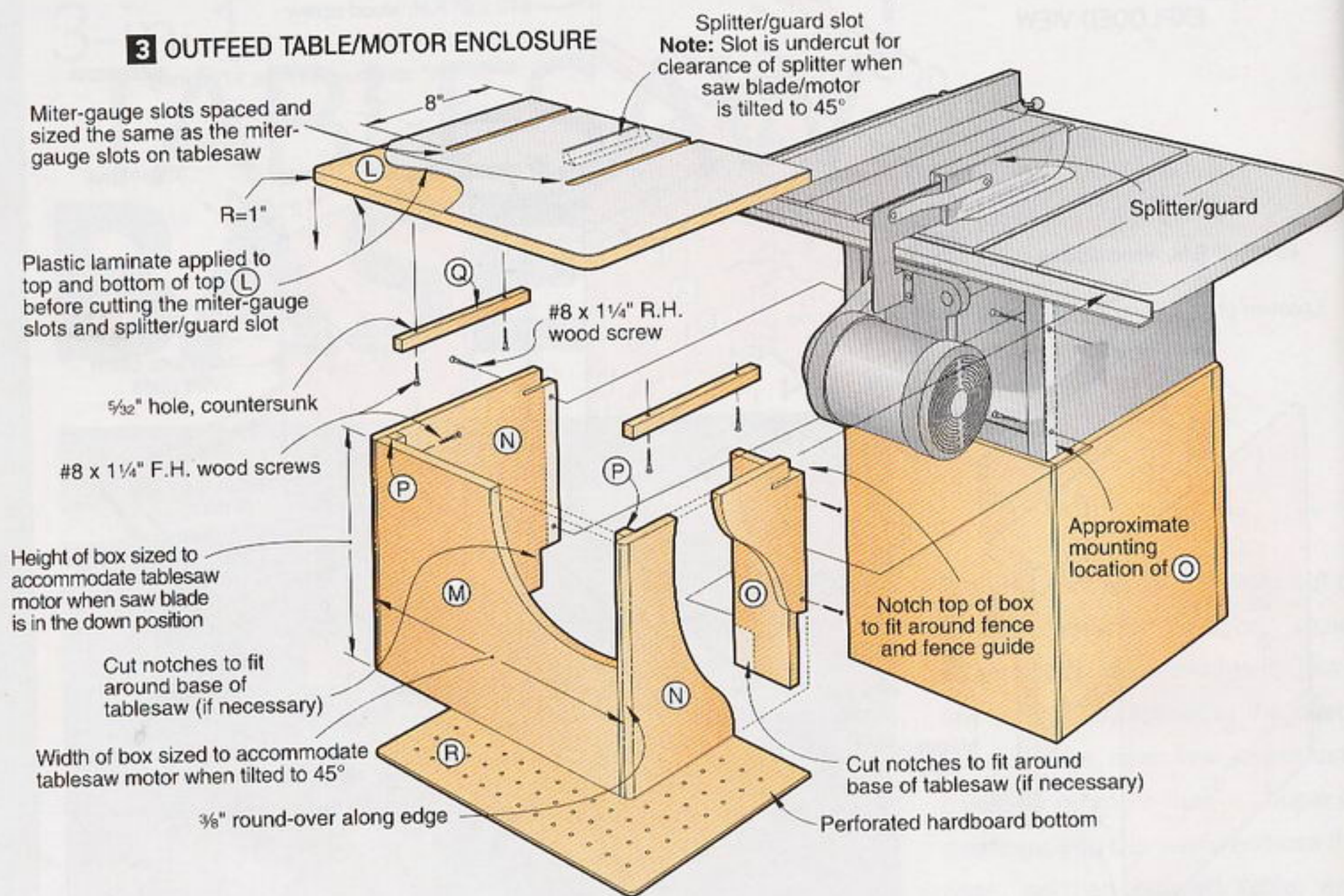


4 Drill countersunk mounting holes in the cleats and filler strips (D-G), where dimensioned on **Drawing 2**. Screw the cleats and filler strips in place, where shown in **Drawing 1**.

6 Working on the outside of the cabinet, sand the joints between the two side panels (A) and back panel (B) smooth. Then, rout a 1/2" round-over along the *back* corners of the cabinet.

2 Cut the door (D) to size. The door should be as wide as the assembled

3 OUTFEED TABLE/MOTOR ENCLOSURE



cabinet and $\frac{1}{8}$ " less in height than the opening. This allows for $\frac{1}{16}$ " clearance above and below the installed door.

3 Rout $\frac{1}{2}$ " round-overs along the sides of the door. Then, cut a rabbet along one edge of the door for the continuous hinge. Locate and drill a pair of holes for the wire pull. Hinge the door in place to test the fit.

4 Working from the top of the cabinet, measure the opening and cut the saw-mount cleats (J) to size. Drill a pair of countersunk mounting holes at each end of each cleat, where shown on **Drawing 2**. Screw the cleats in place. With the aid of a helper, position your tablesaw on the base cabinet. Now, mark the hole locations on the cleats (J) needed to secure the tablesaw to the cleats.

5 From $\frac{1}{2}$ "-thick plywood, cut the bag holder, shown in **Drawing 4**, to size. Place a large garbage bag over the bag holder, and slide the holder into place. If the fit is too tight, trim the edges of the bag holder.

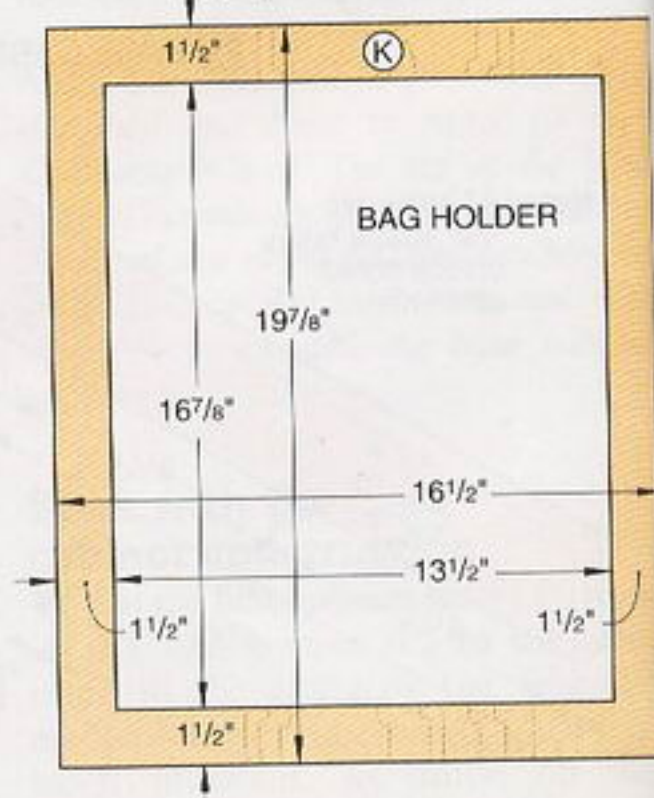
Next, add the outfeed table/motor enclosure

*Note: Because tablesaw fences vary, review **Drawing 5** on page 71 to determine how to fit our outfeed table/motor enclosure with your fence. You'll need to adjust the mating pieces accordingly. When adding the assembly, keep the top surface of the outfeed table $\frac{1}{16}$ " below the top surface of the saw table.*

1 Cut the top (L) to size, radiusing the back two corners, where shown on **Drawing 3**.

2 Cut two pieces of plastic laminate to the same size as the top plus 1" in length and width. Apply contact cement to the mating surfaces, and secure one piece of laminate to the top of the outfeed table. Use a rubber roller to ensure a good bond between the laminate and MDF. Using a flush-trim bit, rout the edges of the plastic laminate flush with the edges of the top. Repeat the process to laminate the bottom side.

4 PART VIEW



3 Cut the box back (M), sides (N), and support (O) to size from your sheet goods. Cut the cleats (P, Q) to size from solid stock. Then, cut the bottom (R) from a piece of $\frac{1}{4}$ " perforated hardboard.

4 Assemble the box in the configuration shown on the drawing. Rout round-overs along the back edge,

where shown on the drawing. Test the fit of the box against your tablesaw and trim if necessary.

5 Position the outfeed table on the motor enclosure, and carefully mark a pair of miter-gauge slots in the top to align perfectly with those in your saw top. Cut or rout the grooves to an 8" length. (After marking the groove locations, we used a straight-edge and a router fitted with a straight bit to rout the grooves.) Then, mark and cut the slot in the table for the splitter/guard support.

You're almost done—just sand, paint, and assemble

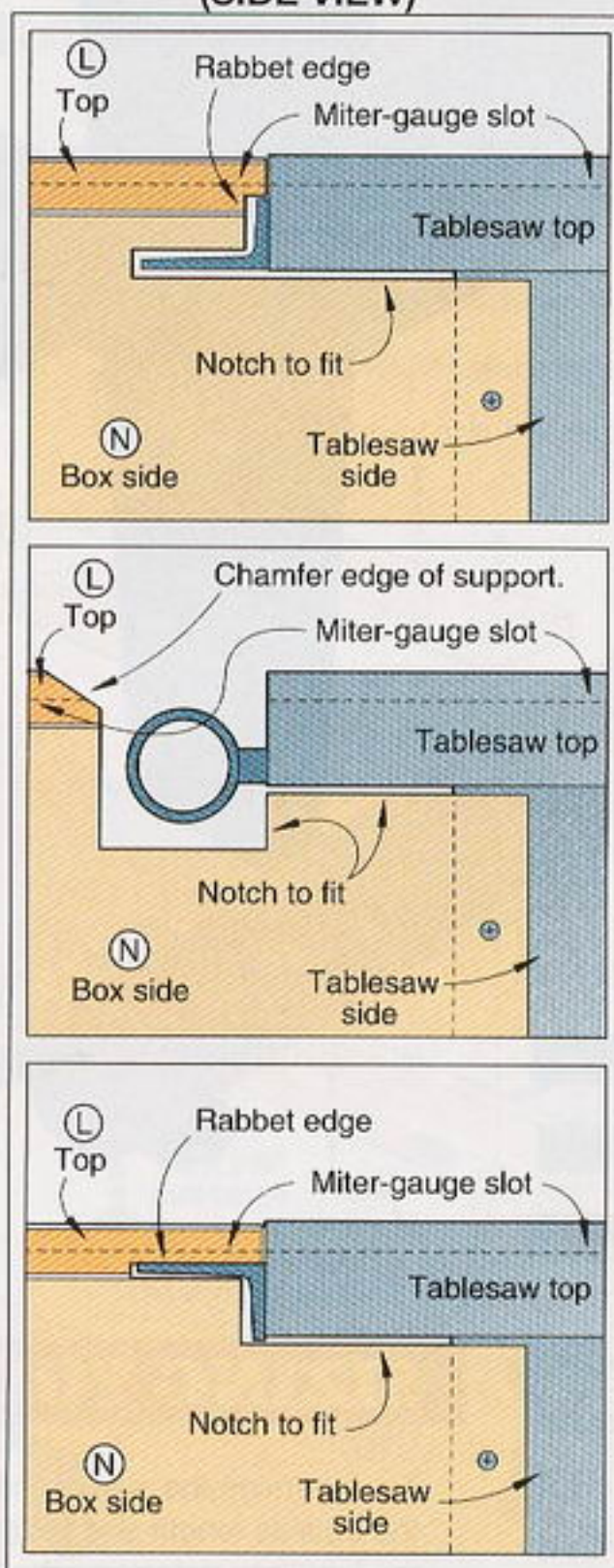
1 Fill any imperfections, and finish-sand the base cabinet, motor enclosure, door, and outfeed table.

2 Prime the assemblies. (We did this in several coats, using a sanding block with 220-grit sandpaper between coats to smooth the primer.) Paint the assemblies, then add a clear finish to the exposed edges on the outfeed table.

3 Hinge the door to the cabinet. Attach the wire pull and magnetic catch to the door.

Written by **Marlen Kemmet**
Project design: **Jim Downing**
Illustrations: **Kim Downing; Lorna Johnson**
Photographs: **Hetherington Photography**

5 FENCE CONFIGURATION FENCE CONFIGURATIONS (SIDE VIEW)



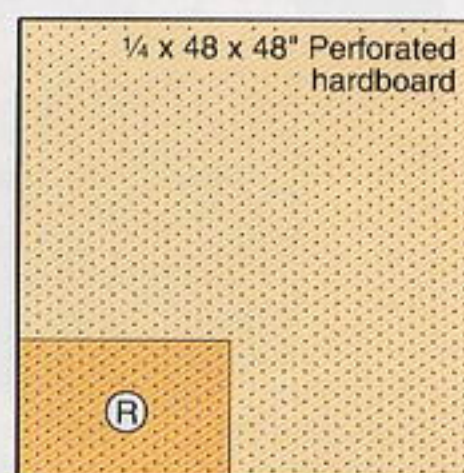
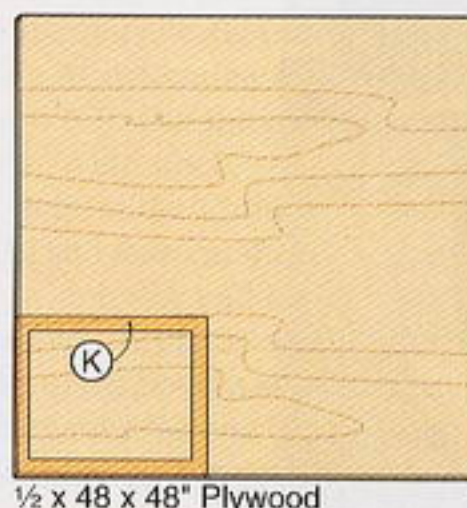
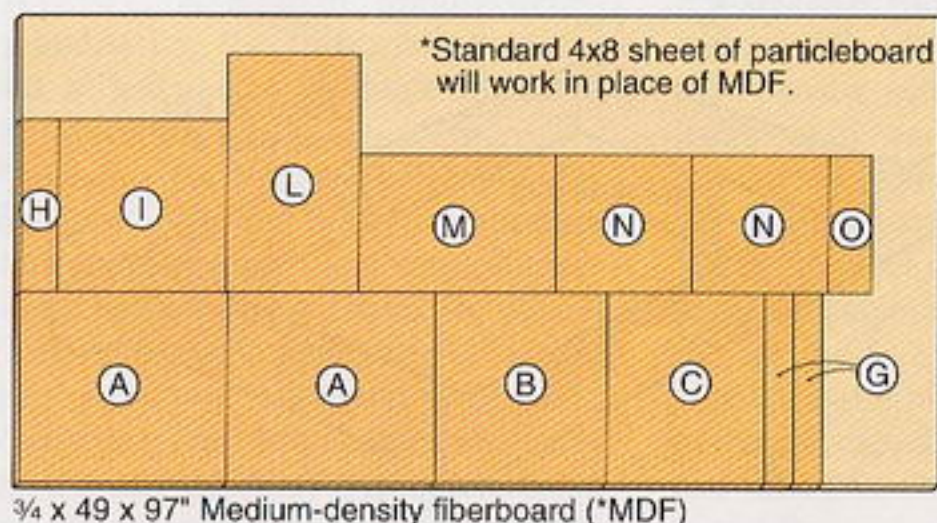
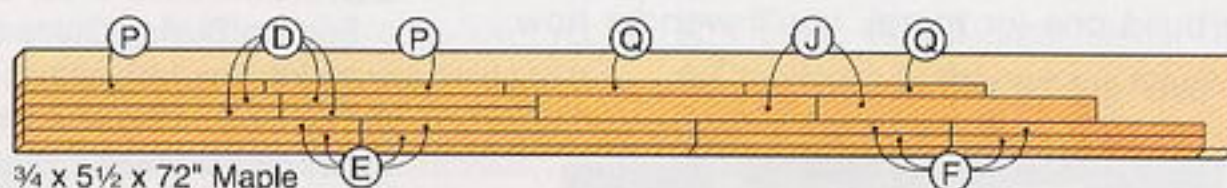
Materials List

Base Cabinet	FINISHED SIZE			Matl.	Qty.
	T	W	L		
A sides	¾"	20"	22"	MF	2
B back	¾"	18½"	22"	MF	1
C bottom	¾"	16½"	20"	MF	1
D cleats	¾"	¾"	15¼"	H	4
E cleats	¾"	¾"	20"	H	4
F cleats	¾"	¾"	15½"	H	4
G filler strips	¾"	3"	20"	MF	2
H toekick	¾"	4"	18½"	MF	1
I door	¾"	17⅞"	18½"	MF	1
J cleats	¾"	1½"	16⅝"	H	2
K bag holder	½"	16½"	19⅞"	PL	1
Outfeed Table/Motor Enclosure					
L top	¾"	14"	25"	MF	1
M back	¾"	13¾"	21¼"	MF	1
N sides	¾"	13¾"	14¾"	MF	2
O support	¾"	4½"	12½"	MF	1
P cleats	¾"	¾"	13¾"	H	2
Q cleats	¾"	¾"	10"	H	2
R bottom	¼"	13⅞"	22¾"	PH	1

Materials key: MF—medium-density fiberboard, H—hardwood (maple or birch), PL—plywood, PH—perforated hardboard.

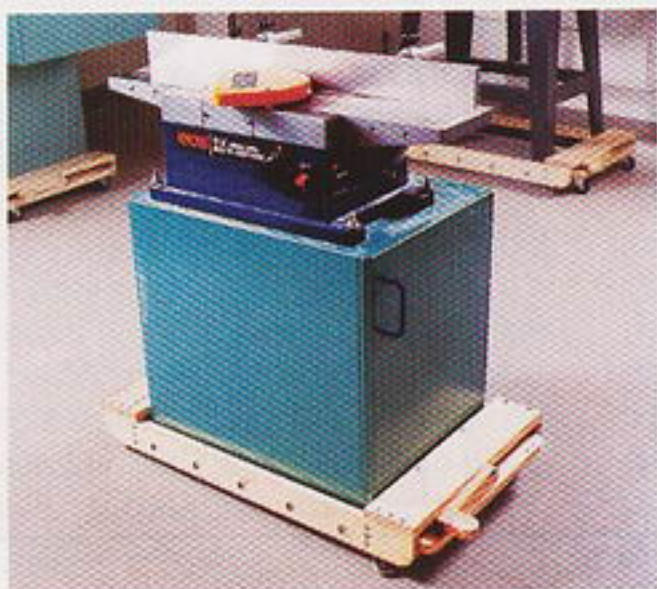
Supplies: #8x1 1/4" flathead wood screws, #8x1 1/4" roundhead wood screws, #10x2" flathead wood screws, plastic laminate, 3" wire pull, magnetic catch and strike plate, 1 1/2" continuous hinge 17 7/8" long, primer, paint, clear finish.

Cutting Diagram



roll-around TOOL BASE

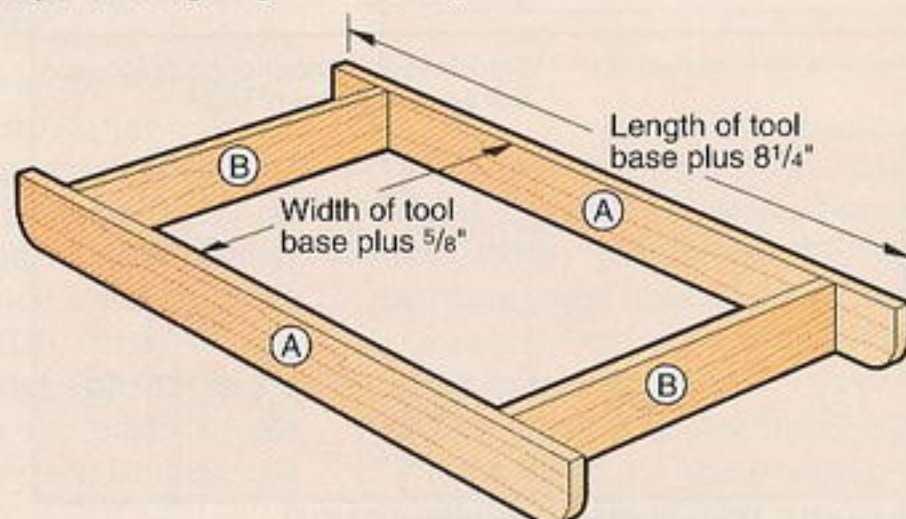
Struggling to move heavy woodworking tools around your shop can cause headaches, let alone backaches. But you can do the job quickly and easily with a mobile, economical, four-wheeled tool base. It's a triumph of brains over brawn. Once you build one (or more), you'll wonder how you ever got by without it.



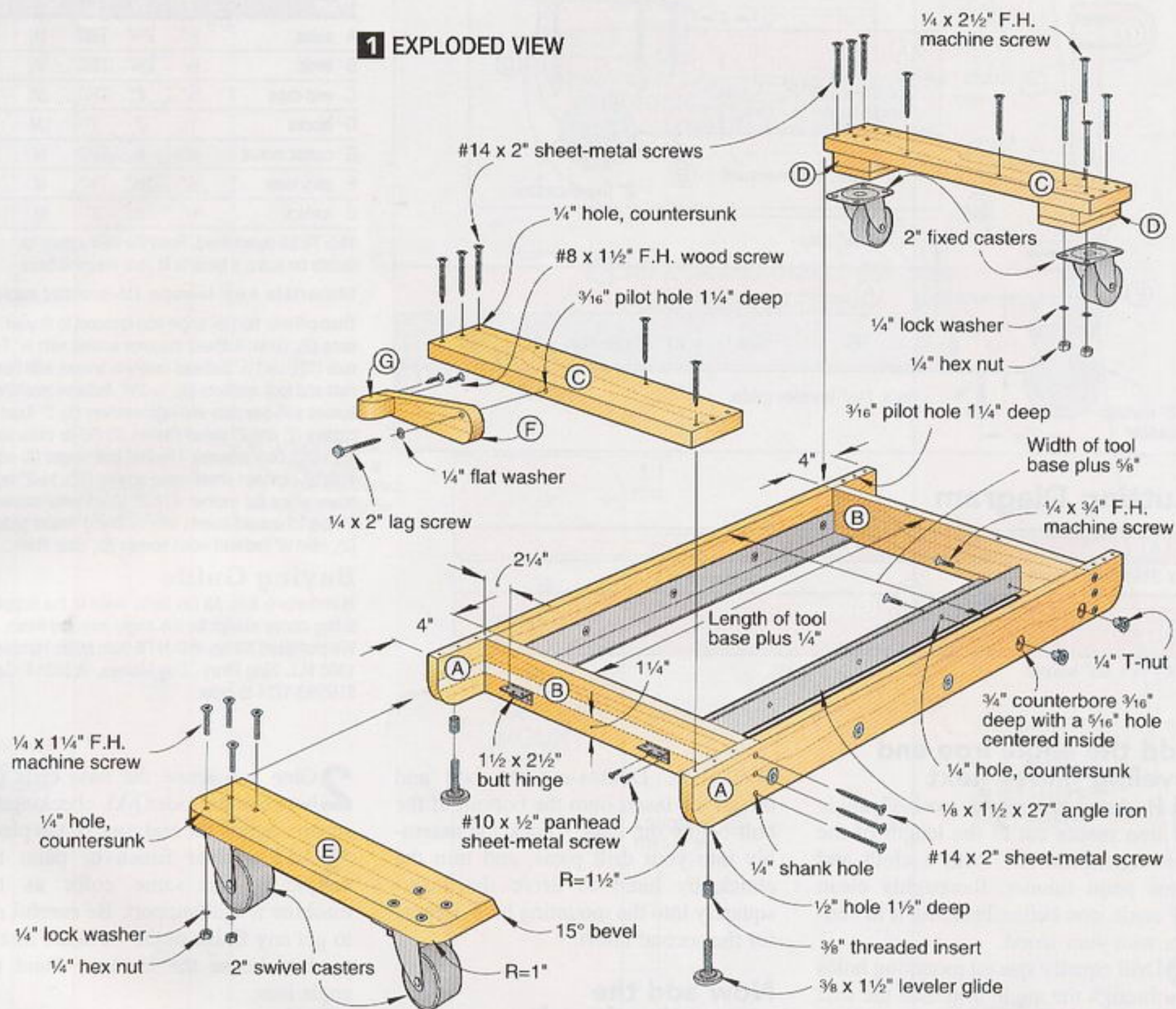
SIZING YOUR TOOL BASE

To determine the size of the mobile tool base, start by measuring the outside length and width of your tool base. Then, add $8\frac{1}{4}"$ to the length to determine the length of the sides (A), and add $\frac{5}{8}"$ to the width to determine the length of the ends (B). Next, adjust the other pieces according to the instructions. The mobile base we built fits the base of our Sears $17\frac{3}{8} \times 27"$ bandsaw.

See the Buying Guide at the end of the Materials List for a hardware kit. The kit contains everything except the angle iron. Due to the cost of cutting and shipping, and the ease of availability, you're better off purchasing angle iron locally.



1 EXPLODED VIEW



Start by building the basic wood frame

1 From 3/4" hardwood stock (we used maple), cut the base sides (A) and ends (B) to the lengths determined using the information in the box at left and to the width listed in the Materials List.

2 Clamp the ends (B) between the sides (A) in the configuration shown on **Drawing 1** and where dimensioned on **Drawing 4**. Check for square. The opening should measure 1/4" longer than your tool base and 5/8" wider. Verify this, then drill countersunk holes through the sides (A) and centered into the ends of the ends (B). Drive in

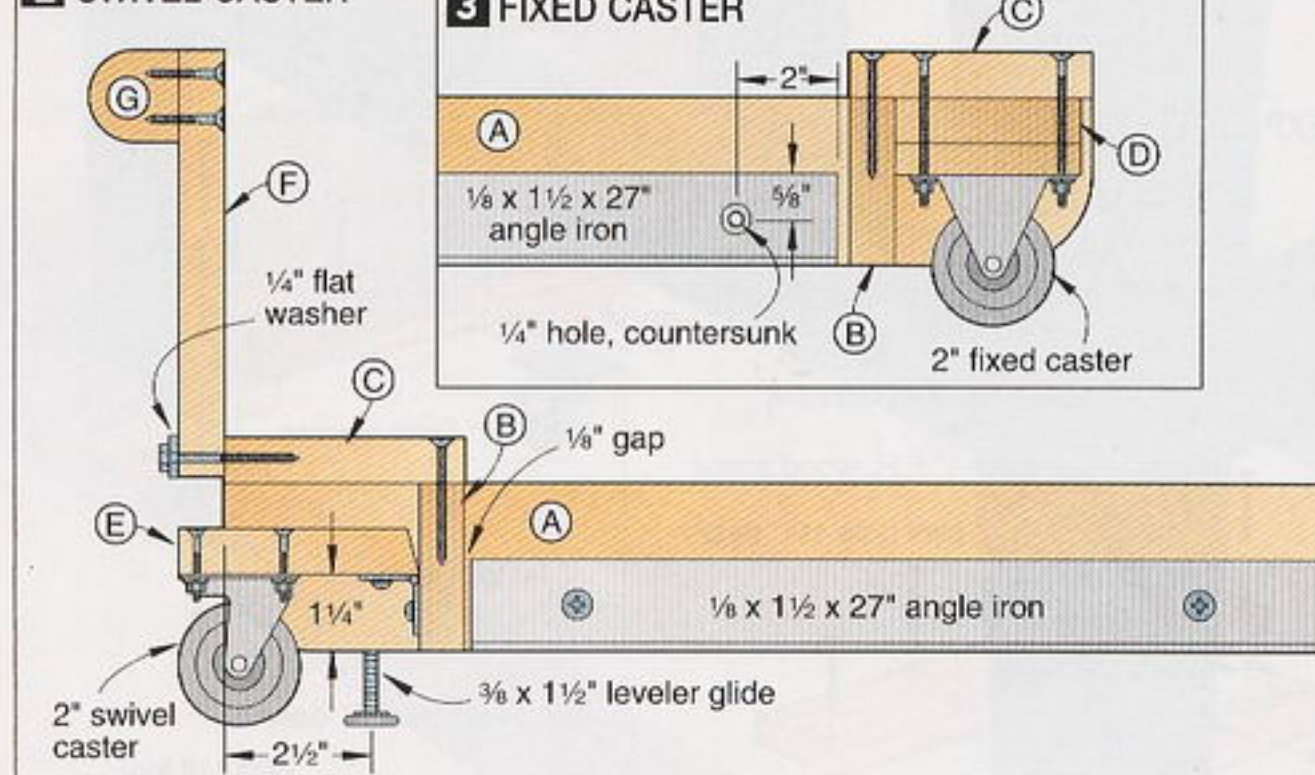
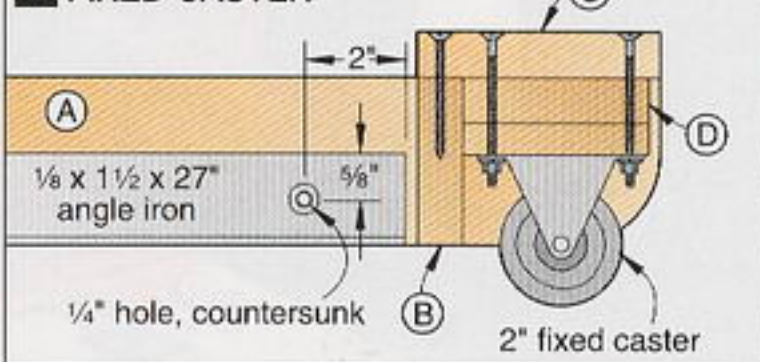
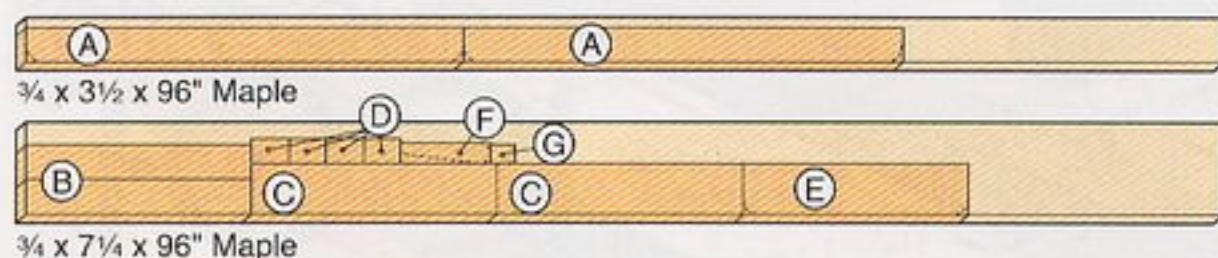
the screws, but do not glue the joint yet. For extra holding power, we used sheet-metal screws. For ease in driving the screws, add beeswax to the threads.

3 Measure from the outside face of one side (A) to the outside face of the opposite side (A) to determine the length of the end caps (C). Cut the end caps to length from 4" wide stock.

4 Laminate stock to form the 1"-thick caster blocks (D), and then cut them to size. Temporarily clamp the end cap (C) for the fixed casters in place, and glue the caster blocks to the bottom side of the end cap, flush against the end (B) and sides (A). Do not glue the blocks to A and B.

5 Cut the swivel-caster mount (E) to the length of the opening minus 1/8". Bevel-rip one edge at 15°, where shown on **Drawing 1**. Mark and cut a pair of 1" radiuses on opposite corners. Drill the mounting holes, and bolt a pair of 2" swivel casters to the bottom side of the mount (E).

6 Mount a pair of 1 1/2" butt hinges 2 1/2" long to the bottom side of the caster mount (E). (After twisting off several of the screws supplied with the hinges, we used #10 x 1/2" panhead sheet-metal screws to secure the hinges to the caster mount.) Drill the pilot holes and screw the hinges to the end (B), where dimensioned on **Drawing 2**.

2 SWIVEL CASTER**3 FIXED CASTER****Cutting Diagram****Add the angle iron and leveling glides next**

1 Hacksaw a pair of $\frac{1}{8} \times 1\frac{1}{2}$ " angle iron pieces cut to the length of the opening minus $\frac{1}{4}$ ". With a cloth and some paint thinner, thoroughly clean the angle iron before bringing it in contact with your wood.

2 Drill equally spaced mounting holes through the angle iron. See the side (A) on **Drawing 4** for spacing. Next, transfer the hole centerpoints to the inside face of the sides (A). Using a high-speed steel countersink bit, countersink the holes on the inside face of each piece of angle iron.

3 Disassemble the tool base, and drill the mounting holes through the sides (A) for attaching the angle iron. Counterbore the holes on the outside face of the sides (A) for the T-nuts.

4 Cut a $1\frac{1}{2}$ " radius on the bottom corners of the sides (A), where shown on the drawings.

5 Mark the centerpoints, and drill the mounting holes for the $\frac{3}{8}$ " threaded inserts on the bottom edge of the sides, $2\frac{1}{2}$ " in from the ends, where shown on **Drawing 2**.

6 For ease in driving the inserts into the sides (A), cut the head off a

$\frac{3}{8} \times 3$ " bolt. Double-nut the bolt and thread the insert onto the bottom of the bolt below the nuts. Chuck the assembly into your drill press, and turn the chuck by hand to drive the insert squarely into the mounting hole. Repeat for the second insert.

Now add the cam-action foot lever

1 Transfer the patterns from the drawings *opposite page*, for the cam lever (F) and the toekick (G) to $\frac{3}{4}$ " stock, and bandsaw them to shape. Sand the edges to remove the saw marks.

2 Drill a $\frac{1}{4}$ " hole through the cam lever for attaching it to the end cap (C) later. Mark the centerpoint, and drill a mating pilot hole in the end cap used at the swivel caster end of the base.

3 Drill a pair of mounting holes through the cam lever and into the toekick. Glue and screw the toekick to the cam lever.

Final assembly and finishing

1 Remove the casters from the base. Remove the hinges from base ends (B) and caster mount (E).

Materials List

Part	FINISHED SIZE T W L	Matl.	Qty
A sides	$\frac{3}{4}$ " $2\frac{3}{4}$ " TBD	M	2
B ends	$\frac{3}{4}$ " $2\frac{3}{4}$ " TBD	M	2
C end caps	$\frac{3}{4}$ " 4" TBD	M	2
D blocks	1" 2" 3"	LM	2
E caster mount	$\frac{3}{4}$ " 4" TBD	M	1
F cam lever	$\frac{3}{4}$ " $1\frac{1}{8}$ " $7\frac{1}{4}$ "	M	1
G toekick	$\frac{3}{4}$ " $1\frac{1}{2}$ " 2"	M	1

TBD: To be determined. Read the instructions for details on sizing a base to fit your machine base.

Materials key: M-maple, LM-laminated maple.

Supplies: $\frac{1}{8} \times 1\frac{1}{2}$ " angle iron crosscut to fit your base (2), $\frac{1}{4} \times \frac{3}{4}$ " flathead machine screws with $\frac{1}{4}$ " T-nuts (10), $\frac{1}{4} \times 1\frac{1}{4}$ " flathead machine screws with hex nuts and lock washers (8), $\frac{1}{4} \times 2\frac{1}{2}$ " flathead machine screws with hex nuts and lock washers (8), 2" fixed casters (2) and 2" swivel casters (2) (90-lb. plate casters with rubber wheels), $1\frac{1}{2} \times 2\frac{1}{2}$ " butt hinges (2) with $\#10 \times \frac{1}{2}$ " panhead sheet-metal screws (12), $\frac{1}{4} \times 2$ " lag screw with a flat washer, $\#14 \times 2$ " sheet-metal screws (28), $\frac{3}{8}$ " threaded inserts with matching leveler glides (2), $\#8 \times 1\frac{1}{2}$ " flathead wood screws (2), clear finish.

Buying Guide

Hardware kit. All the items listed in the Supplies listing above except for the angle iron and finish. We purchased Kit no. WD-MTB from Miller Hardware 1300 M.L. King Pkwy., Des Moines, IA 50314. Call 515/283-1724 to order.

2 Glue and screw the base ends (B) between the sides (A), checking for square. Screw the end caps (C) in place.

3 Add a clear finish or paint the pieces the same color as the machine it will support. Be careful not to get any finish in the threaded inserts used to house the levelers. Paint the angle iron.

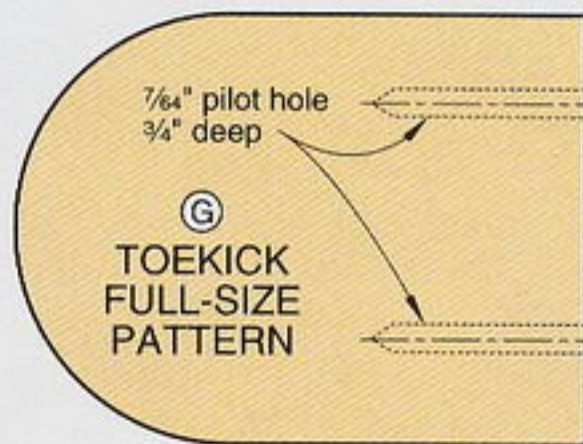
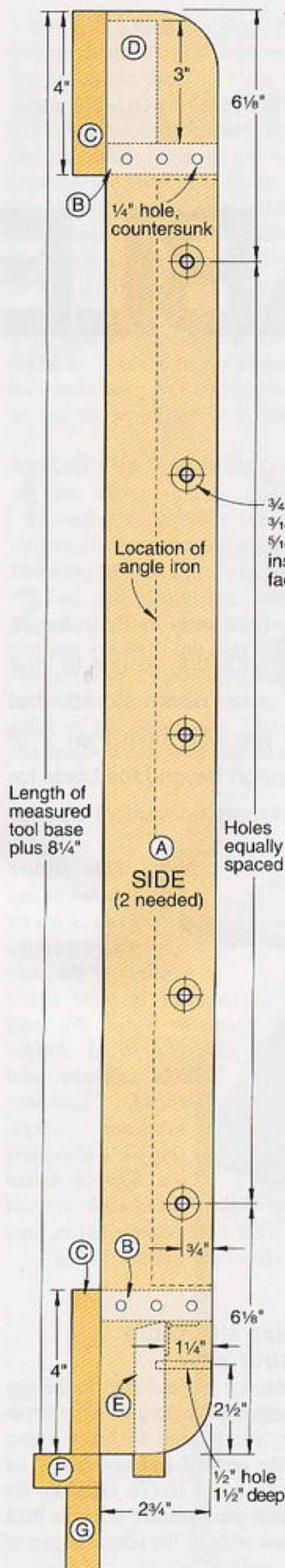
4 Drive the panhead sheet-metal screws to hinge the caster mount (E) to the end (B).

5 Use a wrench to drive the $\frac{1}{4}$ " lag screw connecting the cam lever (F) to the end cap (C).

6 Tap the T-nuts in place, and secure the angle iron to the base sides. Bolt the casters in place.

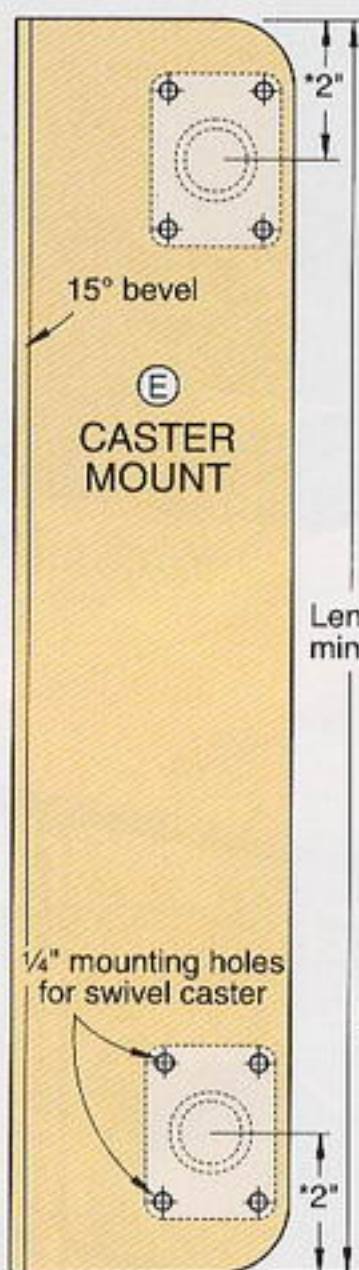
7 Add the levelers. Raise the levelers so the base rests on the levelers when the cam lever is flipped to the right side, raising the caster mount and swivel casters. When you want to move the tool, flip the cam lever to the left to lower the casters. 🌱

Produced by Marlen Kemmet
Project design: Jim Downing
Illustrations: Roxanne LeMoine; Lorna Johnson
Photographs: Wm. Hopkins



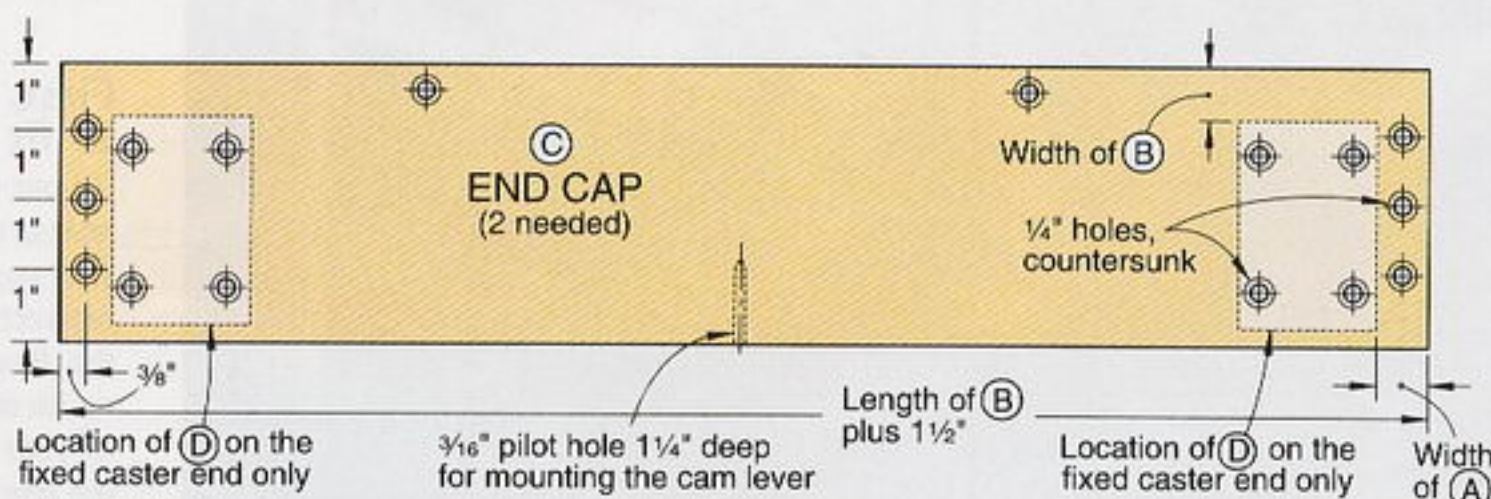
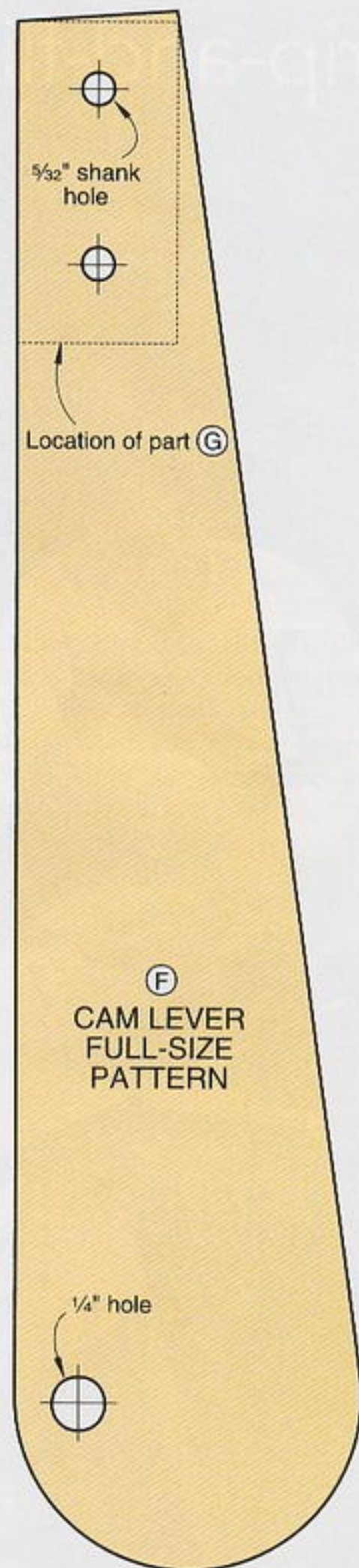
5 TOEKICK AND CAM LEVER FULL-SIZE PATTERNS

4 PARTS VIEW



Length of (B) minus 1/8"

* When mounting swivel casters allow enough room for casters to swivel a full 360°.



rip-and-flip TABLESAW OUTFEED TABLE



Our handy folding fixture adds only inches to your saw when stored, but provides you with more than 3' of stock support beyond the blade for safer and more convenient cutting.

Note: This fixture attaches to any stationary table saw, regardless of the style or material of your saw's extension wings. We built ours to fit a Ridgid TS2424 table saw with webbed, cast-iron extension wings, but we'll also show you how to mount the outfeed table to solid cast-iron, stamped-steel, and shop-built wooden tables.

First, size the table to fit your saw

If your table saw fence clamps to the rear rail, as shown in **Drawing 1** on the opposite page, you'll need to leave a gap between the outfeed and saw tables for the fence to travel in. To calculate the width of that gap, measure from the back of your saw table to the rearmost part of the fence, and add $\frac{1}{4}$ ".

You'll also need to size the fixed table, which should be just wide enough for the extension table to clear the motor when folded down. On belt-driven saws, crank the blade all the way down to find the maximum reach of the motor, then measure the horizontal distance between the back of the saw table and the back of the motor. If you have to leave a gap for the fence, subtract the width of the gap to find the fixed table's length.

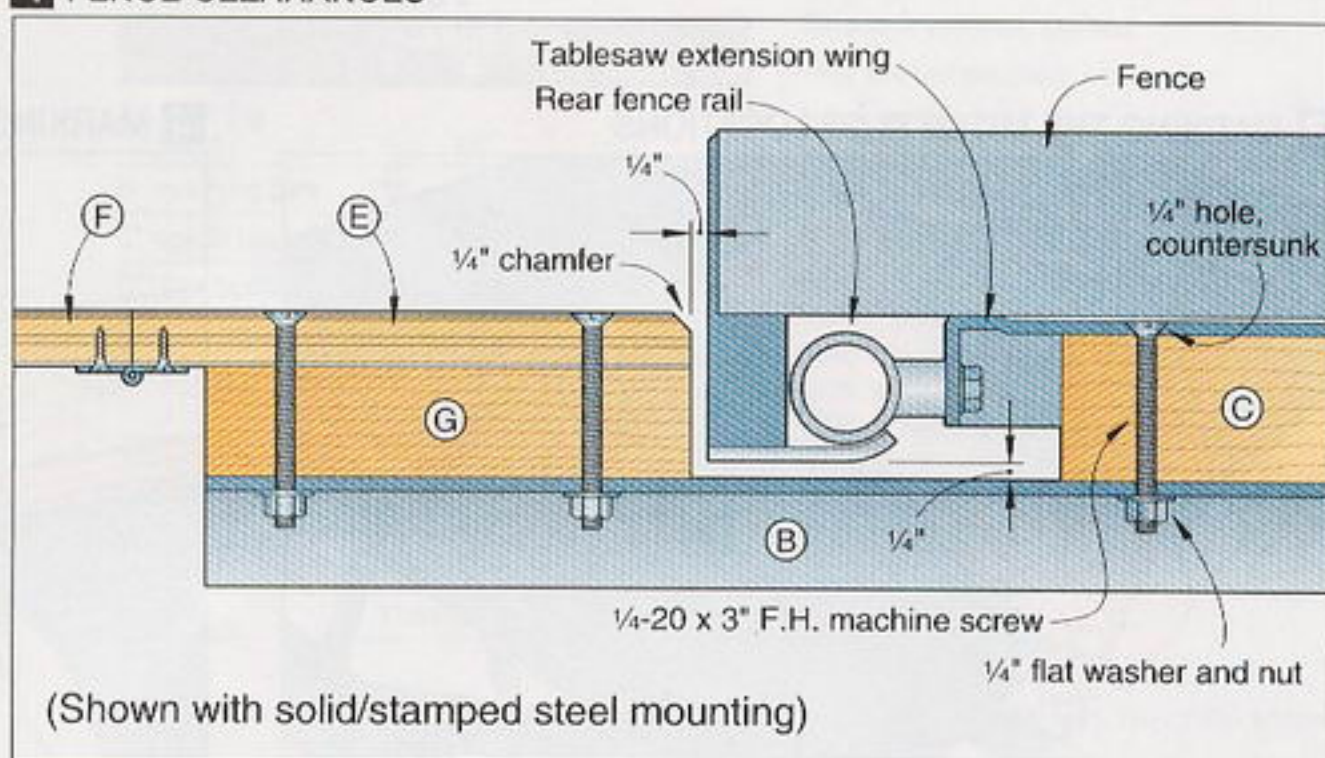
Finally, measure from the front of your saw's cabinet to the back edge of its table. Add the motor clearance measurement you just took, then subtract 1" to find the length of the mounting bars.

