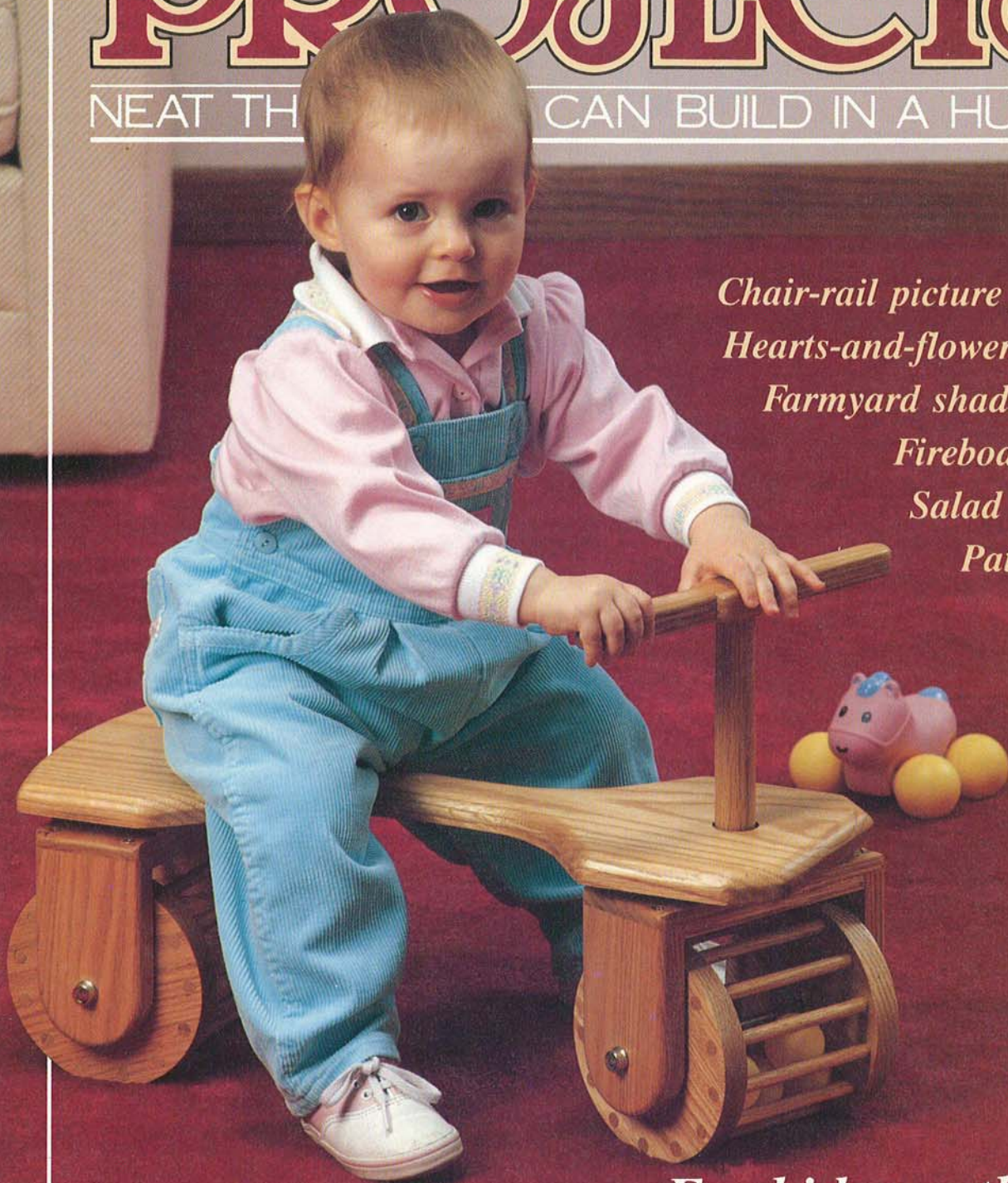


WEEKEND WOODWORKING

PROJECTS®

NEAT THINGS YOU CAN BUILD IN A HURRY

Chair-rail picture frames
Hearts-and-flowers trivet
Farmyard shadow box
Fireboat lamp
Salad servers
Patio cart



For kids on the go
TODDLER TOWN CAR

FROM THE EDITORS OF WOOD® MAGAZINE

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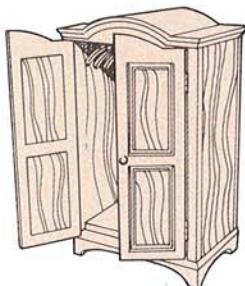


Dear Reader,

A few months ago while scurrying around in search of a Christmas project to build for my family, I decided that the trivet featured on pages 18 and 19 would be perfect. This project had a special appeal to me because I wanted to develop my skill making inside cuts with a scrollsaw. Perfect match! My first time out of the chute, it took me 55 minutes to make all of the inside cuts for one trivet. By the time I finished making 10 more trivets (I made a few extra for wedding gifts), I reduced my sawing time to 40 minutes. And, my quality improved dramatically, too!

Now for the first time, I feel comfortable with my scrollsaw—perhaps because I finally got smart and hauled a stool down to my workshop. The time really flew while I sat and sawed.