Install the mounting bars

1 Size the mounting plates (A), if needed, to straddle three cells (as shown in **Drawing 5b** accompanying **Drawing 5**), and cut them to length.

2 Cut the mounting bars (B) to length. To locate the bars, crank the saw blade to full height and adjust the bevel to 45°. Using a level, mark a minimum clearance line on the back edge of the saw table, plumb above the farthest reach of the motor.

1 FENCE CLEARANCES

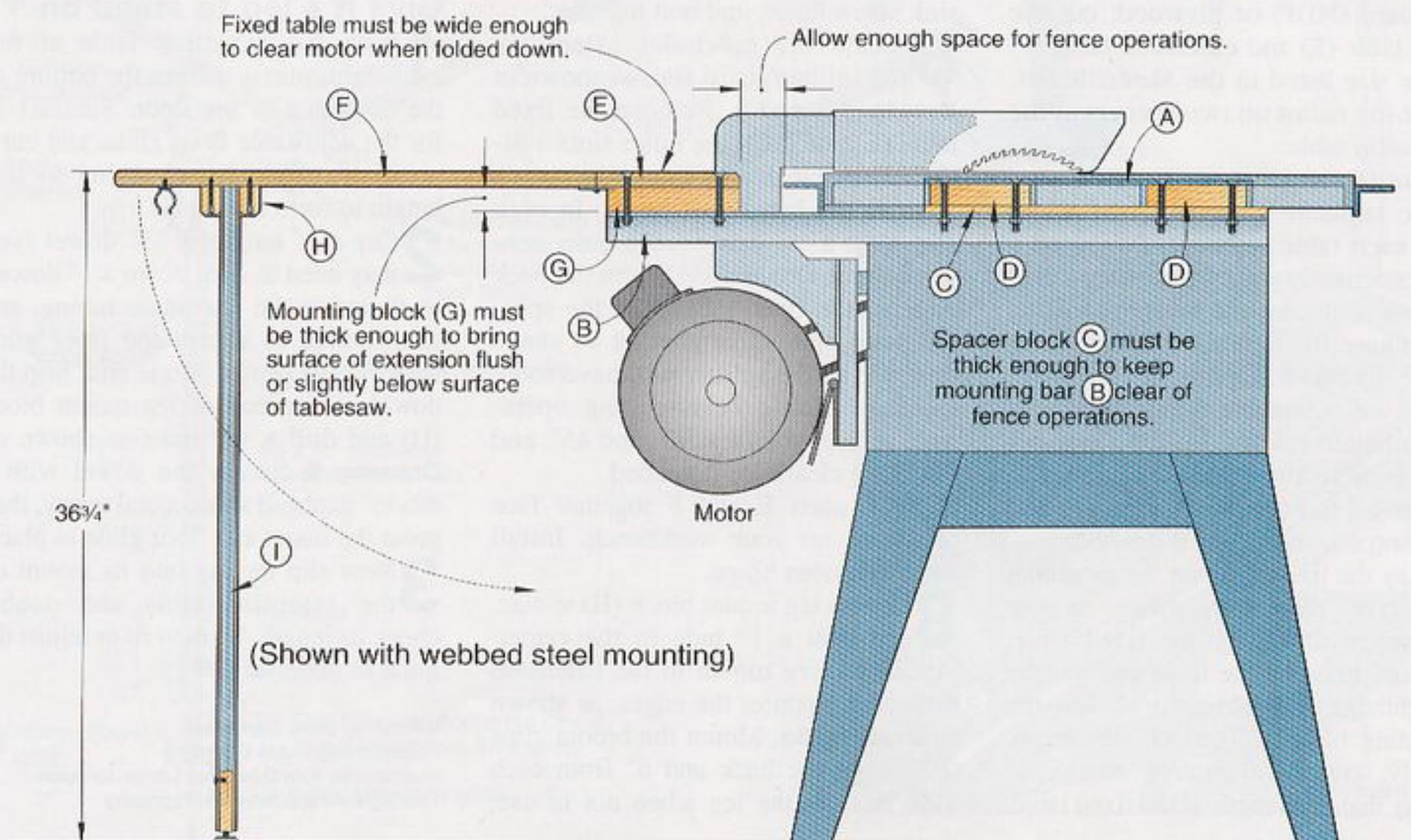


3 Using **Drawing 1** and **Drawing 2** as a guide, cut two spacer blocks (C) and filler blocks (D), if needed, to size. For a rear-locking fence, the spacer blocks must be thick enough to allow 1/4" clearance between the mounting bar and the fence mechanism. (See **Drawing 2**.)

4 Temporarily attach the spacer blocks to the filler blocks, steel

bars, and mounting bars with double-faced tape. Drill and countersink mounting holes through the taped stack. For stamped, cast iron or shop-built tables, clamp the spacer blocks and mounting bars in place on the saw and drill up from the bottom. Then countersink the top. Finally, remove the tape and bolt the assemblies in place.

2 SECTION VIEW



3 MARKING THE MITER SLOT LOCATIONS



4 MARKING THE SPLITTER/GUARD LOCATION



Make and mount the fixed and extension tabletops

1 From $\frac{3}{4}$ " medium-density fiberboard (MDF) or plywood, cut the fixed table (E) and extension table (F) to the size listed in the Materials List. Shape the radius on two corners of the extension table.

2 Cut top and bottom pieces of plastic laminate 1" longer and wider than each table segment. (We used a less-expensive type of laminate, called balance sheet, for the bottoms.)

3 Adhere the laminate to both sides of the fixed (E) and extension (F) tables with contact cement, then trim the laminate using a flush-trim router bit. Machine the edges, as shown in **Drawing 2** (on the *previous page*) and **Drawing 5a**, and paint, if desired.

4 Lay the fixed table on the mounting bars and place a straightedge on your saw top overhanging the fixed table. Measure between the table top and the straightedge and subtract $\frac{1}{16}$ ". Cut the mounting blocks (G) to this thickness. Finally, cut the mounting blocks 1" shorter than the length of the fixed table.

5 Clamp the fixed table (E) and mounting blocks (G) in position on the mounting bars. Drill and counter-sink screw holes, and bolt together.

6 Locate the miter-slot extensions and splitter/guard slot, as shown in **Drawings 3 and 4**. Remove the fixed table (E) and dado the miter slots a little wider and deeper than your saw's slots so the bar clears easily. In each slot, drill a $\frac{3}{4}$ " dust-escape hole, centered in the slot and $1\frac{1}{2}$ " from the back edge of the fixed table. Cut the splitter/guard slot, remembering to shape one side so the splitter will have room to move during bevel-cutting operations. Check the fit at 90° and 45°, and cut more clearance if needed.

7 Butt parts E and F together face down on your workbench. Install the continuous hinge.

8 Cut the leg mount block (H) to size, and drill a 1" hole in the center. Attach the leg mount to the extension table and chamfer the edges, as shown in **Drawing 5a**. Mount the broom clips $2\frac{1}{2}$ " from the back and 6" from each side to store the leg when not in use.

Bolt the outfeed table assembly to the mounting bars.

Give it a leg to stand on

1 With the extension table at full height, measure from the bottom of the extension to the floor. Subtract 1" for the adjustable floor glide, and cut a piece of 1" aluminum tubing to that length to form the leg (I).

2 Cut a 3" length of $\frac{7}{8}$ " dowel (you may need to sand down a 1" dowel) to fit inside the aluminum tubing, and drill a hole to accept the floor glide insert in the center of one end. Slip the dowel in one end of leg mount block (H) and drill a $\frac{5}{32}$ " hole, as shown on **Drawing 5**. Secure the dowel with a #8 $\times\frac{1}{2}$ " panhead sheet-metal screw, then press the insert and floor glide in place.

3 Now slip the leg into its mount on the extension table and double-check its length. Trim to fit or adjust the glide as necessary. 🌿

Written by **Dave Campbell**
Project design: **Jim Downing**
Illustrations: **Kim Downing; Lorna Johnson**
Photograph: **Baldwin Photography**

Materials List

Part	FINISHED SIZE	Matl.	Qty.
A** mounting plates	1/8" 1 1/2" *	S	2
B mounting bars	1 1/2" 1 1/2" *	A	2
C* spacer block	* 1 1/2" *	SS	2
D** filler blocks	* 1 1/2" *	SS	4
E* fixed table	3/4" 36" *	C	1
F extension table	3/4" 36" 24"	C	1
G mounting blocks	* 1 1/2" *	SS	2
H leg mount block	1 1/2" 3" diam.	SS	1
I leg	1" diam. *	AT	1

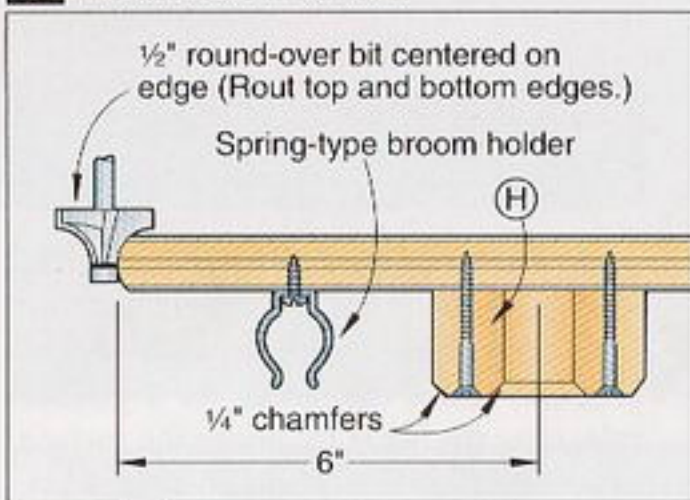
*Size to fit your saw, see text.

**For webbed extension wings only.

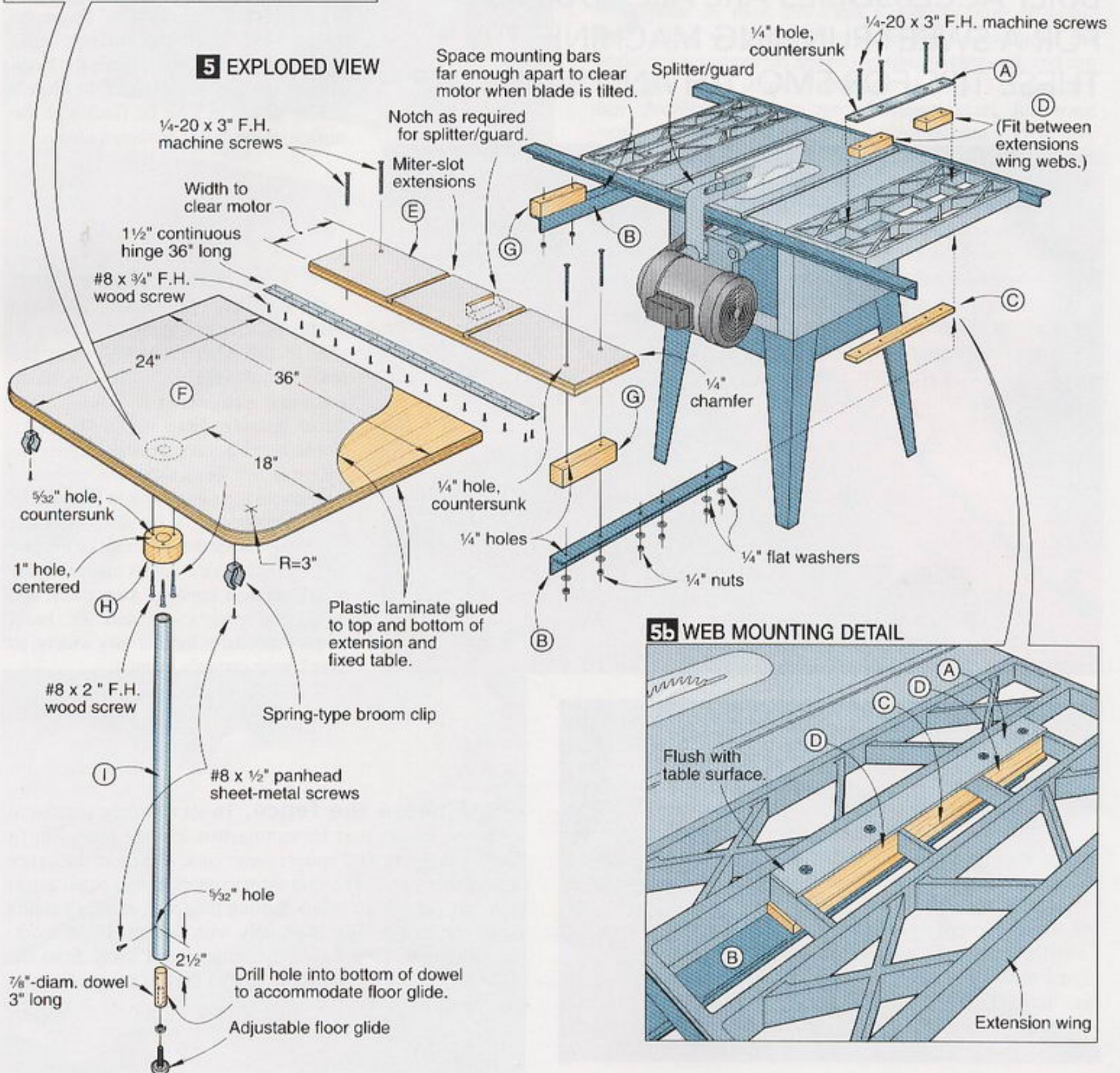
Materials key: A—1/8" angle iron, S—steel bar stock, SS—solid stock, C—choice of plywood or medium-density fiberboard (MDF), AT—aluminum tubing.

Supplies: Plastic laminate; contact cement; 1/8x1 1/2" steel bar**; cloth-backed double-faced tape; 1 1/2x36" continuous hinge; adjustable floor glide; spring-type broom clips (2); 7/8x3" dowel; 1/4-20x3" flathead machine screws; flat washers, and nuts; #8x2" flathead wood screws; #8x3/4" flathead wood screws; #8x1 1/2" panhead sheet-metal screws.

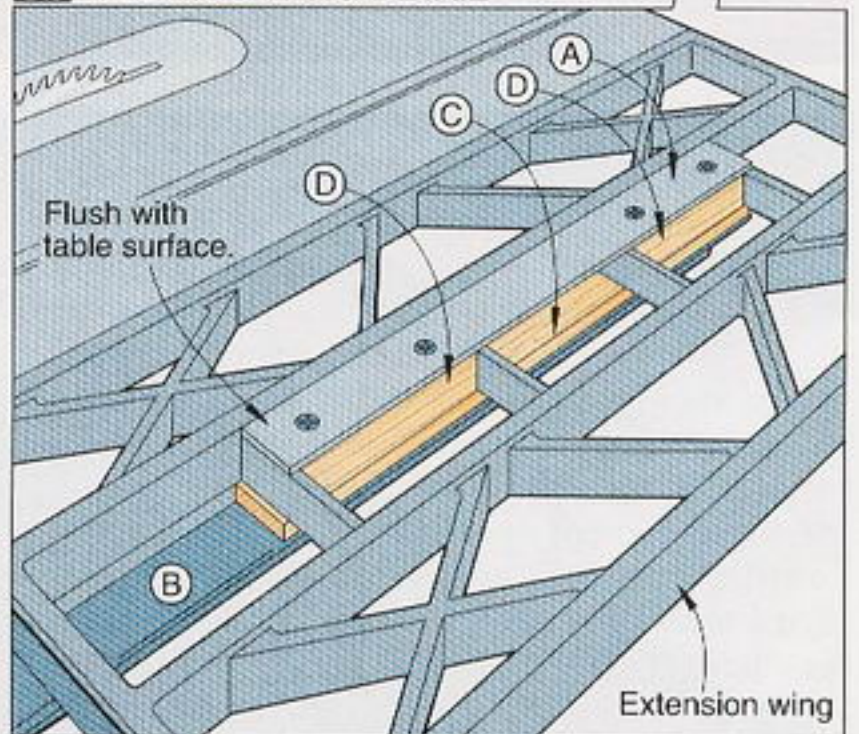
5a LEG MOUNT DETAIL



5 EXPLODED VIEW

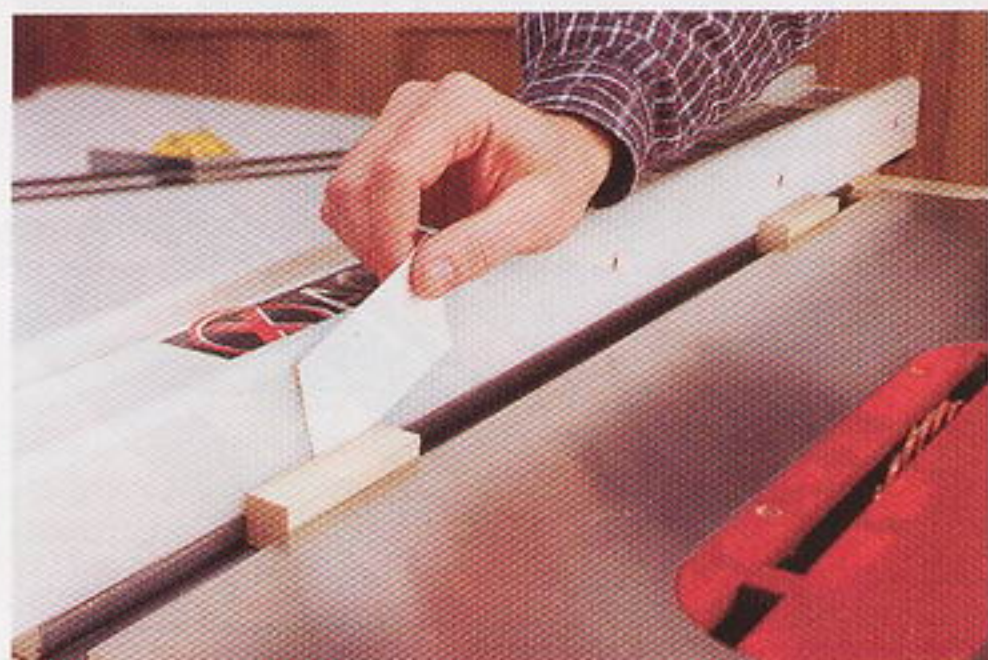


5b WEB MOUNTING DETAIL



10 ways to TABLESAW SUCCESS

A LITTLE FINE TUNING AND SOME SHOP-BUILT ACCESSORIES ARE ALL YOU NEED FOR A SWEET-RUNNING MACHINE. TRY THESE TIPS FOR SMOOTH AND SAFE CUTS.



1 Get blade height right.

Everyone has a different idea on how far saw-blade teeth should protrude above the stock. As a general rule, raise the blade $\frac{1}{2}$ " above the surface of softwood stock to reduce heat buildup. For hardwoods, raise it to $\frac{3}{4}$ " above the surface. You want the blade to eject waste from the gullets between the teeth. That means that the bottom of the blade's gullets should at least be flush with the surface of the stock, as shown *above*.

2 True the blade and table.

For straight, burn-free cuts, the saw blade must run parallel to the miter-gauge slots and the fence. To align the blade, mark one blade tooth and measure, at the front of the throat opening, from one miter gauge slot to it using a combination square, as shown at *left*. Then rotate the blade and measure to the same tooth at the back of the throat opening. If the distances vary, reposition either the trunnions or the saw table. Check your owner's manual to see which method applies. Also check and adjust the blade's 45° and 90° bevel stops. Procedures for this vary widely, so check your owner's manual.

3 Finesse the fence.

To set the fence parallel to the blade, start by cutting two 2"-long blocks to fit snugly in one miter gauge slot. Position the fence against them, and use a thin shim to check for an equal gap at both ends, as shown at *left*. Setting the fence exactly parallel yields the best results, especially with dados. If the workpiece burns or binds, cant the outfeed end away from the blade between .010" and .030" (about the thickness of a business card).

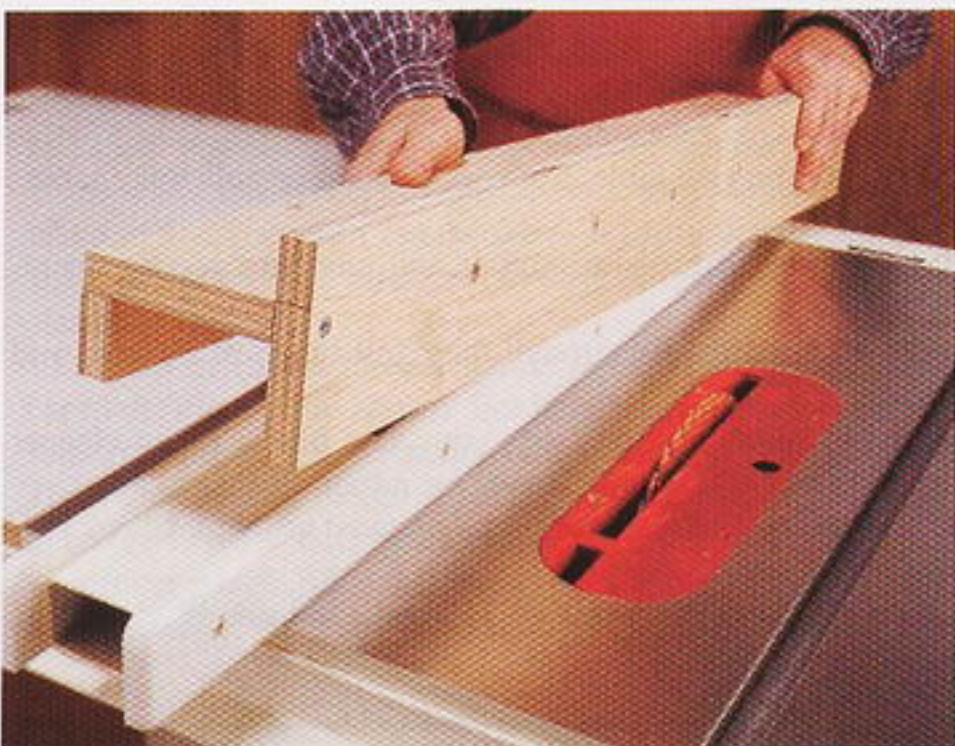


4 Cover the angles. To ensure accurate crosscuts, make sure the miter gauge is accurate at 90° and 45°. Rest one edge of a plastic drafting triangle on the blade body—not on the teeth. Loosen the miter gauge knob, slide the head against the triangle, and then lock the knob, as shown at *left*. Do the same at 45°. These triangles are available in artist's supply stores and are very accurate. Adjustable models also are available.



5 Get proper clearance. The standard throat plate on most saws has a wide opening to allow tilting the blade. This leaves the underside of the workpiece unsupported and susceptible to chip-out, and can allow thin wood strips to drop into the gap. To minimize these problems, make a zero-clearance insert. Just trace your insert onto plywood of the proper thickness (you may have to plane it down) and cut it to rough shape. Plywood is better than solid stock, which may warp. Either sand the insert to exact shape, or attach it to the throat plate using double-faced tape and shape it using a pattern-routing bit in a table-mounted router, as shown in the inset, *left*. You also can use thinner plywood and drive short flathead screws into the bottom face to act as levelers.

Lower your saw blade all the way, and check the insert's fit. If the blade doesn't retract far enough to allow the insert to sit flush with the table surface, reinstall the standard throat plate and cut a kerf in the underside of the zero-clearance insert. Recheck the fit, and then clamp the insert in place using a long board. Turn on the saw and slowly raise the blade to full height to cut through the plate, as shown at *left*. Use the same procedures to make a dado insert.



6 Add function to the fence. For some operations, such as when cutting tenons with a dado blade or cutting with the blade against the rip fence, you'll appreciate having an auxiliary fence face. Easy to make, this accessory prevents damage to the fence, and can support a tall face for cutting wide workpieces on edge.

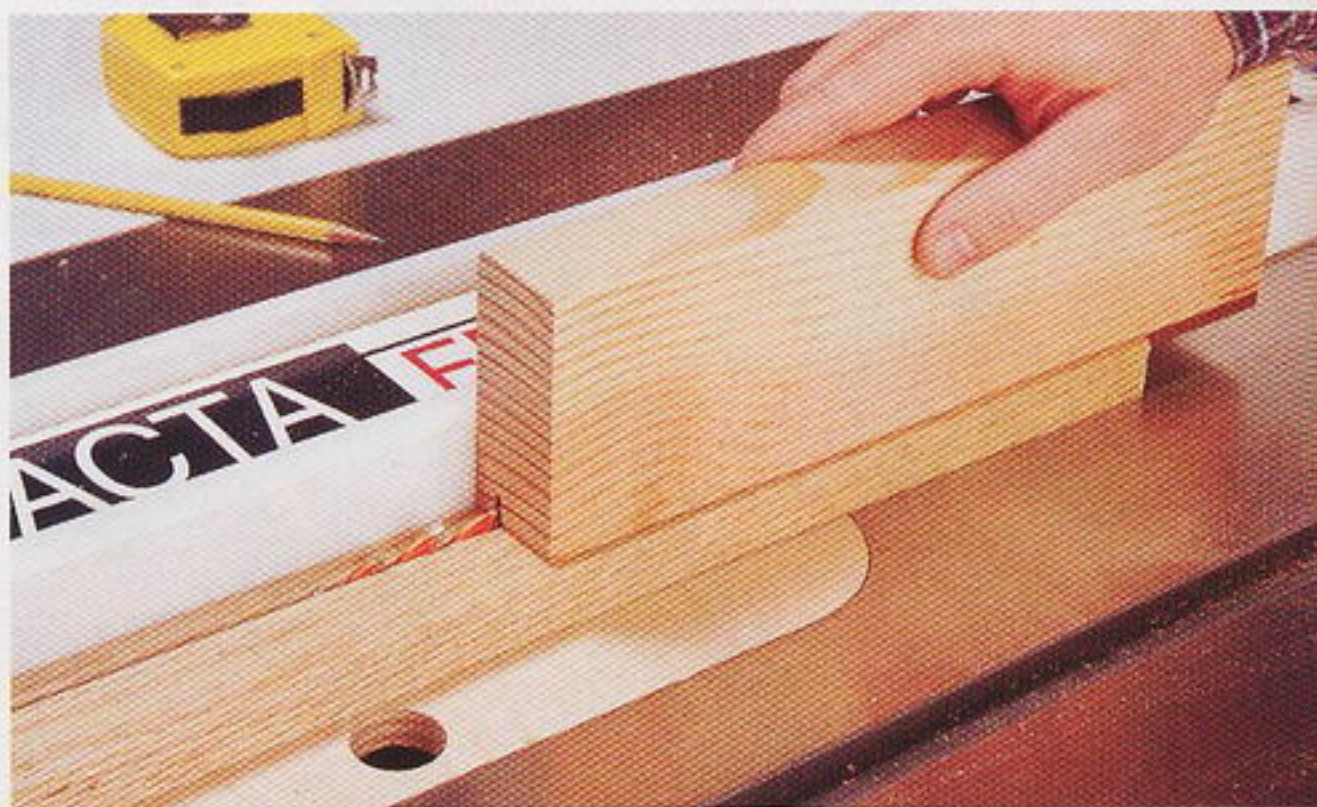
For general use, cut a 3/4" plywood face 4"-wide by the length of your fence. How you attach the face depends on your fence. If your fence has holes through it, attach the face with bolts. Just counterbore the holes in the face so the bolt heads sit below the surface. Or make a "saddle" that slips over the fence, as shown at *left*. Clamp it at the outfeed end, or mount a pair of T-nuts in the saddle's back "leg," and use short bolts as setscrews to secure the saddle.

7 Create a mightier gauge.

When crosscutting long boards or cutting multiple pieces to the same length, an auxiliary extension board for the miter gauge is a must. Make one from scrap $\frac{3}{4}$ " plywood, about 3" wide and up to 36" long, such as the one shown at *right*. For even greater accuracy, give the extension a grip on the workpiece by covering the face with adhesive-backed sandpaper. Screw the extension to the miter gauge so it protrudes beyond the blade, and then cut a kerf through it. Next, make a clamp-on stop-block about $\frac{1}{4}$ " shorter than the fence height to prevent sawdust from building up and causing inaccurate cuts.

**8 Make sacrificial guides.**

Any time you are ripping pieces narrower than 6", use a push-block to guide your stock while keeping your hands safely away from the blade. Make your own by simply cutting a birdsmouth notch in one end of a $\frac{3}{4}$ " $\times$ 2" $\times$ 12" piece of stock. If you have to rip pieces narrower than 1", make a wide pushblock from a 2 $\times$ 4 and a piece of hardboard, as shown at *right*. The blade will cut into the pushblock, but the hardboard "heel" pushes both the workpiece and waste safely past the blade. Rather than getting fancy, make your pushblocks from scrap stock, and sacrifice them to the blade instead of your fingers.

**9 Wax tables for smooth sliding.**

Cast-iron saw tables will rust if left bare, which prevents workpieces from sliding freely. You can get rid of rust by spraying the table with penetrating oil (such as WD-40) and scrubbing with a synthetic steel-wool pad or 220-grit wet/dry sandpaper. Form a barrier to new rust by coating the table with a commercial product such as Top-Cote (available from Woodcraft at 800/225-1153), or by applying a couple coats of paste wax to the table and buffing it out well. Recoat the table every few months to prevent rust from coming back.

10 Take time for regular maintenance.

Your saw will run better and last longer if you take care of it on a regular basis. Do the following every month or two:

- Wipe sawdust and debris from the saw table. Spray protectant or polish the table with wax several times per year.
- Vacuum, blow, or brush sawdust from the trunnions and lubricate per the manufacturer's instructions.
- Turn blade-height and bevel handwheels through their full range of motion, and check 45° and 90° stops.
- Use blade-and-bit cleaner to remove pitch from your saw blade. Oven cleaner works, but is caustic. Try Formula 409-brand cleaner for minor cleanups.
- Check the condition of drive belts, and replace them if cracked or worn. Check pulley setscrews, and tighten if necessary.
- Make sure all electrical cords and connections are in good condition. 🌱

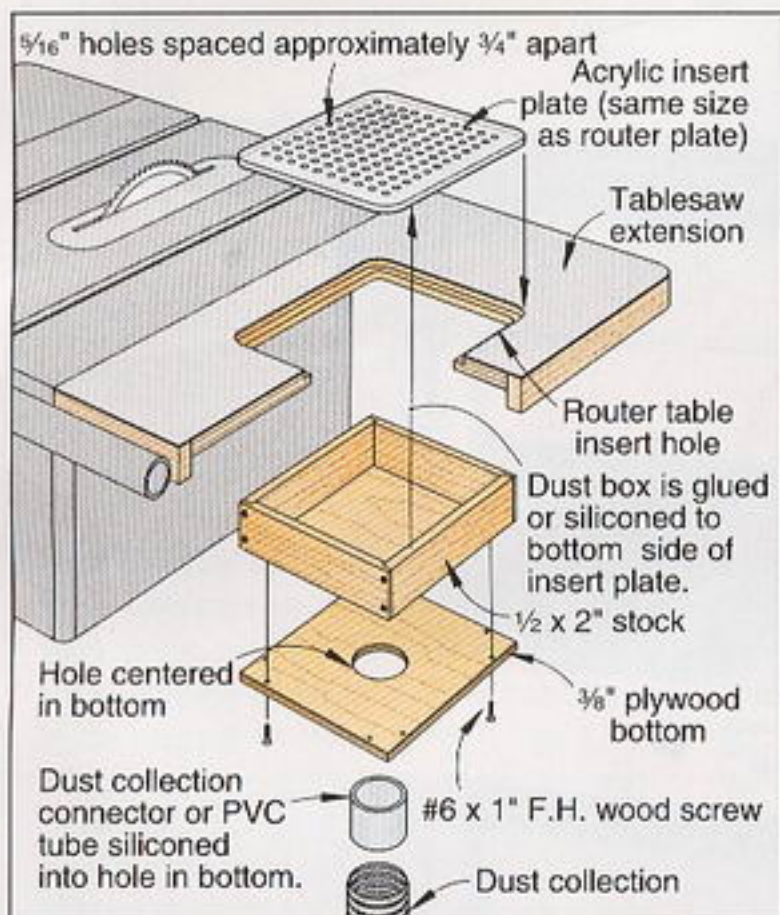
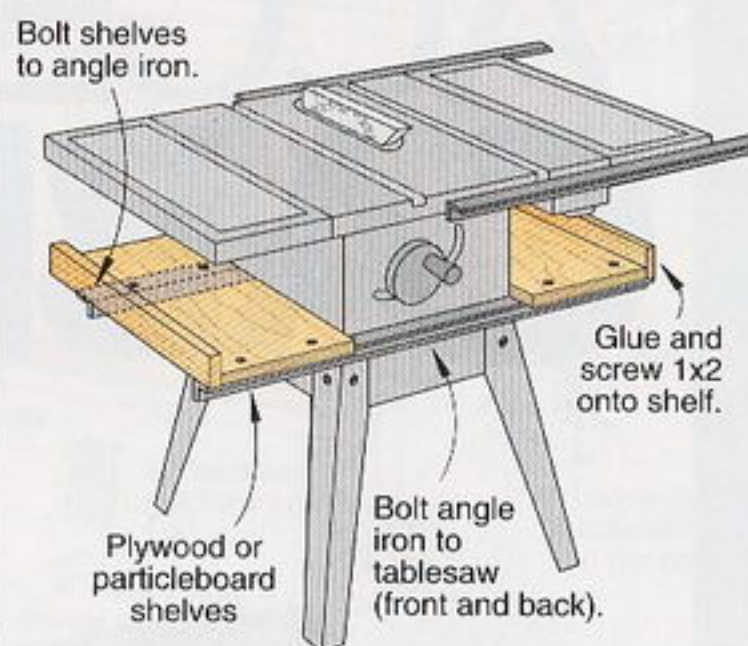
GREAT TABLESAW TIPS

SUPPORT TABLESAW SHELVES WITH ANGLE-IRON RAILS

Every time you switch from the miter gauge to the rip fence you have to walk across the shop to put one or the other down. And then there's the problem of where to store the pushstick and other tablesaw accessories. Solve this dilemma by building a pair of shelves below your tablesaw top, as shown at right, using two pieces of angle iron and some $\frac{3}{4}$ " plywood or particleboard. Cut two pieces of $\frac{1}{8} \times 1 \times 1$ " angle iron as long as the total length of your table-saw top, extensions included. Mount these just above the joint where the legs and the saw enclosure meet, using three equally spaced $\frac{5}{16} \times 2$ " machine bolts. (If the saw's switch or handle interferes, bolt the angle iron to the legs.)

Attach the shelves to the angle iron using $\frac{1}{4}$ " machine screws, lock washers, and nuts. Countersink the heads of the screws into the shelves. A strip of 1×2 glued and screwed on the edge of the shelves will keep accessories from falling off.

—Marvin Ring, Corvallis, Ore.



EXTENSION TABLE PULLS EXTENDED DUTY

I already have my router mounted in the extension wing of my tablesaw to save space. But when I wanted to build a downdraft sanding table, I figured out a way to get triple duty out of the extension and opening.

First, I cut a second acrylic insert the exact size of the one for my router. Then, I marked out and drilled a gridwork of $\frac{5}{16}$ " holes spaced $\frac{3}{4}$ " apart in the insert. Next, I built a dust box, as shown at left. Finally, I glued the box to the bottom of the acrylic insert.

Now when I need to sand a project, I lift out the router, drop in the sanding insert, connect the dust-collection hose, and sand away. My shop stays cleaner, and I still have room to move around.

—Martin Beijer, Castak, Calif.

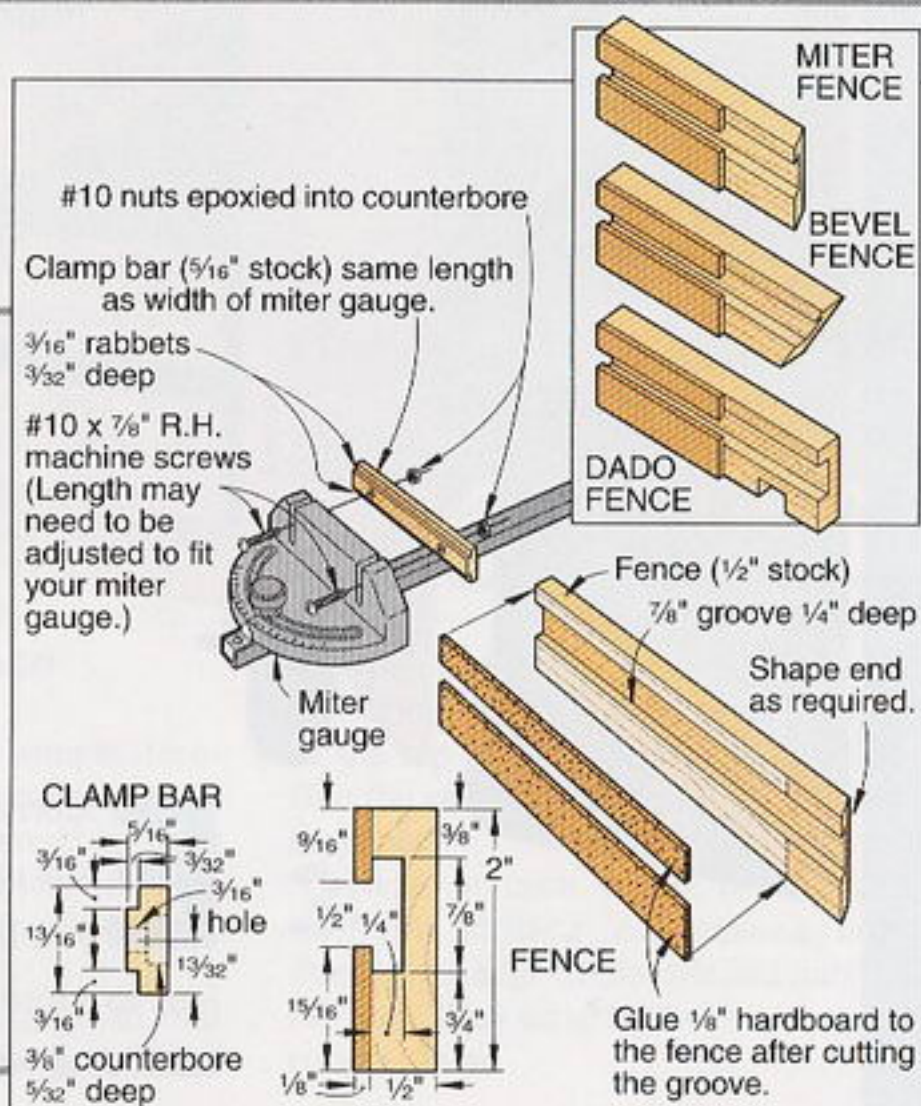
BUILD A WEAR-PROOF MITER-GAUGE FENCE

Most auxiliary fences that bolt to a miter gauge eventually start to look pretty ragged. If you use one for mitering, beveling, dadoing, and such, you eventually wind up with big chunks missing.

This adjustable fence, though, slides toward or away from the blade so that you never cut the face—regardless of the blade or the angle of the cut. You also can fabricate different slides for zero-clearance cuts.

To build any of the three fences at right, cut the fence and clamp bar to the dimensions shown. For length, use whatever dimension suits your needs. Choose maple or another smooth, stable hardwood. Then, glue the two pieces of hardboard to the fence. Now, use epoxy to secure two #10 nuts in the clamp bar. Attach the clamp bar to your miter gauge. Slide the fence on the clamp bar, and position it. Finally, secure the fence in position by tightening the two screws.

—Jerry Boone, Kansas City, Mo



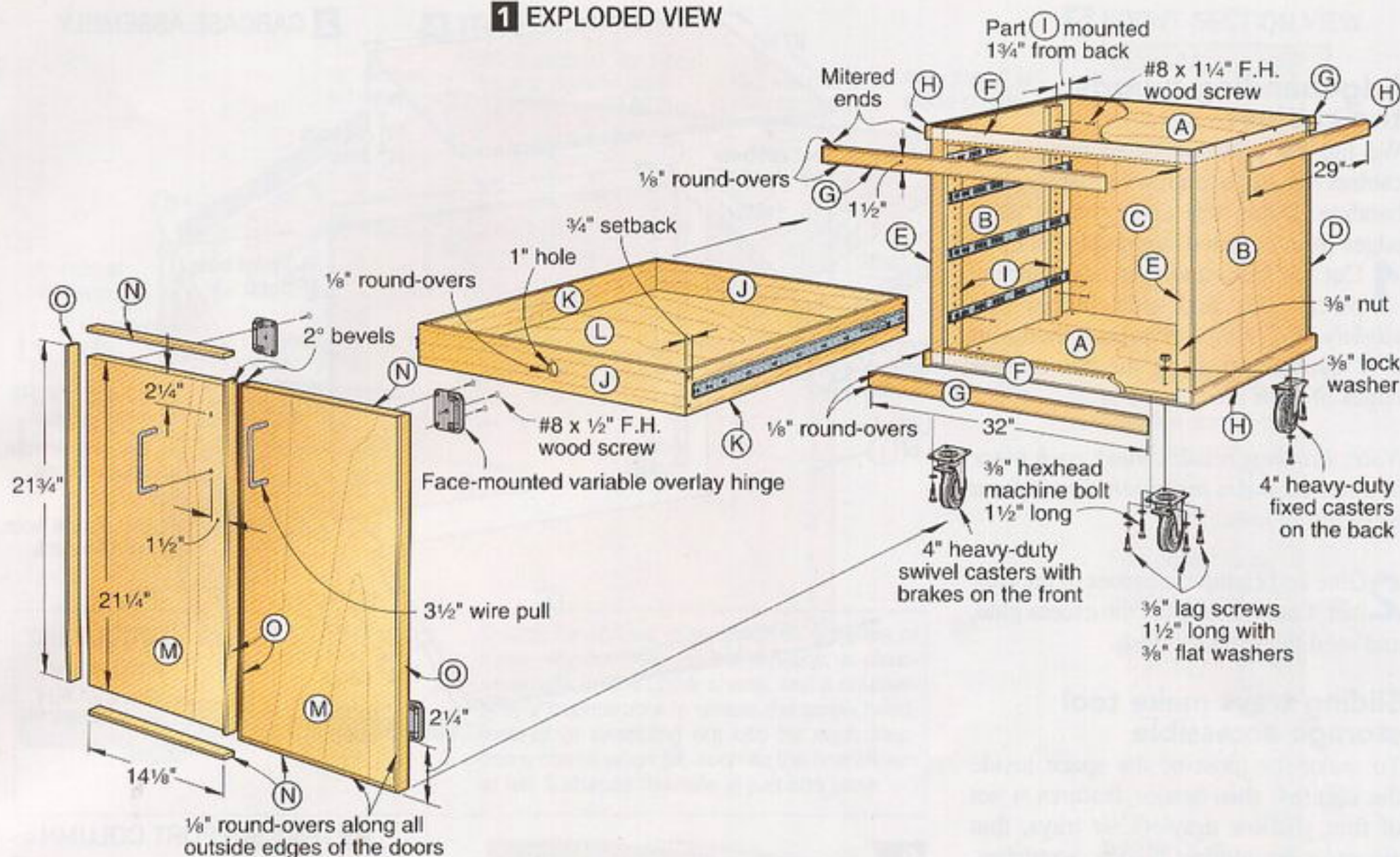
tablesaw

ACCESSORIES CABINET

SAVVY STORAGE
WITHIN EASY REACH

Extension tables for tablesaws make woodworking easier, but they eat up lots of floor space. This handsome roll-away cabinet helps you better utilize that precious square footage. Use this sturdy project to store blades, jigs, and accessories. Pull it out when you need an additional work surface.

1 EXPLODED VIEW



Let's start by building the carcase

1 Cut the carcase top and bottom (A), side panels (B), and back panel (C) to the sizes shown in the Materials List. Referring to the Cutting Diagram and **Drawing 1**, note the grain orientation for each piece.

2 Install a $\frac{3}{4}$ " dado blade on your tablesaw, and set the cutting height to $\frac{1}{2}$ ". Then, attach a wood auxiliary face to your rip fence. Slide the fence over until the wood face butts against the right side of the dado blade, as shown in **Photo A**, right. Now, rabbet the edges of the top and bottom panels (A), where shown in **Drawing 2** on page 86.

3 Reinstall your standard saw blade and cut the back edging pieces (D) to size, and glue them to the back panel (C). (This simple butt joint is fine if you take care to align the pieces. For a self-aligning joint, cut grooves in the edging and the plywood edges and glue splines in between, or use biscuit joints to hold the surfaces flush.)

4 While the glue dries on those parts, join the other panels. Apply glue to

the rabbets on the top and bottom panels (A)—at the sides only, not front or back—and then center and clamp the side panels (B) in place.

5 Drill countersunk holes through the sides (B) for screws to secure the rabbet joints. (To learn about specialized bits for this task, see "Triple-Duty Countersink Bits," on page 87.) After you drive the screws, remove the clamps and place the carcase face down on your bench.

6 Check the fit of the back panel assembly (C/D); then glue and clamp it to the back edges of the carcase. Fasten the back (C/D) to the top and bottom (A) panels.

Now install the face frame pieces

1 You can install the simple face-frame for this cabinet one piece at a time, rather than as an assembly. Start by cutting the two stiles (E) to size; then glue and clamp them to the front edge of the side panels (B).

2 Measure between the stiles to find the exact length for the face frame



A A wood auxiliary fence lets you use the full width of the $\frac{3}{4}$ " dado blade to cut rabbets in the plywood carcase panels.

rails (F). Cut these parts, and then glue and clamp them to the rabbeted edges of the top and bottom panels, making sure the rails and stiles are flush where they meet.

3 Next, at each corner of the face frame drill a countersunk hole through the edge of the stile and into the rail end. Then drive a $\#8 \times 2\frac{1}{4}$ " screw to connect them.

Edgebanding guards the cabinet

We hid the plywood edges around the cabinet top and bottom with maple edgebanding. Doing this also protects these edges from collisions around the shop.

1 Cut the front and rear edgebanding pieces (G) and side pieces (H) slightly longer than required; then rout a $\frac{1}{8}$ " round-over along the two outside edges of each piece.

Note: For best results, mark each piece in place and trim the mitered ends for a tight-fitting joint.

2 Glue and clamp the pieces to the cabinet. Later, scrape off the excess glue, and sand the surfaces flush.

Sliding trays make tool storage accessible

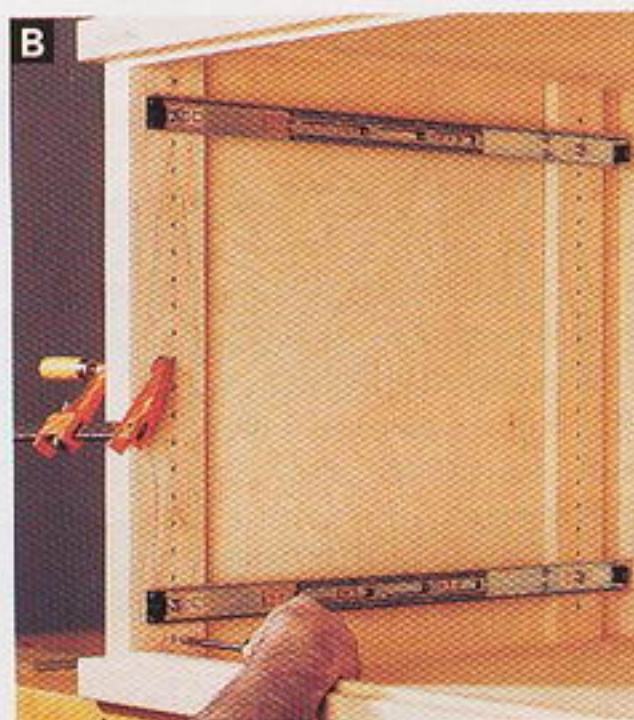
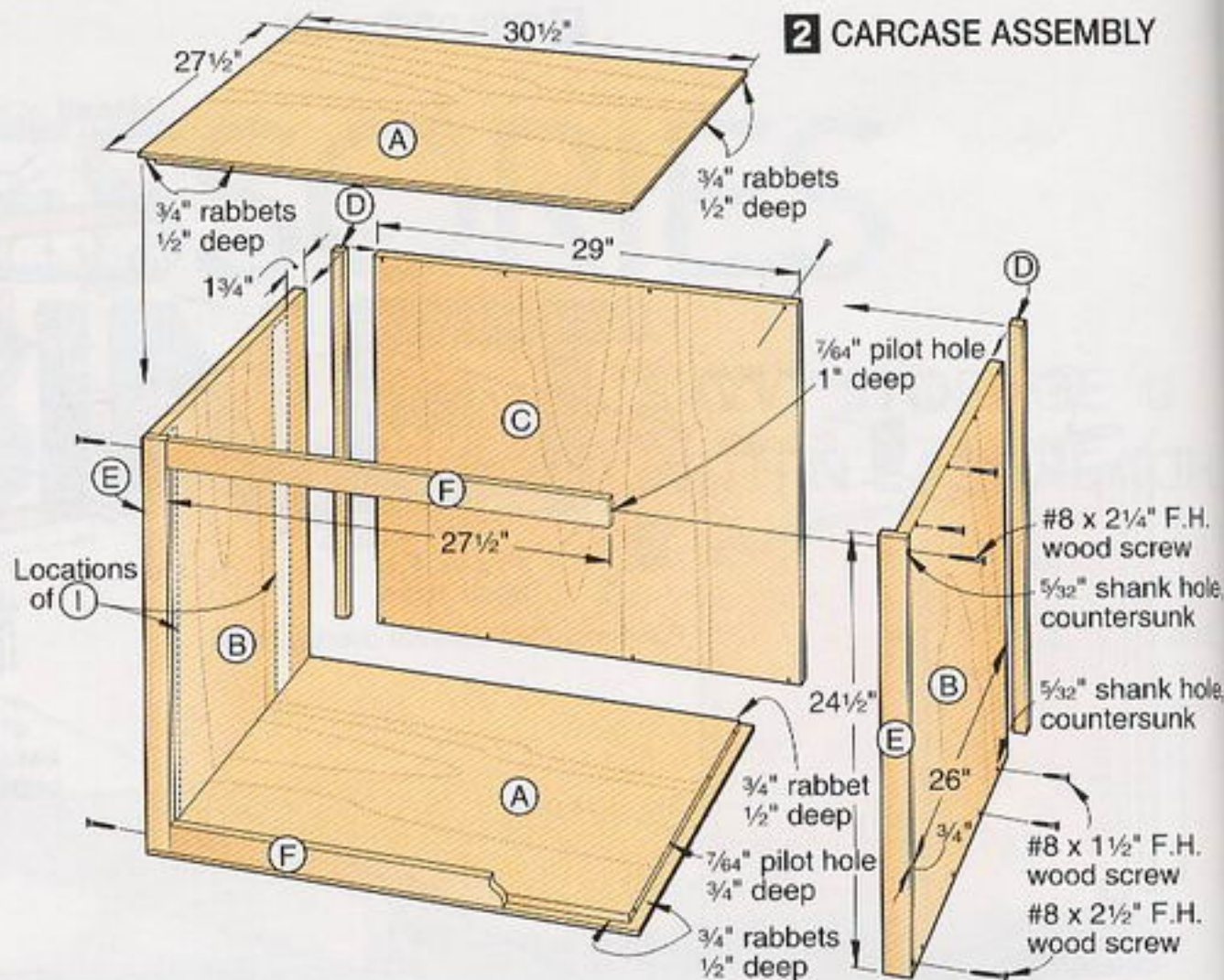
To make the most of the space inside the cabinet, this design features a set of four shallow drawers, or trays, that are great for storing blades, wrenches, and most other accessories you want close to your tablesaw. Four tray support columns (I), one at each corner of the cabinet, let you adjust the tray positions to suit your storage needs. (Keep in mind that using different drawer slide hardware than we specified may require changes in the column sizes or in the mounting hole placement.)

1 Cut the columns (I) to length and drill two mounting holes and a series of slide installation holes as shown in Drawing 3.

Note: For a simple and accurate technique for drilling a row of evenly spaced holes such as this, see the Shop Tip on page 87.

2 Tap a $\frac{1}{4}$ -20 thread in each slide installation hole. You can do this using a tap designed for threading metal, or wax the threads on a $\frac{1}{4}$ -20 bolt and drive it into each hole.

3 Lay a pair of the tray support columns on your workbench, and set them $18\frac{3}{4}$ " apart (between inside edges). Place the "cabinet" half of a drawer slide on the support columns, and fasten it to the top threaded hole in each using $\frac{1}{4}$ -20 $\times$ $\frac{3}{4}$ " roundhead machine screws.



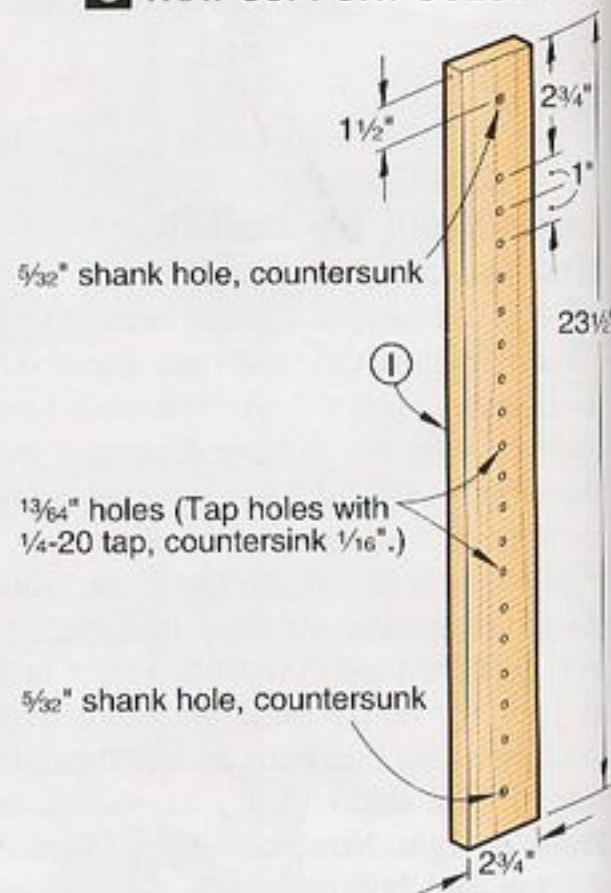
Fasten a pair of drawer slides to the tray support columns for each side; then install the assemblies inside the cabinet.

Note: The front ends of the drawer slides are flush with the front edge of the tray support columns. The other half of each slide mechanism installs on the tray.

Fasten a second slide to the bottom hole in each support, and then fasten the entire assembly inside the cabinet, as shown in Photo B, above.

4 Assemble another pair of supports and slides and fasten them to the

3 TRAY SUPPORT COLUMN

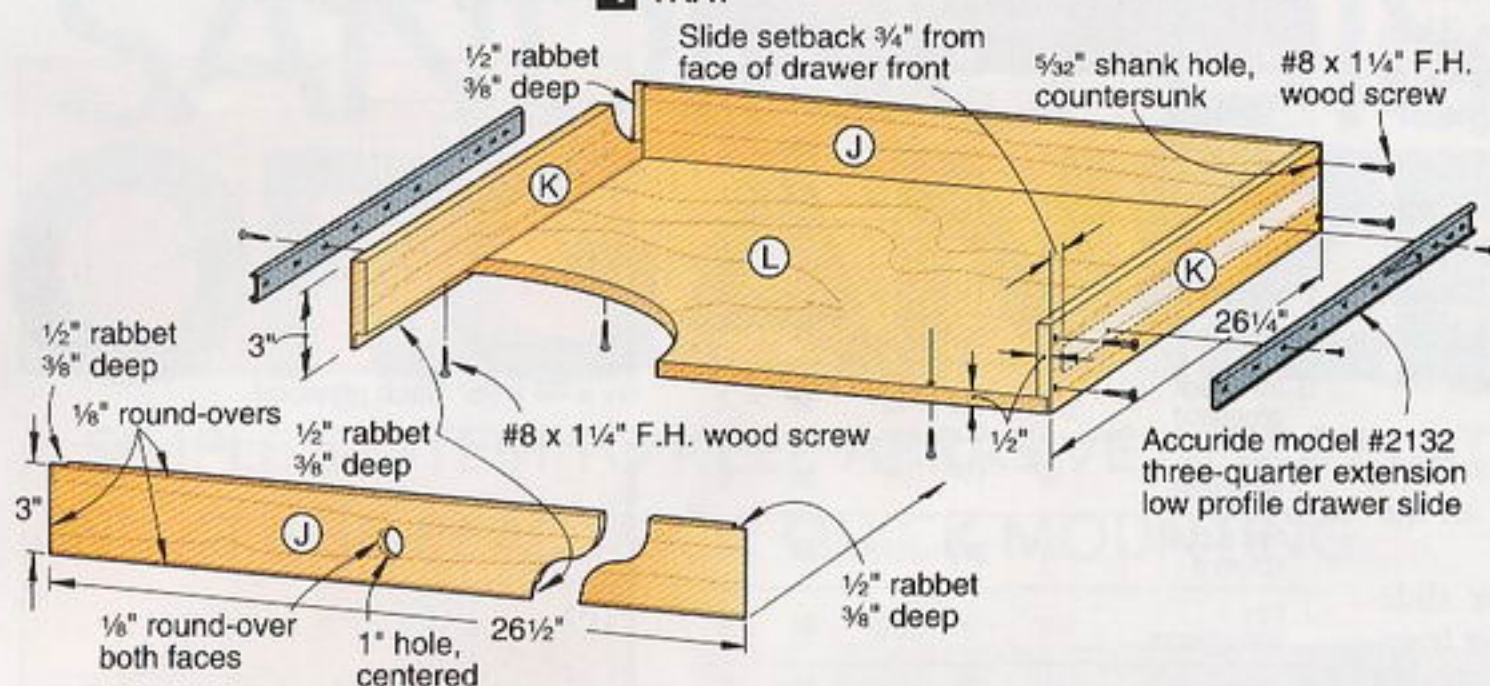


other side of the cabinet. Also, you can fasten the additional drawer slides to the supports at this time.

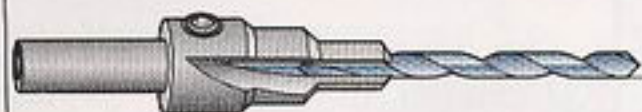
Next, the trays—simple setups, multiple parts

1 Cut the tray fronts and backs (J) and the sides (K) to size. Install a $\frac{1}{2}$ " dado blade on your tablesaw; then reinstall the wood auxiliary fence you used earlier to cut the rabbets on the plywood

4 TRAY



TRIPLE-DUTY COUNTERSINK BITS



Drilling for screws often involves a series of sizes—a pilot hole for the threads, a clearance hole for the upper shank, and a countersink or counterbore to recess the screw head. Instead of swapping out bits for each step, use a combination bit, such as the one shown at left. It shapes the hole in just one pass.

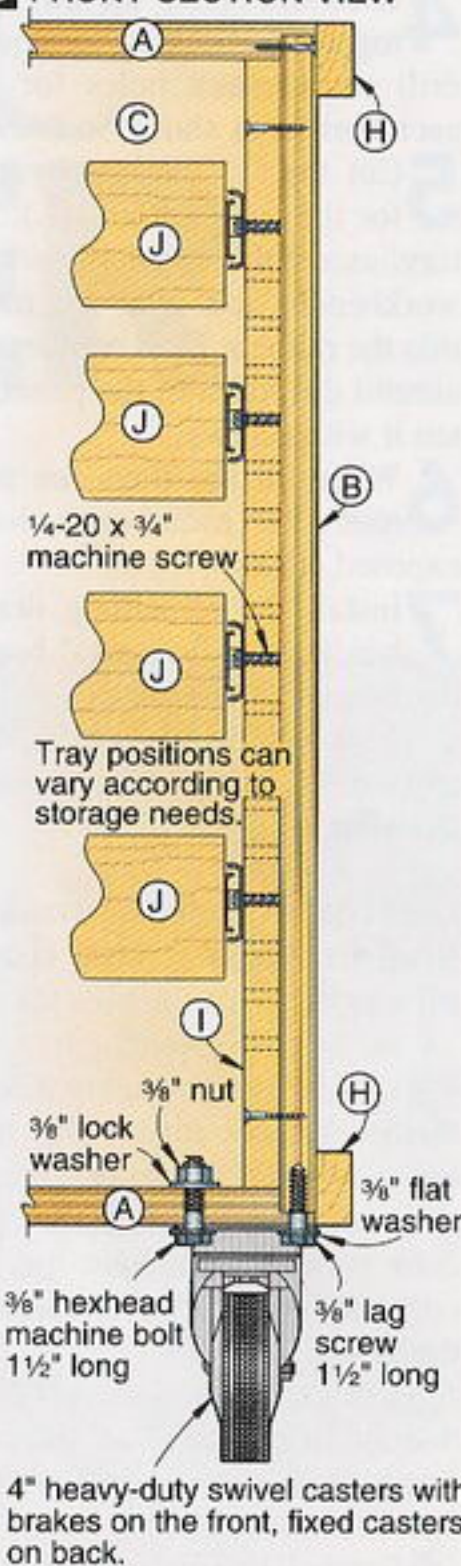
panels. Again, slide the fence until the wood face butts against the dado blade. Adjust the blade height to $\frac{3}{8}$ ", and guiding your stock with the miter gauge, cut the rabbets at the ends of each tray front and back.

2 Without changing the blade or fence setup, cut rabbets along the

lower inside edges of all the tray fronts, backs, and sides by guiding the edge of each piece against the wood auxiliary fence.

3 Drill a centered 1" hole in each tray front. These are finger-pulls, so for comfort rout a $\frac{1}{8}$ " round-over around the rim of the hole, on both of the faces.

5 FRONT SECTION VIEW



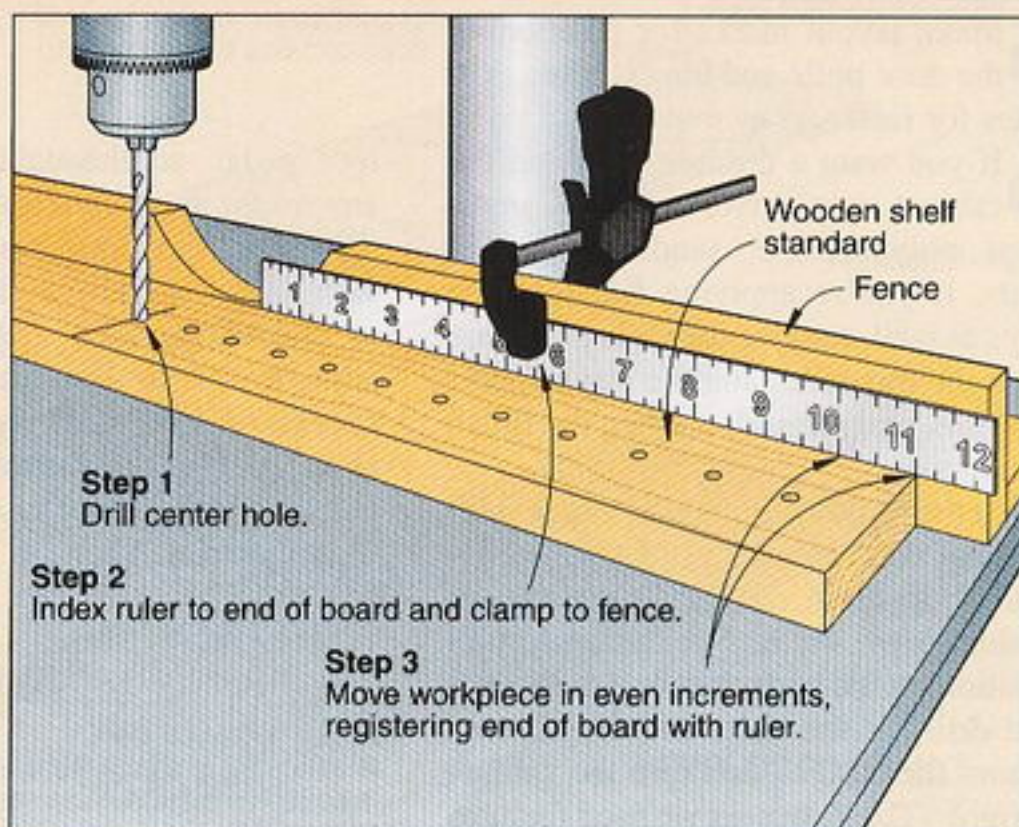
SHOP TIP

A quick and accurate way to drill evenly spaced holes

For the shelf standards in our tablesaw accessory cabinet, you need to drill evenly spaced holes. If you have a ruler at least half as long as your workpiece, you can do it accurately without a lick of math. Here's how:

First, measure, mark, and bore the standard's center hole with your drill press. (If you need an even number of holes, locate and bore one of the two holes closest to the center.) Keeping the bit in the hole and the shelf standard against the fence, clamp a ruler to the fence so that the end of the standard lines up with an easy to remember increment—for example, the 11" mark, as shown in the drawing at right.

Now, raise the drill bit and move your workpiece so the end lines up with the next spaced increment (for 1" spacing, slide the workpiece to the 10" mark; for $\frac{1}{2}$ " spacing, shift it to $10\frac{1}{2}$ "), and bore the next hole. Continue to the next increment, drill again, and so on, until you reach the end of the workpiece. Turn the standard end for end, and repeat the process, starting again with the center hole.



4 Glue and clamp the tray assemblies together, checking for square. Then drill countersunk holes for screws at each corner, as shown in **Drawing 4**.

5 Cut the 1/2" birch plywood to size for the tray bottoms (L). Place one tray assembly upside down on your workbench, and glue the tray bottom into the rabbets. Drill countersunk holes around the edges of the panel; then fasten it with screws.

6 When all the trays are assembled, rout a 1/8" round-over along all the exposed edges.

7 Install the remaining drawer slide hardware. Allow a 3/4" backset from the face of the tray front, so it will end up flush with the face frame. Center the slide on the side of the tray, as shown in **Drawing 4**.

Getting closure: making and installing the doors

1 Cut the door panels (M) from your 3/4" birch plywood.

2 Cut the maple edging pieces (N, O) for the door edges. Glue the top and bottom pieces (N) on first, making sure their ends are flush with the edges of the door panels. Then glue the remaining edgebanding (O) on the side edges of each door.

3 Cut a slight back-bevel (2° is plenty) on the inside door edges so they don't bind on one another when you open the cabinet.

4 Sand all the surfaces flush; then rout a 1/8" round-over along the front edges of each assembled door panel to ease the sharp edges.

5 Make layout marks for positioning the door pulls and hinges; then drill holes for fasteners as required.

6 If you want a durable finish on the cabinet, apply two coats of semi-gloss polyurethane, sanding between coats. If you're applying finish to the trays as well, remove the slide hardware from the tray sides and the tray support columns, and reinstall it when the finish has dried.

7 Set a protective mat (a carpet remnant or even cardboard will do) on your shop floor, and place the cabinet upside down on it. Set the casters in position on the bottom panel; then mark and drill for the bolts and lag screws. Mount the casters, and turn the cabinet upright. (The caster set we used features front swiveling wheels that lock with a

Materials List

Part	FINISHED SIZE			Matl.	Qty.
	T	W	L		
A top/bottom	3/4"	27 1/2"	30 1/2"	BP	2
B side panels	3/4"	26"	24 1/2"	BP	2
C back panel	3/4"	29"	24 1/2"	BP	1
D back edging	3/4"	3/4"	24 1/2"	M	2
E frame stiles	3/4"	1 1/2"	24 1/2"	M	2
F frame rails	3/4"	1 5/8"	27 1/2"	M	2
G front/back edgeband	3/4"	1 1/2"	32"	M	4
H side edgeband	3/4"	1 1/2"	29"	M	4
I tray support columns	3/4"	2 3/4"	23 1/2"	M	4
J tray fronts/back	1/2"	3"	26 1/2"	M	8
K tray sides	1/2"	3"	26 1/4"	M	8
L tray bottoms	1/2"	26 1/4"	26 1/4"	BP	4
M door panels	3/4"	14 1/8"	21 1/4"	BP	2
N door edging top/bottom	1/4"	3/4"	14 1/8"	M	4
O door edging sides	1/4"	3/4"	21 3/4"	M	4

Materials key: BP—birch plywood, M—maple.

Supplies: #8x1 1/4" flathead wood screws (116), #8x1 1/2" flathead wood screws (16), #8x2 1/4" flathead wood screws (4), 1/4"-20x3/4" roundhead machine screws (16), 3/8x1 1/2" lag screws (12), 3/8x1 1/2" hexhead machine bolts (4), 3/8" flat washers (20), 3/8" lock washers (4), 3/8" hex nuts (4), 2x8' nonslip rug cushion (1).

Buying Guide

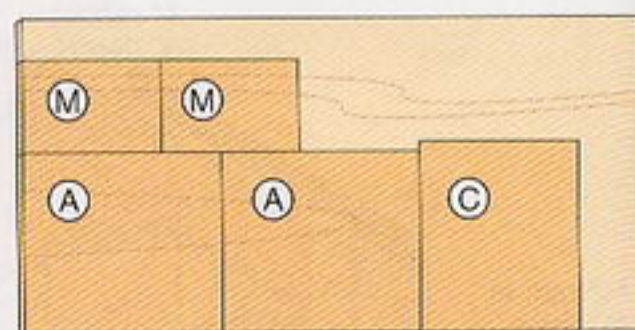
Hardware. In addition to the lumber and supplies shown above, the following items (or appropriate substitutes) are required for this project. Heavy-duty 4" casters (2) fixed, no. 141053; casters (2) swivel, no. 141050; Accuride Model 2132 drawer slides, 26" long (4 sets) no. 130595; 3 1/2" wire pulls (2), no. 130311; and face-mount overlay hinges (2 pair), no. 130135. All are available from Woodcraft, 800/225-1153 or visit www.woodcraft.com.

foot pedal, so the cabinet won't roll around the shop unnecessarily.)

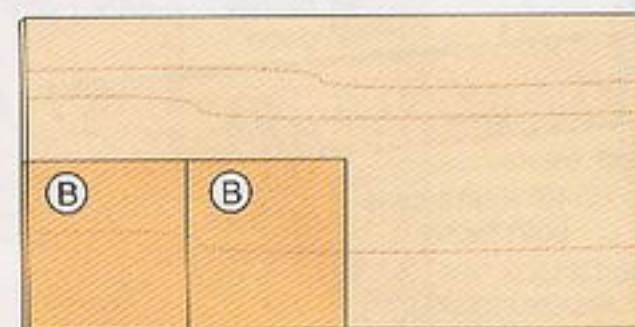
8 Install the door hinges and pulls, mount the doors, and fit all the trays to check clearance and travel. Make adjustments to the tray positions if necessary. Finally, if you're concerned about tools sliding around in the trays, cut up a nonslip rug cushion to use as liner material. Then fill'er up! 🌟

Written by **Bill LaHay**
Project design: **Chuck Hedlund**
Illustrations: **Brian Jenson; Roxanne LeMoine; Lorna Johnson**
Photographs: **Hetherington Photography**

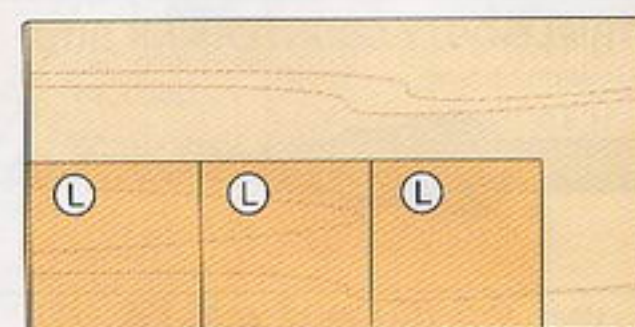
Cutting Diagram



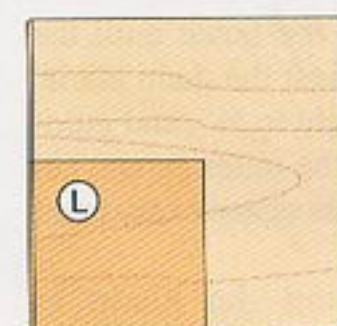
3/4 x 48 x 96" Birch plywood



3/4 x 48 x 96" Birch plywood



1/2 x 48 x 96" Birch plywood



1/2 x 48 x 48" Birch plywood



3/4 x 7 1/4 x 96" Maple



1/2 x 7 1/4 x 96" Maple



1/2 x 7 1/4 x 96" Maple



1/2 x 7 1/4 x 96" Maple



3/4 x 7 1/4 x 96" Maple

SANDING-DISC ORGANIZER

A SIMPLE SYSTEM TO KEEP ABRASIVE DISCS FLAT AND AT THE READY FOR QUICK MOUNTING

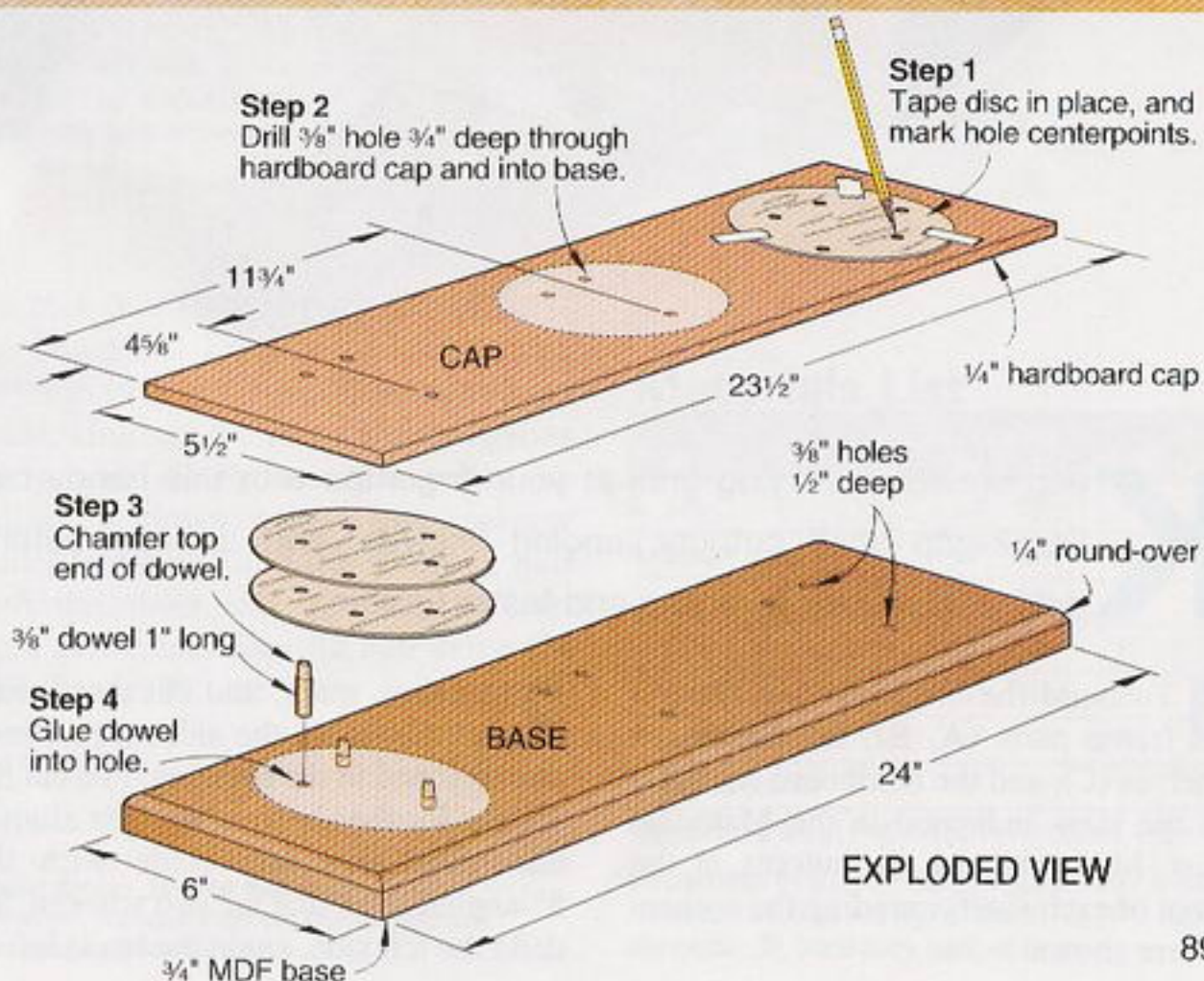
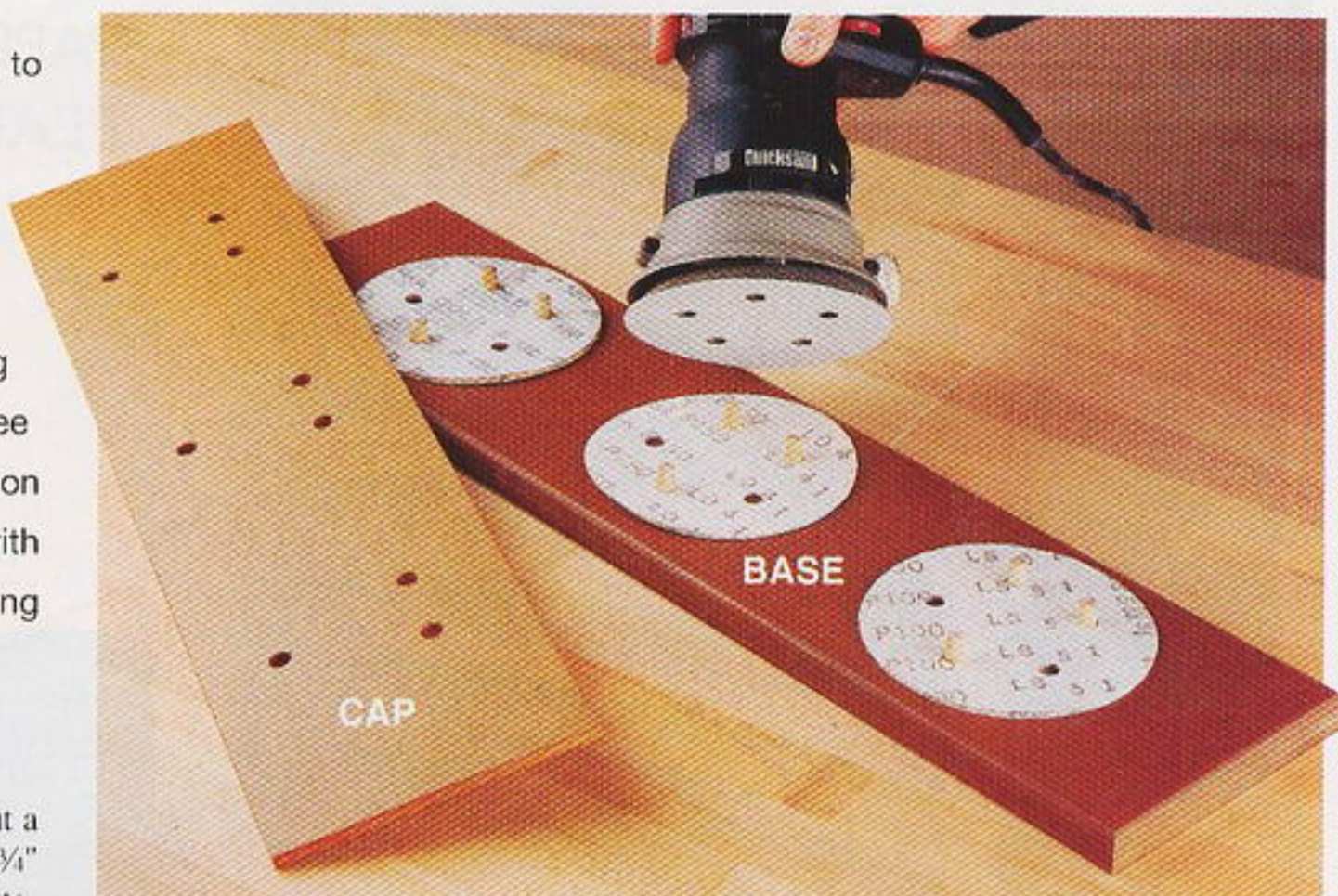
Ever been frustrated trying to align the holes in a sanding disc with the holes in a random-orbit sander's pad? If so, then you'll appreciate this simple storage and organizing system. This fixture stores three grits of 5" hook-and-loop discs on short pieces of dowel that index with the holes in the sander, making alignment foolproof.

Building a disc dispenser is easy. Cut a base to the size shown from scrap $\frac{3}{4}$ " stock. (We used MDF because it stays stable and flat.) Then rout the top edges with a $\frac{1}{4}$ " round-over bit. Cut a $\frac{1}{4}$ " hardboard cap, center it on the base, and temporarily tape it in place.

Mounting the dowels accurately is no problem. Use a sanding disc as a guide, and follow the four steps shown in the drawing at right. Whether your sander accepts 5-hole or 8-hole discs, three dowels hold each disc securely in place.

To use the organizer, place the sanding discs over the dowels grit side down. Then just press the sander onto the dowels for surefire alignment. Each section holds about a dozen discs. The cap keeps them flat and clean. 🛠️

Written by **David Stone**
Project design: **Tom Frazier**
Illustration: **Roxanne LeMoine; Tim Cahill**
Photograph: **Marty Baldwin**



SANDPAPER STORAGE BIN



WITH A BUILT-IN
PAPER-CUTTING
FEATURE

Keeep sheets of varying grits at your fingertips with this handy bin. Quick-grip shelf cutouts, angled shelves, and a paper-cutting device mean less fumbling and faster finishing.

1 To build the box, cut the plywood frame parts (A, B), the hardboard shelves (C), and the hardboard back (D) to the sizes indicated in the Materials List. Mark and cut the cutouts in the front of each shelf, rounding the corners where shown.

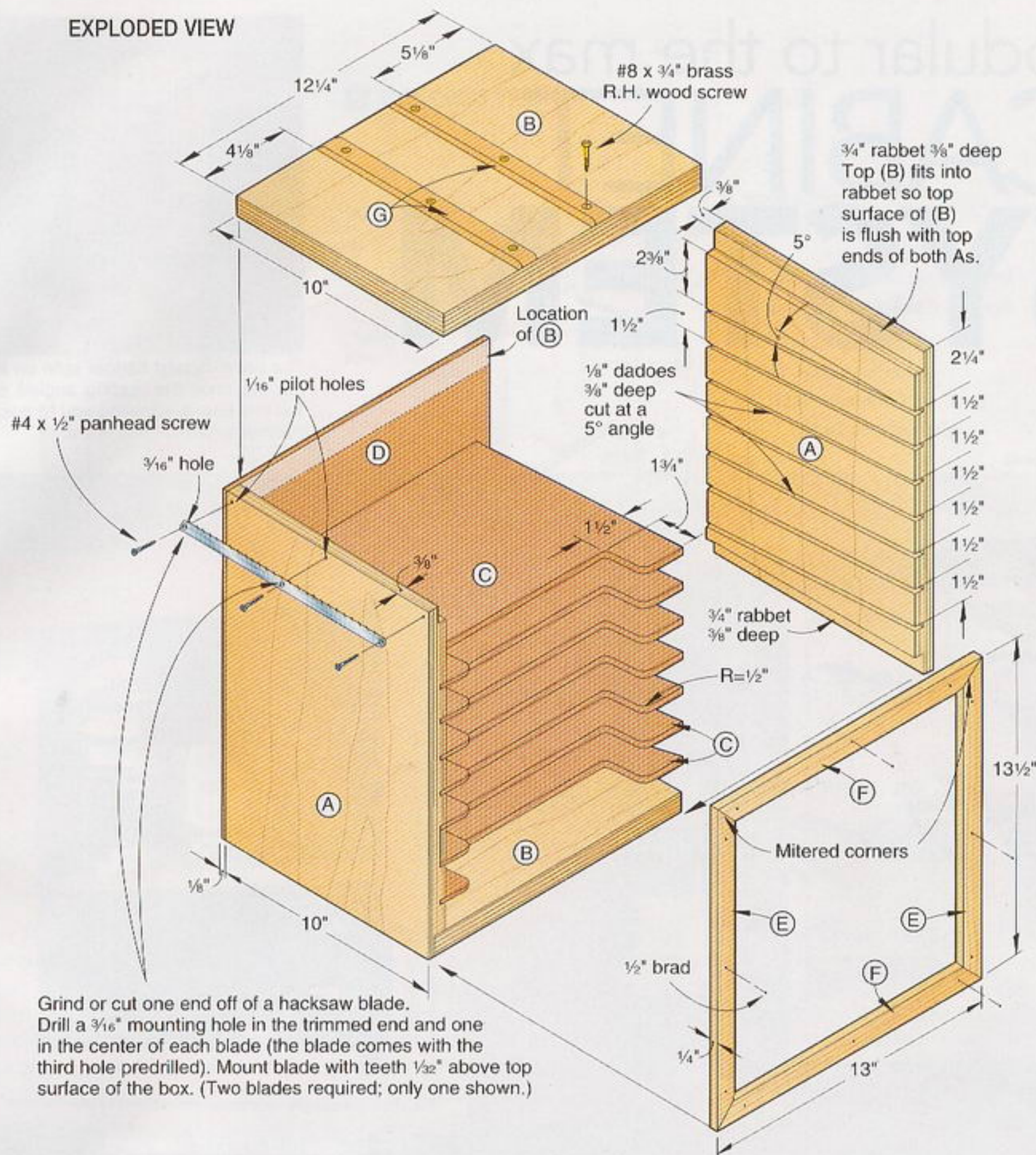
2 Measure, mark, and cut the dadoes and rabbets in the sides (A), where dimensioned in the drawing. (To cut the dadoes for the shelves, we first aligned our radial-arm saw blade with the 5°-angled lines that we just marked. To dado the left side, angle the blade left of

center, and for cutting the right side, angle the blade right of center. You could cut the dadoes on your tablesaw with a miter gauge fitted with an auxiliary fence.) Glue, clamp, and nail the box assembly together.

3 Sand the box. Then paint or finish it to match your shop cabinets.

4 Miter-cut the frame rails and stiles (E, F) to length, finish-sand, and attach them to the box with glue and brads. Set the brads, and fill the holes.

EXPLODED VIEW



5 To make the paper-cutting device, first grind two hacksaw blades to 10" in length. Then, drill 3/16" holes in the blade, as shown. Drill pilot holes into the sides, and screw a blade to each side of the box.

6 Cut the cutting guides (G) to size, finish-sand, and attach them to the top of the box where indicated. (The right guide is 5 1/2" from the right edge of the box, and the left guide is 4 1/2" from the left edge.) When the guides are mounted where shown, you can halve and quarter a standard sheet of sandpaper to fit most palm-grip sanders. Apply an oil finish to the frame.

Cutting sandpaper to size

Position a full sheet of sandpaper with the short (9") side against the right-hand guide. Holding the piece firmly against the guide, slowly cut the paper by pulling it down across the hacksaw blade. Now, position the resulting half with the short side against the left-hand guide, and cut it in half using the other blade. 🛠️

Project design: Marlen Kemmet
Illustration: Randall Foshee; Lorna Johnson
Photograph: Bob Calmer

Materials List

Part	FINISHED SIZE			Matl.	Qty.
	T	W	L		
A sides	¾"	10"	13½"	P	2
B bottom & top	¾"	10"	12¼"	P	2
C shelves	⅛"	10"	12⅜"	H	7
D back	⅛"	13"	13½"	H	1
E frame stiles	¼"	¾"	13½"	B	2
F frame rails	¼"	¾"	13"	B	2
G cutting guides	¼"	¾"	10"	B	2

Materials key: P-plywood, H-hardboard, B-birch.

Supplies: #4x1/2" panhead screws (6), #8x3/4" brass roundhead wood screws (6), 1/2" brads (12), 10 3/8" hacksaw blades (2), wood putty, paint, oil finish.

modular to the max CABINET SYSTEM

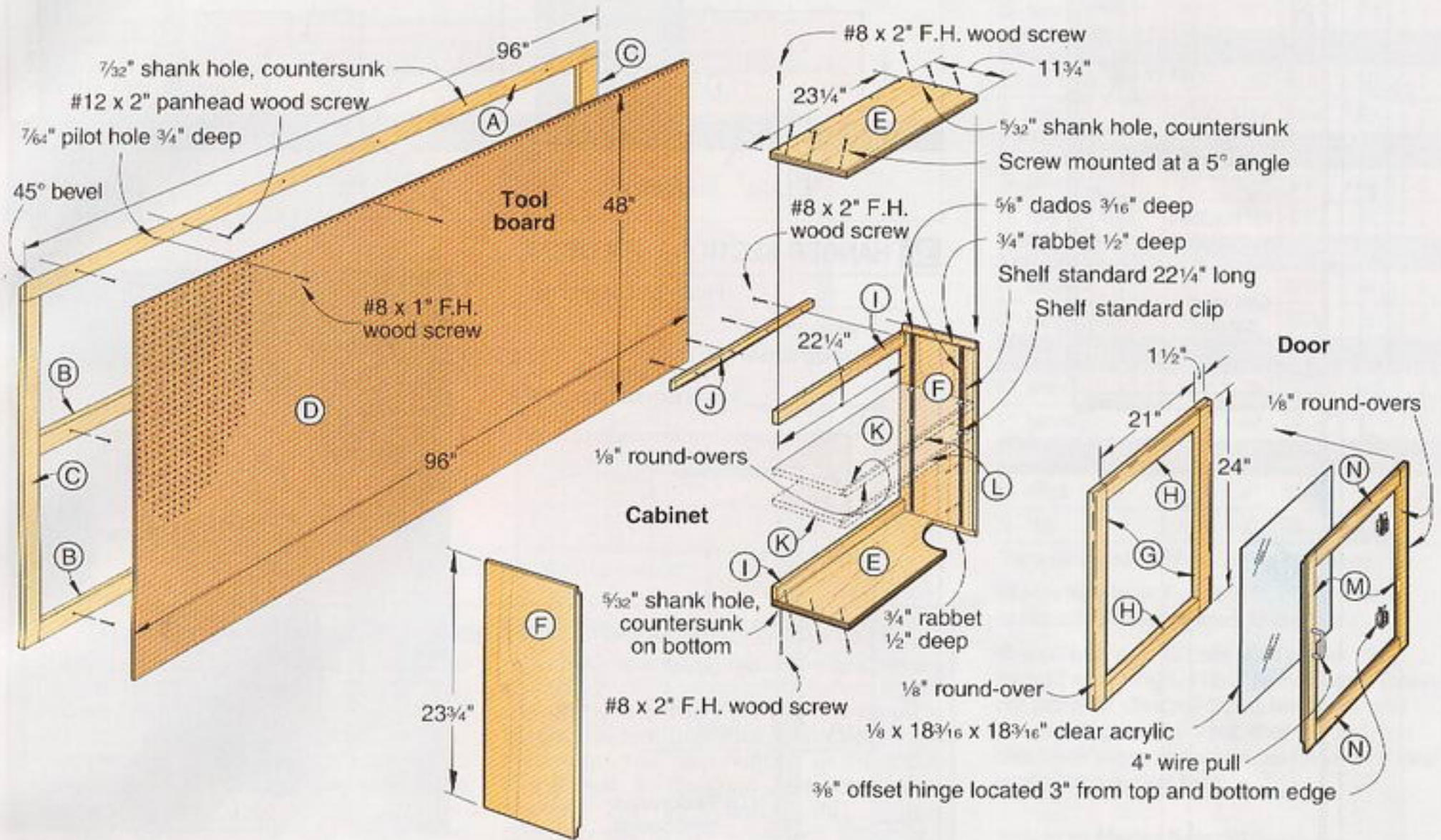


The bevel-ripped hanger strip on the cabinet fits onto the mating angled piece on the tool board, allowing you to position the cabinet wherever you want.



The smaller your shop, the smarter you have to be when determining where to place your cabinets. Here's a space-saving design for storage that is geared toward a small shop. To customize the cabinets for your own workspace, see the tips on *page 95*.

↑ EXPLODED VIEW



Begin with the perforated hardboard tool board

1 Select the straightest 1×3s available for the mounting strips (A, B, C) shown on **Drawing 1**. When purchasing these, make sure they're $\frac{3}{4}$ " thick, we ran across some furring strips that measured only $\frac{5}{8}$ " thick. Use the straightest of the bunch for the top strip. Now, bevel-rip the top mounting strip at 45° where shown on **Drawing 3a** on *page 94*. Crosscut the mounting strips to length.

2To position the top mounting strip A (the one with the beveled edge), temporarily screw or nail a 2×4 to the bottom side of the floor joists, assuming that you have 7' ceilings in your basement. For basements with taller ceilings, simply snap a chalk line to establish where you want the top of the pegboard. Using the 2×4 as a spacer creates the 1½" gap (see **Drawing 2**) needed for hanging the cabinet(s) later. Make sure you locate the screws in

the 2×4 where they can be removed easily after the perforated hardboard has been secured to the mounting strips.

3 Lay out and drill countersunk mounting holes through each mounting strip. Using the 2×4 as a spacer, screw the top mounting strip (A) in place, where shown on **Drawings 3** and **3a**. The type of wall you're screwing into will determine the size and type of fasteners required. Screw the other mounting strips (B, C) in place.

4 Drill mounting holes, and screw the perforated hardboard front (D) to the mounting strips. Remove the 2×4 spacer from the floor joists.