More on doll's armoire



We've heard from several readers who enjoyed making the fashion-doll armoire featured in Issue 19. A couple of these sharp-eyed woodworkers noted that a detail in Step 3 on page 6 doesn't match dimensions on the Exploded View and the Top and Side View drawings. Dimensions for the rabbets on the drawings are correct. Step 3 should read:

Cut an $1\frac{1}{16}$ "-wide rabbet $\frac{1}{4}$ " deep along the side edges of the top (A) and bottom (B) pieces. Make the rabbet $\frac{1}{2}$ " wide along the front edge of the bottom, and $\frac{5}{8}$ " wide along the front edge of the top.

Also, we've been asked for sources of the $\frac{3}{4}$ " o.d. router guide bushing specified in Step 7. Here are two firms: Woodworker's Supply of New Mexico sells a set (catalog number 800-812) of seven Porter-Cable bushings and two lock nuts; telephone 800-645-9292 for more information. Woodcraft Supply Corp. (telephone 800-535-4482) sells the same kit, or you can buy individual bushings and lock nuts. By using adapters, the universal design should fit most router bases.

If you enjoyed building the armoire, you'll have fun with the matching doll bed we've designed for the September issue. It's a cutie, too.

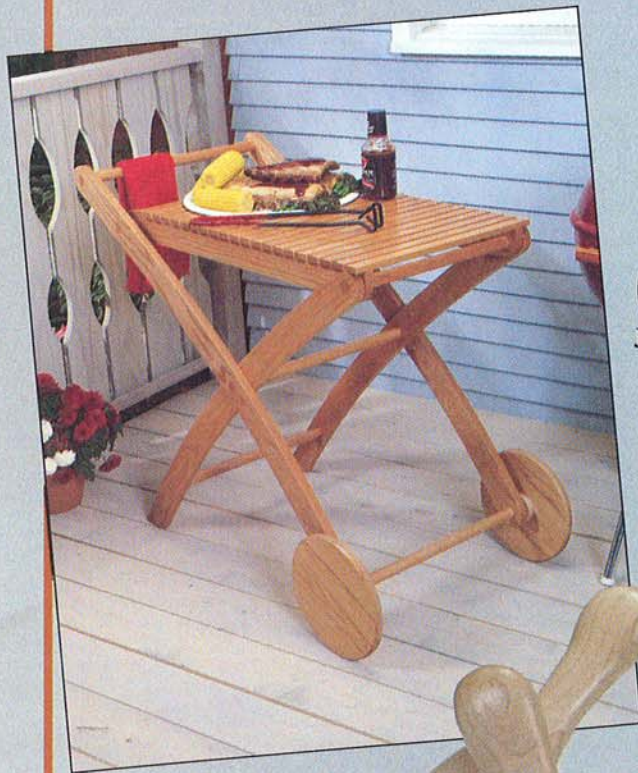
CHECK OUT THESE TIPS AND JIGS

- For quiet, smooth-turning wheels, incorporate brass bushings—page 23.
- A drill press can help you sand uniformly round wheels—page 23.
- Learn the formula for calculating lengths of frame members—page 25.
- Call on a framing square for perfect 45° miter cuts—page 25.

Note: To find these tips, turn to the pages and look for the tinted numbers.

Cam Don

Managing Editor



6 Party-time cart

Just wait until friends feast their eyes on this barbecue cart. You'll appreciate the way that it rolls smoothly outdoors, and how it folds compactly for storage.



10 Harbor light

Build this lamp and model honoring the nation's oldest fireboat, a ship that patrols Lake Erie for the Buffalo, New York, Fire Department.



16 Hands-on salad servers

Here's a quick shop project that will liven up a party. Dinner guests are sure to applaud your wood-working skills when they serve salad with these fun utensils.

18 Hearts-and-flowers trivet

Let a garden motif grace your table with this simple-to-make trivet. After sorting through a pile of discontinued tiles, we whipped out 12 of them in just a few hours.



20 Toddler town car

Small kids just love this durable toy—especially the rattling sound from the table-tennis balls bouncing around inside the wheels. It's another terrific design from *WOOD*® magazine's Build-A-Toy™ contest.



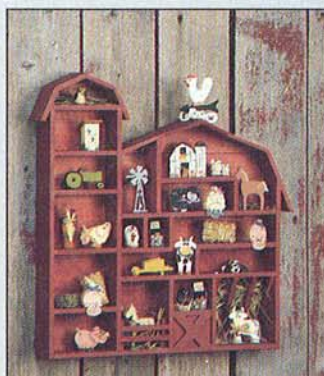
24 Big frames, small investment

Inexpensive lumberyard moldings offer fantastic alternatives to milling your own framing material. We'll show you how to build a frame in an afternoon—and for less than \$1.45 a foot.



28 Farmyard shadow box

After erecting this barn and silo, round up a whole herd of your favorite miniatures and fill up the stalls.