Construct the wall cabinet

1 Cut the cabinet top and bottom (E) and sides (F) to size.

2 Using a dado blade in your table-saw, cut $\frac{5}{8}$ " dados $\frac{3}{16}$ " deep for the shelf standards on the inside face of the sides (F). Then, cut $\frac{3}{4}$ " rabbets

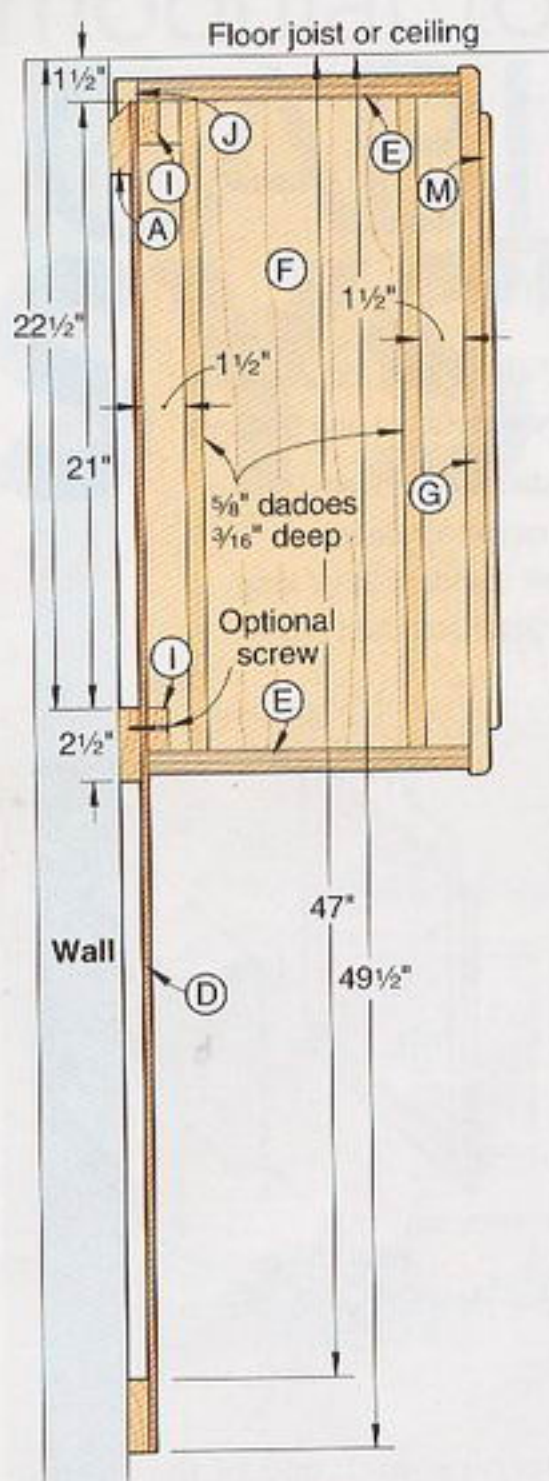
1/2" deep on each end of the sides to house the top and bottom (E) later.

3 Mark the screw-hole center-points on the top and bottom (E). We located ours 1½" from each end and centered the middle screw. The screws are located ½" in from the outside edge. Now, cut a scrap block like that shown in the photo on *page 94*, with a 5° angle across one end. Glue and clamp the plywood panels (E, F) together, checking for square. Using the block as a drill guide, drill angled holes through the corner joints. Countersink the holes, and drive the screws. Remove the clamps, and then wipe off excess glue with a damp cloth.

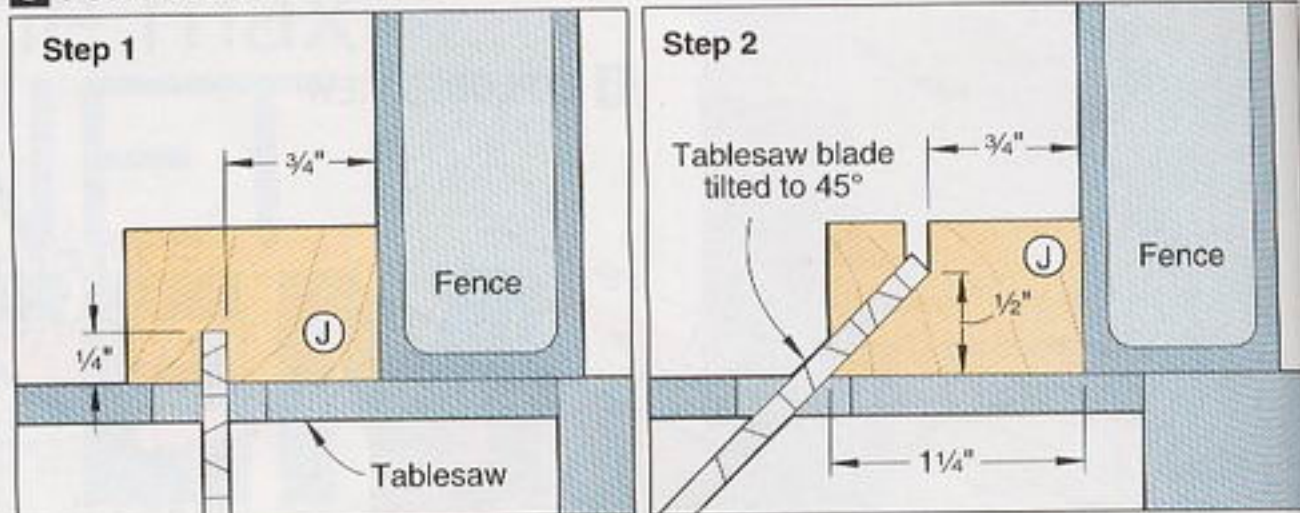
Add the face frame and supports next

1 Cut the face frame stiles and rails (G, H) to size, so the assembled face frame will overhang the plywood cabinet $\frac{1}{8}$ " on all edges.

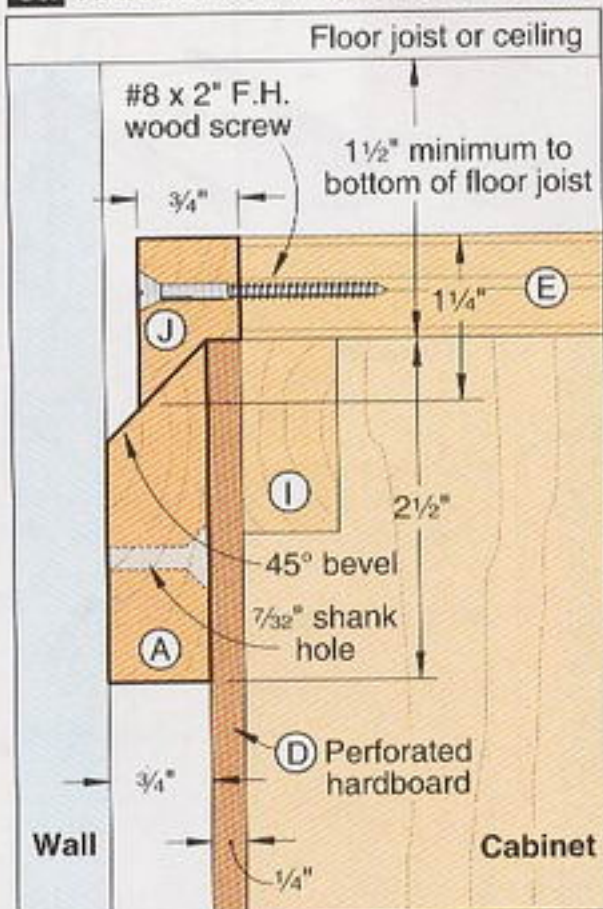
2 SIDE SECTION VIEW



3 FORMING THE HANGER



3a HANGER SECTION VIEW DETAIL



After marking the centerpoints 1 1/2" in from the outside edge, use a 5° drill guide to drill the angled holes.

2 Glue and clamp the face-frame pieces directly to the front of the plywood cabinet. If you own a biscuit joiner, you can further strengthen the joint with biscuits.

3 Sand the face frame. Then, rout a 1/8" round-over along the outside edges of the frame, where shown on Drawing 1.

4 Measure the cabinet opening, and cut the supports (I) to size. Drill mounting holes, and glue and screw the supports to the top and bottom (E), where shown on Drawing 1. The back edges of the supports should be flush with the back edge of the cabinet.

5 Cut the hanger (J) to size. Follow Drawing 3 to form the angled bottom edge. Now, screw the hanger to the back of the cabinet, where shown on Drawing 3a.

Next, let's add the shelves and banding strips

1 Cut the plywood shelves (K) and banding strips (L) to size plus 1" in length. Glue and clamp the banding strips to the front edge of the plywood shelves. Later, remove the clamps, and cut the shelves/banding to final length.

2 Rout 1/8" round-overs along the front, banded edges of each shelf, where shown in Drawing 1.

And now for a half-lapped door for the cabinet

1 Cut the door stiles (M) and rails (N) to size. Using Drawing 4 for reference, cut half-lap joints on the ends of each.

2 Cut or rout a 3/8" rabbet 3/8" deep along the inside edge of each door member.

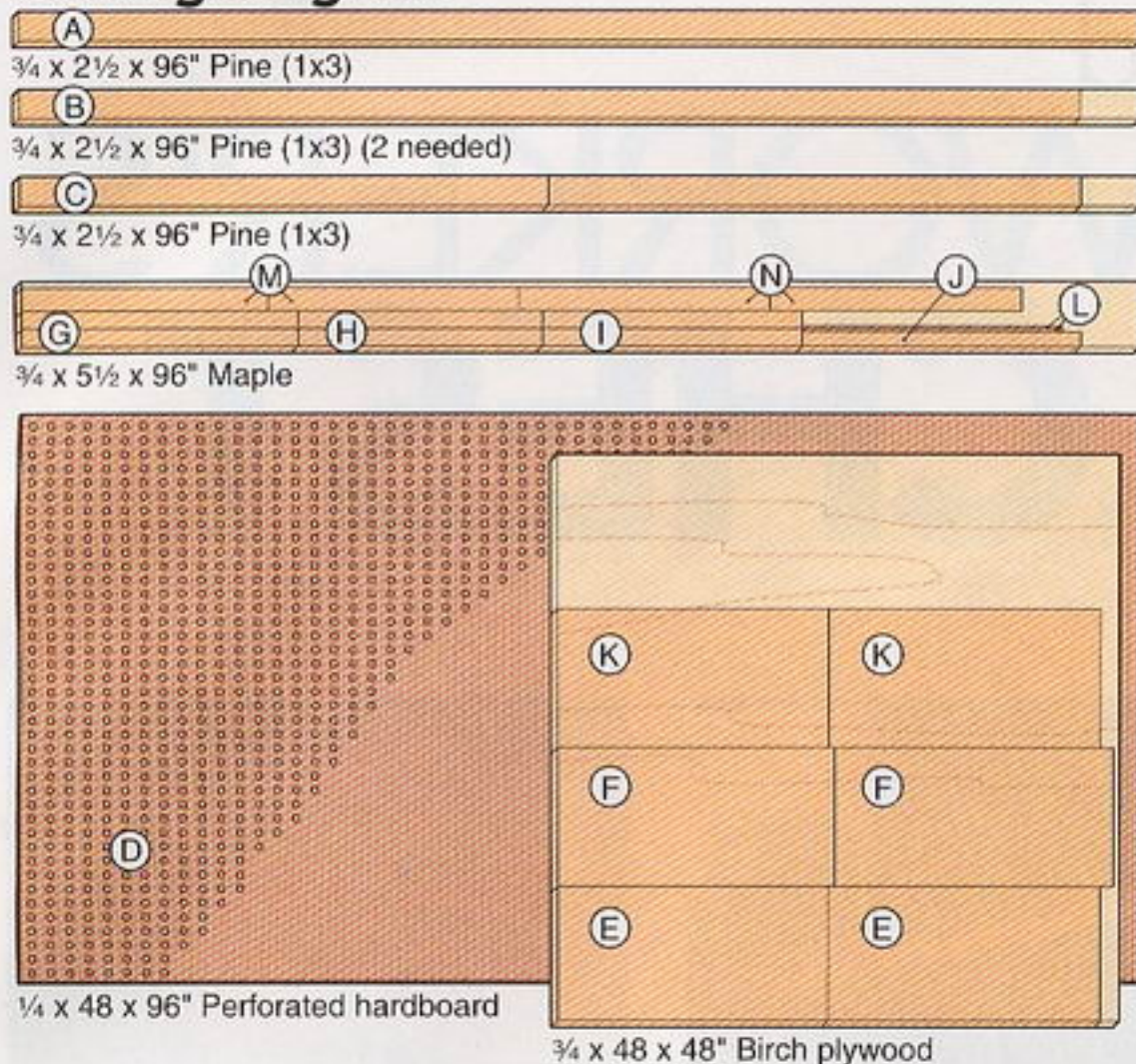
3 Glue and clamp the door frame together, checking for square and flatness. Later, remove the clamps, and sand the door frame.

4 Rout a 1/8" round-over along the front inside and outside edge of the door frame. Switch bits or use a dado blade in your tablesaw to cut a 3/8" rabbet 3/8" deep along the back outside edge of the frame.

5 Mark the hinge locations on the doors. Drill pilot holes and screw the hinges in place.

6 Position the door centered in the opening, and mark the hinge-hole locations on the face frame. Position the door to open on the left or right, depending on what's most convenient. Drill the pilot holes, and screw the door/hinges to the face frame. Drill the mounting holes for the wire pull.

Cutting Diagram



Tips on Customizing Your Tool Board and Cabinets

Because all shop walls are not created equal, start by carefully determining where you want to position your tool boards and cabinets. And, in our opinion, you never can have too much perforated hardboard from which to hang tools and such.

Next, determine the size you'll need for your tool boards. Because most basements have 7' ceilings, we designed this system to hang 1 1/2" below the bottom edge of the floor joists. You'll need this 1 1/2" clearance for hanging the cabinets on the tool boards. See **Drawing 2** for details. If your shop has

more wall space, or if you already have a cabinet or workbench anchored to the wall where you want the tool board, create the tool board to fit the opening minus the 1 1/2" gap needed at the top. If the wall is obstacle free, consider making the tool board 96" long, enabling you to use a full 4x8' sheet of perforated hardboard.

Customize your cabinets, too. Though we built ours all the same size, you may want to make your cabinets longer, shallower, or whatever. The modular design will allow you to be as creative as you like.

Finish it all up

1 Remove the hardware from the cabinet. Finish-sand, and apply a clear finish to the cabinet, door, and shelves. Leave the perforated hardboard unfinished.

2 Cut the shelf standards to length, and then screw them in place.

3 Measure the opening, and cut the acrylic for the door. Run a fine bead of clear silicone to secure the acrylic in place. Later, reattach the hinges, and secure the door to the cabinet.

4 Hang the cabinet on the tool board. Leave the cabinet moveable, or drive a couple of screws through the bottom support (I), the perforated hardboard, and into the middle mounting strip (B), where shown on **Drawing 2**.

Materials List

Tool board	FINISHED SIZE			Matl.	Qty.
A top strip	$\frac{3}{4}$ "	2 1/2"	96"	P	1
B middle & bottom strips	$\frac{3}{4}$ "	2 1/2"	91"	P	2
C end strips	$\frac{3}{4}$ "	2 1/2"	45 1/2"	P	2
D front	$\frac{1}{4}$ "	48"	96"	PH	1
Cabinet					
E top & bottom	$\frac{3}{4}$ "	11 3/4"	23 3/4"	BP	2
F sides	$\frac{3}{4}$ "	11 3/4"	23 3/4"	BP	2
Face frame					
G stiles	$\frac{3}{4}$ "	1 1/2"	24"	M	2
H rails	$\frac{3}{4}$ "	1 1/2"	21"	M	2
Supports and hanger					
I supports	$\frac{3}{4}$ "	1 1/2"	22 1/4"	M	2
J hanger strip	$\frac{3}{4}$ "	1 1/4"	23 3/4"	M	1
Shelves					
K* shelves	$\frac{3}{4}$ "	11 3/8"	22 1/8"	BP	2
L* banding	$\frac{1}{4}$ "	$\frac{3}{4}$ "	22 1/8"	M	2
Door					
M stiles	$\frac{3}{4}$ "	2"	21 1/2"	M	2
N rails	$\frac{3}{4}$ "	2"	21 1/2"	M	2

*Parts initially cut oversize. See the instructions.

Materials key: P—pine or fir, PH—perforated hardboard, BP—birch plywood, M—maple or birch.

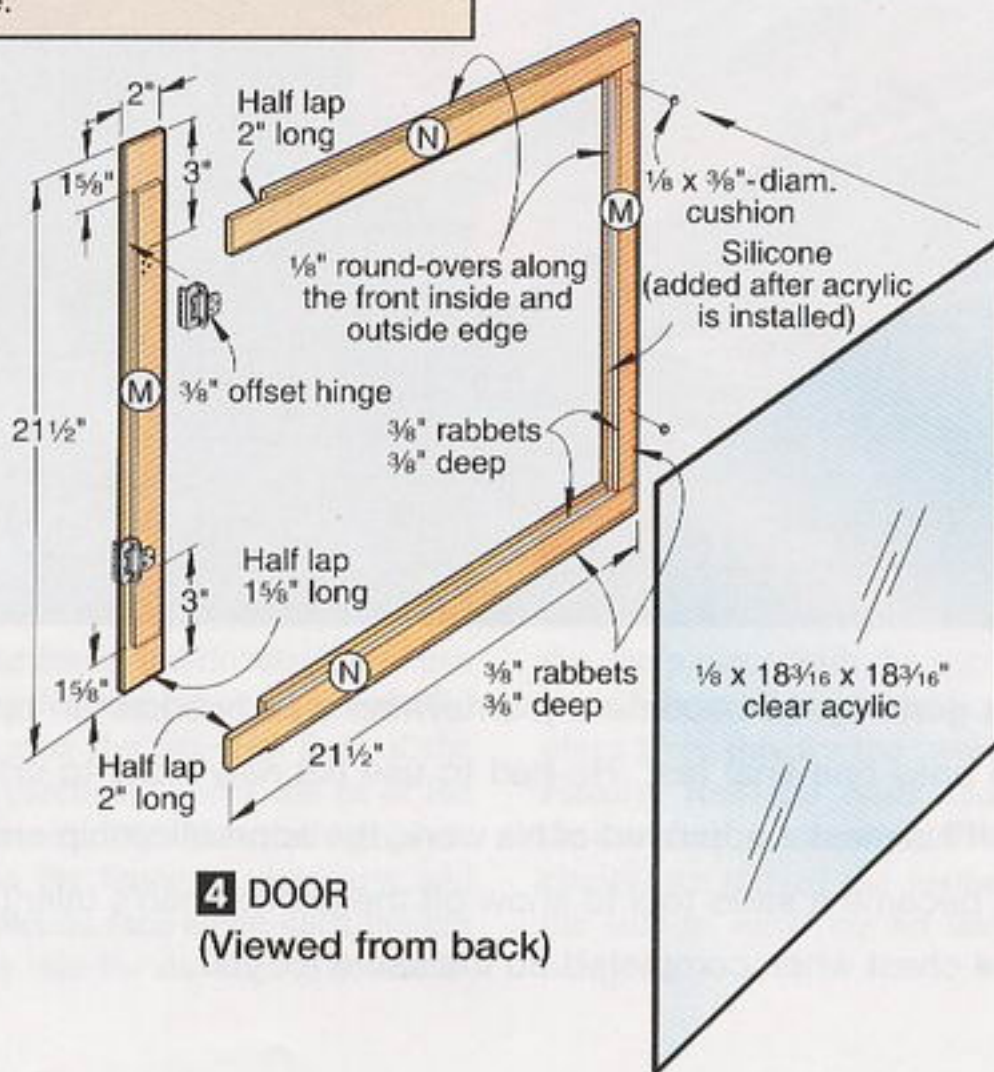
Supplies: #8x1" flathead wood screws, #8x2" flathead wood screws, #12x2" panhead wood screws, one pair of 3/8" offset self-closing hinges (we used Amerock hinges), 4" wire pull, shelf standards and clips, 1/8x3/8"-diameter cushions, 1/8x18 3/16x18 3/16" clear acrylic, silicone, clear finish.

Written by **Marlen Kemmet**

Project design: **Jim Downing**

Illustrations: **Roxanne LeMoine; Lorna Johnson**

Photographs: **Wm. Hopkins**



4 DOOR
(Viewed from back)

a tradition revived

WOODWORKER'S TOOL CHEST



First, glue up the panels for the box

1 Rip and crosscut enough $\frac{1}{2}$ " oak stock for the top (A), sides (B), and drawer shelves (C). Edge-join the stock so each panel measures 1" extra in length and width. (To ensure stability, we edge-joined three narrower pieces for each panel.)

2 Later, scrape off the excess glue, cut the panels to finished size, and sand smooth. Check each panel for flatness and plane if necessary.

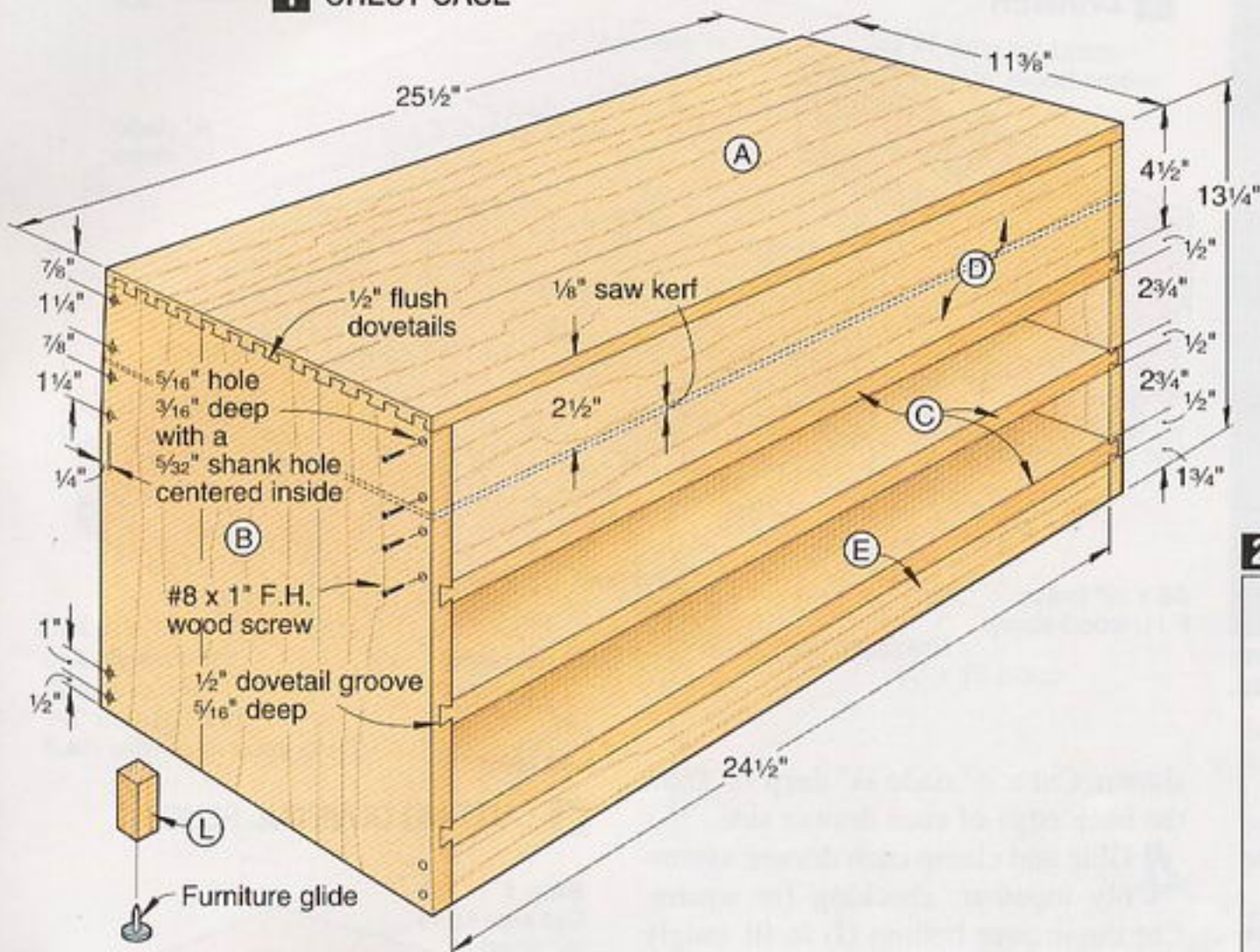
Dovetail the chest case parts

Note: We used a Sears dovetail jig (model 2579) and our router to cut the dovetail joints. Jigs by other manufacturers will work similarly.

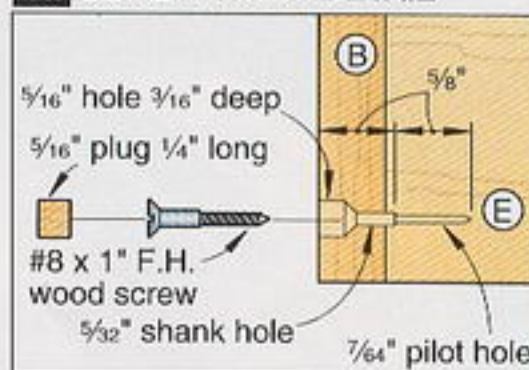
1 Set up the dovetail jig and router to cut $\frac{1}{2}$ " dovetails. To ensure proper jig and bit settings, test-cut dovetails in scrap stock the same thickness as the case sides and top *before* cutting the actual parts. (Jig cut dovetails seldom come out perfect the first time, so we recommend test cutting on scrap first.)

In days gone by, to become a journeyman woodworker, an apprentice had to pass one final test. He had to use his new skills to craft a tool chest. If his master approved of his work, the apprenticeship ended, and the chest became a sales tool to show off the journeyman's talent. Let this handsome chest when completed do the same for you.

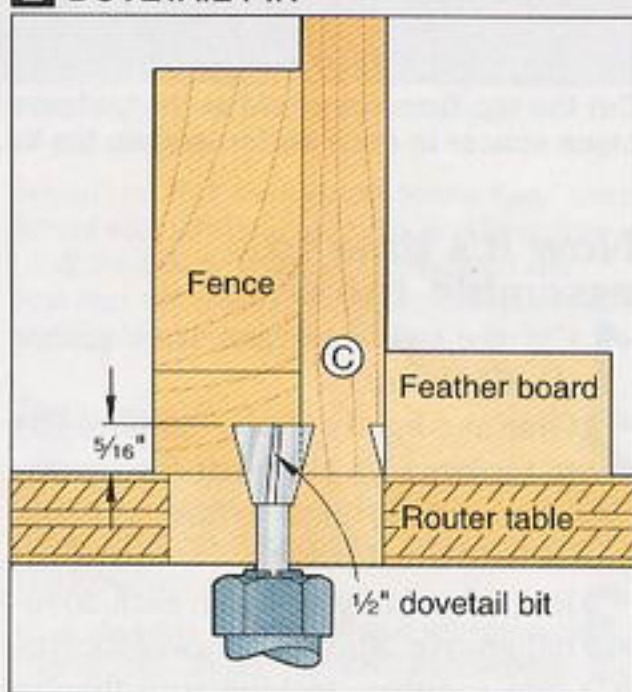
1 CHEST CASE



1a SCREW HOLE DETAIL



2 DOVETAIL PIN



2 Cut dovetails on both ends of the top (A) and the top edge of each side piece (B). Keep the dovetail jig set up—you'll use it again later for dovetailing the drawer parts.

3 To cut the dovetail grooves in the side pieces (B), mount a 1/2" dovetail bit in a table-mounted router. Raise the bit 5/16" above the surface of the router table. Mark the location of the three dovetail grooves on the front edge of one of the side pieces, where dimensioned on **Drawing 1** above. Adjust the fence to align the bit with the marked groove. Now, rout a 1/2" dovetail groove on the inside face of *each* side piece, as shown in **Photo A**. Reposition the fence and cut the next set of grooves. Repeat the process for the third set of grooves.

4 To cut the dovetail pin on each end of the drawer shelves, reposition the fence so the dovetail bit is positioned as shown in **Drawing 2**.

5 Rout *one* face of each drawer shelf and a scrap piece of 1/2" oak about 6" long. Clamp a feather board to the router table to hold the shelf firmly



With a 1/2" dovetail bit, rout the first of three dovetail grooves in the side pieces.

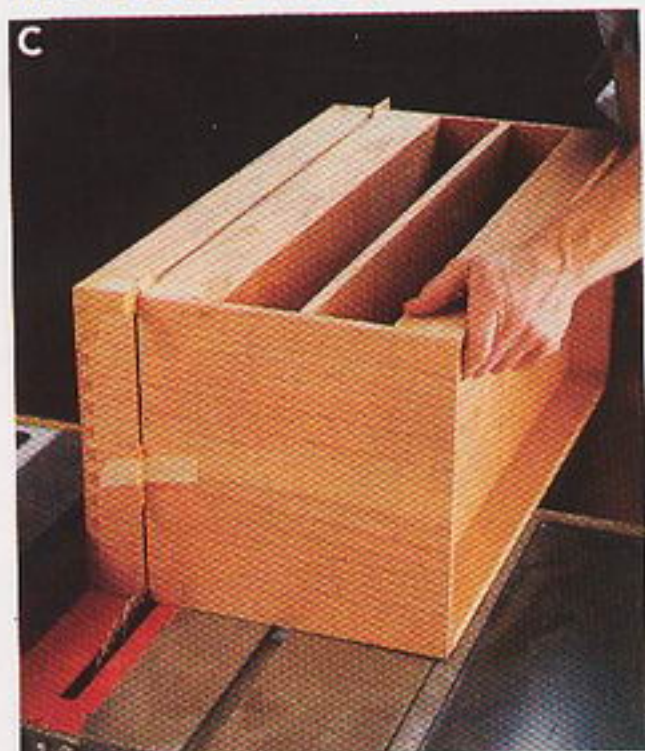
against the fence and dovetail bit when routing the dovetail pins. (See **Photo B**.)

6 Now, rout the *opposite* face of the scrap piece and check the fit of the scrap pin in the dovetail groove. Reposition the fence if necessary, and rout the second face again until the pin fits snugly into the dovetail groove. Set



Rout a dovetail pin on one end of a drawer shelf, after testing on scrap wood.

the scrap piece with the correctly sized routed dovetail pin aside, you'll cut pin plugs from this for the case back later. Finally, rout the other face of each drawer shelf, as shown in **Photo B**. (For clarity, we moved the feather board to the side to show the bit and the shelf being cut.)



Cut the top from the chest at the tablesaw, place spacer in each kerf to secure the lid.

Now it's time to assemble the chest

1 Cut the oak front and back pieces (D, E) to size.

2 Glue and lightly clamp the sides (B) to the top (A), checking for square. (We applied the glue to the tails and pins with a small brush.)

3 Run a bead of glue down each dovetail groove. Slide the drawer shelves (C) into position, making sure they're flush with the front edge of the chest. Then, glue and clamp the front and back pieces (D, E) into position.

4 Drill holes through the chest sides (B) into the ends of parts D and E, using the hole sizes stated in **Drawing 1a** on the *previous page*. Drive the screws. Cut plugs with a plug cutter, and glue a plug in place over each screw, matching the grain direction of the plug with that of the side piece. Sand the plugs flush later.

5 To saw away the lid, position the fence 2½" away from the fence side of the blade. Cut the two ends and one face. Tape ⅛"-wide spacers in the saw kerfs, where shown in **Photo C**, and make the final cut.

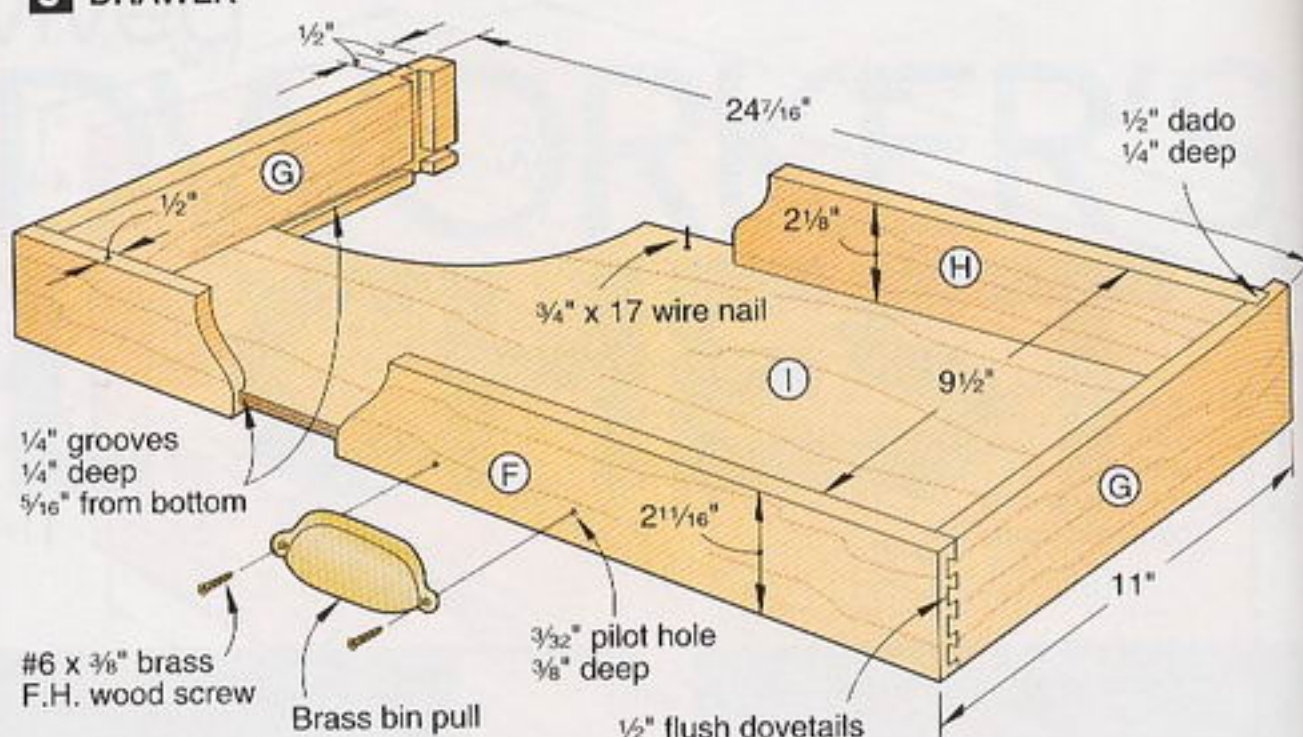
Now let's build and fit the drawers

1 Cut the drawer fronts (F), sides (G), and backs (H) to size, as dimensioned in **Drawing 3**.

2 Using the same jig setup as before, dovetail both ends of each drawer front and the front end of each side.

3 Cut a ¼" groove for the bottom (I) in each drawer front and side where

3 DRAWER



shown. Cut a ½" dado ¼" deep ½" from the back edge of each drawer side.

4 Glue and clamp each drawer assembly together, checking for square. Cut the drawer bottom (I) to fit snugly into the grooved opening. Before the glue has dried, slide a drawer bottom into the grooves in each drawer, and nail to the drawer backs (H).

5 Sand each drawer, smoothing all sharp edges. Belt-sand the drawer sides if necessary for a smooth fit into the chest drawer openings.

6 Cut the drawer stops (J) and guides to size. Slide the drawers into the drawer openings, and align the *front* of each drawer with the *front* of the chest. Now, working from the *back* side of the chest, glue the stops and guides to the drawer shelves, positioning them flush against each drawer.

7 Cut the dovetail pins from the scrap pin you cut earlier, using the two-step **Drawing 4** for reference.

8 Cut the plywood back (K) to fit the opening shown on **Drawing 5**. Glue and nail the back piece into place. Glue the plugs into the ends of the dovetail grooves on the back side of the chest, where shown in **Drawing 5**. Sand the plugs smooth.

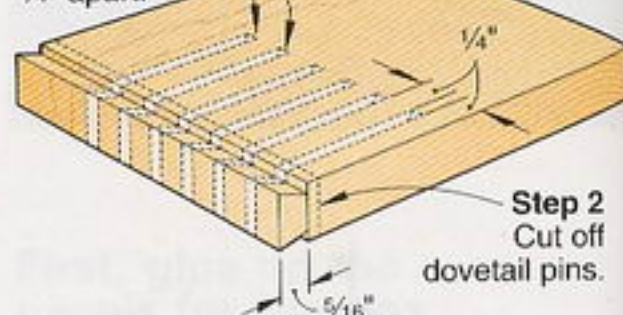
Custom-fit your tools into the drawers

1 To make the recessed holders for our hand planes and router plane, as shown in the *opening photo*, we started by cutting a piece of ¼" plywood to fit snugly inside the top opening. Then, we positioned our hand planes and router

4 CUTTING DOVETAIL PLUGS

Step 1

Cut saw kerfs ¼" apart.



Step 2

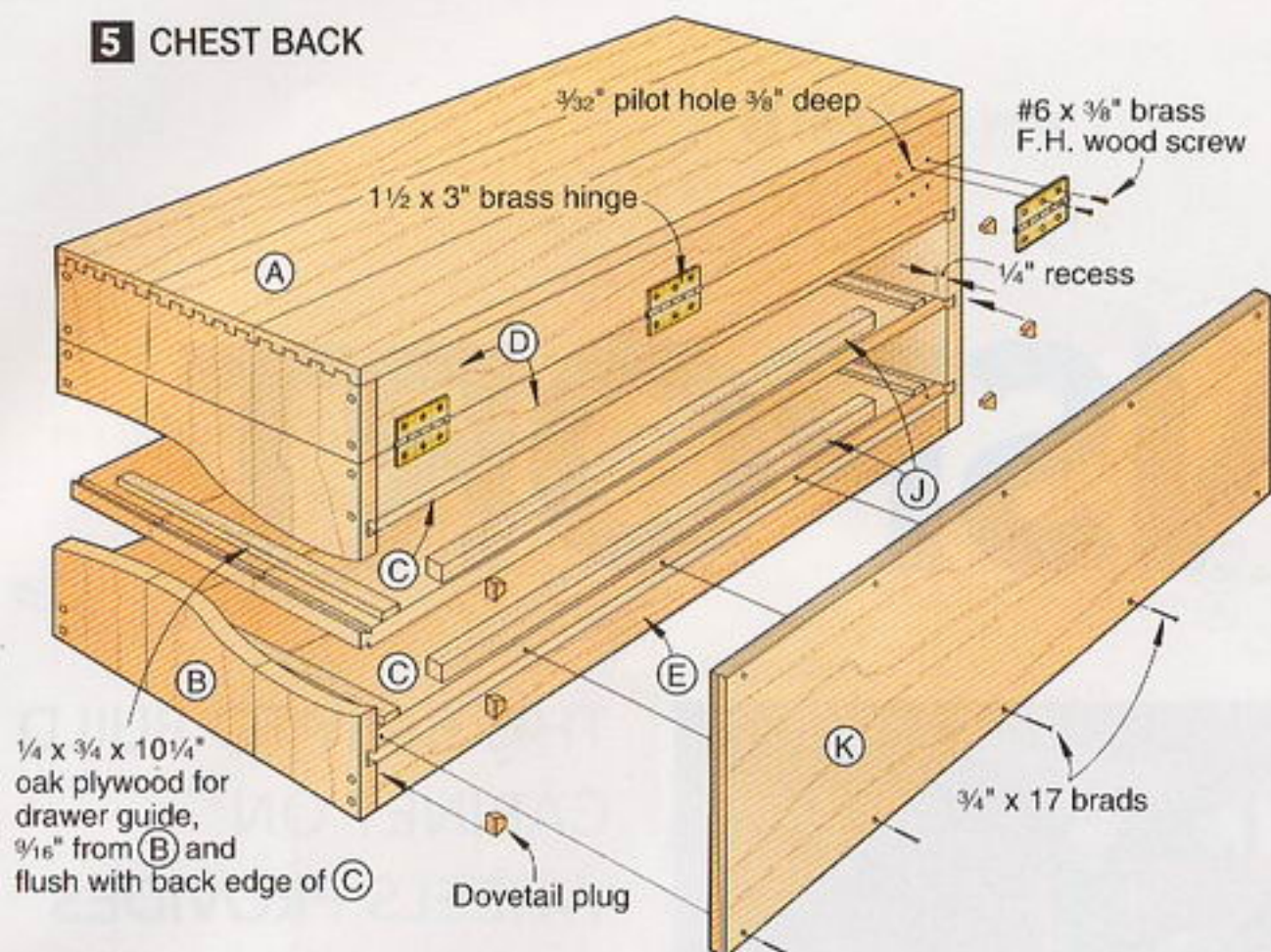
Cut off dovetail pins.

plane on the plywood, traced their outlines, and cut out the stock inside the outlines with a scrollsaw. Next, we glued the ¼" plywood to the top of the top drawer shelf (C). Finally, we cut a semicircular block, drilled holes in it to hold the cutters for the router plane, and glued and clamped it in position.

2 To hold the handsaws in position in the top drawer, we cut three ¾x¾x9½" oak strips. We then positioned the strips between the drawer front and back, laid the saws on top of the strips, and marked the portions of the strips covered by the saws. Next, we dadoed away the marked areas deep enough so the saws fit into the dadoed recesses. Finally, we glued the strips to the drawer bottom.

3 For the chisels stored in the bottom drawer, we cut two oak strips

5 CHEST BACK



6 NAMEPLATE FULL-SIZE PATTERN



$\frac{1}{2} \times \frac{3}{4} \times 9\frac{1}{2}$ " for the chisel handles and two strips $\frac{3}{4} \times 2 \times 9\frac{1}{2}$ " for the chisel blades. We positioned the strips and chisels in the drawer, and marked the portions of the strips that were covered. We dadoed away the marked areas for the blades, and using a scrollsaw, cut curved recesses for the handles. Finally, we glued the strips in position. We also cut dividers to place against the chisel handles to keep the chisels from sliding when opening and closing the drawer.

Finishing touches

1 Cut four furniture-glide supports (L) to size, then glue and clamp one support in each bottom corner.

2 To attach the lid, position it squarely on the chest. (We clamped ours in position.) Using double-faced tape, tape the hinges in position to the back

of the chest. Drill holes to the sizes given on **Drawing 5**, remove the tape, and attach the three hinges. Open the lid and attach the two lid supports. Attach the bin pulls.

3 Remove the hardware, and sand the chest case, lid, and drawers smooth. If you plan to flock the top opening and drawer interiors as we did, sand a slight round-over on all exposed edges of the recessed openings and tool supports. (The flocking doesn't stick well to sharp edges and wears off faster.)

4 Apply stain and finish to the chest. (We used spray-on lacquer.)

5 Mask off the drawer and top-opening tops and sides. Apply flocking to the drawer interiors following the directions supplied with the flocking. (See the Buying Guide for our source of flocking.)

Materials List

Part	FINISHED SIZE			Matl.	Qty.
	T	W	L		
A* top	$\frac{1}{2}$ "	$11\frac{3}{8}$ "	$25\frac{1}{2}$ "	EO	1
B* sides	$\frac{1}{2}$ "	$11\frac{3}{8}$ "	$13\frac{1}{4}$ "	EO	2
C* drawer shelves	$\frac{1}{2}$ "	$11\frac{3}{8}$ "	$25\frac{1}{8}$ "	EO	3
D top front & back	$\frac{1}{2}$ "	4"	$24\frac{1}{2}$ "	O	2
E bottom front & back	$\frac{1}{2}$ "	$1\frac{3}{4}$ "	$24\frac{1}{2}$ "	O	2
F drawer fronts	$\frac{1}{2}$ "	$2\frac{1}{16}$ "	$24\frac{7}{16}$ "	O	2
G drawer sides	$\frac{1}{2}$ "	$2\frac{1}{16}$ "	$10\frac{3}{16}$ "	O	4
H drawer backs	$\frac{1}{2}$ "	$2\frac{1}{8}$ "	$23\frac{15}{16}$ "	O	2
I drawer bottoms	$\frac{1}{4}$ "	$10\frac{1}{4}$ "	$23\frac{15}{16}$ "	OP	2
J drawer stops	$\frac{1}{2}$ "	$\frac{1}{2}$ "	20"	O	2
K plywood back	$\frac{1}{4}$ "	7"	$24\frac{1}{2}$ "	OP	1
L supports	$\frac{3}{4}$ "	$\frac{3}{4}$ "	$1\frac{5}{8}$ "	P	4

*Parts initially cut oversize. See the instructions.

Materials key: EO—edge-joined oak, O—oak, OP—oak plywood, P—pine.

Supplies: #8x1" flathead wood screws, #6x $\frac{3}{8}$ " brass flathead wood screws, $\frac{3}{4}$ "x17 brads, $\frac{3}{4}$ "x17 wire nails, $1\frac{1}{2}$ "x3" brass flat pin hinges (3), paraffin, $\frac{1}{16}$ "x1x3 $\frac{3}{4}$ " brass stock with two #4x $\frac{3}{8}$ " brass flathead wood screws for nameplate, furniture glides (4), stain, finish.

Buying Guide

• **Bin pulls** (3). Made of cast brass, catalog no. 36152, Rockler Woodworking and Hardware, 4365 Willow Drive, Medina MN 55340. Call 800/279-4441 to order, or go to www.rockler.com.

• **Lid supports** (2). Made of steel and brass plated. Catalog no. 34090, Rockler Woodworking and Hardware, listed above.

• **Suede-Tex flocking** Mini-flocker, catalog no. 28035, 3 oz. kelly green flocking fibers, catalog no. 73163, 8 oz. kelly green undercoat adhesive, catalog no. 23114. All items available from Rockler Woodworking and Hardware, address above.

6 Apply paraffin to the bottom edge of each drawer for smooth operation.

7 To make the nameplate on the front of the chest, we cut a piece of $\frac{1}{16}$ " brass (available at most hobby stores) to shape using the full-size pattern *above left*. Next, we drilled the mounting holes, filed and sanded the cut edges, and had a trophy shop do the engraving.

8 Reattach all hardware. Finally, attach the furniture glides to the bottom of the supports (L). ♣

Written by **Marlen Kemmet**
Project design: **Jim Downing**
Illustrations: **Kim Downing; Lorna Johnson**
Photographs: **Wm. Hopkins; Bob Calmer**

super-simple TOOL TRANSPORT



THIS EASY-TO BUILD CABINET ON WHEELS PROVIDES MOBILITY FOR YOUR BENCHTOP MACHINES, AND SOME SENSIBLE STORAGE TO BOOT

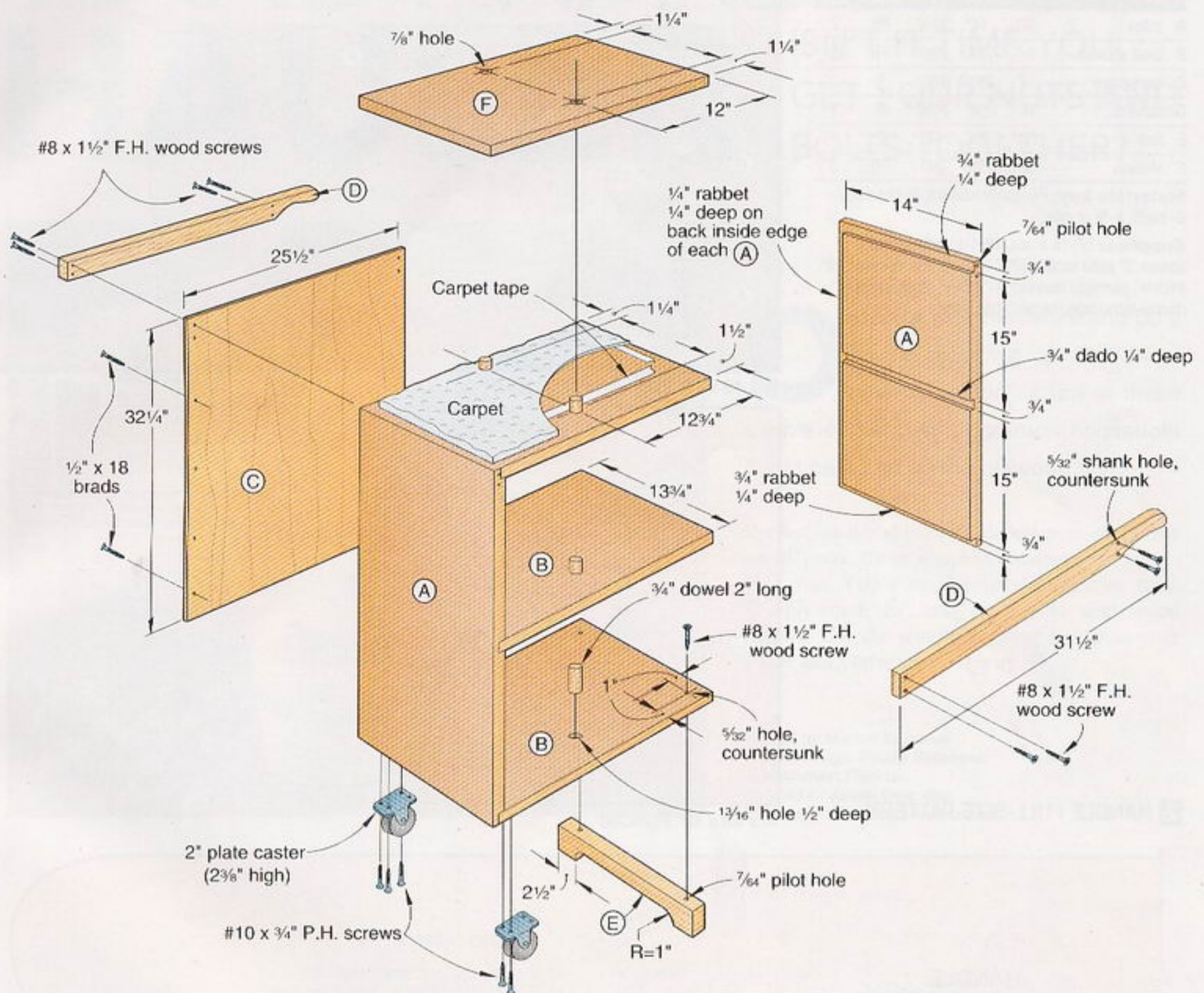
Most woodworkers we know have the same problem: not enough shop space. While we can't expand your shop, we've come up with a tool cart guaranteed to make the most of the space you do have. Just mount three benchtop tools to the interchangeable shelves, put the tool you need on top, and store the others below until you need them. You'll wonder how you ever got along without this handy unit.