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Weekend Woodworking Projects® (ISSN 1042-6094) is published bimonthly in January, March, May, July, September, and November by Meredith Corporation, 1716 Locust Street, Des Moines, IA 50336. Second-class postage paid at Des Moines, Iowa, and additional offices. **SUBSCRIPTION PRICES:** One year \$24.97 in the United States and its possessions. Canada and other countries add \$6 per year. **POSTMASTER:** Send address changes to **Weekend Woodworking Projects**, P.O. Box 10815, Des Moines, IA 50336-0815.
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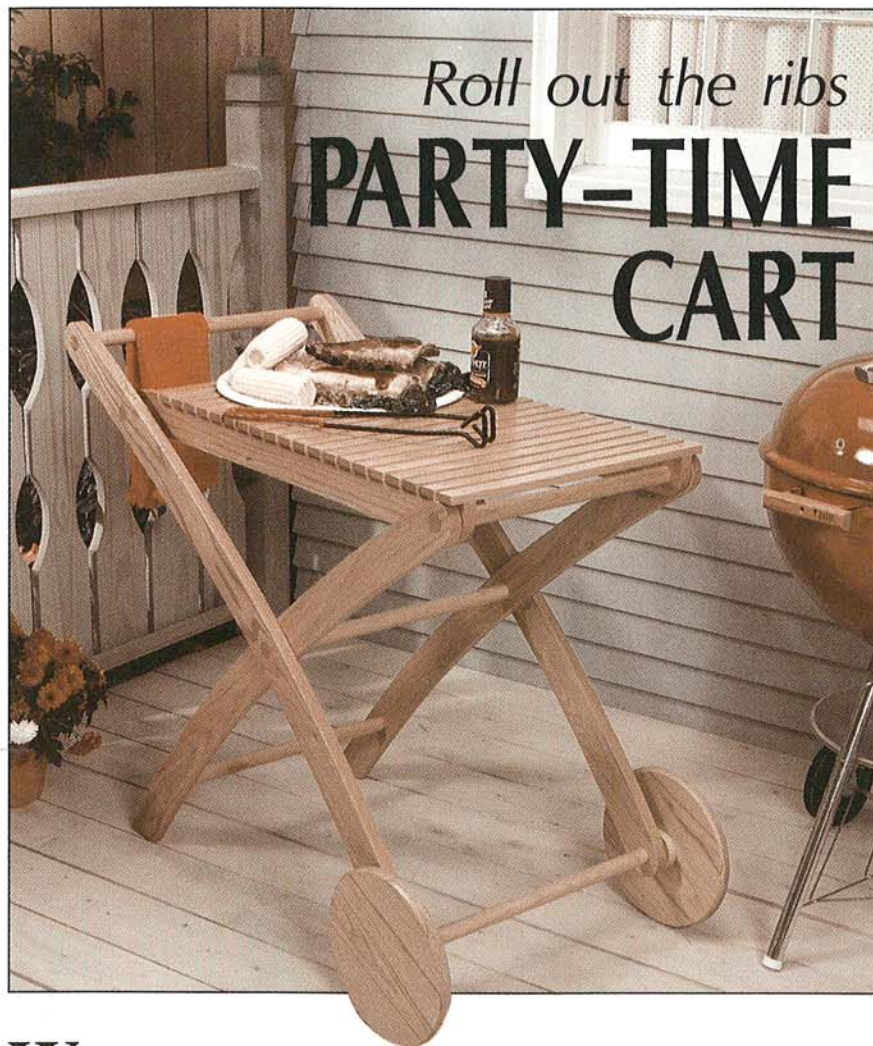
Weekend Woodworking Projects editorial mailing address: **Weekend Woodworking Projects**, P.O. Box 11022, Des Moines, IA 50336-1022. For subscription service, including change of address: Customer Service, P.O. Box 10815, Des Moines, IA 50336-0815. Please enclose your address label from a recent issue. Call toll-free 800-678-2666 if you wish telephone subscription service.

OUR PLEDGE TO YOU

Before publication, we build every project in *Weekend Woodworking Projects* step-by-step in our shop. Then, a seasoned team of editors reviews the directions, illustrations, and Bill of Materials of each wood project to make sure the instructions we provide you are clear, concise, and complete.

The Weekend Woodworking Projects Staff

MM



We're now serving up the fourth course in our line of outdoor furniture. If you've selected the two-part chair, folding table, or porch swing from 1990-vintage issues (March, May, and July respectively), you'll savor this latest offering even more when entertaining friends.

Let's begin with the legs

1 Make the leg patterns by first taping sheets of paper end to end to form one length measuring 8" wide by 48" long. Now, starting at one corner, draw 1" squares across the entire surface.

Note: Because of space limitations, we can't provide full-sized patterns of the legs in the magazine. However, if you'd like to work with full-sized patterns, we encourage you to order them from us. See page 9 for details.

2 Using the gridded Leg patterns on page 9 as your guide, draw the outline of the outside leg (A) and inside leg (B) on the grid form. (When working with gridded patterns, we first plot the points where the pattern lines cross the grid lines. On large patterns like these, we find it helpful to number each line in both directions on both the gridded and the large pattern. Then, we draw the lines to connect the points. Use French curved to help draw smooth curving lines.) Mark the seven centerpoints.

3 With scissors, cut out both patterns, leaving a 1/2" margin around the outlines. Apply spray adhesive to the underside of the patterns, and then adhere them side by side to the face of a piece of 3/4" stock at least 8" wide and 4' long. (We chose white oak because it stands up well to the weather elements.) Now, using double-faced tape, sandwich a second 3/4" x 8" x 48" board to the patterned board, and align them along the edges.

4 Bore the 1" holes marked on the patterns (we used a Forstner bit). Then, bandsaw the legs to shape. (We sawed outside the line, and then sanded to the line with our stationary disc and drum sanders.)

5 Separate the four legs and remove the tape and patterns. (We wiped off adhesive residue with lacquer thinner.) Finish-sand the legs, starting with 100-grit, then 180-grit, and finally 220-grit sandpaper.

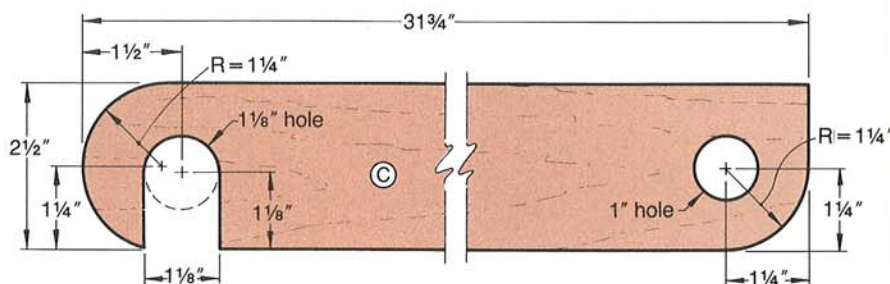
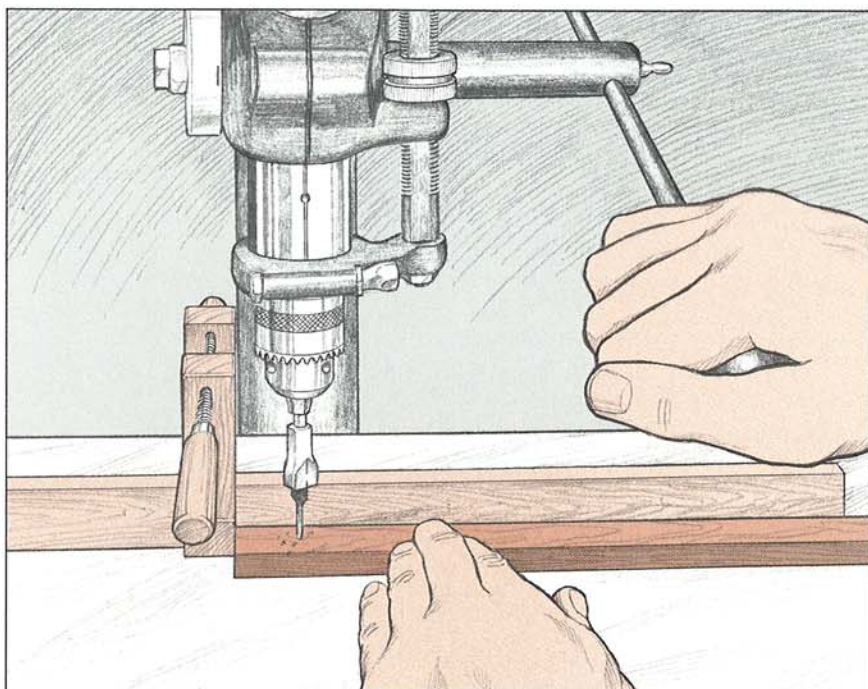
Now, cut the tray parts

1 Rip and crosscut two pieces of $\frac{3}{4}$ " stock to $2\frac{1}{2} \times 31\frac{3}{4}$ " for the tray supports (C). Stack the pieces together face-to-face with double-faced tape between them. Now, using the dimensions on the Tray Support drawing *below right*, lay out the top board by plotting the center-points for the holes, the slot, and the two end radii.

2 Bore the 1" and $1\frac{1}{8}$ " holes where marked. Next, bandsaw and sand the tray supports (C) to shape, using the same technique described for preparing the legs. Separate the parts and remove the tape and patterns. Finish-sand.

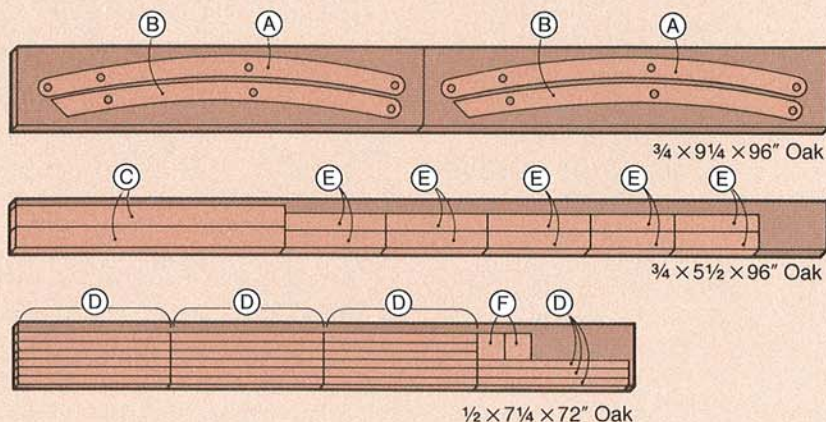
3 From $\frac{1}{2} \times 7\frac{1}{4}$ " stock, cross-cut four 18"-long pieces. (We resawed $\frac{3}{4}$ " stock to $\frac{1}{2}$ ".) Finish-sand both faces and the ends. Now, rip 21 1"-wide slats (D) from the 18"-long pieces. Finish-sand the edges.