Let's begin with the basic cabinet

1 Cut the cabinet sides (A) and fixed shelves (B) to the sizes listed in the Materials List.

2 Using **Drawing 1** for reference, mark the dowel-hole centerpoints on each of the three shelves (B), and drill $\frac{13}{16}$ " holes $\frac{1}{2}$ " deep where marked. From $\frac{3}{4}$ " dowel stock, cut four dowels 2" long each. Sand a slight chamfer on each end of each dowel. Set the dowels aside for now.

1 EXPLODED VIEW



3 Cut or rout 3/4" dados and rabbets in the sides (A) where dimensioned on **Drawing 1**. Then, cut a 1/4" rabbet 1/4" deep along the back inside edge of each side piece to house the back panel (C).

4 Dry-clamp the parts (A, B) together, and check for square. Also, make sure that the front edges of the sides and fixed shelves are flush. Measure the opening, and cut the back panel (C) to size from 1/4" plywood or hardboard. Glue and clamp the shelves

between the sides, and then glue and nail the back panel in place, checking for square.

Now, for the handles, foot, and casters

1 Rip and crosscut two pieces of 3/4"-thick solid stock (we used birch) to 1 1/2" wide by 31 1/2" long for the handles (D).

2 Transfer the full-size Handle pattern (**Drawing 2**) to one end of each handle blank. Cut and sand the handle

ends to shape. Drill the mounting holes, and glue and screw the handles to the cabinet, where shown on **Drawing 1**.

3 Now, cut the foot (E) to shape (we cut this from a piece of 2x4 stock). Drill the mounting holes and screw the foot to the cart. Then, drill the mounting holes and fasten a pair of casters to the opposite end. (We used regular casters, but you might want to consider using locking-type casters if you think rolling will be a problem.)

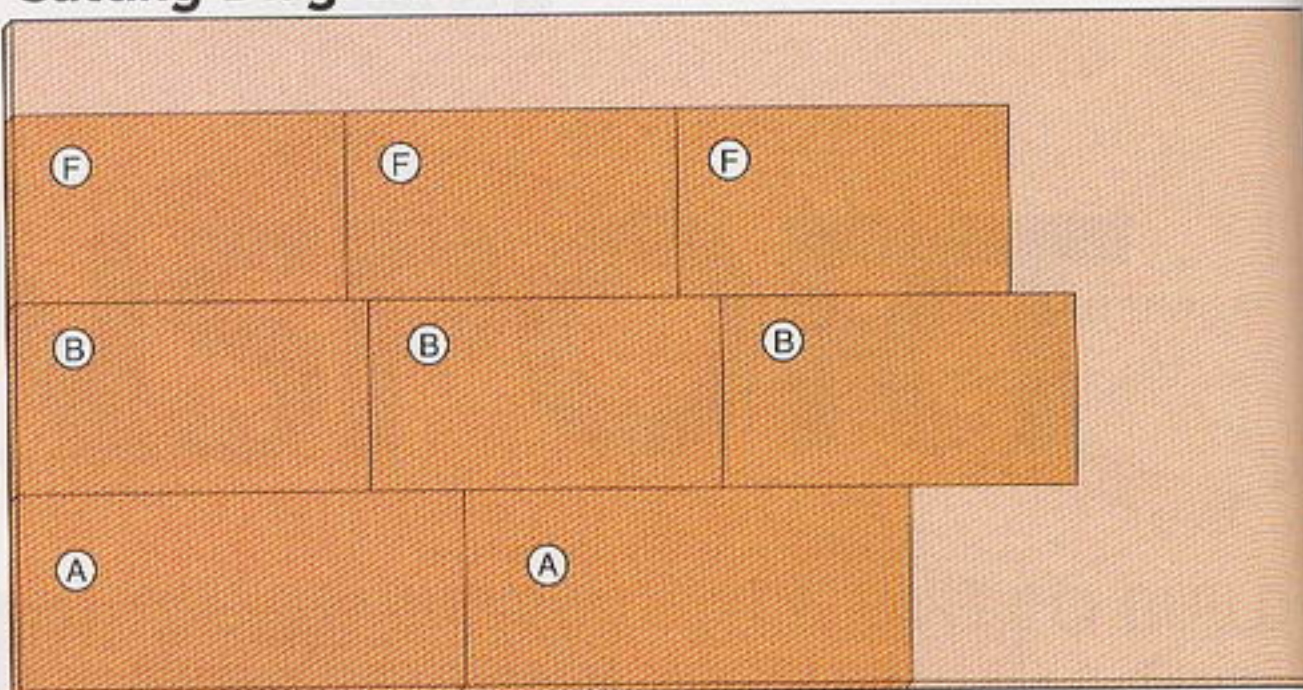
Materials List

Part	FINISHED SIZE			Matl.	Qty.
	T	W	L		
A sides	¾"	14"	32¼"	PB	2
B fixed shelves	¾"	13¾"	25½"	PB	3
C back panel	¼"	25½"	32¼"	P	1
D handles	¾"	1½"	31½"	B	2
E foot	1½"	2¾"	14"	F	1
F shelves	¾"	13½"	24"	PB	3

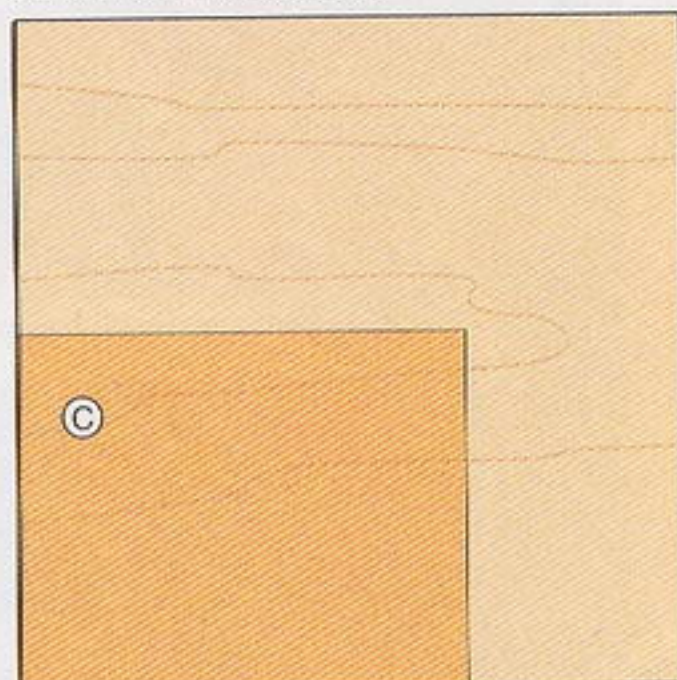
Materials key: PB—particleboard, P—plywood, B—birch, F—fir or pine.

Supplies: ½"x18 brads, #8x1½" flathead wood screws, 2" plate casters (2¾" high casters mounted with #10x¾" panhead screws), ¾" dowel stock, carpet, double-faced tape (carpet tape), paint.

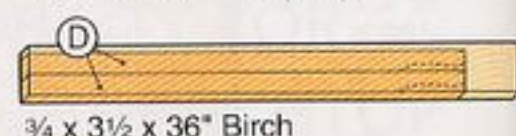
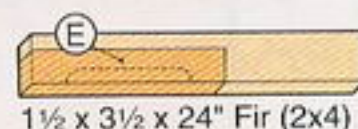
Cutting Diagram



¾ x 48 x 96" Particleboard



¼ x 48 x 48" Plywood



2 HANDLE FULL-SIZE PATTERN



Add the shelves; you're nearly finished

1 Cut the interchangeable shelves (F) to size. Bore a pair of ⅞" holes through each shelf, where shown **Drawing 1**. The holes need to be centered over the 1⅜" holes in the fixed shelves.

2 For a glass-smooth finish, fill the voids and edges of the particleboard. (We applied Durham's Rock Hard Putty and let it dry for a couple

hours. Then, we sanded the filled areas and added more putty where necessary.) Sand and paint the cart and shelves. (We applied several coats of sanding sealer, sanding between coats with 220-grit paper. We sprayed on a coat of semigloss enamel paint, allowed it to dry, and then sprayed on a second coat.)

3 To reduce vibration, cut a piece of carpet to the same size as an interchangeable shelf (13½x24"). Mark the locations and cut a pair of ⅞" holes in

the carpet, and stick the carpet to the top shelf with double-faced tape.

4 Position your machines on the shelves, mark the locations on the shelves for the mounting holes, and drill the holes. Fasten the machines to the shelves. 🛠️

Written by **Marlen Kemmet**
Project design: **Jim Downing**
Illustrations: **Kim Downing**
Photograph: **Bob Calmer**

HANDY HARDWARE HAULER

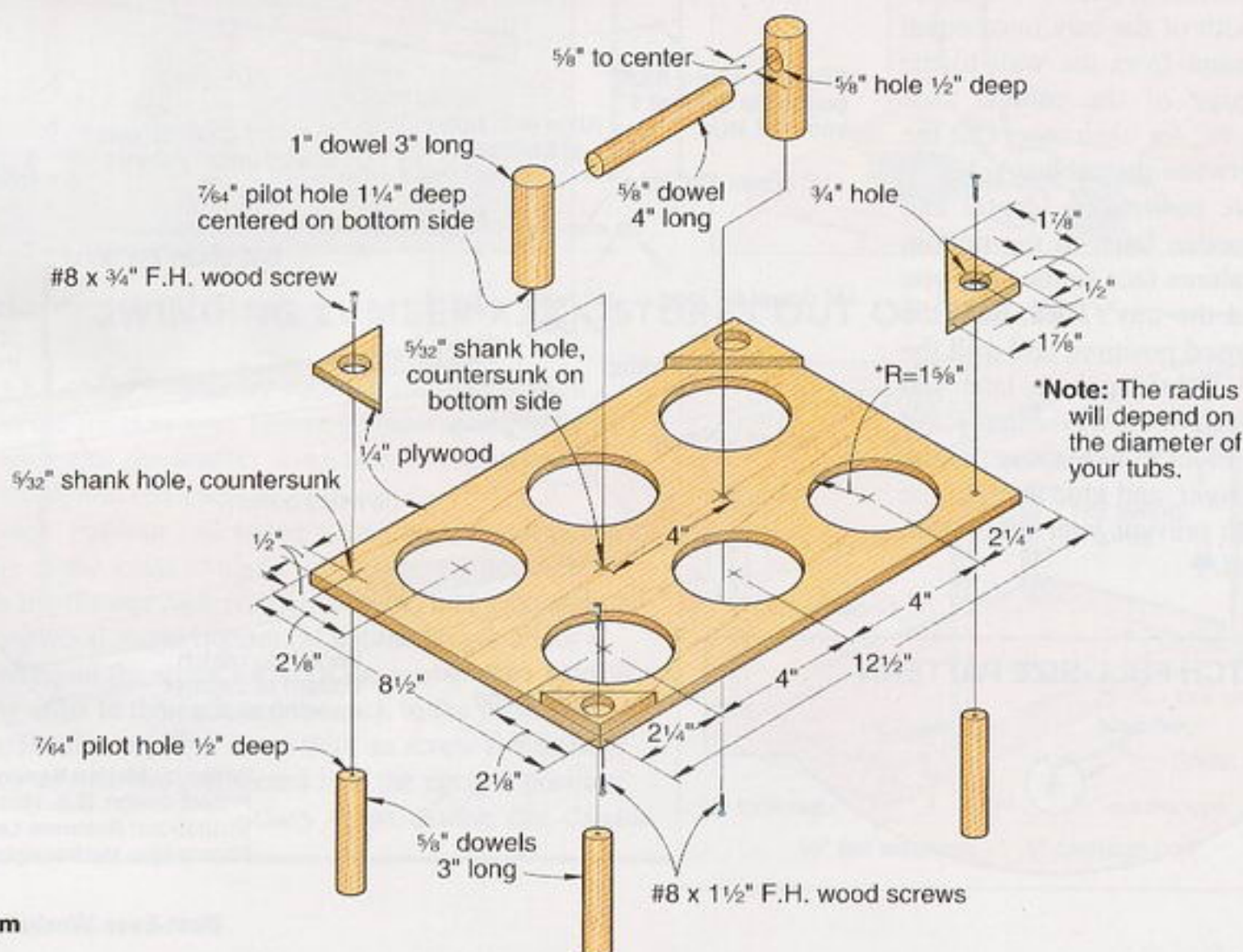
ISN'T IT TIME YOU GET YOUR NUTS AND BOLTS TOGETHER?



Organize your hardware and do a bit of recycling at the same time by building a few of these simple carriers with common household containers and a little plywood.

Perfect for wood buttons, dowel pins, and other small parts, these simple containers are stackable, too. You'll need several margarine tubs, $\frac{1}{4}$ " plywood, $\frac{5}{8}$ " and 1" dowels, and wood screws. Use the simple drawing *below* as your guide and you're on your way. 🌲

Written by **Marlen Kemmet**
Project design: **Phillip Belanger**,
Kissimmee, Florida
Illustration: **Jamie Downing**
Photograph: **Hopkins Associates**



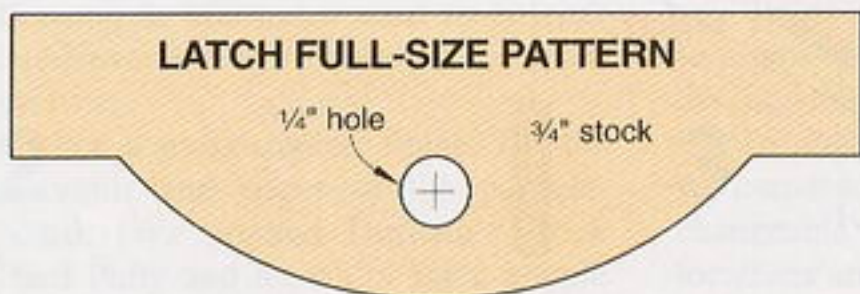
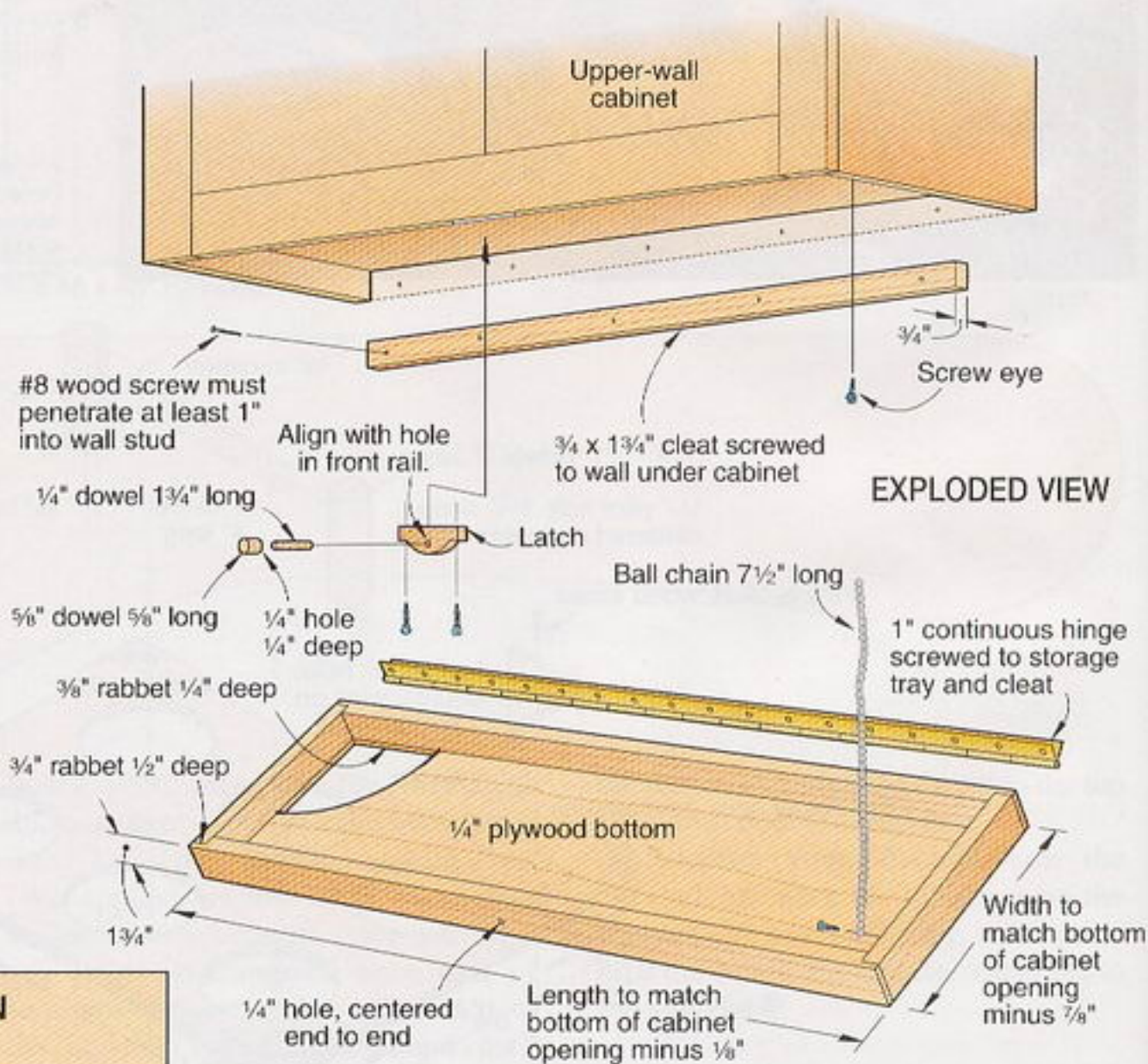
drop-down TOOL-STORAGE TRAY

Here's a great way to squeeze a lot of storage space into a small area. The storage tray shown here holds nine measuring and marking tools, and quickly folds up into an unused space. You could just as easily customize your tray to hold chisels, screwdrivers, wrenches, or other tools.



To build the tray, you must first measure the underside of the cabinet. The length of the tray should equal the inside measurement between the two sides of the cabinet minus $\frac{1}{8}$ " for clearance. The width of the tray must equal the measurement from the wall to the inside edge of the cabinet face frame minus $\frac{7}{8}$ " for clearance. Cut the cleat to fit between the cabinet sides.

For accurate positioning, center and screw the wooden latch to the bottom edge of the cabinet face frame after you have installed the tray. Then, hold the tray in the closed position, and drill the hole for the dowel through the latch and into the front rail of the tray. Finally, cut tool-holding blocks, like those in the photo *above right*, and glue them to the tray bottom to prevent your tools from sliding around.



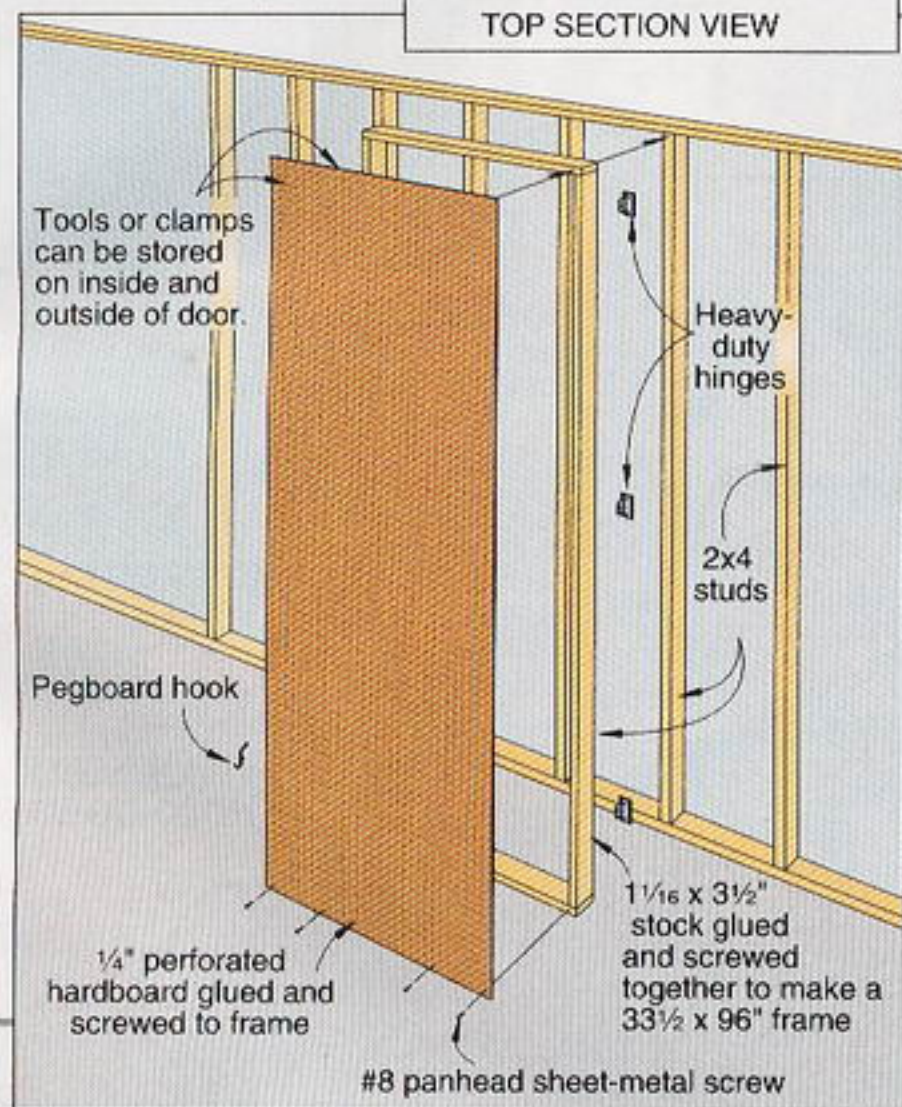
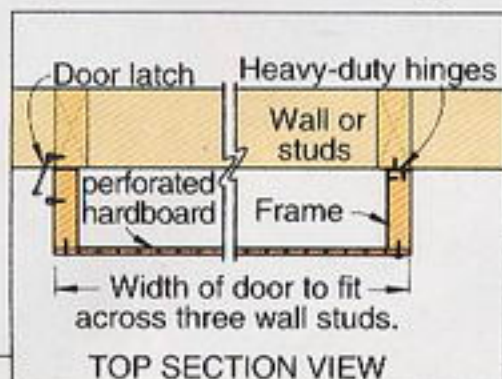
Written by Marlen Kemmet
Project design: R.B. Himes
Illustrations: Roxanne LeMoine; Lorna Johnson
Photograph: Hetherington Photography

GREAT ORGANIZATION TIPS

SWING-OUT RACK HOLDS CLAMPS AND TOOLS

With shop storage space at a premium, I wanted a place to store my clamps, yet keep them handy when I needed them. The answer was to build a hinged rack that provides tool storage on both sides. I put the tools I use on a regular basis on the outside and the clamps on the inside. When I need a clamp, I swing the rack open and I'm ready to go.

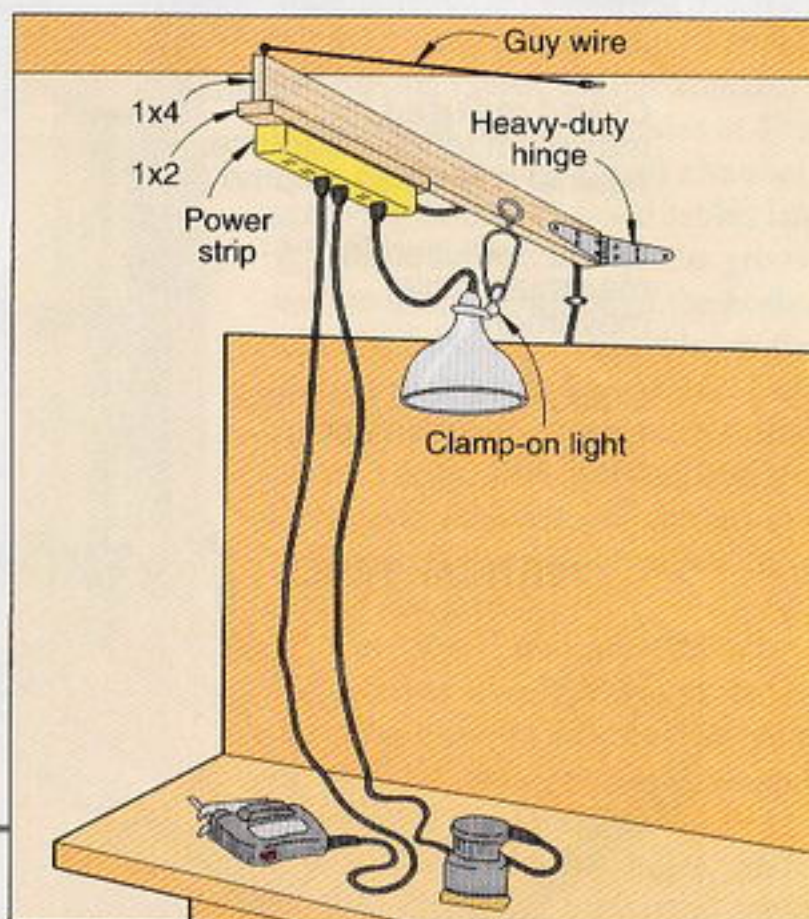
—Kevin Hemmingsen,
Wabasha, Minn.



BOOM PUTS POWER RIGHT ABOVE YOUR BENCH

Electrical cords that get draped across a benchtop are ripe for damage, and such a situation could easily result in a serious electrical shock. If you plug in your tools above the bench instead of behind it, you won't have to drag cords across the work surface. For an overhead outlet that goes where you need it, fashion a boom, like the one shown below, from 1x4 and 1x2 boards. It should be long enough to extend from the back of the bench to slightly past the bench front. Attach a power strip to one end, and hinge the other end to the wall behind the bench. For a long boom, add a guy wire from the free end of the boom to a point on the wall above the hinge. Add a clamp-on reflector lamp for a simple, adjustable worklight.

—G.E. Wallauz, Painesville, Ohio



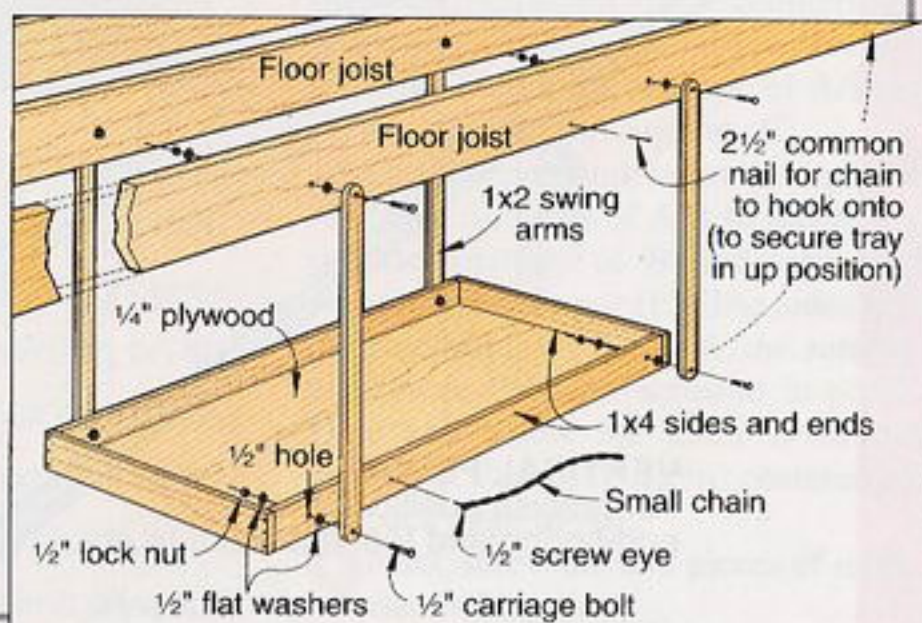
SWINGING LUMBER RACK STORES OUT OF THE WAY

You can save a lot of floor space by stashing short lengths of lumber between the joists in your garage or basement. And with this rack you can swing the lumber down to eye level where it is easy to sort through and retrieve.

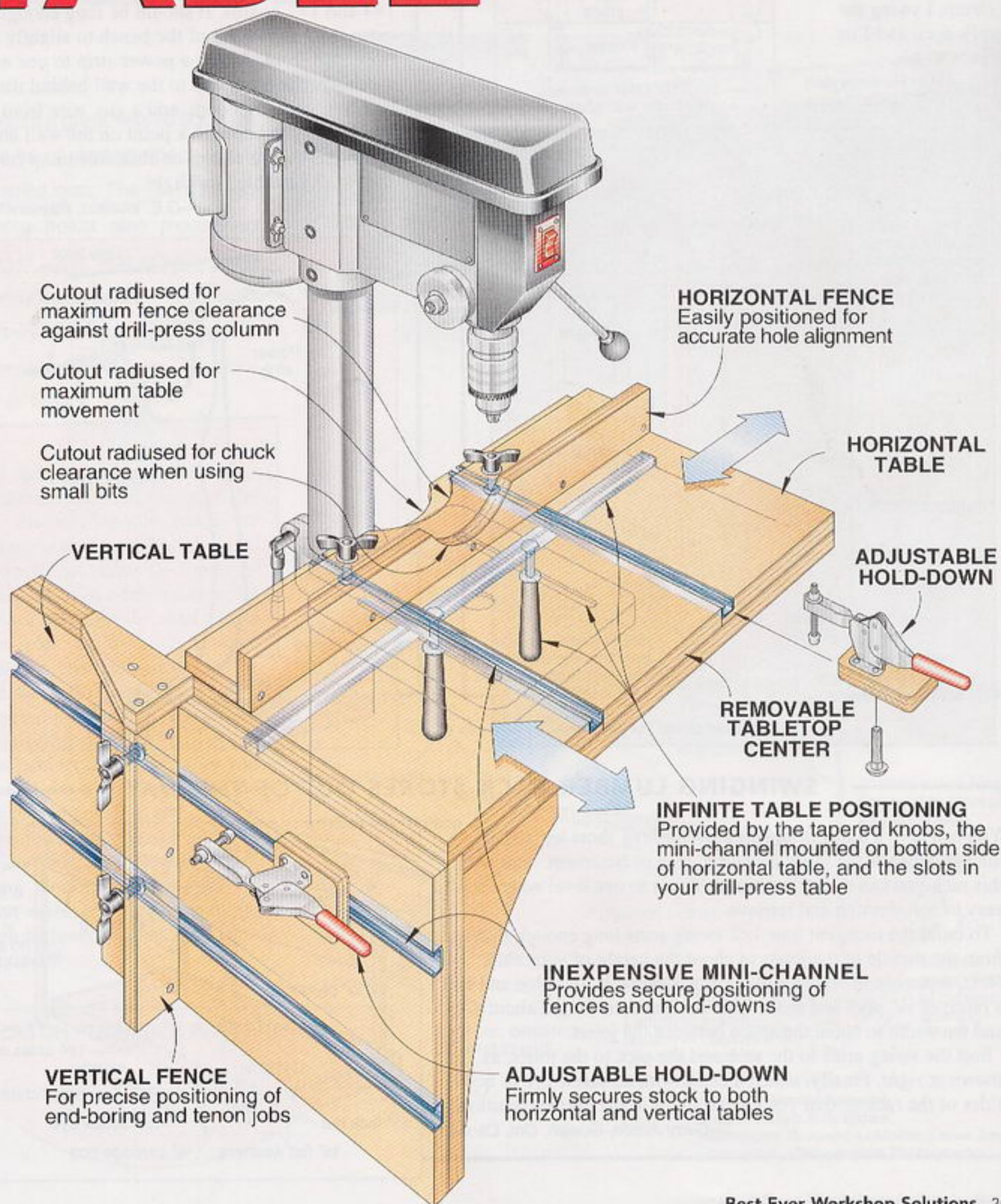
To build the rack, cut four 1x2 swing arms long enough to reach from the middle of the joists to about the height of your chin. Next, assemble the lumber rack from 1x4 stock, and glue and nail a piece of 1/4 inch plywood to the bottom. Make the length about 4' and the width to equal the space between the joists.

Bolt the swing arms to the rack and the rack to the joists, as shown at right. Finally, attach a chain with a screw eye to both sides of the rack so that you can secure it in the upright position.

—Gerry Austin, Guelph, Ont. Canada



the super-versatile DRILL-PRESS TABLE





Start with the horizontal and vertical table pieces

1 Cut the horizontal table (A) and vertical table pieces (B) to the sizes listed in the Materials List. (We used $\frac{3}{4}$ " Baltic birch plywood, as sourced in the Buying Guide, because of its stability and strength.)

2 To make the radiused support (C), cut a piece of $\frac{3}{4}$ "-thick plywood to $5\frac{1}{4} \times 10\frac{1}{4}$ ". Mark a 9" radius, and cut the support to the shape shown on **Drawing 1** on the next page.

3 Cut the horizontal table tops (D, E) to size. (Constructing the table top out of three pieces simplifies replacing the center (E) should it eventually get drilled full of holes.)

4 Using a hacksaw, crosscut five pieces of metal mini-channel to the lengths listed on **Drawing 1**. (We used B-Line Systems B72 mini-channel. See the Buying Guide for our source.) Drill countersunk mounting holes at 4" intervals through the mini-channel for screwing to the plywood tables later.

5 Mark the location of the groove on the bottom surface of the horizontal table (A). Position the table on the top of your metal drill-press table. Looking through the slots on your drill-press table, verify that the marked groove crosses at least two of the grooves in your metal table. If not, adjust the position of the groove.

6 Cut $\frac{1}{16}$ " dadoes, rabbets, and grooves (wide enough to house the mini-channel just cut) in parts A, B, and D, where dimensioned on **Drawing 1** and **Drawing 2**.

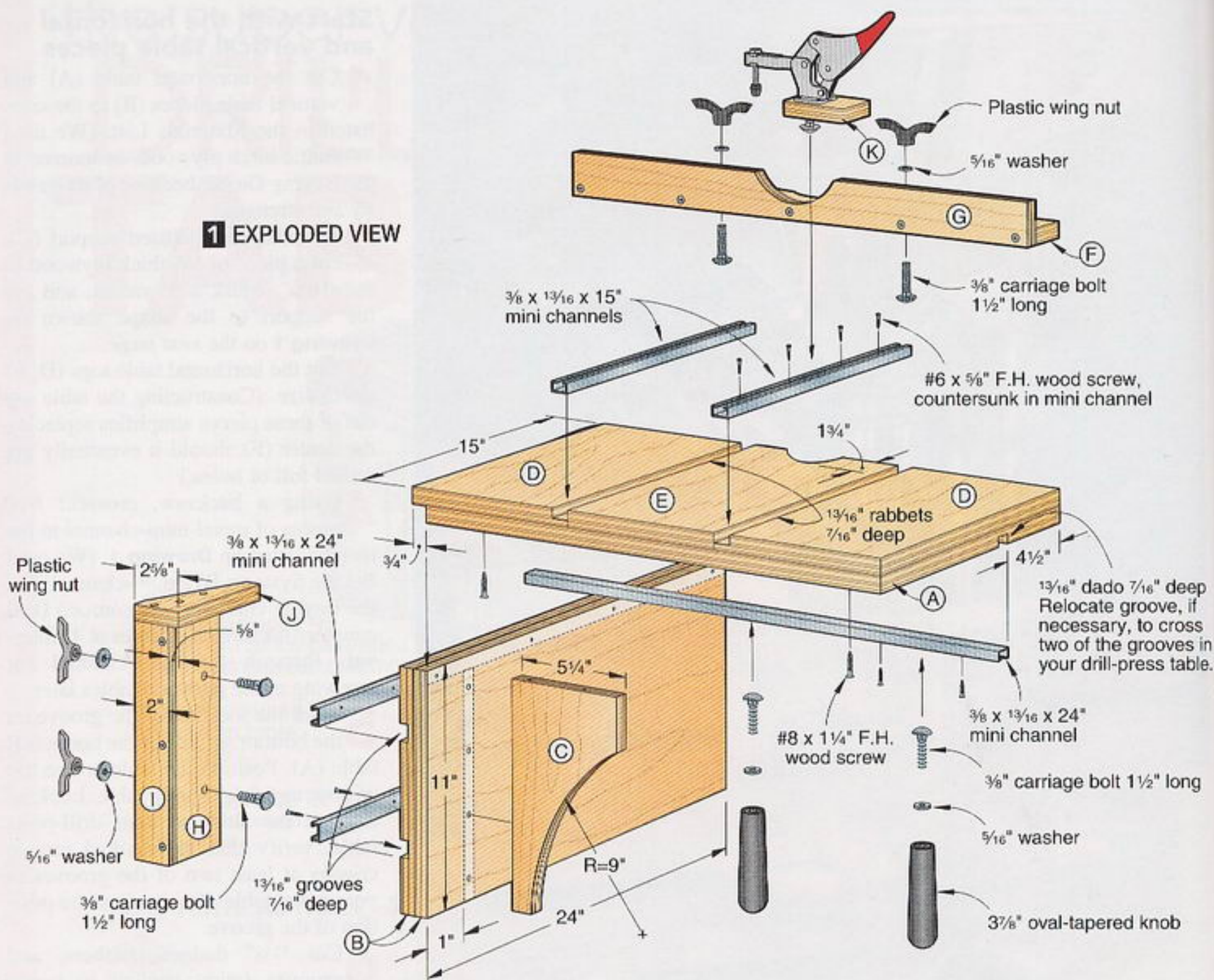
7 Drill countersunk holes, and glue and screw the horizontal table (A) to the inside member of the vertical table (B) in the configuration shown on the drawings. Drill more countersunk mounting holes, and drive screws through the outside surface of A/B to secure the radiused support (C).

8 Drill countersunk holes through the inside surfaces of A/B to secure the outside member of B and table top sides (D) and center (E). The sides (D) are glued and screwed to A, the removable piece E is just screwed in place. Glue and screw the outer B to the assembly. Cut a $2\frac{1}{2}$ " radius centered on the back edge of A/E.

9 Next, screw the five pieces of mini-channel in place.

Quality workmanship depends in large part on the accuracy of your tools. With this in mind, we set out to make your already hard-working drill press into the ultimate precision-machining center. To do this, we designed and tested several prototypes before settling on this L-shaped table coupled with a pair of firm fences and hold-down clamps. As shown on pages 110-111, this setup allows you to perform numerous machining processes with impressive precision. See the Buying Guide at the end of the Materials List for our source of hardware and Baltic birch plywood.

1 EXPLODED VIEW



Build a pair of fences for precision alignment

1 Cut the horizontal fence pieces (F, G) to size. Mark a 2 1/2" radius on each, where shown on **Drawing 3**, and bandsaw and drum-sand the radii to shape. The radius centered on table fence (G) allows the drill-press chuck to come closer to the workpiece, which is especially helpful when using a small bit. The radius in the fence base (F) allows the fence to be moved closer to the drill-press column when drilling into wide stock.

2 Mark a pair of hole centerpoints on the fence base (F). Before drilling the holes, verify that the points are centered over the dadoed openings in the table top.

Improperly located, the carriage bolts will bind in the mini-channel. Adjust if necessary, and drill the 3/8" holes.

3 Next, drill countersunk mounting holes, and screw the table fence (G) to the fence base (F), being sure to check for square.

4 Repeat the process to make the vertical fence (H, I), shown in **Drawing 4**. Cut the end guide (J) to shape, drill the mounting holes, and screw it to the top end of the vertical fence.

5 To mount the fences to the tables, start by grinding two opposing edges of four 3/8" carriage bolts until the bolt heads slide easily in the metal mini-channel. See **Drawing 2a** for reference. Insert the bolts through the

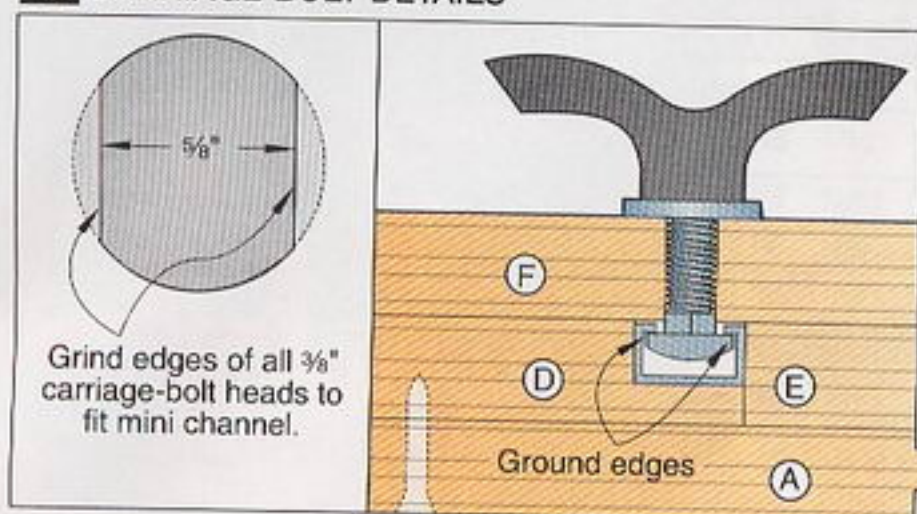
fence pieces (F and H), through flat washers, and into the plastic wing nuts (knobs). The fence assemblies should slide back and forth in the tables easily.

The hold-downs come next

1 Cut the clamp hold-down bases (K) to size from 5/8" stock. (We resawed some of the 3/4" plywood we used for the other pieces.) For holding 3/4"-thick stock later, the bases must be less than 3/4" thick. Cut or sand a 1/4" radius on each corner of each hold-down base. (See **Drawing 5**.)

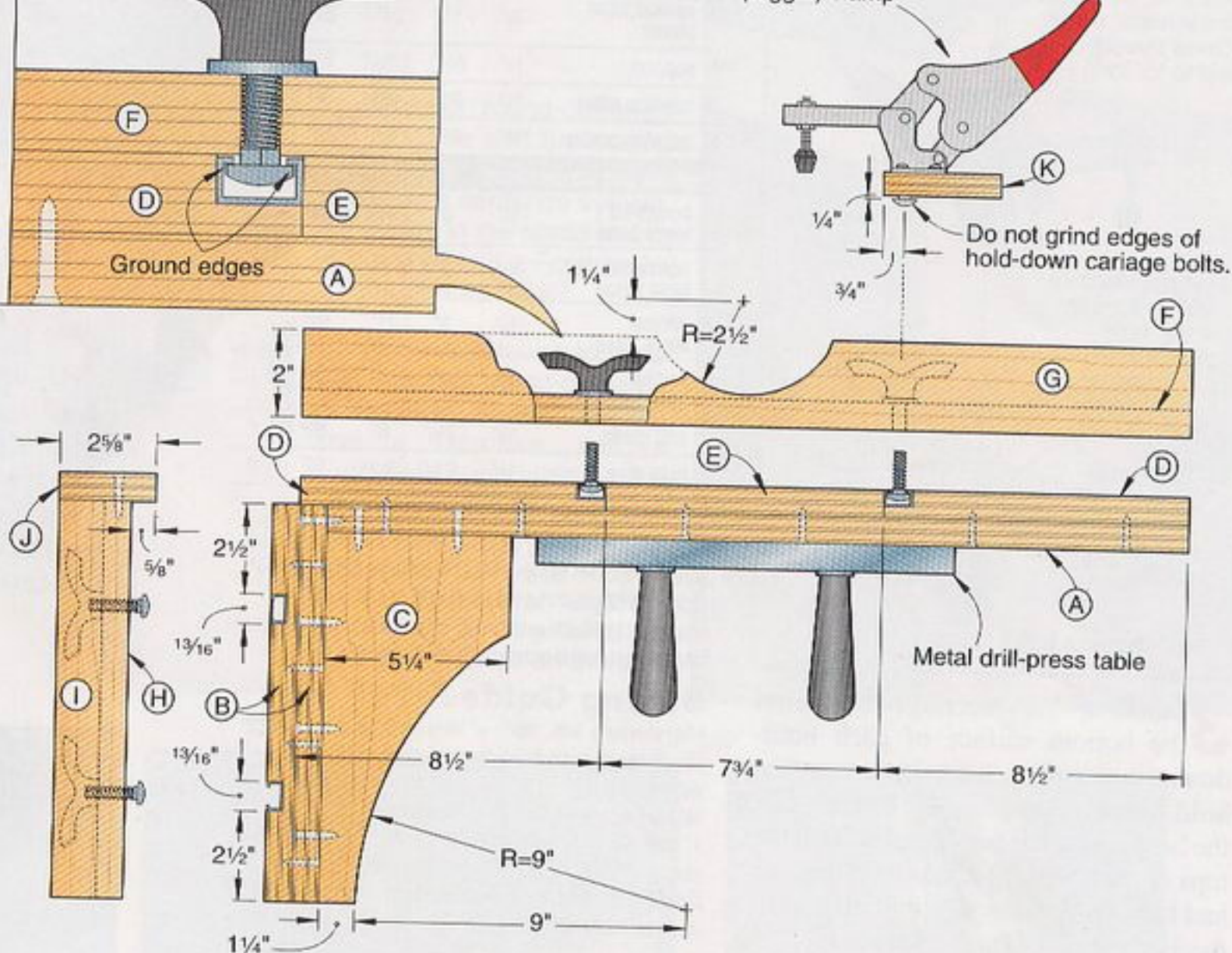
2 Drill a 1/2" hole 5/16" deep in the top of each hold-down base (K). Now, drill a 5/16" hole, centered through the middle of the counterbore.