4 With a $\frac{3}{8}$ " countersink/counterbore bit, drill a screw hole centered on and $1\frac{3}{16}$ " from each end of the tray slats as shown on the Screw Hole detail accompanying the Exploded View drawing on page 8. (To simplify the task, we clamped a fence to our drill press table to center the slats, and used a stop block to set a uniform hole distance from the ends.)



TRAY SUPPORT

CUTTING DIAGRAM



Bill of Materials

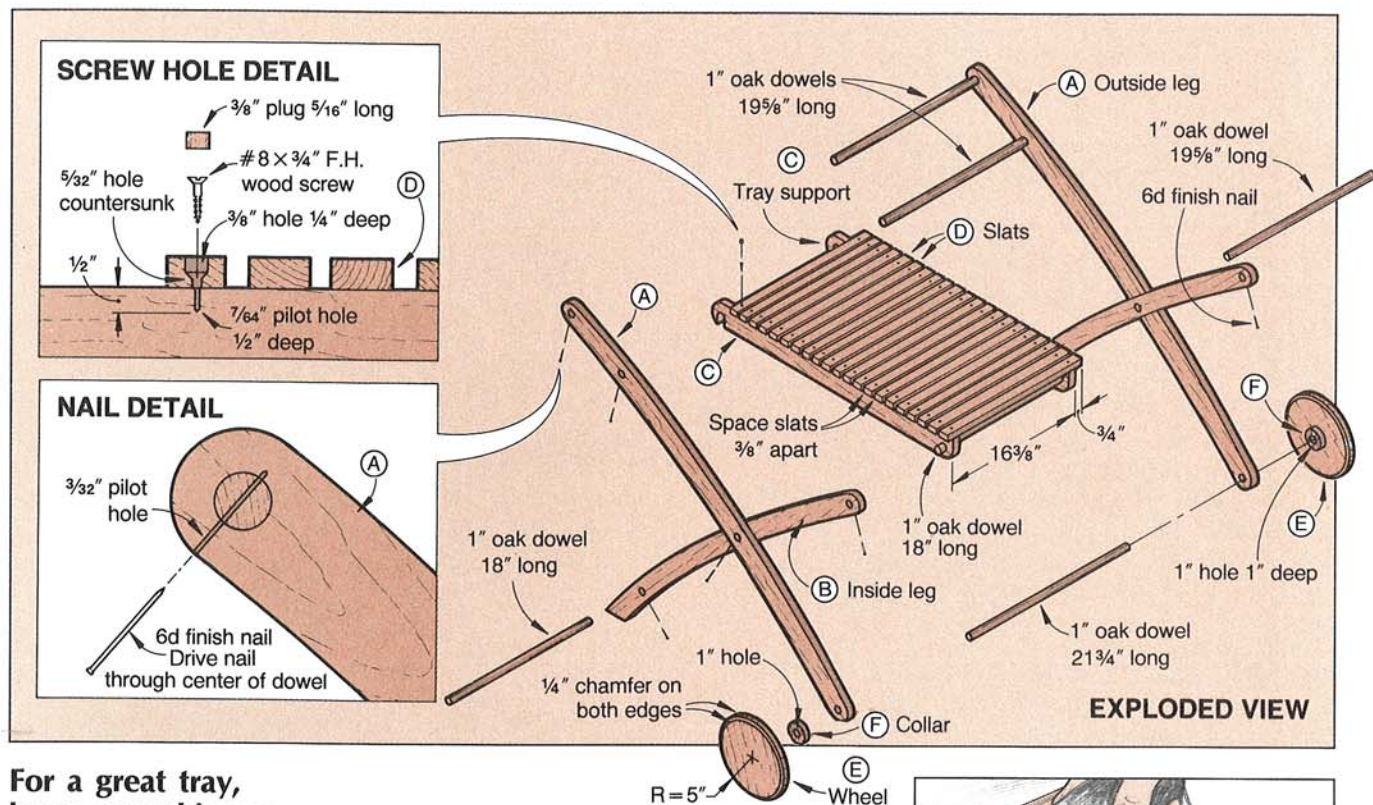
Part	Finished Size			Matl.	Qty.
	T	W	L		
A outside leg	$\frac{3}{4}$ "	6"	46"	O	2
B inside leg	$\frac{3}{4}$ "	5"	44"	O	2
C tray support	$\frac{3}{4}$ "	$2\frac{1}{2}$ "	$31\frac{3}{4}$ "	O	2
D slat	$\frac{1}{2}$ "	1"	18"	O	21
E wheel	$\frac{3}{4}$ "	10"	10"	EO	2
F collar	$\frac{1}{2}$ "	$2\frac{1}{2}$ "	$2\frac{1}{2}$ "	O	2

Material Key: O-oak, EO-edge-joined oak

Supplies: $\frac{3}{8}$ " oak dowel plugs, 1" oak dowels, #8 $\times \frac{3}{4}$ " flathead wood screws, $\frac{3}{8} \times 1$ " dowel pins, 6d finish nails, finish.

Continued

Party-time cart



For a great tray, keep everything square

1 Before assembling the tray, cut two pieces of scrap 3/4" plywood to 2 x 36". Clamp each to the outside of the tray supports and flush with the top edge.

2 Set the tray supports on a flat surface about 16" apart and parallel to each other. Beginning opposite the hook end (farthest from the handles in the Exploded View drawing), place the first slat at the end of the tray supports. Next, align the ends of the slat flush with the outside edge of the plywood scraps you clamped to the supports.

3 With a 7/64" bit, drill through the slat holes and 1/2" into the tray support. Drive a #8 x 3/4" flat-head wood screw through each of the holes.

4 Attach a piece of scrap at the hook end of the tray supports, 27" on center from the inside edge of the first slat. Square the assembly and adjust if necessary.

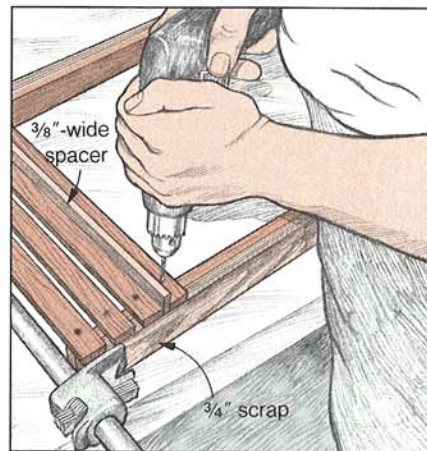
5 Cut a 3/8"-wide spacer 20" long. Use it to space the remaining slats as you attach them one by one to the supports. Remove the scrap, and attach the 21st slat.

6 For screw-hole plugs, crosscut 42-5/16" lengths of 3/8" oak dowel and glue one in each of the slat holes. (We used yellow woodworker's glue. If you prefer less-conspicuous face-grain plugs, make them with a plug cutter.) Finish-sand the tray with 220-grit sandpaper.

And now for the wheels

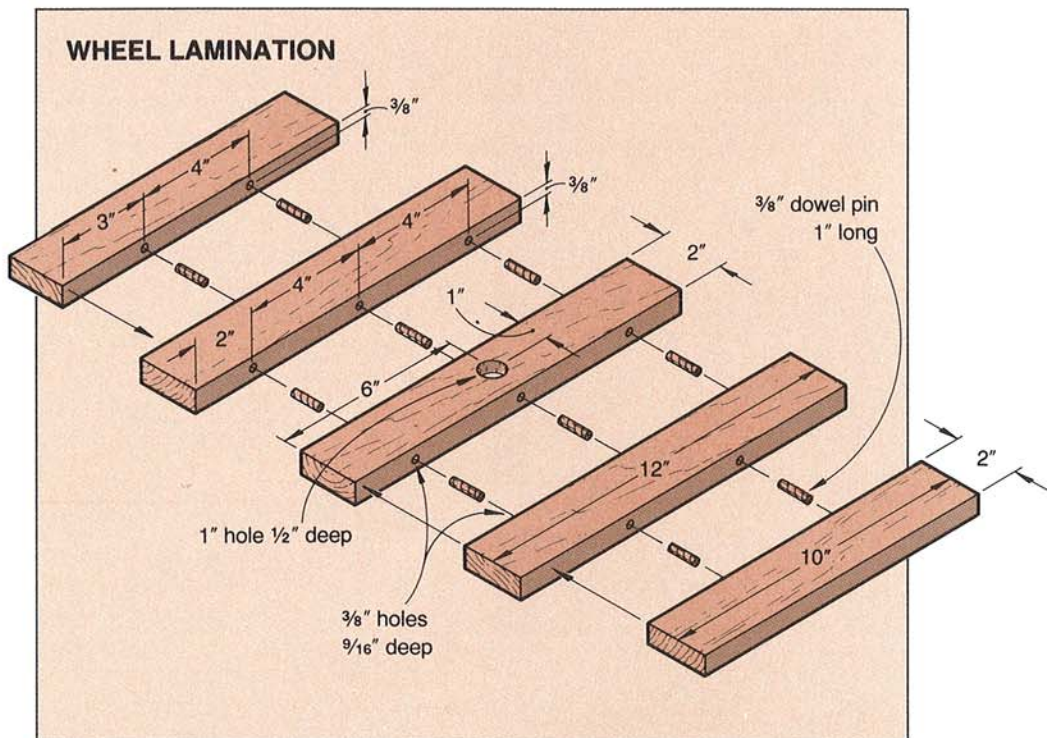
1 From 3/4" stock, first rip material to 2 1/8" wide. Then, from it, crosscut six pieces to 12" long and four pieces to 10" long.