2a CARRIAGE BOLT DETAILS

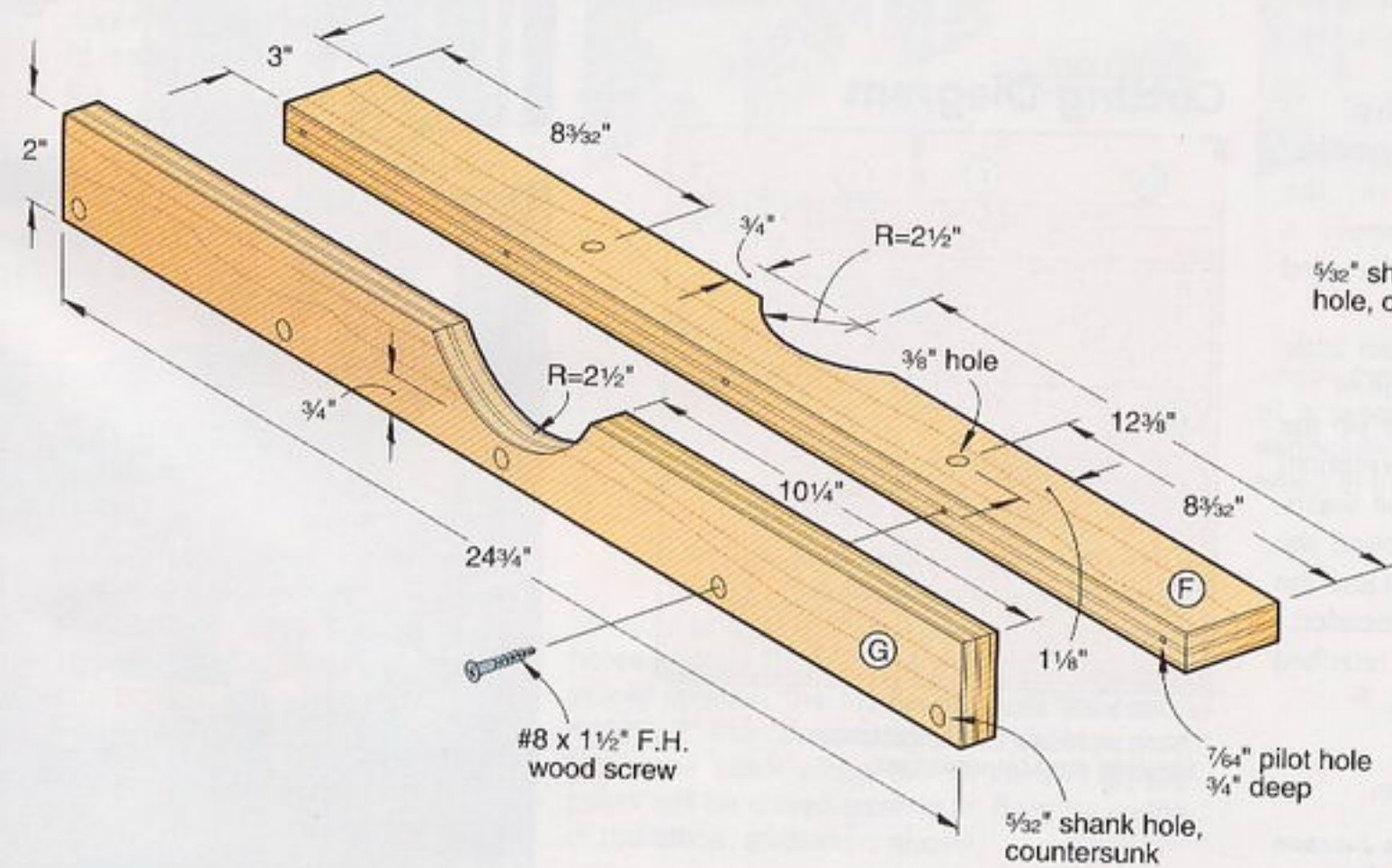


2 FRONT VIEW

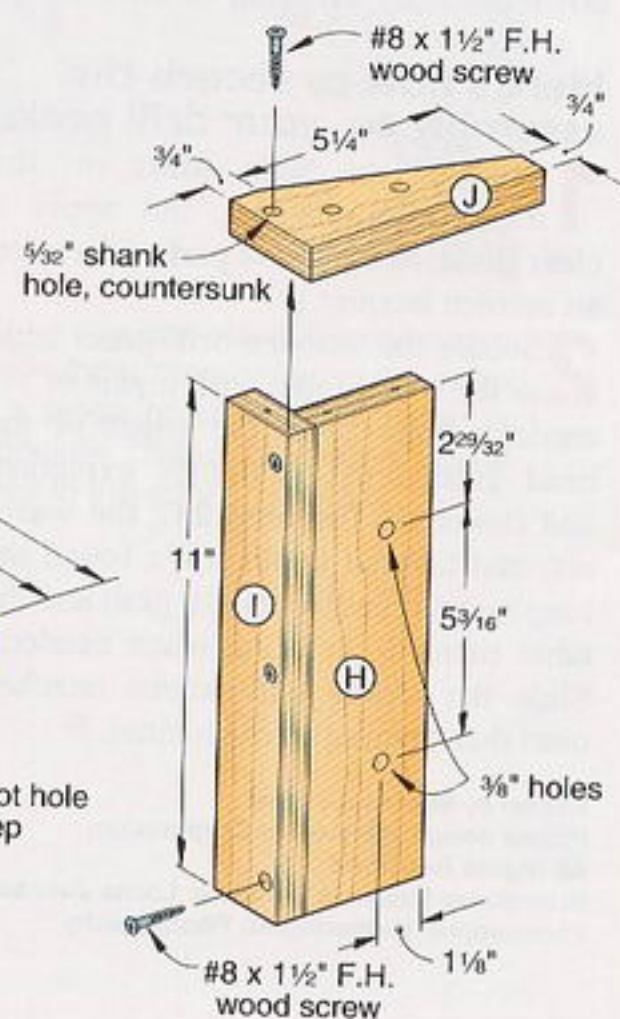
Hold-down (toggle) clamp



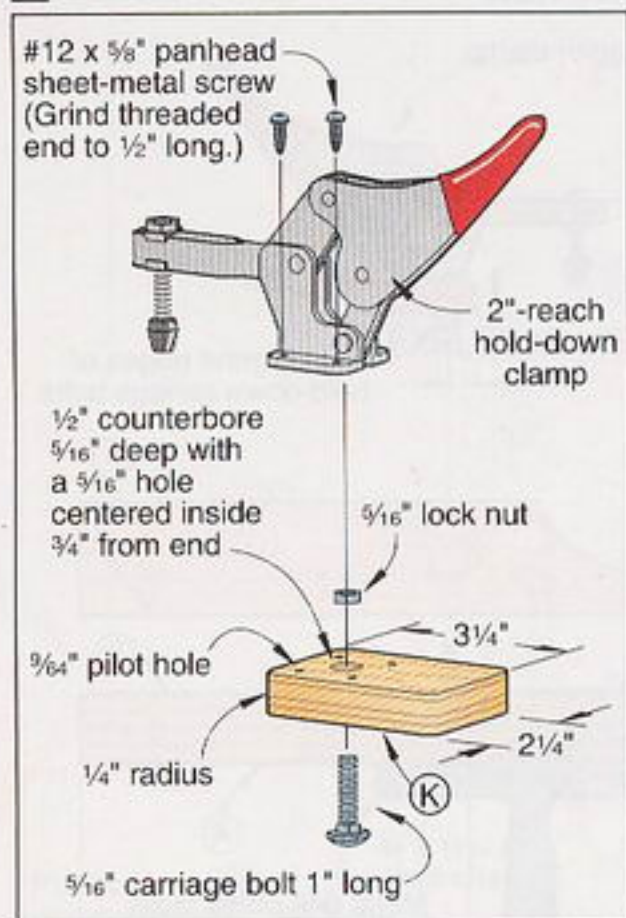
3 HORIZONTAL FENCE



4 VERTICAL FENCE



5 HOLD-DOWN



3 Insert a $\frac{5}{16}$ " carriage bolt into the bottom surface of each hold-down base. (For ease in using the hold-down clamps, we found that the hold-down bases must swivel on the tops of the tables. In order to do this, we had to use a $\frac{5}{16}$ " carriage bolt instead of the $\frac{3}{8}$ " bolts used on the fences.)

4 Grind the threaded end of eight #12x $\frac{5}{8}$ " panhead sheet-metal screws until the threaded end is $\frac{1}{2}$ " long. Then, drill pilot holes, and secure one hold-down clamp to each hold-down base (K) with four of the screws.

Here's how to secure the assembly to your drill press

1 Sand all the parts. Mask off the metal mini-channel, and apply a clear finish to the wood parts. (We used an aerosol lacquer.)

2 Secure the wooden drill-press table to the metal table with a pair of $\frac{3}{8}$ " carriage bolts (with the edges of the head ground as previously explained and shown on **Drawing 2a**), flat washers, and tapered knobs. (We found the long tapered knobs easy to grab and the table easier to relocate when needed.) Slide the fences with knobs attached onto their mating mini-channel. 

Written by **Marlen Kemmet**
Project design: ©Meredith Corporation,
All Rights Reserved

Illustrations: **Roxanne LeMoine; Lorna Johnson**
Photographs: **Hetherington Photography**

Materials List

Table assemblies	FINISHED SIZE			Matl.	Qty.
	T	W	L		
A horizontal table	$\frac{3}{4}$ "	15"	24"	BP	1
B vertical table pieces	$\frac{3}{4}$ "	11"	24"	BP	2
C support	$\frac{3}{4}$ "	5 $\frac{1}{4}$ "	10 $\frac{1}{4}$ "	BP	1
D tabletop sides	$\frac{3}{4}$ "	8 $\frac{1}{2}$ "	15"	BP	2
E tabletop center	$\frac{3}{4}$ "	7 $\frac{3}{4}$ "	15"	BP	1
Fences and hold-downs					
F horizontal fence base	$\frac{3}{4}$ "	3"	24 $\frac{3}{4}$ "	BP	1
G horizontal table fence	$\frac{3}{4}$ "	2"	24 $\frac{3}{4}$ "	BP	1
H vertical fence base	$\frac{3}{4}$ "	3"	11"	BP	1
I vertical table fence	$\frac{3}{4}$ "	2"	11"	BP	1
J end guide	$\frac{3}{4}$ "	2 $\frac{5}{8}$ "	6"	BP	1
K hold-down bases	$\frac{5}{8}$ "	2 $\frac{1}{4}$ "	3 $\frac{1}{4}$ "	BP	2

Material key: BP-Baltic birch plywood.

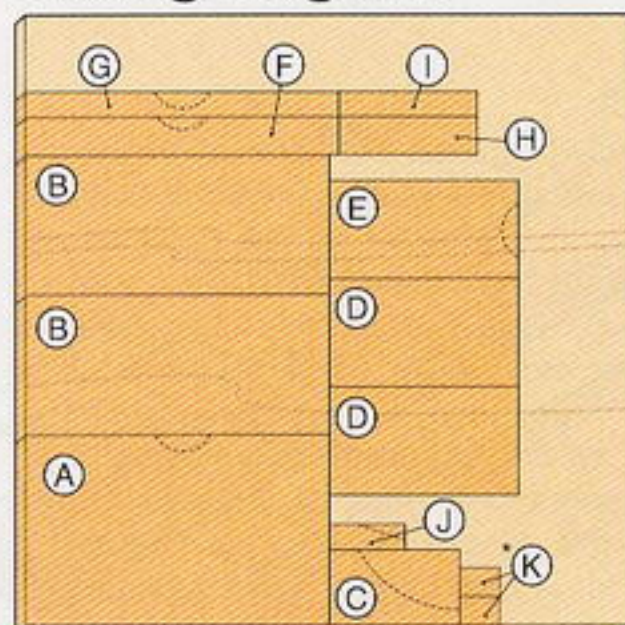
Supplies: #6x $\frac{5}{8}$ ", #8x1 $\frac{1}{4}$ ", #8x1 $\frac{1}{2}$ " flathead wood screws; $\frac{3}{8}$ x1 $\frac{1}{2}$ " (6) and $\frac{5}{16}$ x1" carriage bolts (2); $\frac{5}{16}$ " lock nuts (2); $\frac{5}{16}$ " flat washers (6); $\frac{3}{8}$ x1 $\frac{3}{4}$ x24" mini-channel (3); $\frac{3}{8}$ x1 $\frac{3}{4}$ x15" mini-channel (2); #12x $\frac{5}{8}$ " panhead sheet-metal screws (8), clear finish.

Buying Guide

Hardware kit. $\frac{3}{8}$ x1 $\frac{3}{4}$ " mini-channel cut to length (5); 2" reach hold-down (toggle) clamps (2), plastic wing nuts (knobs) (4), 3 $\frac{3}{8}$ " long oval-tapered knobs (2), $\frac{3}{8}$ " carriage bolts 1 $\frac{1}{2}$ " long (6) and $\frac{5}{16}$ " carriage bolts 1" long (2), plus screws, washers, and lock nuts listed above. WOOD KIT DPT1, call for current price. Schlabaugh and Sons Woodworking, 800/346-9663; www.schsons.com.

Ready-to-assemble kit. All the pieces listed in the hardware kit above, plus all the Baltic birch plywood pieces listed in the Materials List cut to size and shape with predrilled holes. WOOD KIT DPT2. Contact Schlabaugh and Sons Woodworking, as listed above.

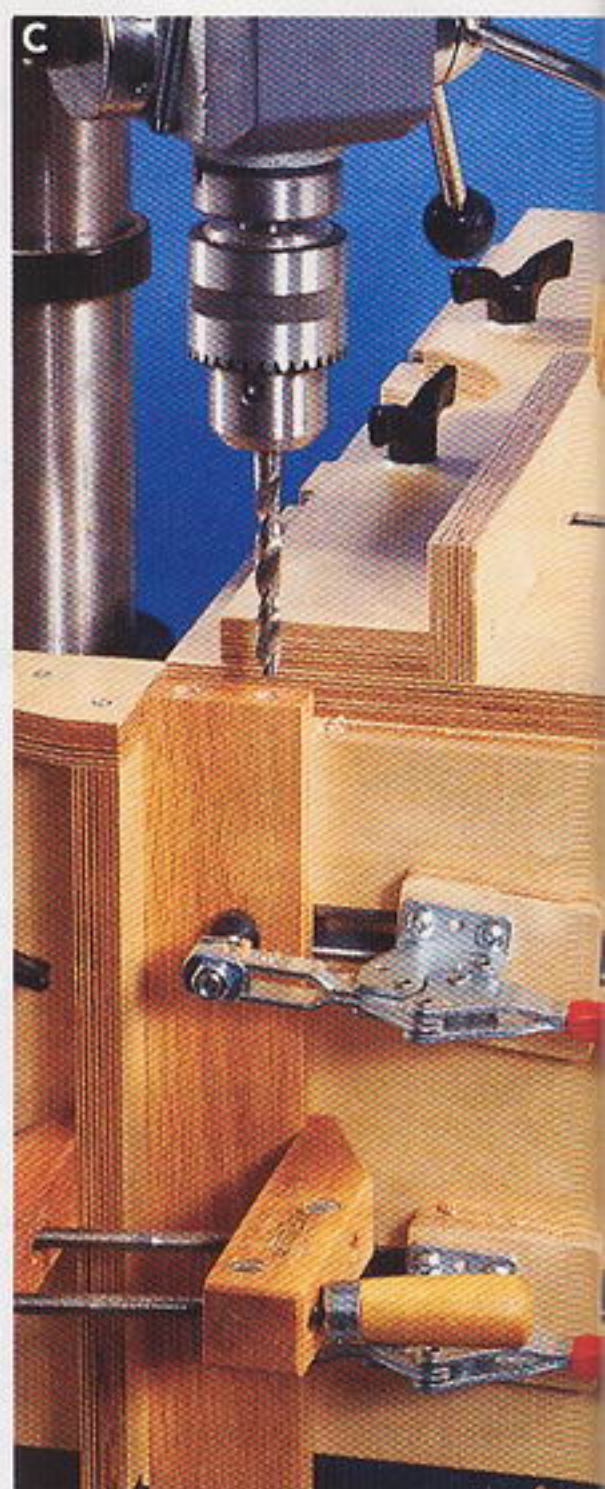
Cutting Diagram

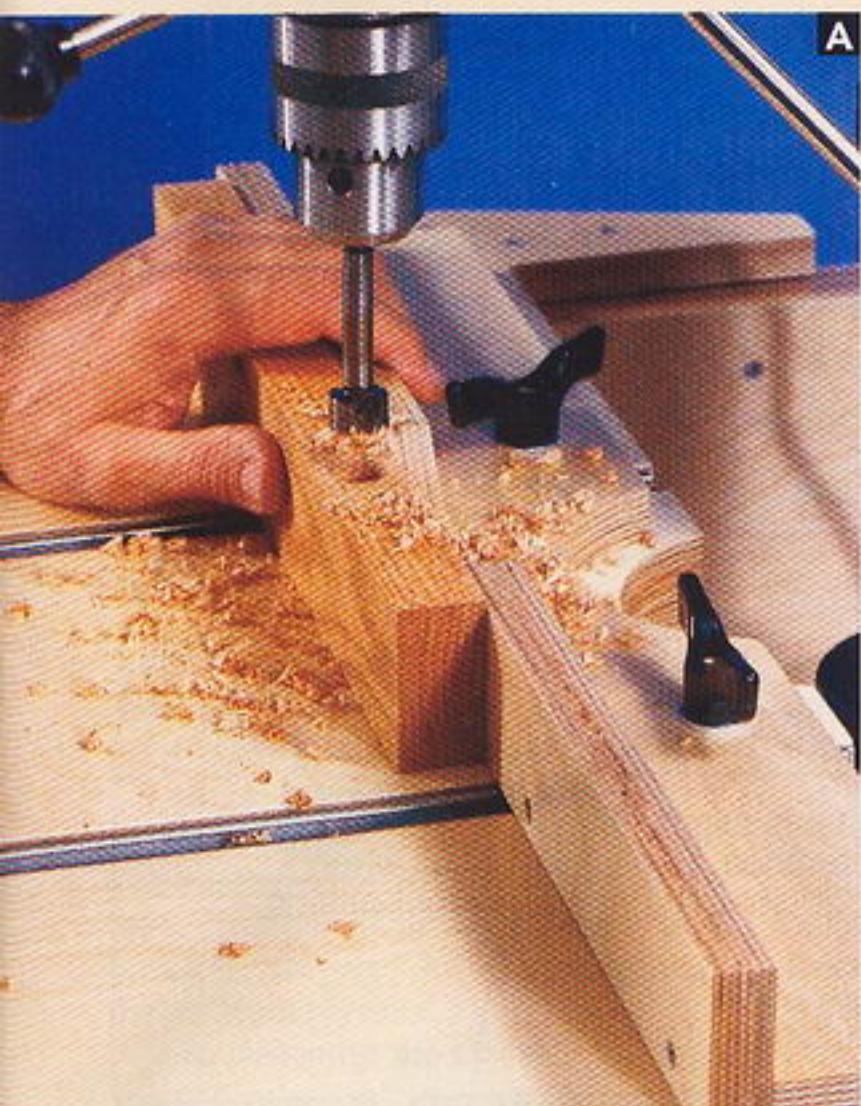


$\frac{3}{4}$ x 48 x 48" Birch plywood
*Plane or resaw to the thickness listed in the Materials List.

Put your new table to work

Shown here are a variety of uses for our super-versatile drill-press table. Once you've built your own table, you're sure to discover other applications, too.





A

▶ Making round-cornered mortises and the mating tenons is easy to accomplish using our fence system. As shown in the photo at *left*, drill a hole with a Forstner bit to form the mortise.

▶ To form a tenon to mate with the round-cornered mortise formed at *left*, use a tablesaw and a V-grooved support to cut the shoulders. Then, as shown at *right*, use the hold-downs and clamp to secure the stock to the vertical table and fence. Use a plug cutter to cut a round tenon on the end of the stock.



B



▶ For drilling holes in the ends of stock, switch to the vertical fence with hold-downs. As shown at *left*, we drilled a pair of dowel holes in the ends of a rail to mate with the stile drilled at *far right*.

To do this, mark the dowel-hole centerpoints on the ends of the rail. Next, use the hold-downs to clamp the rail to the vertical table. Loosen the collar connecting the drill-press table to the drill-press column. Swing the drill-press table to the side until the drill bit aligns directly over the marked centerpoint. (You'll also have to move the rail to get it under the bit.) If the bit won't align, rotate the drill-press head on the column for proper alignment. Adjust the position of the fence until the bit aligns with the marked centerpoint. Check that the fence is plumb. Use the hold-downs to secure the rail to the vertical table. Use a handscrew clamp to secure the piece to the fence. Without the handscrew clamp, the stock being drilled can slip slightly down the vertical table. Finally, drill the holes.



D

▶ Drilling numerous holes all in a straight line is easy using the horizontal table and fence. For instance, if you need holes exactly 2" from the edge of a piece of stock, position the inside edge of the fence exactly 2" from the center of the bit. Now, just move the stock along the fence and all the holes will be drilled exactly 2" from the edge of the stock, as shown *above*.



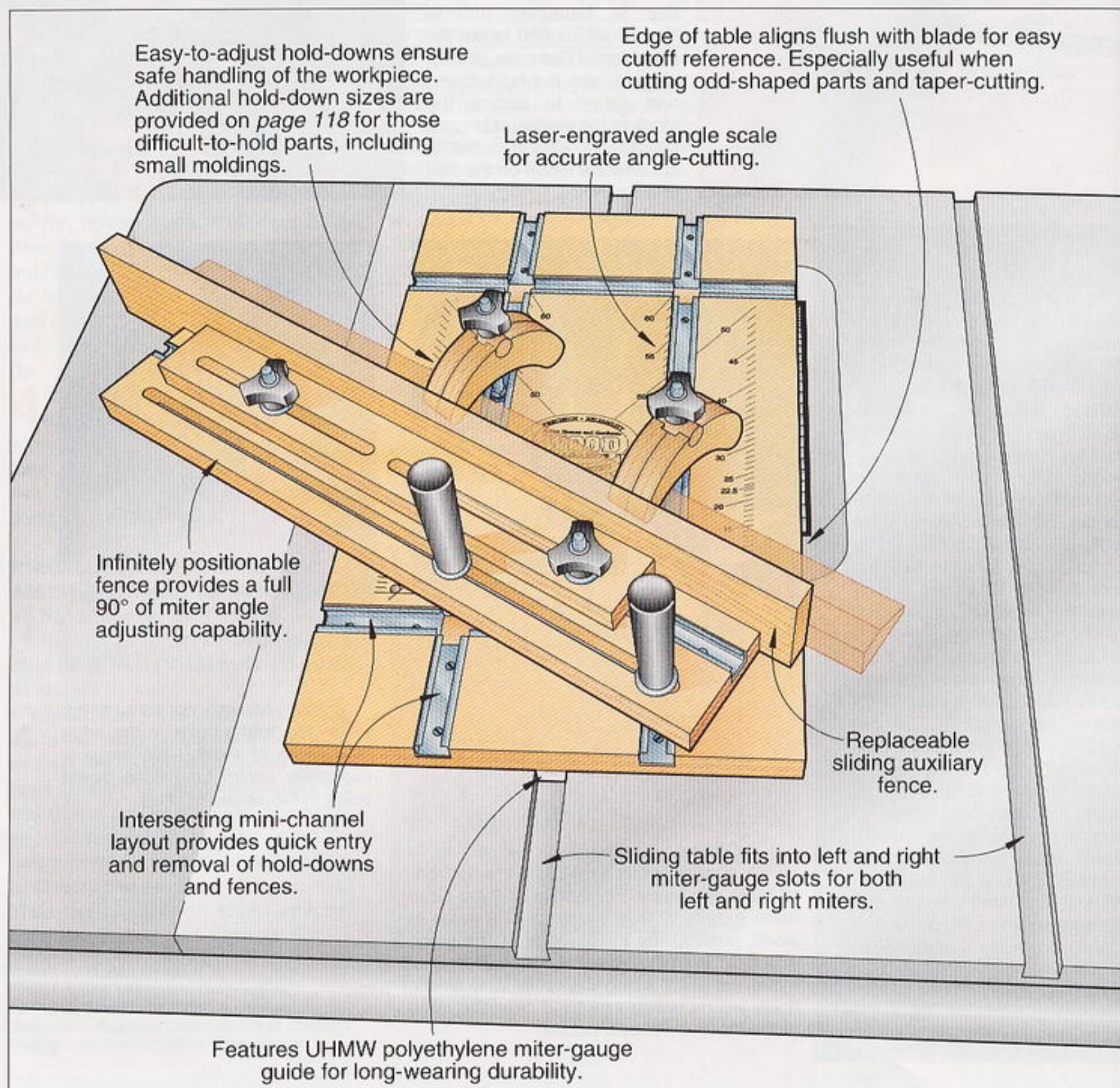
E

▶ You can use this same setup for drilling holes in the edge of a piece of stock. This setup is especially useful for drilling dowel holes in the edges of stiles.

universal TABLESAW JIG

WITH LASER ACCURACY

Note: See the Buying Guide at the end of the Materials List on page 119 for our source of hardware and Baltic birch plywood for this jig. To save you the time and effort of having to use an adjustable triangle to position the fence to cut miters, we've had the jig table (A) laser-engraved with angle scales. This, too, is available through the Buying Guide. If you'd rather save a few dollars and use your own plywood for the jig table, try an adjustable triangle to set the angle of cut. To do this, see Photo G on page 115 for our method.



Laser-engraved angle scales on this sliding-table jig help guide you to right-on-the-money mitercuts, tapercuts, crosscuts, and anglecuts. Time and time again, this jig has proved its worth here in the *WOOD*® magazine shop where it was conceived, designed, and tested. Now, you can build one for your own shop and raise your woodworking to a new level of accuracy. See page 115 for just a few of the jig's many uses.

Let's start with the jig table

1 Cut the jig table (A) to the size listed in the Materials List. For an accurate cutting jig later, make sure the rectangular table you cut has perfectly square corners. (Due to its stability and strength, we used $\frac{3}{4}$ " (18mm actual) Baltic birch plywood.)

2 To customize the jig table for your particular tablesaw, you'll need to properly locate the miter-gauge groove on the bottom side of the table (A). To do this, follow the 3 steps on **Drawing 1** below. Since one miter-gauge groove in a tablesaw is located farther from the blade on one side than the other, the slot in the jig's table (A) won't be centered.

3 Using a dado blade in your tablesaw, cut a $\frac{1}{16}$ "-deep dado on the bottom side of the table (A) to the same width as your tablesaw's miter-gauge groove, centered between the lines, where marked in Steps 1 and 2 on **Drawing 1**.

4 Cut the miter-gauge guide bar (B) to size. Use solid birch if you're using your own stock, or, if you use our hard-

ware kit, cut the UHMW (ultra-high molecular weight) polyethylene to size. (We found polyethylene slides easier in the groove than wood. Plus, polyethylene will not change in size with seasonal humidity changes.) Drill mounting holes in the guide, where shown on **Drawing 2**. Screw the miter-gauge guide in place, making sure the screw heads don't protrude below the bottom surface of the guide.

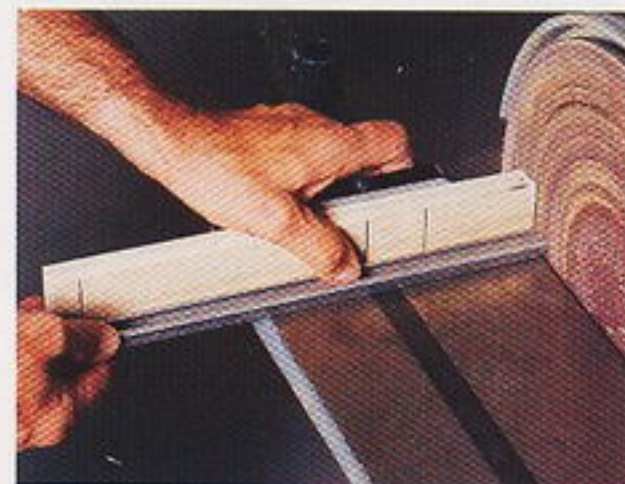
5 Fit your tablesaw with a $1\frac{3}{16}$ " dado blade that's set to cut $\frac{7}{16}$ " deep ($\frac{1}{16}$ " deeper than the thickness of the metal mini channel). Set the fence on your tablesaw 3" from the edge of the dado blade. With a different edge against the fence for each pass, cut four dados in the top surface of the table (A), where indicated on **Drawing 2**.

6 Replace the dado set with the blade you normally use in your tablesaw. Place the jig in one of the miter-gauge slots and trim one edge of the jig with the blade. Mark the front end of the jig top. Transfer the jig into the other miter-gauge slot, and with the marked end forward, trim the opposite edge of the jig.

Next, cut and add the metal mini channel

1 Measure the lengths, and use a hacksaw or bandsaw fitted with a metal-cutting blade to cut the 12 pieces of metal mini channel to length plus $\frac{1}{8}$ ". (We used B-Line System B72 mini channel, available at most electrical supply outlets. Or, see the Buying Guide for our mail-order source.)

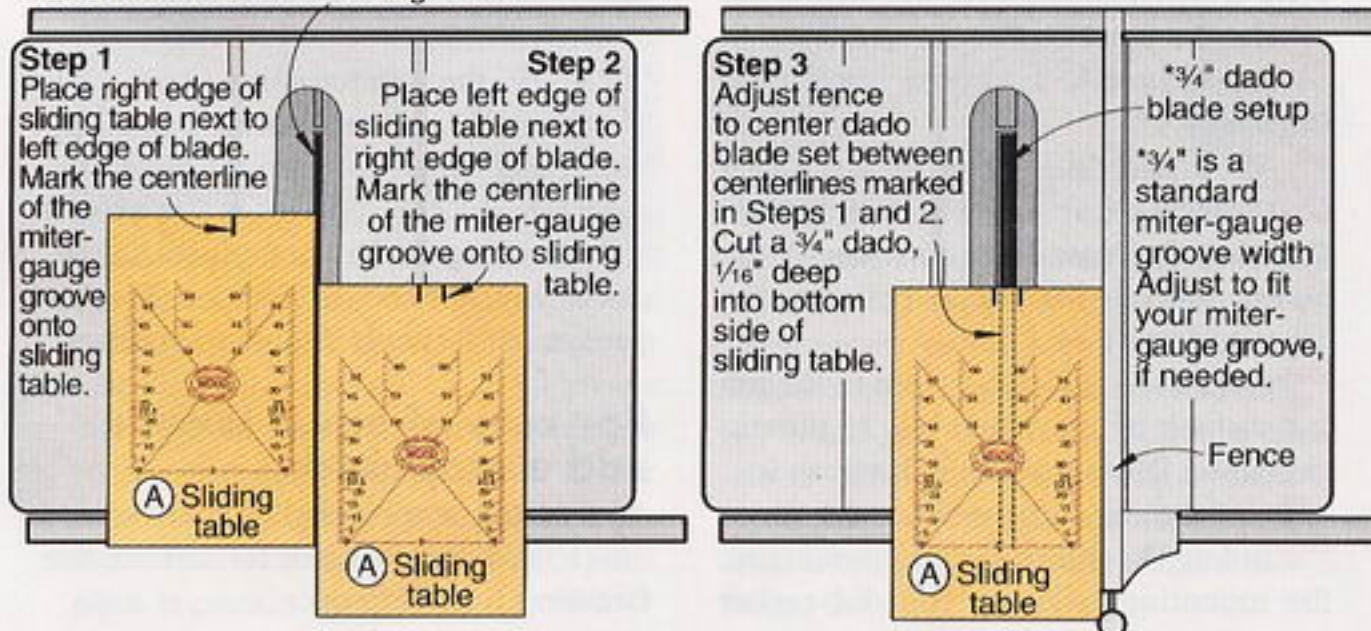
2 To square the ends and make sure the corresponding pieces are identical in length, screw a wooden extension to your disc sander miter gauge where shown in the photo below. Then, mark three lines on the fence to indicate the three lengths of mini channel needed. Using a disc sander, sand one end of each piece of channel square. Then, sand the opposite end of each, pushing lightly on the already sanded end until it is flush with the previously marked lines. Finally, sand the four short side pieces so they will be positioned $\frac{1}{16}$ " in from the edge of the table side, where noted on **Drawing 2**. This prevents your tablesaw blade from coming in contact with the mini channel.



Marked lines on a miter-gauge extension allow you to sand the mini channel to the exact lengths needed.

1 LOCATING THE GUIDE-BAR SLOT

Blade to be used with sliding table.

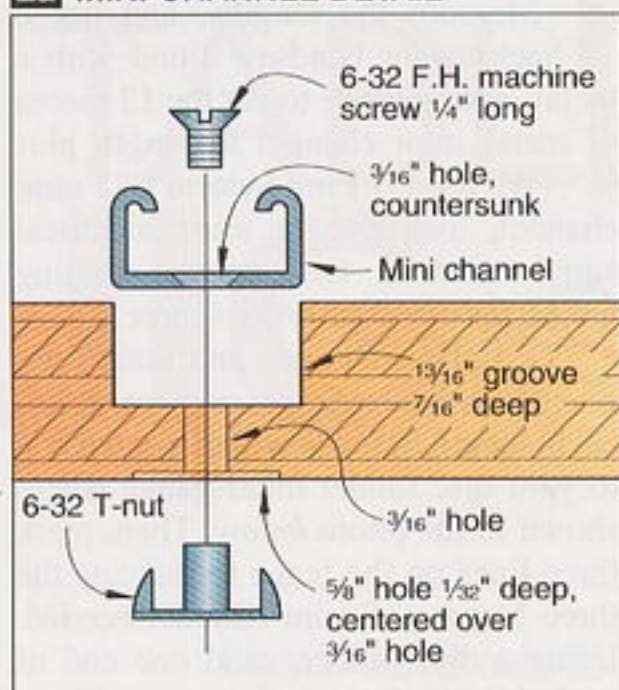


3 Fit your drill press with a $\frac{3}{16}$ " bit, and attach a fence to the table so you can drill all the mounting holes centered in the top surface of the mini channel, where shown on **Drawing 2a** and on **Drawing 9**. File off any burrs from the bottom side of the channel.

4 Remove the guide (B) from the bottom side of the table (A). Then, using double-faced tape, stick each piece of mini channel in its mating location. Using the same $\frac{3}{16}$ " bit in your drill press, use the holes in the mini channel as guides to drill $\frac{3}{16}$ " holes through the table (A).

5 Working from the bottom side of the jig table, drill a $\frac{5}{8}$ " counterbore

2a MINI CHANNEL DETAIL



1/32" deep for each T-nut. Test the fit; the T-nuts must not come in contact with the metal top of your tablesaw when the jig slides back and forth.

6 One at a time, remove the channel, and attach a piece of masking tape to the bottom side of each piece. For ease in relocating the channel later, number the tape on the channel and mark the mating number on the dado from where the channel was removed.

7 Lightly sand the table and apply a couple of light coats of finish (we used polyurethane).

8 Tap all the T-nuts into place in the bottom of the table (A).

9 Using the numbers as guides, reposition the mini channel in their mating locations in the jig table. Fit a countersink bit (we used a Weldon $\frac{3}{8}$ "-diameter countersink bit) into your drill press, and countersink each hole in the mini channel so the top surface of a 6-32 flathead machine screw will seat in the countersink and the top of the screw will be flush with the top of the channel. For the stops and fences to slide smoothly in the channel later, the tops of the screws must not protrude. The countersink bit will also machine the tops of the T-nuts so they don't protrude through the mini channel.

10 Remove the pieces of mini channel from the table. Use the countersink bit to slightly machine the tops of the T-nuts a bit more. This creates a slight gap between the T-nuts and mini channel so the T-nut will be pulled tightly into the bottom of the

2 TABLE EXPLODED VIEW

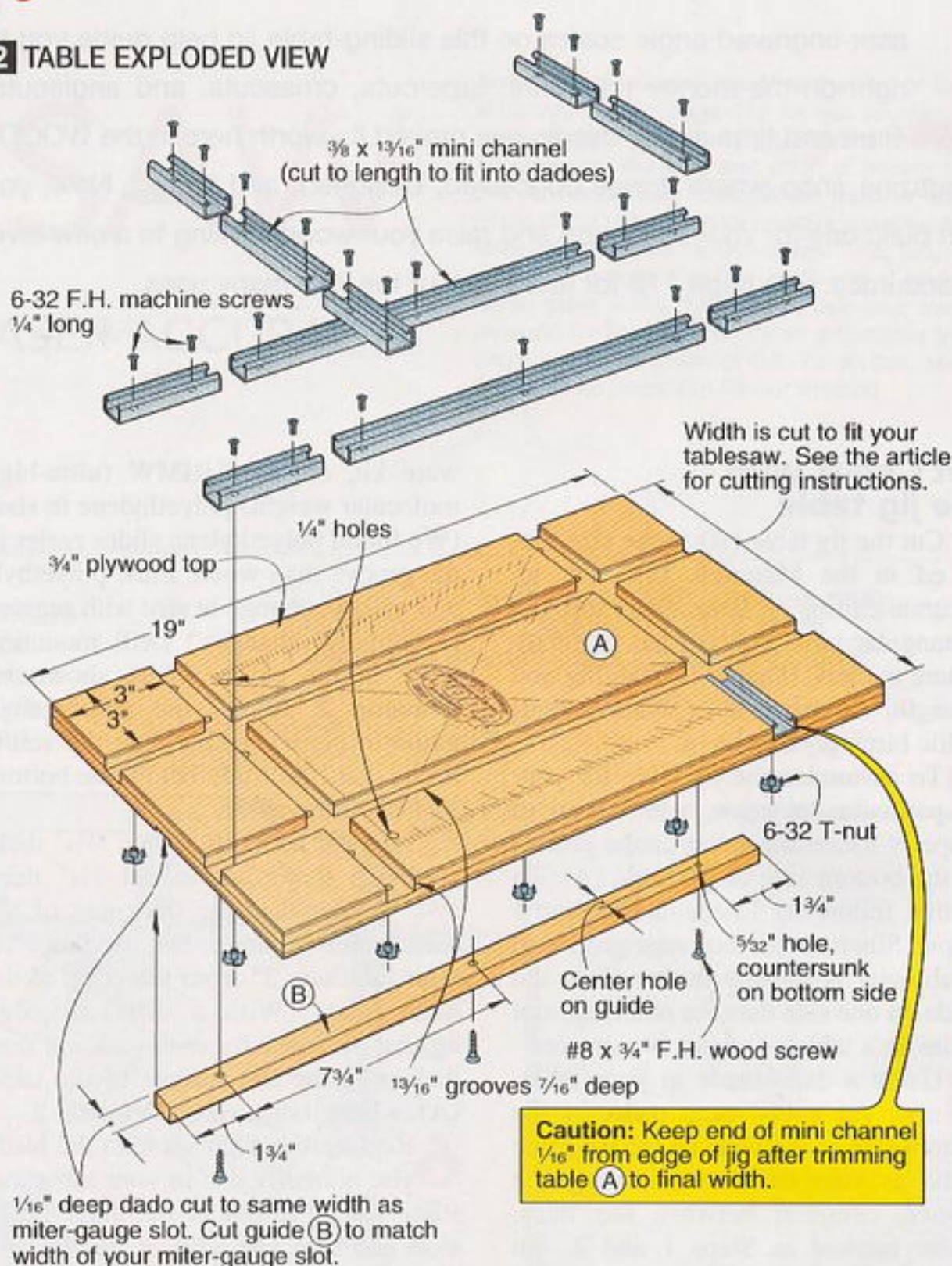


table when securing the mini channel in place. Screw the channel in place.

11 Reattach the guide bar (B) to the bottom of the table.

Next, make the fence and the auxiliary attachment

1 Cut the fence (C) to the size listed in the Materials List and shown on **Drawing 9.**

2 Mark and drill a pair of $\frac{7}{16}$ " holes through the fence, where shown on **Drawing 9**. Draw lines to connect the holes, and cut the waste between the holes to form a $\frac{7}{16}$ " slot.

3 Cut a $1\frac{3}{16}$ " dado $\frac{1}{16}$ " deep in the top surface of the fence where dimensioned on **Drawing 3** and **Drawing 9**.

4 Cut the mini channel for the fence to length, and drill and countersink the mounting holes as you did earlier

for the table (A). Finish-sand the fence, and screw the channel in place. See the Buying Guide for our knob source.

5 Cut the auxiliary attachment base (D) and upright (E) to size.

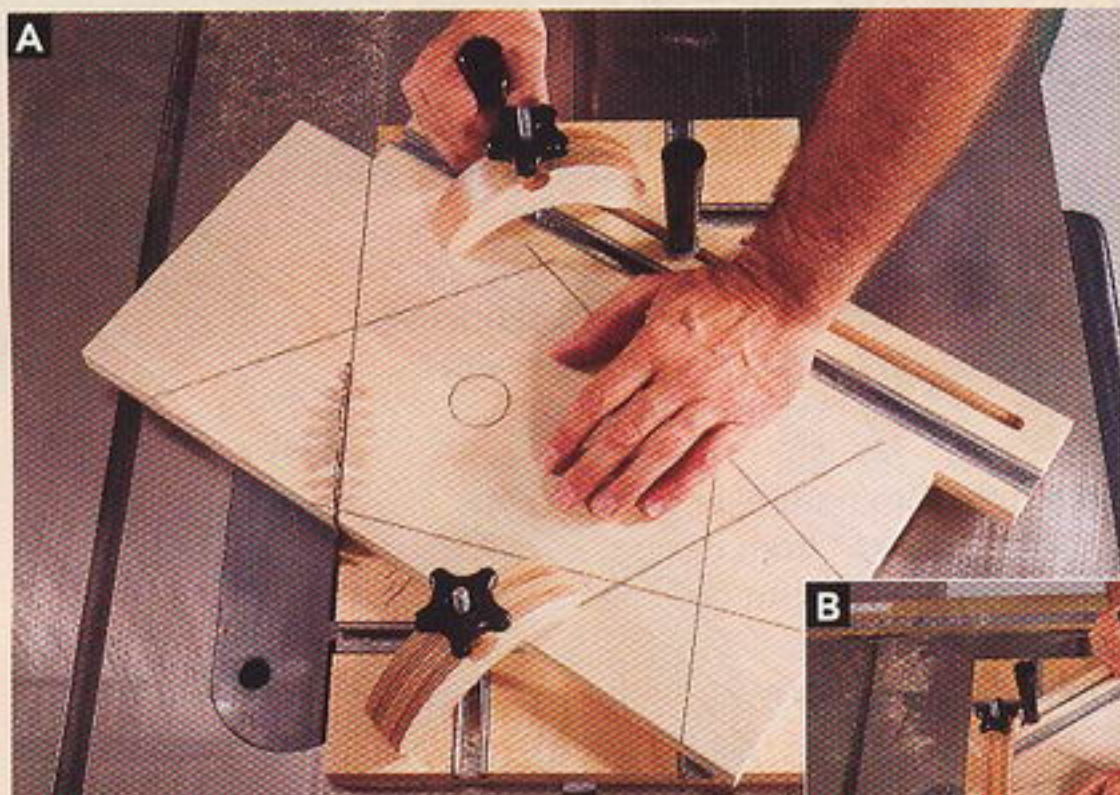
6 Mark the locations and form $\frac{7}{16}$ " slots in the base (D), where shown on **Drawing 9**.

7 Mark the centerpoints, and drill three 1/8" counterbored mounting holes, and screw the upright (E) to the base (D), where shown on **Drawing 4** and **Drawing 9**. Do not glue D to E, since you'll need to replace E after you've cut through it numerous times.

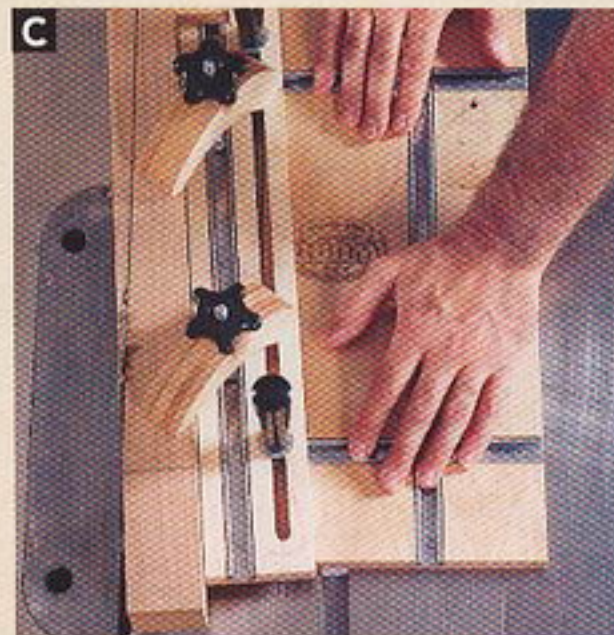
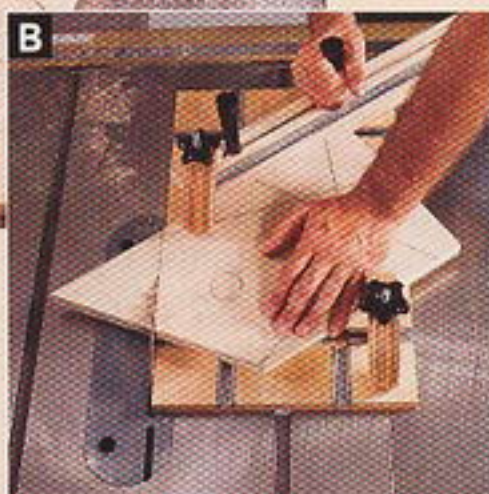
**For cuts of equal length,
add a stopblock**

1 Cut the stopblock horizontal piece (F) and vertical piece (G) to size. See **Drawing 5** for reference.

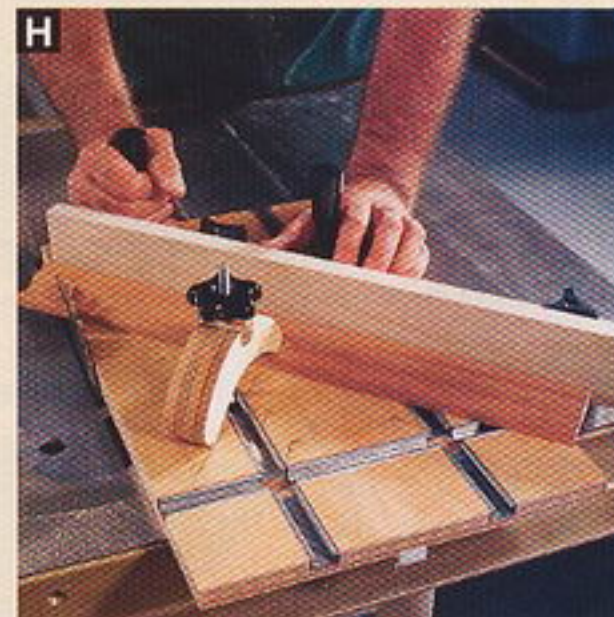
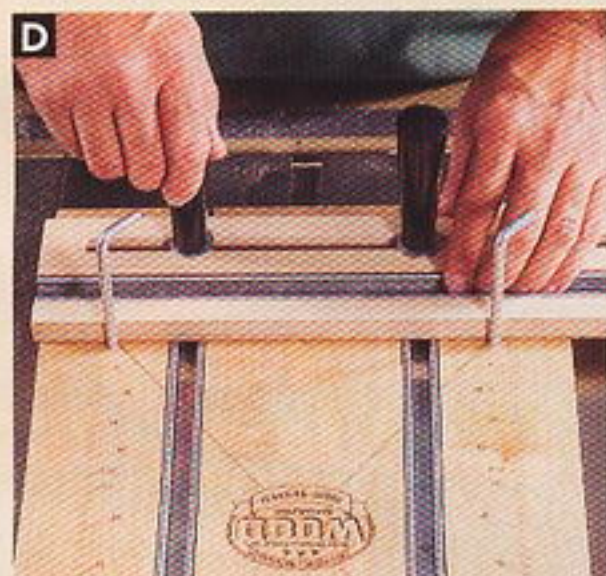
How to use your tablesaw jig



To cut angled pieces to shape, mark the cutlines on the wood. Align a marked cutline with the edge of the jig table. Position the fence, tighten the and hold-downs to hold the piece steady. Make the cut as shown in **Photo A**. The fence adjusts easily for making the adjoining angle cut as shown in **Photo B**.



You can taper-cut table legs and other projects by marking the cutline on the workpiece and aligning the marked cutline with the outside edge of the jig table. Then, as shown in **Photo C**, position the fence against the workpiece, add the stop and hold-downs, and make the cut. With this setup, you can cut numerous pieces exactly the same.



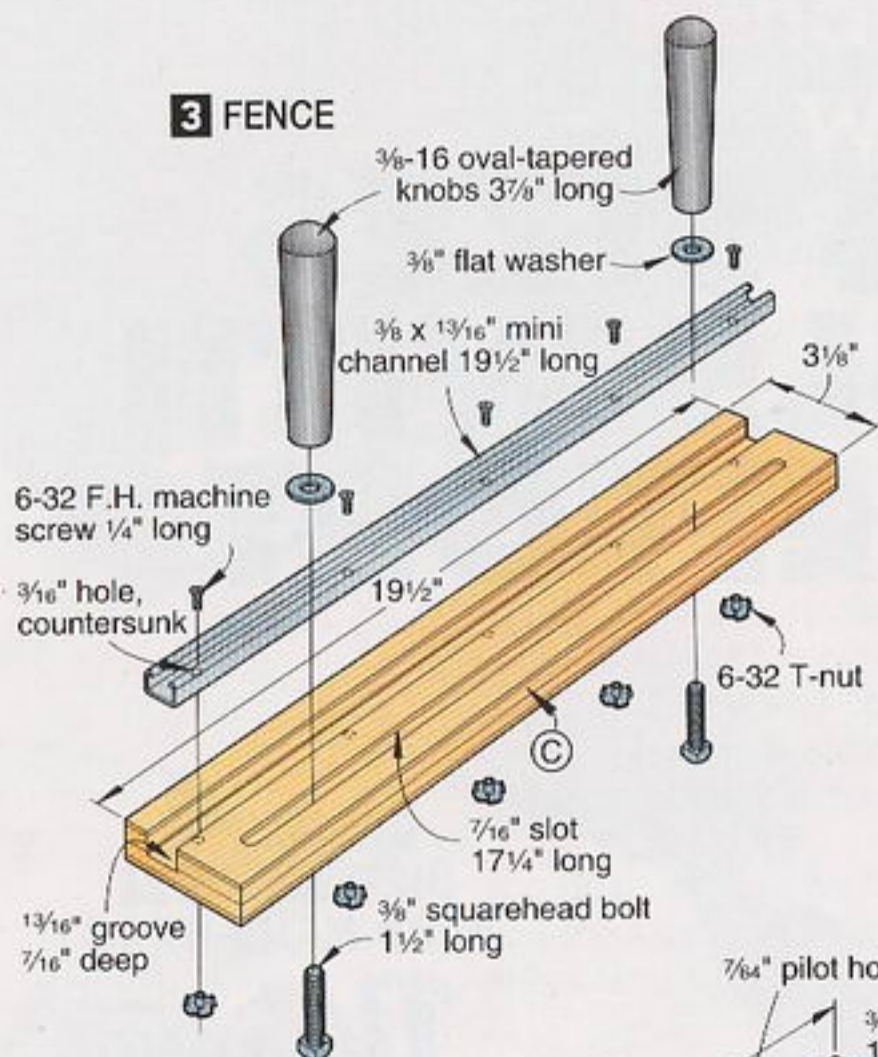
For making accurate 90° crosscuts, use the metal pivot pins to accurately align the fence on the laser-cut table as shown in **Photo D**. Use the jig and fence for crosscutting as shown in **Photo E**. For repetitive cuts, secure the stopblock to the fence to ensure consistent lengths from piece to piece.

To set the angle using the laser-engraved table, fit one pivot pin in place, and pivot the fence against the pin. Align the fence with the laser-marked angle as shown in **Photo F**. If you use your own stock for the jig table, use an adjustable triangle and a piece of scrap stock held against the edge of the jig table to correctly angle the fence as shown in **Photo G**.

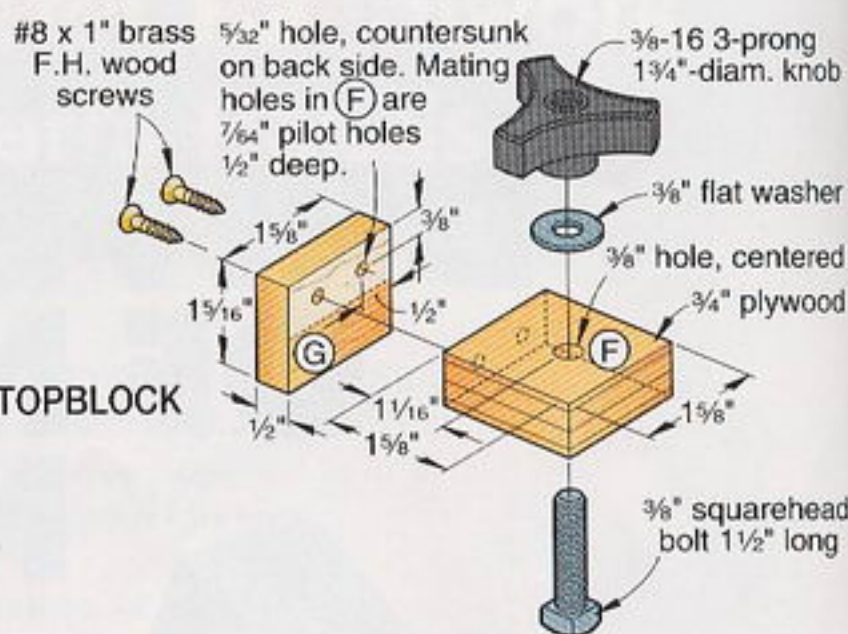


Accurately cut both left and right miters with this jig as shown in **Photos H** and **I**. Note the use of the auxiliary attachment. For crown molding and picture frame material, you'll need to move the jig to the opposite side of the blade as shown in **Photo I**.

3 FENCE

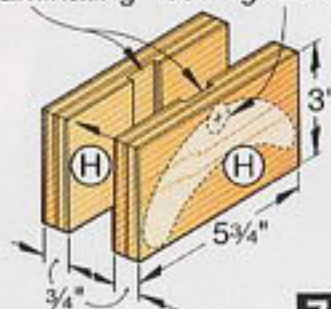


5 STOPBLOCK

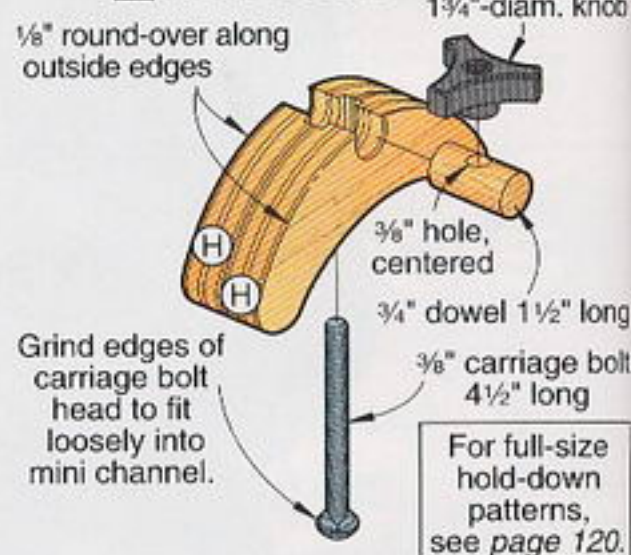


6 HOLD-DOWN LAMINATION

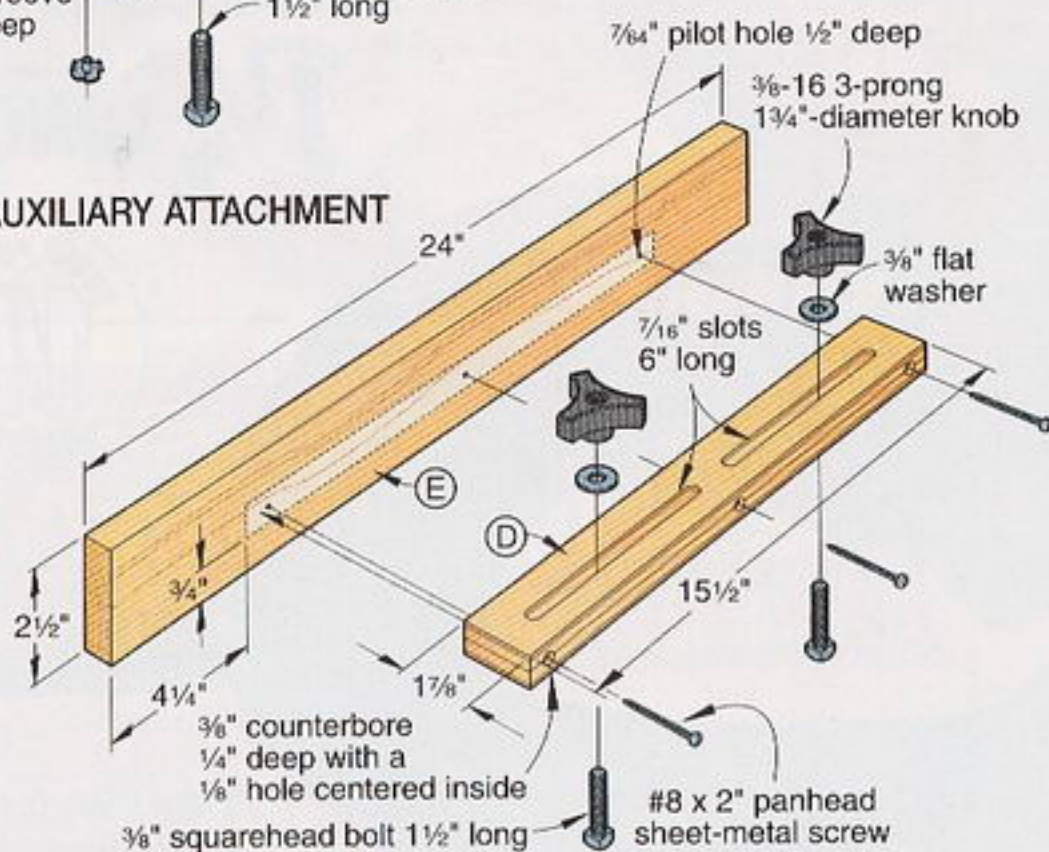
1" dados 3/16" deep
3/4" hole bored before
cut before laminating
cutting the hold-down
to shape



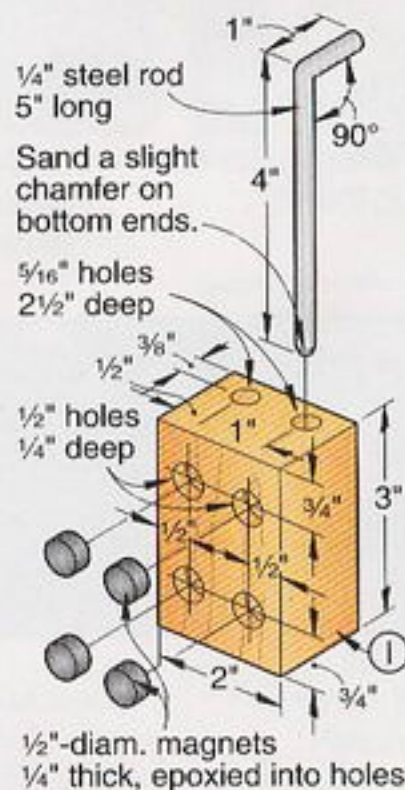
7 HOLD-DOWN



4 AUXILIARY ATTACHMENT



8 ALIGNMENT PIN AND HOLDER



2 Drill a 3/8" hole in F where dimensioned on the drawing. Then, drill a pair of countersunk mounting holes through G and into F. Screw the pieces together.

3 Attach a knob to F where shown in the drawing.

Finally, add a pair of hold-downs and pivot pins

1 Cut four hold-down blanks (H) to 3x5 3/4" from 3/4" plywood. Cut a 1" dado 3/16" deep in each piece where shown on **Drawing 6**. With the edges and ends aligned, glue and clamp two pieces together to form each hold-down. Later, transfer the full-size pat-

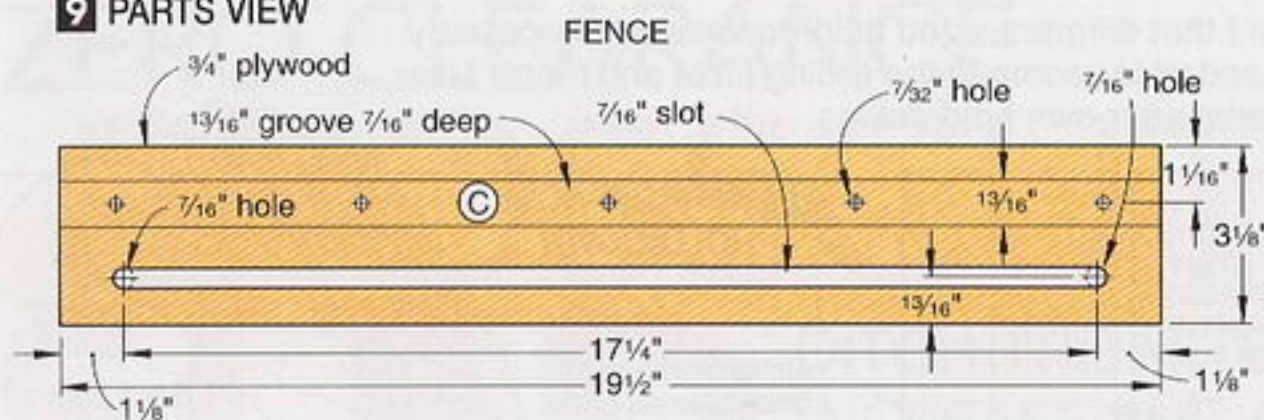
tern(s) shown on *page 120*, bore a 3/4" hole where indicated, and bandsaw the hold-downs to shape.

2 Drill and cut a pair of the 3/4" dowels, shown on **Drawing 7**, and assemble the hold-downs in the configuration, shown on the drawing.

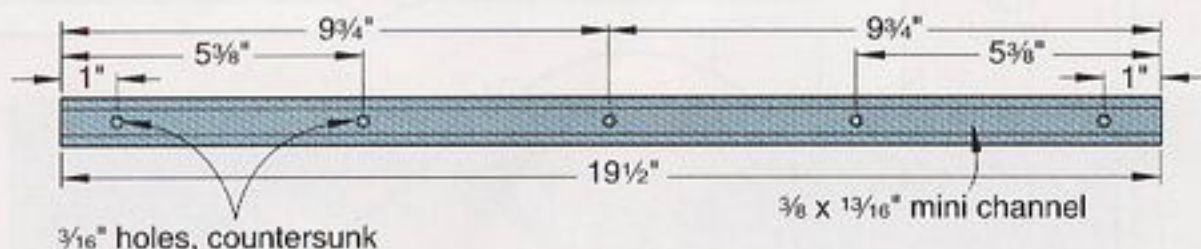
3 If you don't plan to buy the laser-engraved table (A), skip to the next section. Crosscut and bend two pieces of 1/4" steel rod 5" long to the shape shown on **Drawing 8**. You'll use the alignment pins for aligning the fence on the laser-engraved table later.

4 Build the alignment-pin holder, shown on **Drawing 8**. To keep the holder close at hand, drill counterbores,

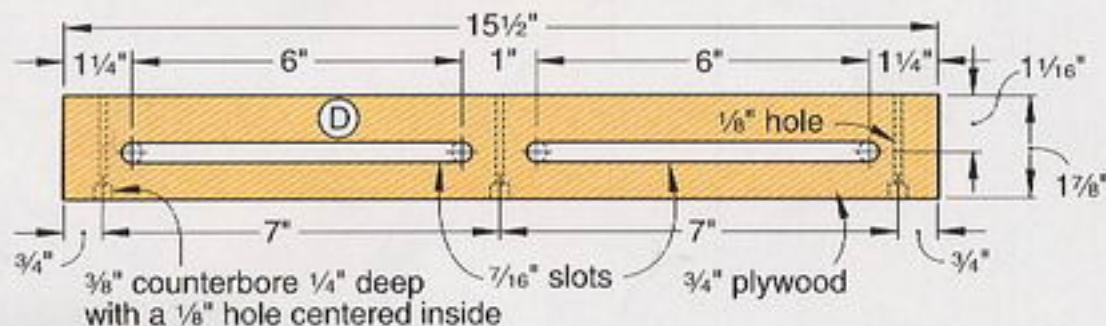
9 PARTS VIEW



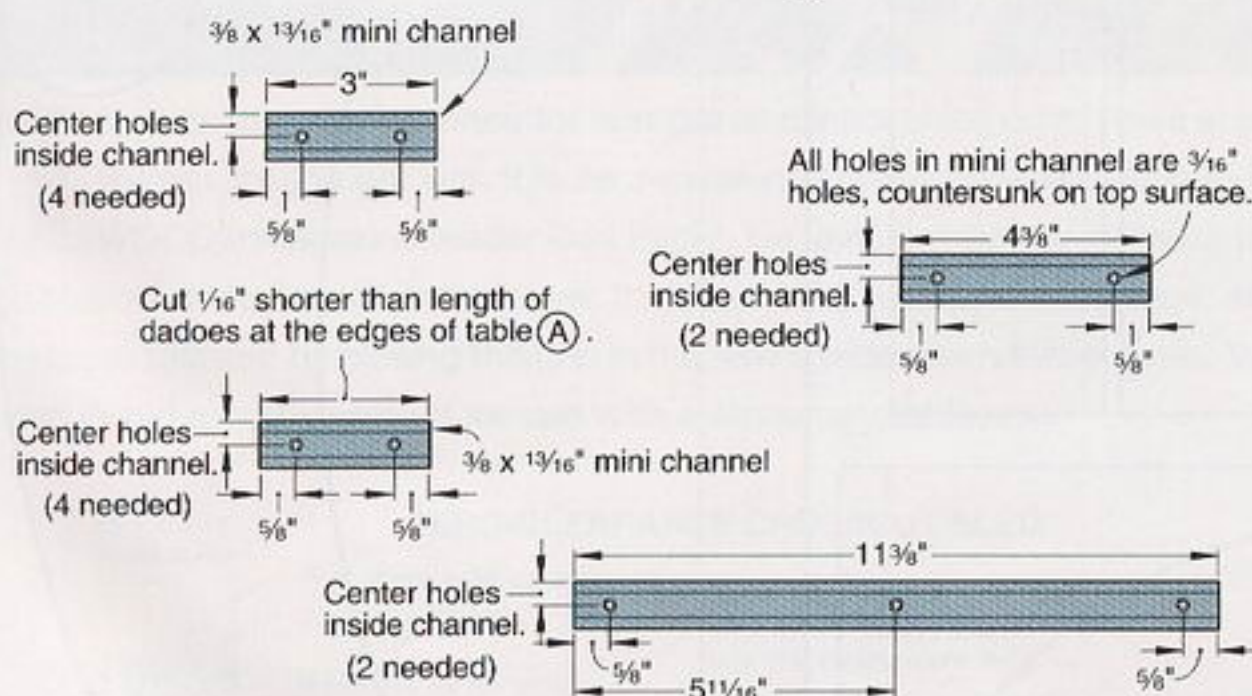
MINI CHANNEL FOR FENCE (C)



BASE FOR AUXILIARY ATTACHMENT



MINI CHANNELS FOR TABLE (A)



and epoxy four magnets in place for sticking the holder to your tablesaw cabinet.

Finally, sand and apply a finish

1 Finish-sand the fence, auxiliary attachment, stop, hold-downs, and alignment-pin holder.

2 If you use your own plywood for the table (A), consider marking commonly used angles on the top surface of the plywood table. Find the angles with an adjustable triangle as shown in **Photo G**.

3 Add a clear finish too all wood parts. (To prevent the working surfaces from becoming too slick, we prefer a polyurethane finish.)

Materials List

Part	FINISHED SIZE T W L	Matl.	Qty.
A table	3/4" 12" 19"	BP	1
B guide	3/8" ** 19"	B	1
C fence	3/4" 3 3/8" 19 1/2"	BP	1
D base	3/4" 1 7/8" 15 1/2"	BP	1
E upright	3/4" 2 1/2" 24"	B	1
F stopblock	3/4" 1 5/8" 1 5/8"	BP	1
G stopblock	1/2" 1 5/8" 1 5/8"	B	1
H hold-down blanks	3/4" 3" 5 3/4"	BP	4
I holder	1 1/2" 2" 3"	P	1

**Width depends on the width of your particular table-saw's miter-gauge groove.

Materials key: BP—Baltic birch plywood, B—birch, P—pine or fir.

Supplies: 3/8x1 3/16" mini channel, 6-32 T-nuts and mating 6-32 flathead machine screws 1/4" long (31), #8x3/4" flathead wood screws (3), 3/8-16 oval-tapered knobs 3 7/8" long (2), 3/8" flat washers (5), 3/8" square-head bolts 1 1/2" long (5), 3/8-16 3-pronged plastic knobs 1 3/4" diameter (5), #8x2" panhead sheet-metal screws (3), #8x1" brass flathead wood screws (2), 3/4" dowel stock, 3/8" carriage bolts 4 1/2" long (2), 1/2"-diameter magnets 1/4" thick (4), 1/4" steel rod 5" long (2), clear finish.

Buying Guide

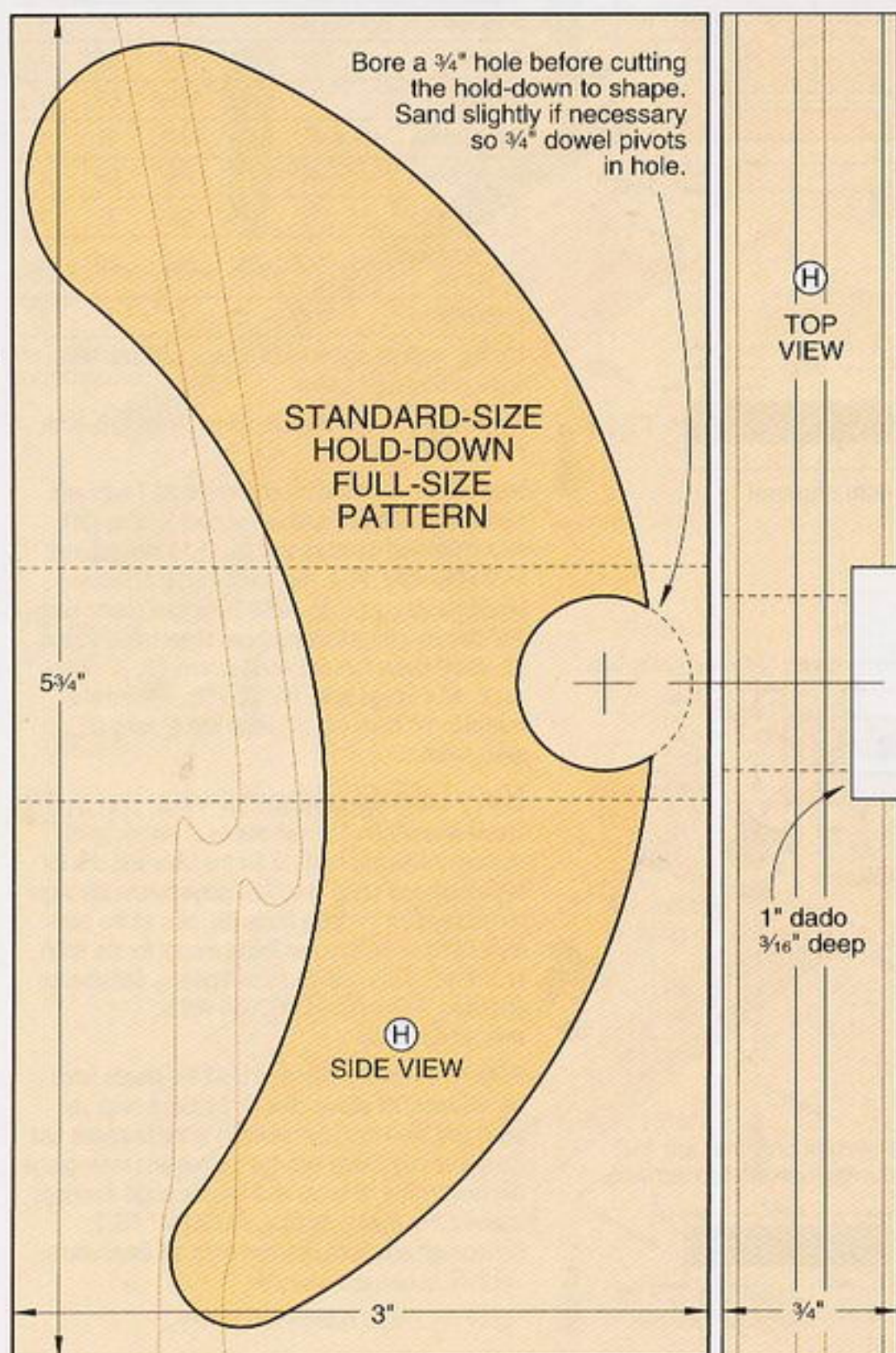
Hardware kit. Thirteen pieces of 3/8x1 3/16" mini channel cut slightly long (12 for the table and one for the fence), one piece of UHMW polyethylene cut slightly oversized for the table guide (B), plus all the hardware listed in the Supplies listing except for the finish. WOOD KIT TSJ1, call for current pricing. Schlabaugh and Sons Woodworking, 800/346-9663; www.schsons.com.

Ready-to-assemble kit. All the pieces listed in the hardware kit above, plus all the Baltic birch plywood and solid-birch pieces listed in the Materials List cut to size and shape with the dadoes and miter-gauge slot pre-cut. The table (A) also has the angle markings laser-cut into the top surface. WOOD KIT TSJ2, Schlabaugh and Sons Woodworking, as listed above.

4 If you used solid stock for your guide (B), apply a bit of paraffin to the guide for easier sliding in the table-saw groove. 📌

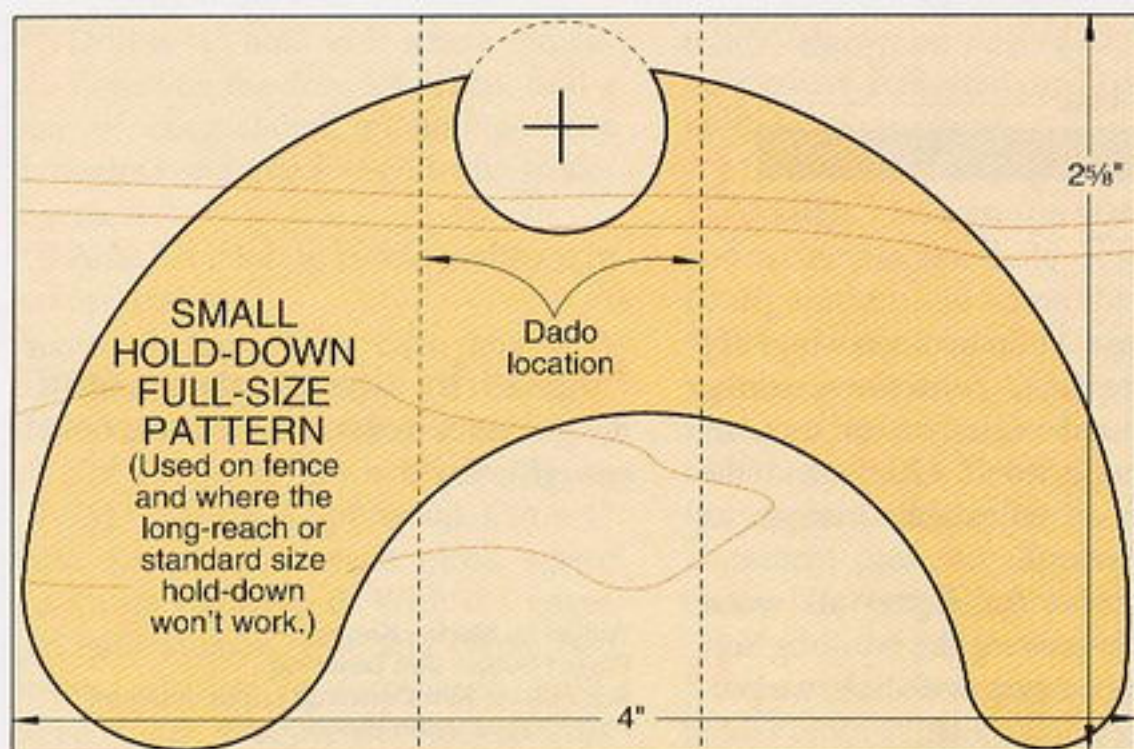
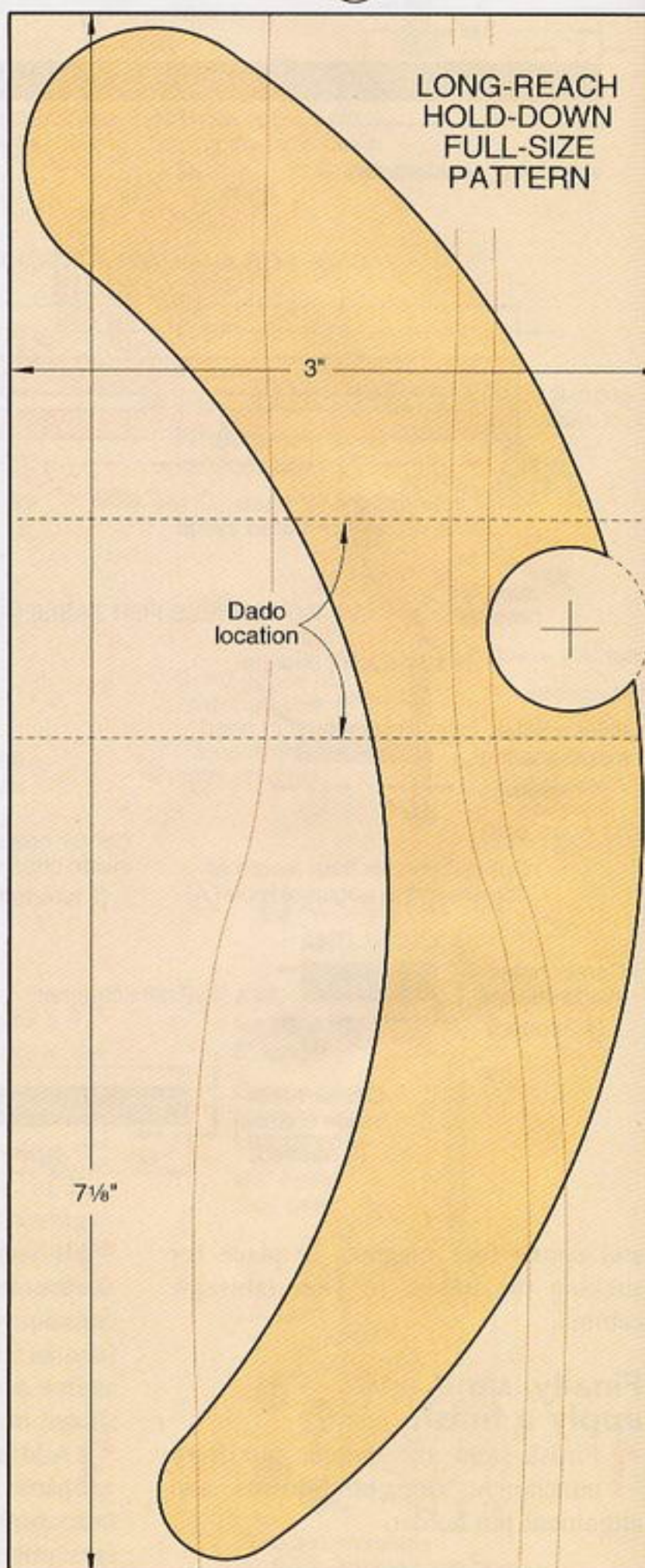
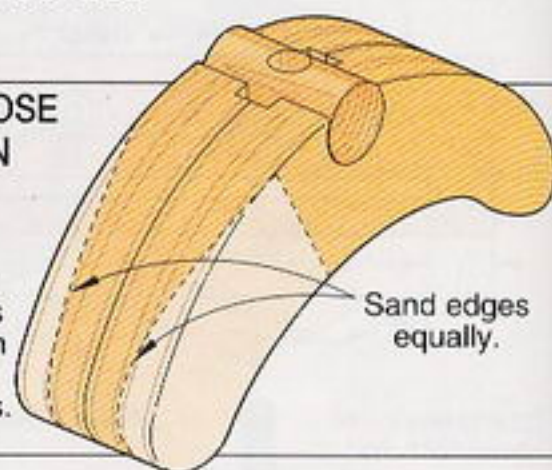
Written by **Marlen Kemmet**
Project design: **Jim Downing**
Illustrations: **Kim Downing; Lorna Johnson**
Photographs: **John Hetherington**

When using our jig, it became apparent that different-sized hold-downs were necessary for the many sizes of workpieces we needed to secure to the sliding table and fence. Use the full-size patterns shown here to make your own hold-downs.



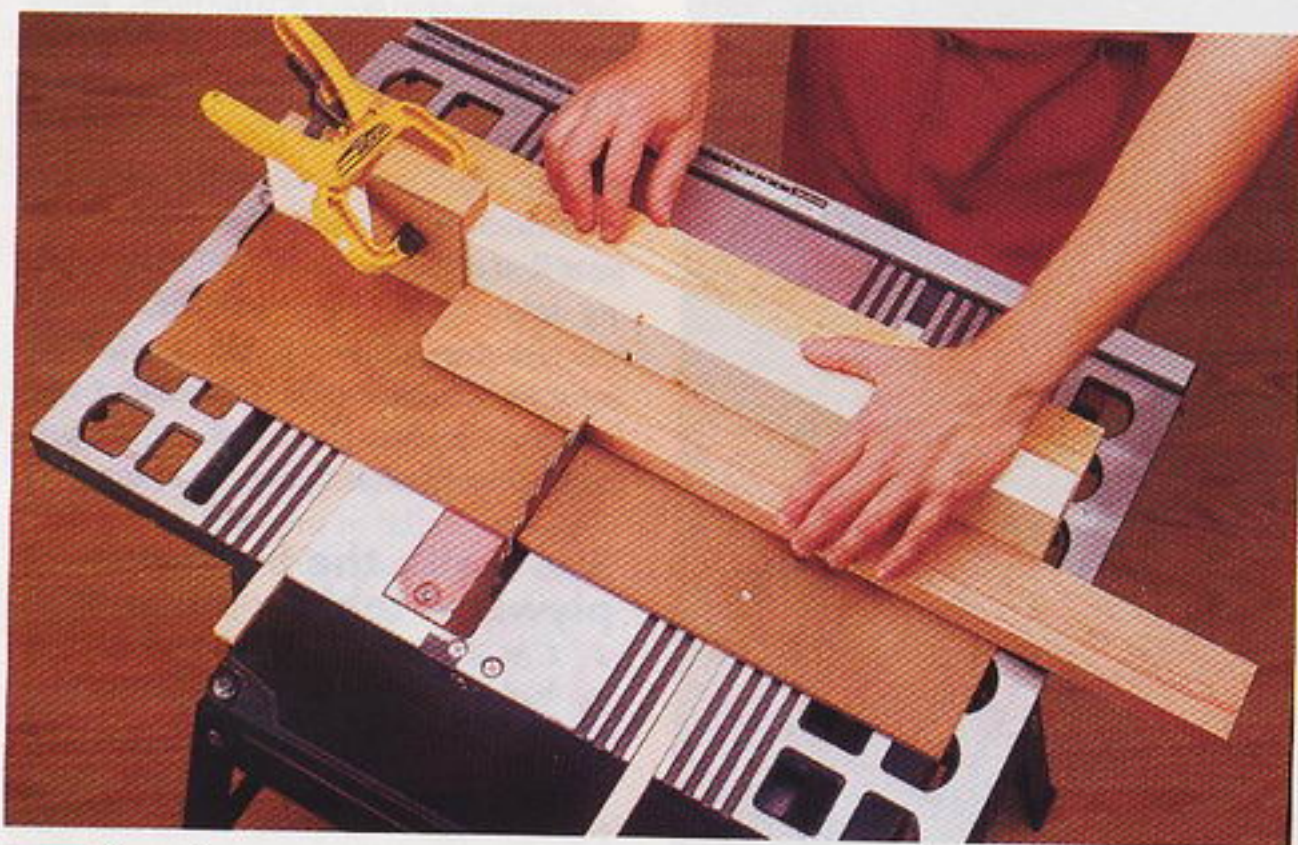
10 NARROW-NOSE HOLD-DOWN

Optional shape for holding small parts and clamping at an angle. We found it useful on moldings.



ZERO-CLEARANCE CROSSCUT SLED

DITCH THE MITER GAUGE TO INCREASE THE ACCURACY OF YOUR BENCHTOP TABLESAW.



If you have zero tolerance for tear-out and inaccurate cuts, you'll enjoy the results you get with this zero-clearance crosscut sled designed by WOOD® magazine reader Dan Pacht. He uses the sled to increase the precision of his benchtop table saw. It replaces the wobbly miter gauge, and reduces tear-out by closing the gap in the saw's wide-open throat plate. You also could modify the sled for use with a stationary table saw.

Start by cutting a $\frac{1}{4}$ " hardboard base to size. Now square the edges of a pine 2x4, ripping it to 3" wide. From it, cut two 24"-long pieces, and glue and screw them together to form an L-shaped fence assembly. Then glue it to the hardboard base.

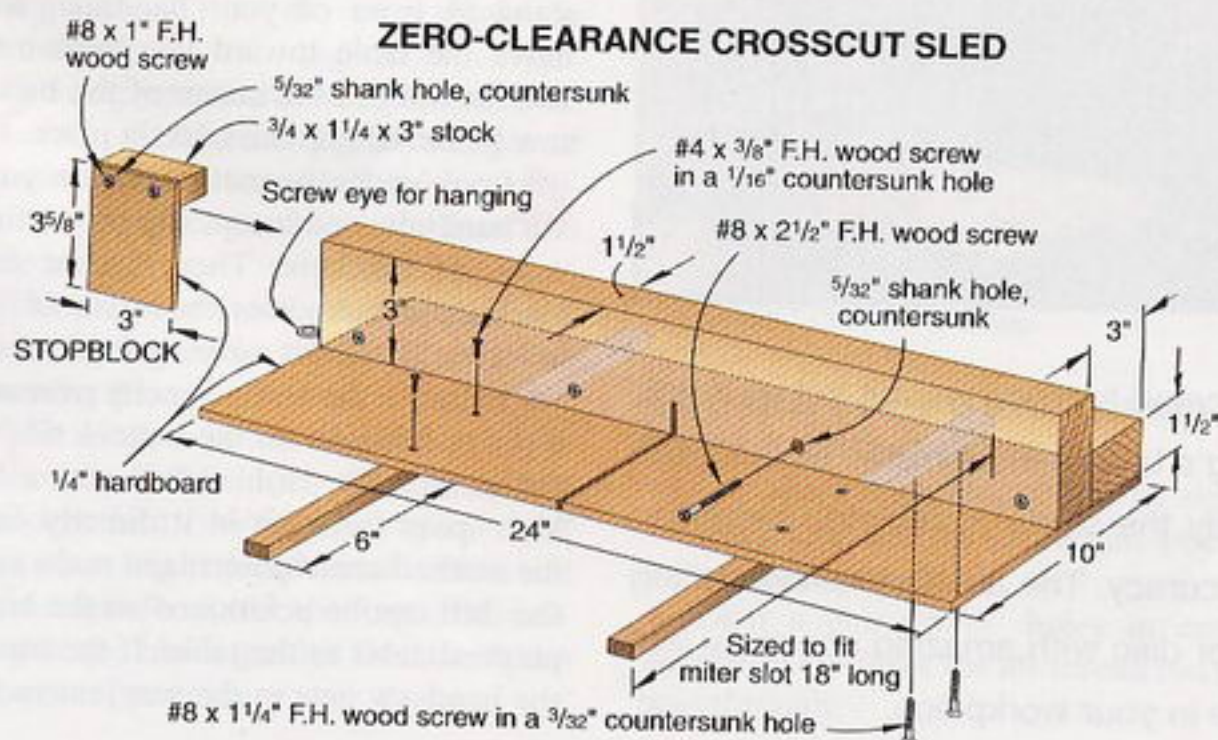
Next, make a pair of hardwood runners to fit your miter-gauge slots. The runners should fit snugly but still be able to slide.

Place the runners into their slots and run a small bead of glue along each one where the sled's base will cover them. Center the base/fence assembly side-to-side on your saw's table. Square the sled's fence to the saw blade by placing a framing square against the fence face and along the face of the blade. Allow the glue to dry.

Drill countersunk pilot holes in the base, and drive screws through it into the runners. Turn the sled over, and screw each runner into the base/fence assembly. Add a screw eye at one end of the fence so the sled can hang when not in use.

Note: This sled is designed for $\frac{3}{4}$ "-thick stock. To safely cut thicker stock, add a $1\frac{1}{2} \times 3 \times 4$ " block behind the fence, aligned with the saw kerf, to encase the blade.

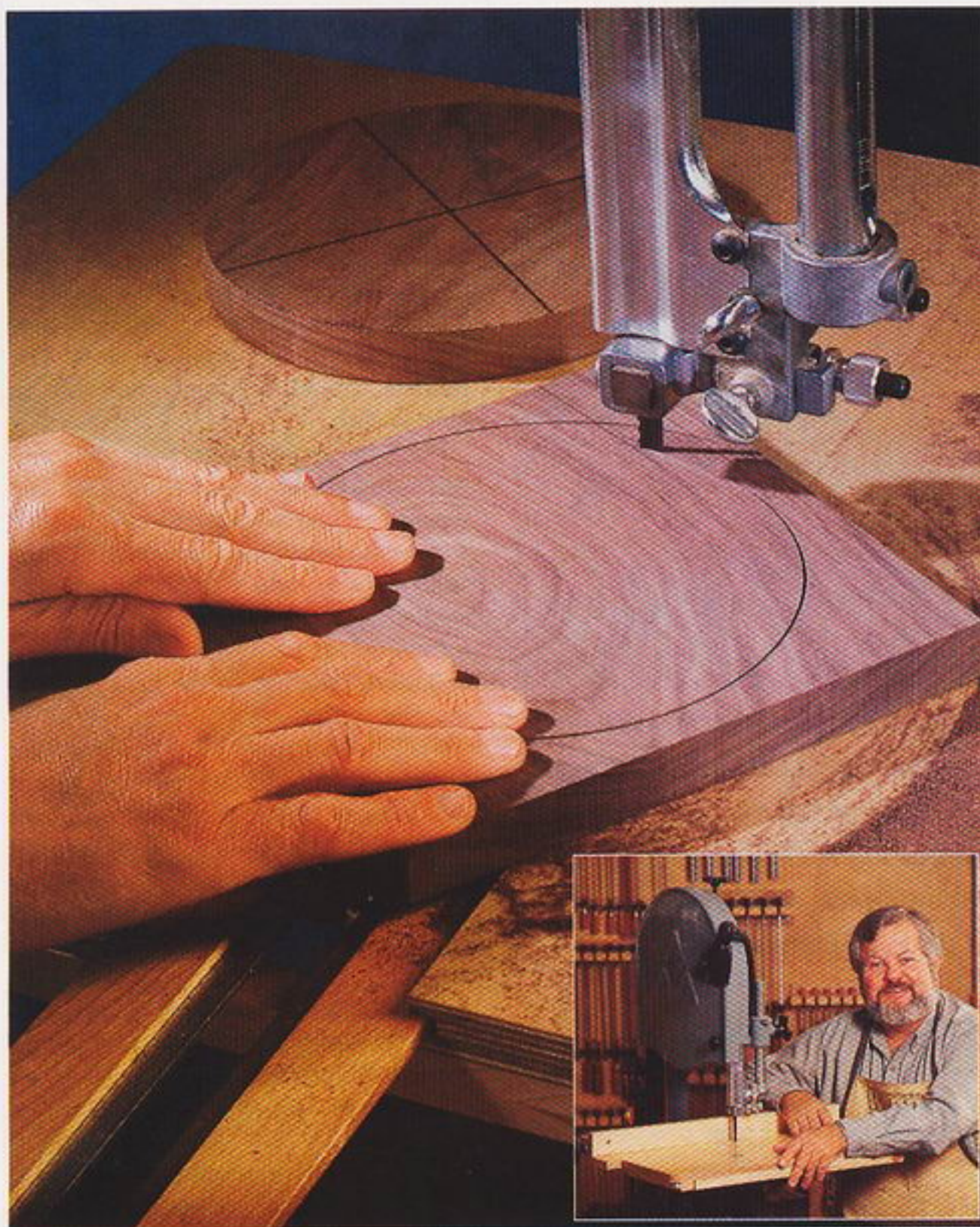
Finally, make the optional stopblock if you wish, and you're ready to go. Simply place the runners into the slots, and raise your blade $1\frac{1}{4}$ " above the saw table. Glide the sled forward until the top of the blade cuts into the fence, then back out of the cut. Now crosscut your workpiece. 📌



Written by **Robert Settich**
Project design: **Dan Pacht**
Illustration: **Roxanne LeMoine; Lorna Johnson**
Photograph: **Baldwin Photography**

BANDSAW MULTI-JIG

STOPS BLADE
WANDER IN
ITS TRACKS!



Note: This jig was designed to fit most 14" bandsaw tables. If your metal bandsaw table measures more than 10" in front of or behind the blade, you'll need to increase the depth (front to back) of the jig. If your metal table measures more than 9" on either side of the blade, you'll need to increase the width of the jig table. For larger bandsaw tables, the distance between the guides (E) must be $\frac{1}{4}$ " more than the width of your metal table plus the length of the protrusion of the metal alignment pin.

Start with the two-part plywood table

1 Cut the two tables (A) to the size listed in the Materials List. (Because of its stability and strength, we used $\frac{3}{4}$ " [18mm actual] Baltic birch plywood.) Mark and cut a $\frac{3}{4}$ " radius on two corners of each table, where shown on Drawing 1.

2 Using a $\frac{1}{4}$ " spline cutter in a router table or a dado blade in a tablesaw, cut a $\frac{1}{4}$ " groove $\frac{5}{16}$ " deep, centered along the inside edge of each table (A).

3 Place the front table (A) on your metal bandsaw table, and center the table side-to-side from the blade. Now, stand in front of your bandsaw, and move the table toward you until it is $1\frac{3}{4}$ " in front of the center of the bandsaw blade. Clamp the table in place.

4 Look under the metal table on your bandsaw, and locate any protruding webs or brackets. Then, locate and mark the centerpoints for a pair of $\frac{1}{4}$ " holes on the front table, being careful not to locate the holes directly over any webs or brackets on the bottom side of the metal table. Hold a drill with a $\frac{1}{4}$ " high-speed twist bit in it directly over the marked centerpoints, and make sure the drill can be positioned so the bit is perpendicular to the table. If the top of the bandsaw gets in the way, move the

Is your bandsaw the precision multi-faceted tool you want it to be? If not, we've just the solution for you. This jig's table increases the size of your bandsaw table, and the guides steady the blade at tabletop height to minimize blade wander and increase accuracy. The auxiliary circle-cutting guide attachment helps you cut disc after disc with amazing accuracy and consistency without having to drill a hole in your workpiece.



With the front table as a guide, use a center punch to mark the hole locations on the metal bandsaw table.

hole centerpoints forward, again being careful not to locate them over any webs or brackets on the bottom side of the metal table.

5 Remove the front table section from your bandsaw jig, and form a pair of counterbored slots in it, where indicated on the Front Table portion of **Drawing 1**. The slots allow you to adjust the wood jig table on the metal bandsaw table.

6 Reposition and clamp the front table (A) to your bandsaw table $1\frac{3}{4}$ " in front of the center of the blade. As shown in **Photo A**, use a center punch to mark the center of the slot locations onto the metal table. Remove the front wood table, and drill a $1\frac{3}{64}$ " hole through your metal bandsaw table at each marked centerpoint.