2 For each laminated wheel (E), lay out one 10" piece, three 12" pieces, and another 10" piece. Mark the mating centerpoints on each set where shown on the Wheel Lamination drawing on page 9.



3 Using a doweling jig, drill 3/8" holes 9/16" deep where marked. Glue, assemble, and clamp each lamination with 3/8 x 1" dowel pins. Wipe away glue squeeze-out with a damp cloth.

4 After the glue dries thoroughly, remove the clamps and scrape the surfaces. Belt-sand if necessary. Then, find the center of each lamination and scribe a 5"-diameter



GRIDDED LEG PATTERNS

1" holes

(B)

(A)

1" hole

Each square = 1"

circle. Now, bore a 1" hole $\frac{1}{2}$ " deep to receive the axle. (Put the most attractive grain on the opposite face of the wheel.)

5 Bandsaw the 5"-diameter wheels to shape. Sand to the line with a disc sander. With a $\frac{1}{4}$ " chamfer bit, rout a $\frac{1}{4}$ " chamfer along both edges of each wheel. (If you don't have a table-mounted router, place the lamination on a carpet pad scrap while you chamfer the wheels with a hand-held router.)

6 To make the two wheel collars (F), first adhere two pieces of $\frac{1}{2} \times 3 \times 3$ " stock together with double-faced tape. Scribe a $2\frac{1}{2}$ "-diameter circle on one piece. Bore a 1" hole through the centerpoint. Bandsaw and sand the circles to shape, using the techniques described above. Separate the collars.

7 Glue and clamp a collar to the inside face of each wheel, aligning the 1" holes in the wheel and the collar. Remove glue squeeze-out with a damp cloth.

Assemble and finish the cart

1 Crosscut four 1" dowels $\frac{1}{4}$ " longer than specified on the Exploded View drawing *opposite*. Next, dry-fit all of the pieces. Check that the tops of the inside legs have about $\frac{1}{16}$ " clearance below the slats, that the cart folds without binding, and that the tray sets level when in the open position. Adjust the leg lengths if necessary for a good fit, and to level the cart.

2 Remove the dowels and crosscut them to their final length. Apply the finish of your choice. (We brushed on three coats of an exterior polyurethane, sanding between coats.) To prevent the finish from running onto the gluing surfaces, we wrapped $\frac{3}{4}$ "-wide masking tape inside each 1" hole and around the dowel axle ends.

3 Assemble the cart, gluing the dowels to the legs where shown in the Nail detail accompanying the Exploded View drawing *opposite*. As you assemble the parts, drill $\frac{3}{32}$ " pi-

lot holes on the underside of the legs where shown on the Exploded View drawing. Drive 6d finish nails in the holes. Finally, glue the wheels to the 1" axle dowel. ■

How to get a leg up

If you'd rather not make your own gridded patterns, we will send you full-sized patterns of the barbecue-cart legs. Enclose \$1 (U.S.) for handling and a self-addressed business-sized envelope with 49¢ (U.S.) postage to:

Party-time Barbecue Cart
Weekend Woodworking Projects
P.O. Box 11022

Des Moines, IA 50336-1022

Foreign readers: Please use an international reply coupon.



HARBOR LIGHT

*Build a lamp honoring
nation's oldest fireboat*

Henry Gorczynski, a woodworker from Batavia, New York, has designed and sold all sorts of wooden toys and models during the last 20 years. In his region of the country, Hank's handsome lamps command the highest praise. This model honors *The Edward M. Cotter*, a working fireboat that has actively patrolled and protected Buffalo's harbor since 1900.

Note: We used padauk for the dark-colored boat parts. However, dust created while working padauk may irritate your respiratory system. We recommend you wear a dust mask when sawing and sanding padauk, or consider substituting another wood.

We'll shape the hull first

1 Cut these pieces to $4\frac{1}{2} \times 14$: one $\frac{5}{8}$ "-thick padauk, one $\frac{1}{4}$ "-thick padauk, one $1\frac{1}{16}$ "-thick padauk, and one $\frac{3}{8}$ "-thick maple.

2 Copy the patterns on pages 14-15. (For convenience, we photocopied ours.) Using the Hull pattern, make a template out of $\frac{1}{8}$ " hardboard for shaping the hull. Scrollsaw the template to shape.

3 To form the deck (A), center the template on the face of the $\frac{5}{8}$ "-thick padauk, and scribe a line along the inside edge of the template. Now, cut away the inside area, and sand the cut edge. (We sawed wide of the line, and then sanded to the line with a drum sander.)

4 Place the $1\frac{1}{16}$ " padauk piece you prepared in Step 1 on edge on your saw's table. Using a taper jig on your tablesaw, saw the bottom hull (D) 1" thick at the bow (front), tapering to $\frac{5}{8}$ " thick at the stern (rear). (As shown *opposite*, we elevated the saw blade to its maximum height, made rip cuts on both edges of the piece, and then finished sawing the uncut portion on our bandsaw.) Sand the cut surfaces on the bottom and on the scrap piece. Drill the two $\frac{1}{4}$ " holes $\frac{3}{4}$ " deep into the hull's bottom where shown on the pattern.