7 Tap the holes in the metal bandsaw table with a 1/4-20 tap.

Next, add the spacers and blade guides

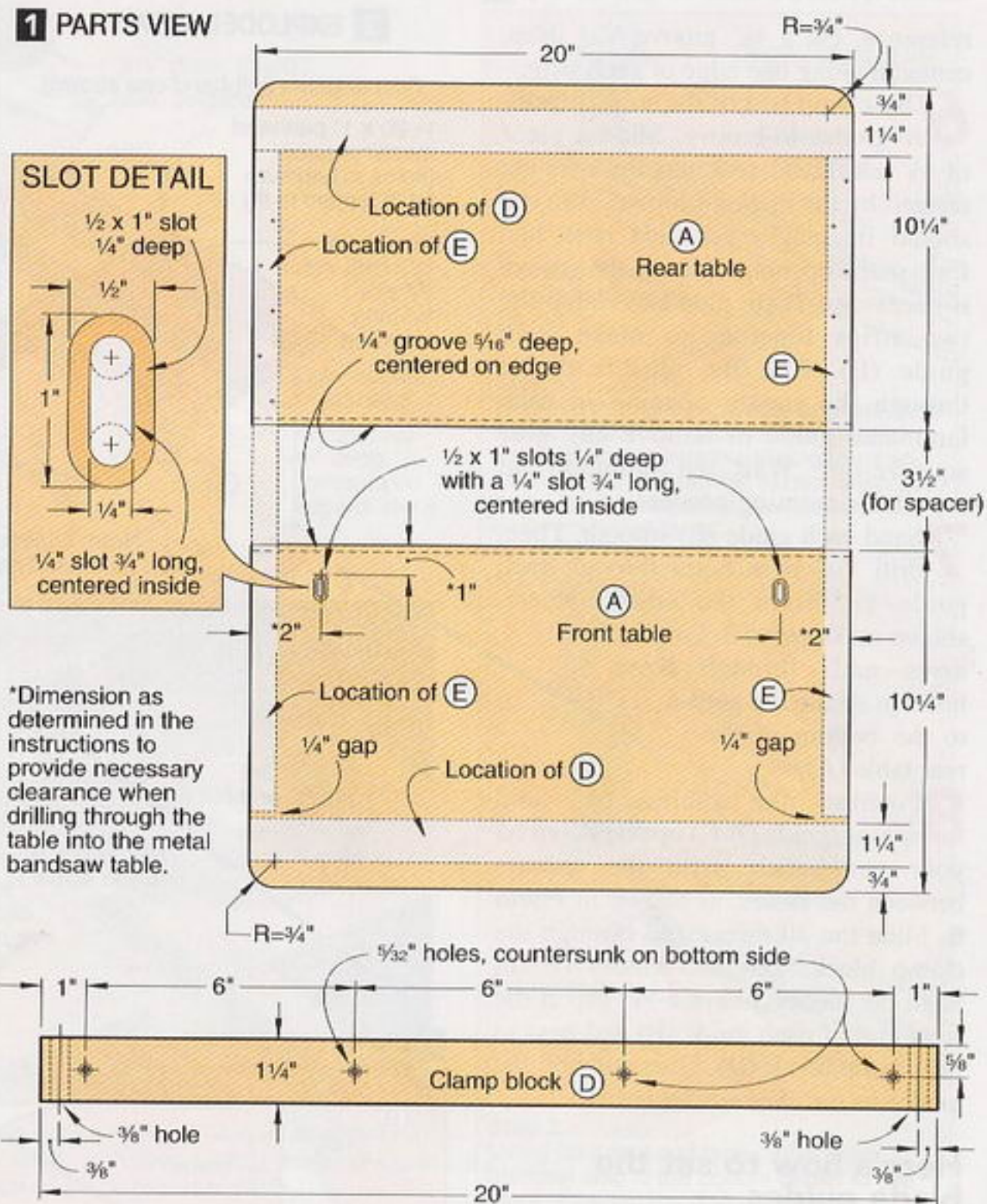
1 Cut the spacer guides (B) and blade guides (C) to the size shown in **Drawing 2**.

2 Using your tablesaw or router table, form a tongue along both edges of each spacer to fit snug but slide smoothly in the mating grooves in the front and rear tables (A).

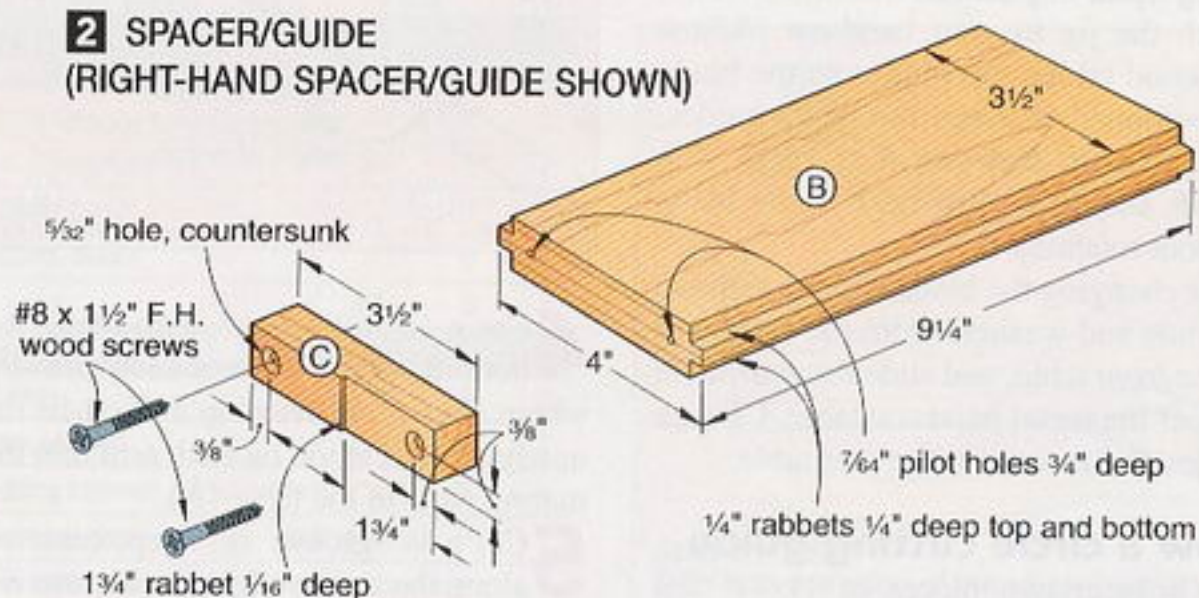
3 Form a $\frac{1}{16}$ "-notch $1\frac{3}{4}$ " long in each blade guide, where shown on Drawing 2.

4 Drill the holes, and screw the blade guides (C) to the spacer guides (B). Note that you will have a right-hand and left-hand spacer/guide. Sand the top and bottom of the blade guides flush with the spacers if necessary.

1 PARTS VIEW



2 SPACER/GUIDE
(RIGHT-HAND SPACER/GUIDE SHOWN)



Cut and secure the clamp blocks and guides

1 Cut the clamp blocks (D) to size. Mark and drill the $\frac{5}{32}$ " holes, where shown on **Drawing 1**.

2 Drill a pair of $\frac{3}{8}$ " holes in each clamp block for the all-thread rod to pass through.

3 Cut two pieces of $\frac{3}{8}$ " all-thread rod to 23½" long.

4 Screw the blocks to the *bottom side* of the front and rear tables (A), where shown on **Drawing 1**.

5 To form the guides (E), rip four $\frac{3}{8}$ "-thick strips from the edge of $\frac{3}{4}$ " stock 19 $\frac{1}{8}$ " long. Using **Drawing 3a** for

bandsaw multi-jig

reference, cut a $\frac{3}{8}$ " groove $\frac{3}{16}$ " deep, centered along one edge of each strip.

6 Dry-clamp two of the strips together groove-to-groove. Slide a piece of $\frac{3}{8}$ " all-thread rod into the opening created by the mating grooves. The rod should fit snugly yet slide back and forth in the opening. Enlarge the groove if necessary. Then, glue and clamp the two strips together to make each guide (E). Run the all-thread rod through the square opening in each laminated guide to remove any glue squeeze-out. Wait ten minutes and repeat the reaming process.

7 Sand each guide (E) smooth. Then, drill $\frac{1}{16}$ " pilot holes through each guide $\frac{3}{32}$ " from the edges, where shown on **Drawing 3**. Later, you'll drive nails through these holes to secure the guides to the bottom of the rear table (A).

8 Position the tables (A) and spacer/guide (B/C) upside down on your workbench, with the spacers between the tables, as shown in **Photo B**. Slide the all-thread rod through the clamp blocks (D) and guides (E) to align the pieces. Leave a $\frac{1}{4}$ " gap at the front end of each guide (E) and next to one clamp block (D). Glue and nail the guides to just the rear table (A).

Here's how to set the blade guides

Using a pair of panhead machine screws, attach the jig to your bandsaw. Adjust the wood tables and guides so the blade is positioned between the blade guides, as shown on **Drawing 4** at right. The guides should be just next to the blade without touching it.

For changing the blade, simply remove the nuts and washers from the front end of the front table, and slide the rear table (A) off the metal bandsaw table. Change blades and reconnect the rear table.

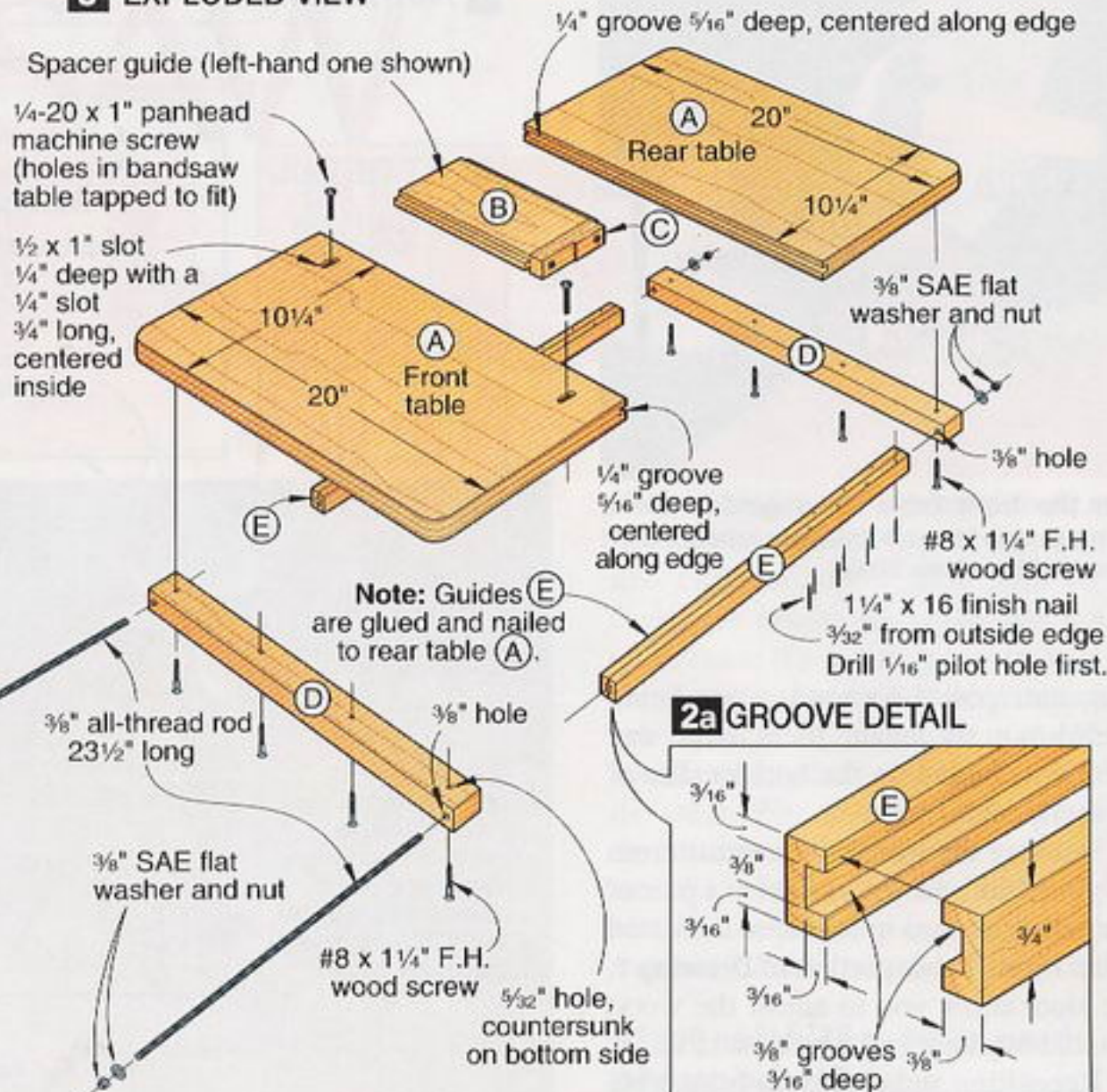
Now a circle cutting guide

1 Crosscut two pieces of $\frac{1}{8} \times \frac{3}{4}$ " flat steel to 18" long. Cut two pieces to $\frac{1}{8} \times 1 \times 1\frac{1}{16}$ " for the stop. See **Drawing 5** for reference. Drill and tap the holes in the stop pieces, where shown on the drawing.

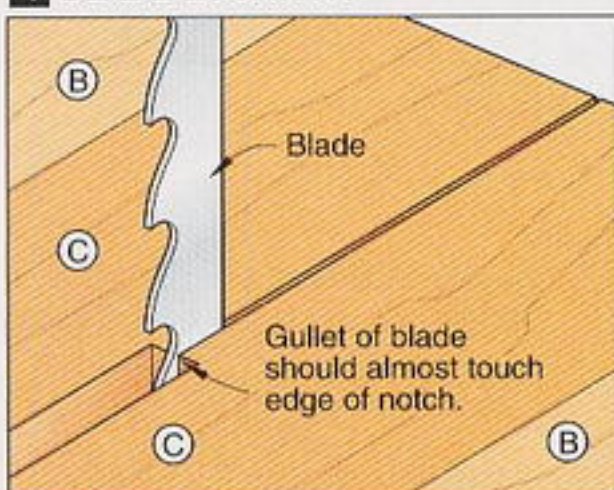
2 Cut the arms (F) to size from $\frac{1}{2}$ " solid stock. (We used birch.)

3 Cut the arm spacers (G) and sliding trammel (H) to size plus 12" in length from $\frac{1}{2}$ " stock.

3 EXPLODED VIEW



4 BLADE LOCATION



4 Cut a $\frac{1}{4}$ " rabbet $\frac{1}{4}$ " deep along the bottom outside edge of each arm (F), where shown on **Drawing 5**. Test-fit the newly created tenon on each arm into the mating slots in the table (A).

5 Cut a $\frac{1}{8}$ " groove $\frac{3}{8}$ " deep, centered along the inside edge of each arm (F) and along the extra-long blanks for the arm spacers (G) and sliding trammel (H). Check that the $\frac{1}{8} \times \frac{3}{4} \times 18$ " flat steel stock slides smoothly in the grooves in parts F, G, and H. Crosscut parts G and H to length from the 12"-long blanks.

6 Drill a $\frac{3}{8}$ " hole, centered, in the sliding trammel (H). Drive a $\frac{1}{4}$ " threaded insert square into the sliding trammel.



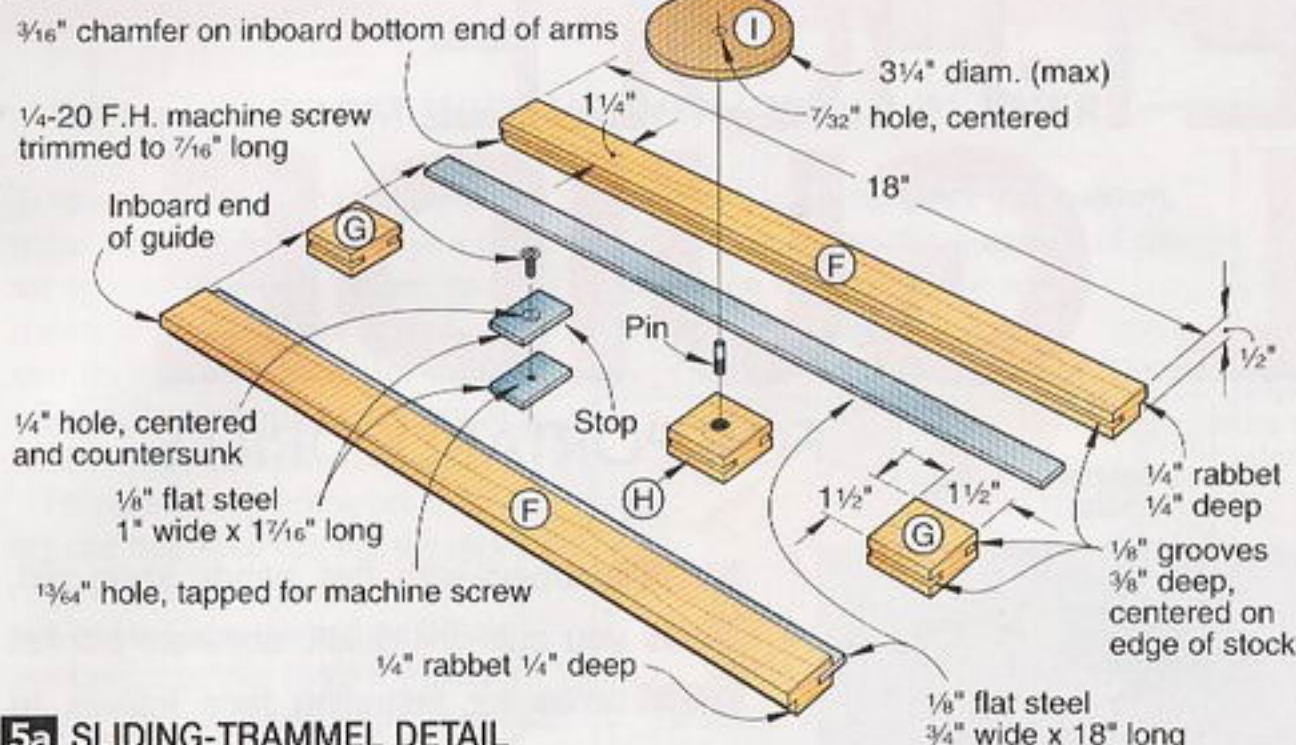
With the tables and spacers upside down, slide the all-thread rod through the clamp blocks and guides to align the pieces. Nail the guides in place.

7 Hacksaw the heads off two $\frac{1}{4}$ " hexhead bolts with smooth upper shanks. Cut to $\frac{3}{4}$ " long to form the two $\frac{3}{4}$ "-long trammel points like those, shown on **Drawing 5a**.

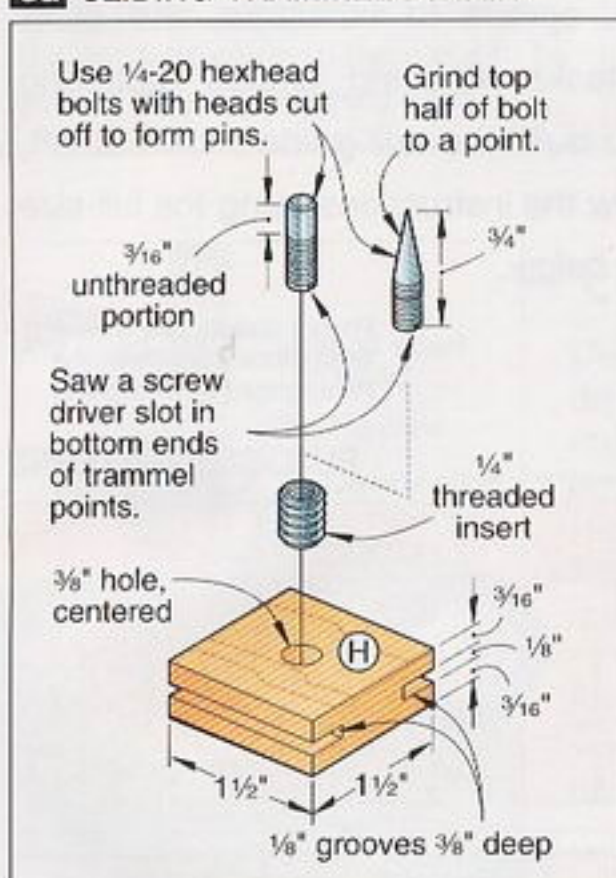
8 Assemble (dry-fit) the flat steel into the groove in the arms (F), and position the arm spacers (G) and sliding trammel (H) between the steel stock. The trammel must slide back and forth on the flat steel. Sand the grooves in the trammel if necessary until it slides freely.

9 Epoxy the steel stock into the grooves in the arms (F). Immediately remove any excess epoxy. Later, position the arm spacers (G) and

5 CIRCLE-CUTTING GUIDE



5a SLIDING-TRAMMEL DETAIL



sliding trammel (H) between the two assemblies, keeping the ends of the spacers flush with the end of the arms. Epoxy the spacers in place; the trammel must be left free to slide on the steel stock. Rub a bit of paraffin on the bars if necessary so the trammel slides smoothly.

10 Using the 1/4-20 machine screw, secure the stop to the steel stock to make sure that the stop slides on the flat steel stock.

11 Cut the trammel disc (I) to shape, and drill a 7/32 inch hole in its center.

12 To use the circle guide, follow the instructions shown in **Drawing 6** and **Photo C**.

Note: The trammel point must be exactly perpendicular to the bandsaw blade's tooth tips or the circles attempted won't be perfectly sized.



Using the guide is as simple as a twist of the wrist with our sliding trammel and taped-in-place trammel disc.

Materials List

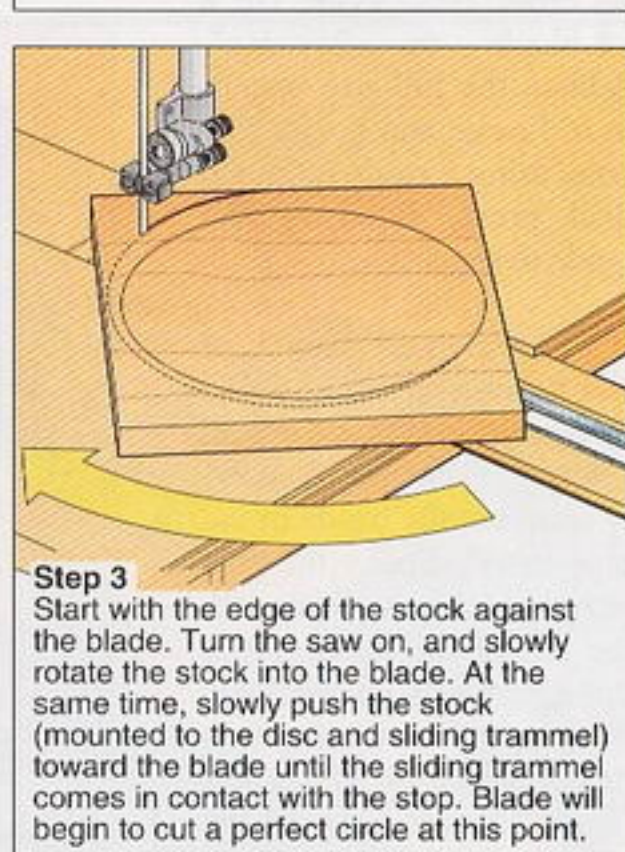
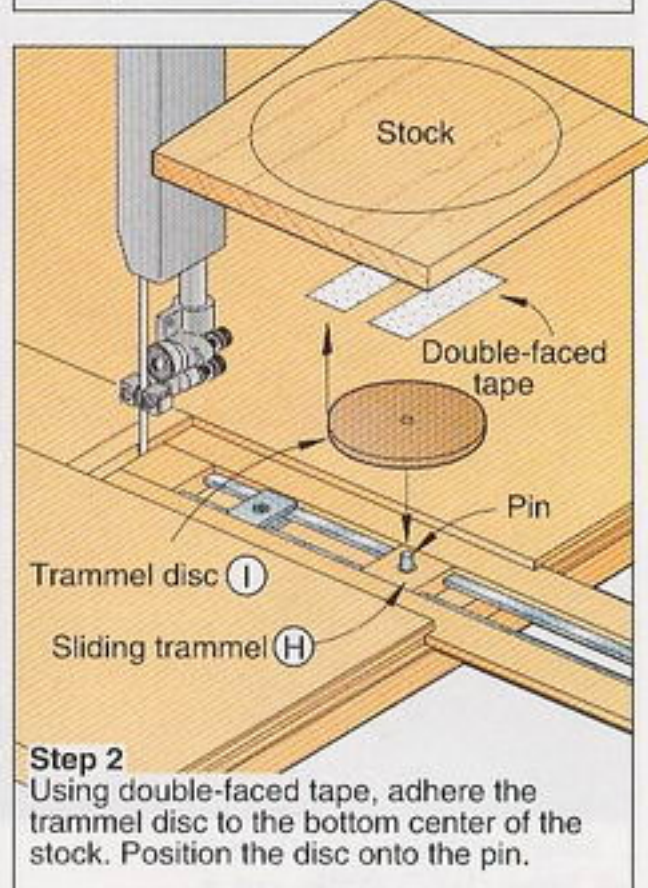
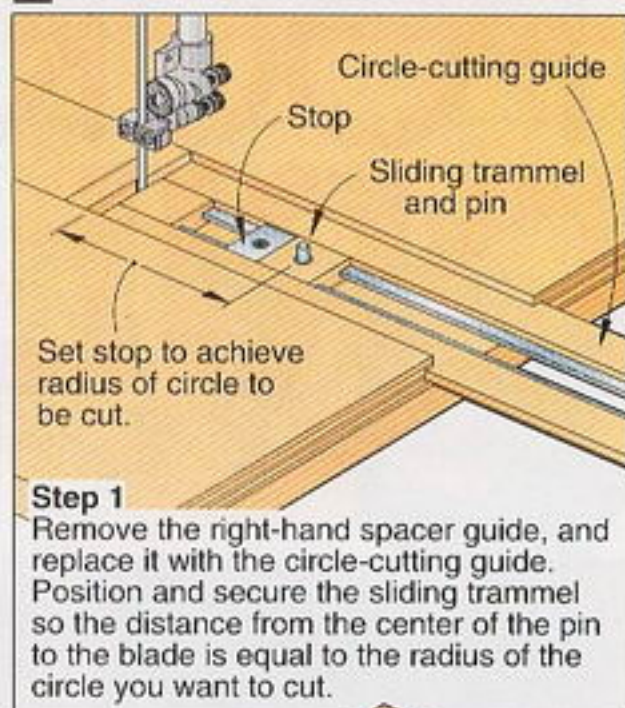
Table	FINISHED SIZE			Matl.	Qty.
	T	W	L		
A tables	3/4"	10 1/4"	20"	BP	2
B spacer guides	3/4"	4"	9 1/4"	BP	2
C blade guides	3/4"	3/4"	3 1/2"	B	2
D clamp blocks	3/4"	1 1/4"	20"	B	2
E guides	3/4"	3/4"	19 1/8"	B	2
Circle-cutting guide					
F arms	1/2"	1 1/4"	18"	B	2
G arm spacers	1/2"	1 1/2"	1 1/2"	B	2
H sliding trammel	1/2"	1 1/2"	1 1/2"	B	1
I trammel disc	1/4"	3 1/4" diam.		H	1

*Parts initially cut oversize. See the instructions.

Materials key: BP—birch plywood, B—birch, H—hardboard.

Supplies: #8x1 1/4" flathead wood screws (8), #8x1 1/2" flathead wood screws (4), 1 1/4"x16 finish nails, 3/8" all-thread rod 23 1/2" long (2), 3/8" SAE flat washers and nuts (4), 1/4-20x1" panhead machine screws (2), 1/8x3/4" flat steel 36" long, 1/8x1" flat steel 3 1/2" long, 1/4" threaded insert, 1/4-20x2" hexhead machine bolts (for trimmed points) (2), 1/4-2x1 1/2" flat-head machine screw (trimmed to 7/16" long).

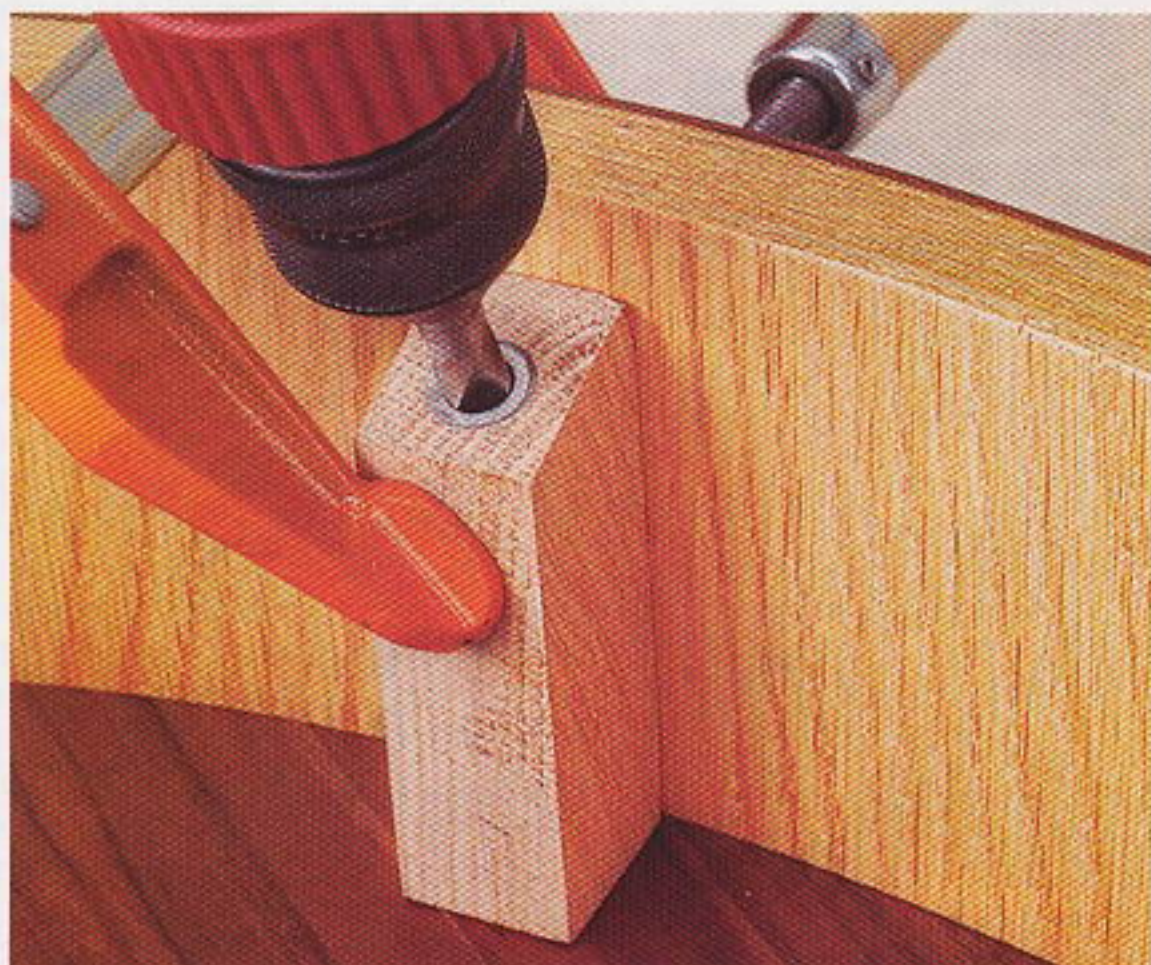
6 USING THE CIRCLE-CUTTING GUIDE



Written by **Marlen Kemmet**
Project design: **Chuck Hedlund**
Illustrations: **Kim Downing; Lorna Johnson**
Photographs: **Hetherington Photography**

POCKET-HOLE DRILL GUIDE

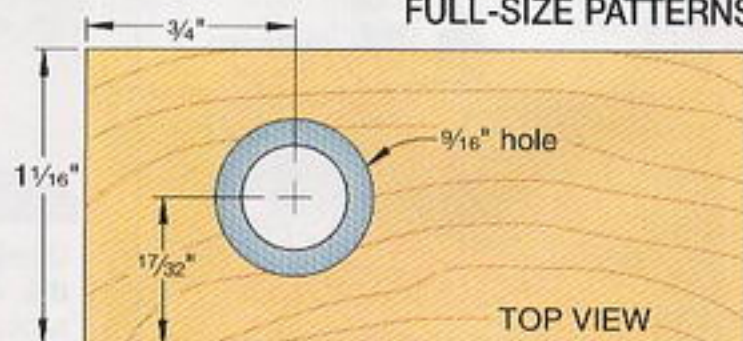
FOR PORTABLE DRILLS



Equipped with this handy shop aid, you can drill quick, accurate pocket holes for fastening face frames to cabinets, aprons to tabletops, and other similar tasks requiring angled mounting holes. To build the drill guide shown at left, just follow the instructions using the full-size patterns below.

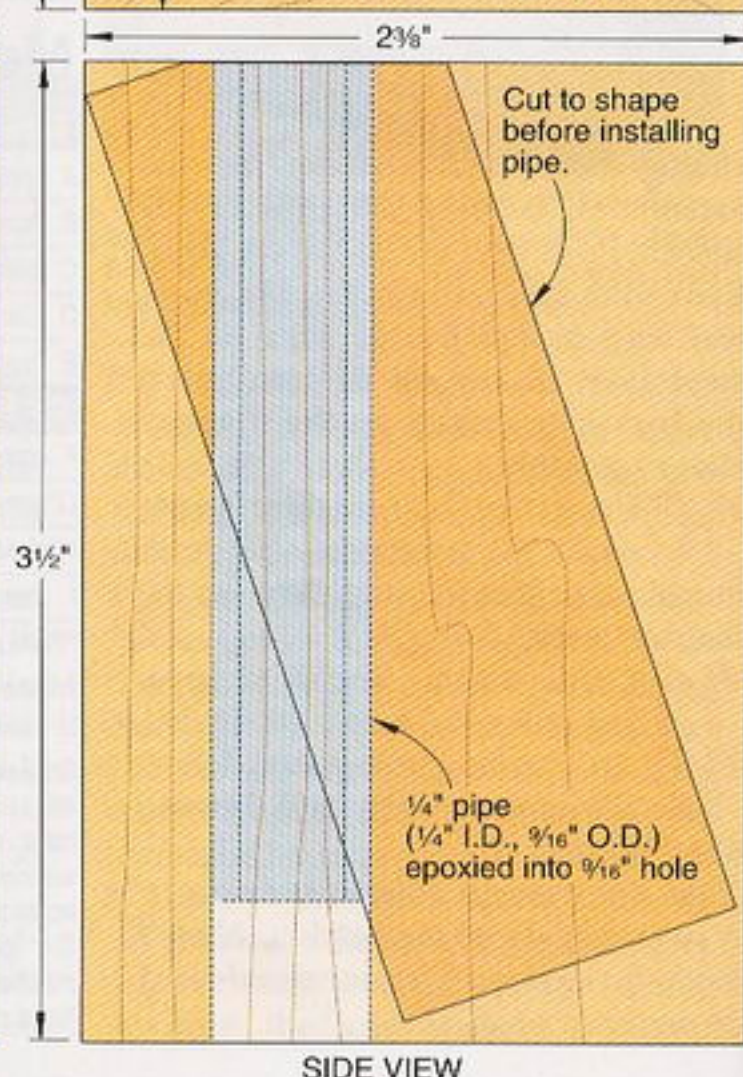
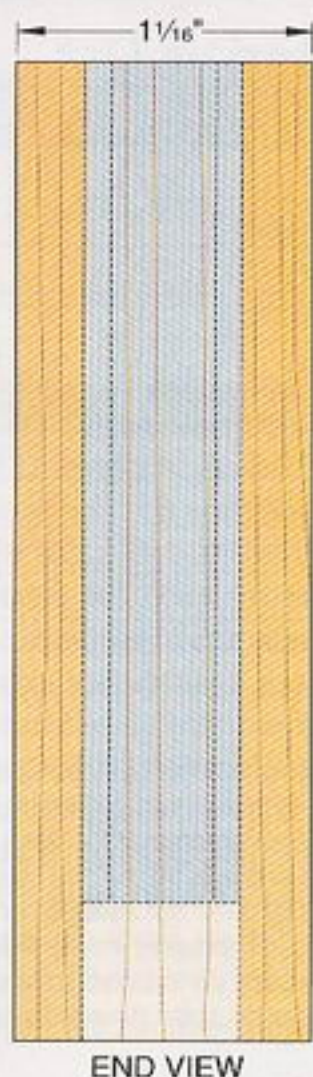
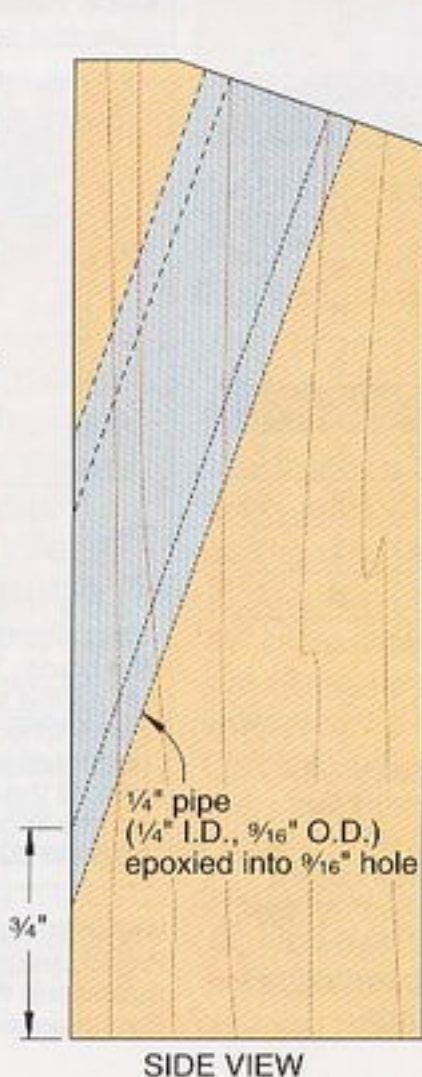
Project design: Jim Downing
Illustrations: Kim Downing
Photograph: Wm. Hopkins

FULL-SIZE PATTERNS



1 From $1\frac{1}{16}$ " stock, cut a block to $2\frac{3}{8} \times 3\frac{1}{2}$ ". Adhere the full-size pattern to it. Locate and bore a $\frac{9}{16}$ " hole, using a spade bit in the drill press. Bandsaw the guide to shape.

2 Clamp a 3" length of $\frac{1}{4}$ " iron pipe ($\frac{9}{16}$ " O.D.) into a machinist's vice. Using a $\frac{3}{8}$ " twist drill, slowly ream out the inside of the pipe to $\frac{3}{8}$ ". Epoxy the pipe into the $\frac{9}{16}$ " hole, flush with the top of the block. After the epoxy sets up, hacksaw the pipe off at an angle to match the block. Use a stationary sander to sand the pipe flush. Break the sharp edges of the steel with a file and emery cloth. *



GREAT JIG TIPS

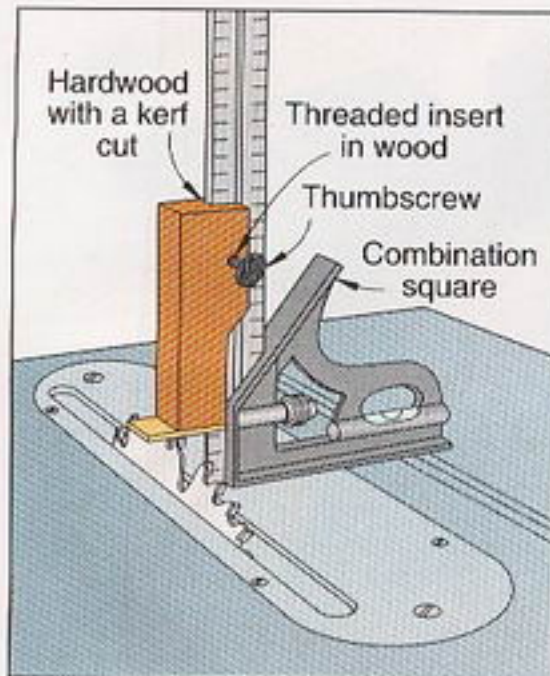
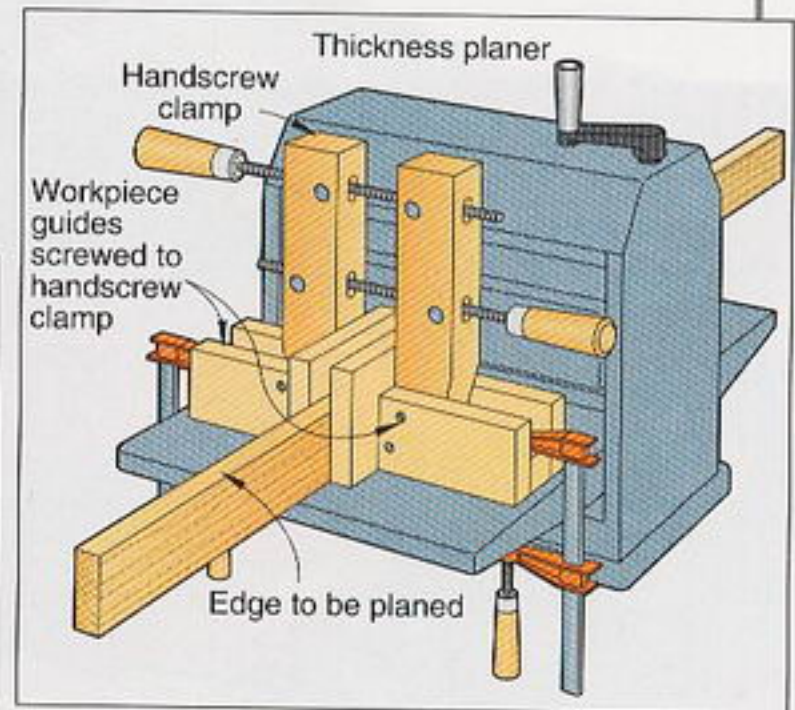
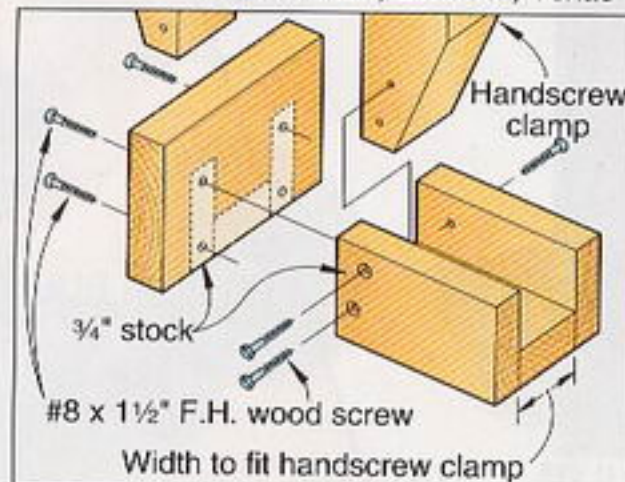
MILL UNIFORM WIDTHS WITH YOUR PLANER

With an old handscrew clamp and some scraps of hardwood, you can set up your thickness planer, as shown in the drawings at right, to mill uniform-width door or cabinet stiles, rails, and other pieces with jointer-smooth, square edges.

Prepare your workpieces by jointing one edge and ripping the other edge so the workpieces are slightly too wide. Then, clamp one of the workpiece guides to your planer's infeed table, and ensure its main face is 90° to the planer table. Position the opposite guide so the piece to be planed fits snugly between the

guides. Clamp the other guide down. Finally, fine-tune the snugness of the guides on the workpiece with a handscrew clamp.

—Bob Killian, Lubbock, Texas



CONVERT A COMBINATION SQUARE TO A DEPTH GAUGE

Using a ruler or tape measure to set the depth of cut on a tablesaw or router table often proves to be inaccurate. Isn't there a better way to make these measurements, short of buying a special tool? There is. Just turn your combination square into an accurate depth gauge with two small pieces of wood, a thumbscrew, and a threaded insert. First, cut a 3/4"-thick block of hardwood about 3" long, and cut a kerf down the middle just wide enough to fit over the

edge of the blade on your square. Then, cut the notch in the lower half of the block to fit around the head of the square.

Glue a piece of 1/8"-thick hardwood to the bottom of the hardwood block, where shown in the drawing at left. With epoxy, secure a threaded insert into the upper half of the block, put in a thumbscrew, and you're ready to quickly gauge the blade height.

—Mark Albrecht, Houston, Texas

BORE DOWELS WITHOUT BREAKAGE

I've seen lots of tricks for drilling centered holes into dowel ends, but I'd not seen one that allowed me to bore a 1/8" hole into a 3/16"-diameter dowel without blowing out the side. Here is the method I came up with that gives me that ability.

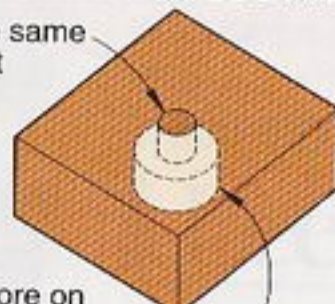
Make a centering guide by clamping a 2x3" scrap of 3/4" hardwood to your drill-press table and boring a hole the diameter of your dowel halfway into it. Without moving the workpiece, chuck a bit the size of the hole you want, and drill the rest of the way through. (For small holes, advance the bit slowly to keep it from flexing.)

Place this centering guide over the end of your dowel, and clamp the dowel into a holding device, such as the V-groove jig shown. Lower the drill-press chuck, inserting the bit into the centering guide, and clamp the holding jig in place. Now, drill the hole in the dowel, again going easy with the small bit.

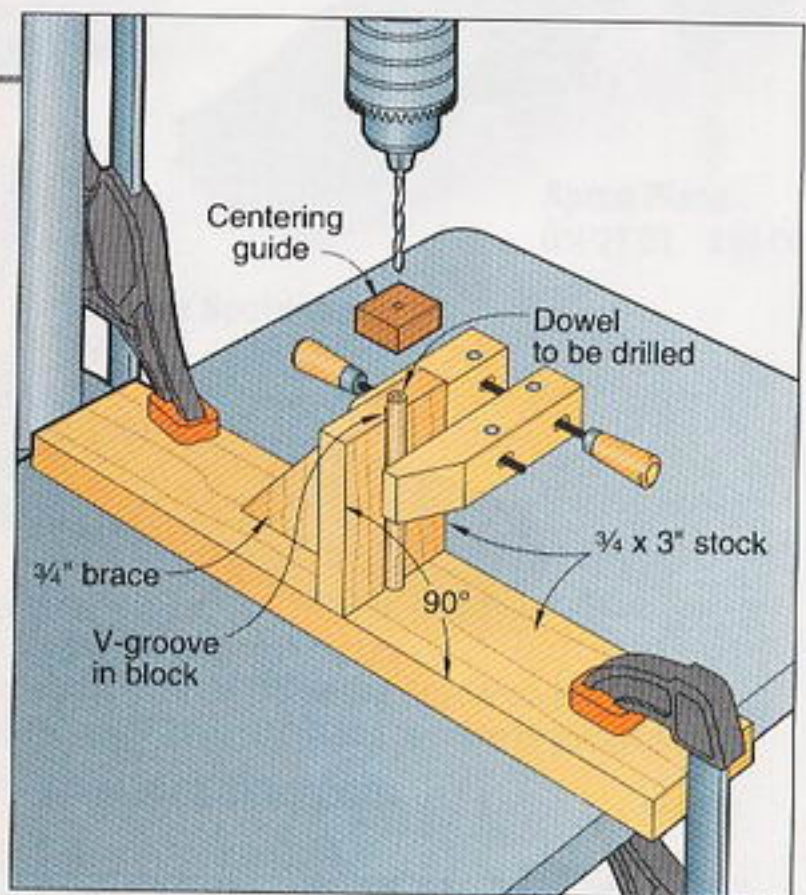
—Wayne Holder, Brooksville, Fla.

CENTERING GUIDE DETAIL

Hole size same as drill bit



Counterbore on bottom side the same diameter as dowel (centered over drill hole).



continued from page 41

3 BASE FULL-SIZE PATTERN