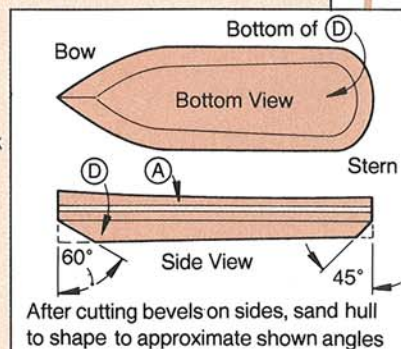
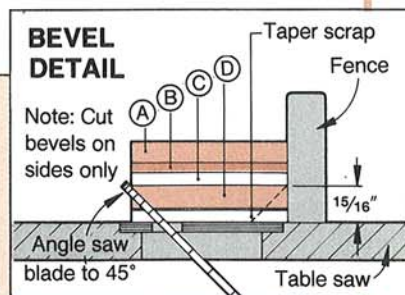
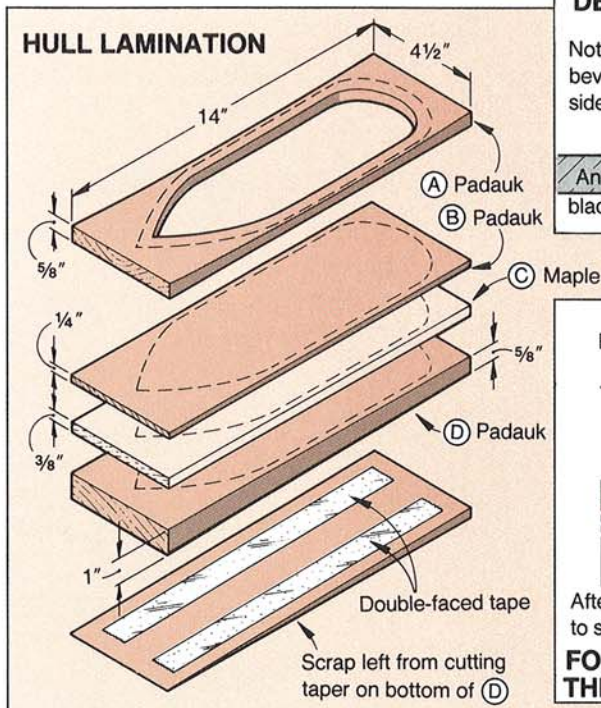
5 Next, using double-faced tape, adhere the wedge-shaped scrap piece onto your hull's bottom. Now, glue and clamp the hull parts (A, B, C, D) in the order shown on the Hull Lamination drawing *top right*. (We used yellow woodworker's glue and placed scraps between the clamps and lamination to avoid

marring the wood.) Remove any glue squeeze-out on the inside of the deck with a damp cloth.

6 After the glue dries, remove the clamps and scrape the glue from the lamination's sides. With double-faced tape, adhere the hull template onto the deck (A), aligning it along the inside edges. Now, trim the lamination to the final $4\frac{1}{4}$ " width and 13" length, cutting along the outside edges of the template.

7 Shape the bow and stern as shown on the Forming the Bow and Stern drawing *center right*. To do this, angle your saw blade to 30° from perpendicular. Place the lamination bow-end down onto the saw table, and make the bevel-cut. Next, set the blade to 45° , and bevel-cut the stern. When making these two cuts, set the rip fence so you do not cut into the maple layer (C).

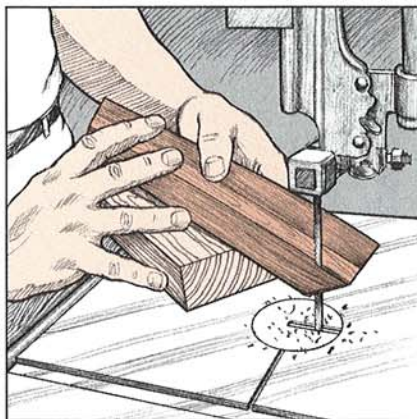
8 With the saw blade at 45° , saw the side bevels on the hull as shown on the Bevel Detail *top right*. Again, set the fence so your blade cuts to—but not into—the maple layer. Next, place the lamination on the bevel of one hull side as shown *below right*. Cut away the bow waste on that side, sawing just outside the bottom of the maple layer. Do the same on the other hull side. (We ripped a piece of 2x4 at 45° and placed it under the hull to help support the lamination while making this cut. During the sawing,



FORMING THE BOW AND STERN

we stayed about $\frac{1}{16}$ " wide of the maple line of the hull so we didn't cut away too much material.) Now, sand the entire hull to final shape. (We used our stationary belt sander.) Remove the template.

9 Adhere (we used spray adhesive) the Deck Profile pattern to one side of your deck (A), aligning the dotted profile line on the pattern with the deck's top. Now, sand to the line as shown at the *top* of page 12. Remove the pattern and wedge-shaped scrap from the bottom. Sand the hull with 150-grit sandpaper.



Bill of Materials

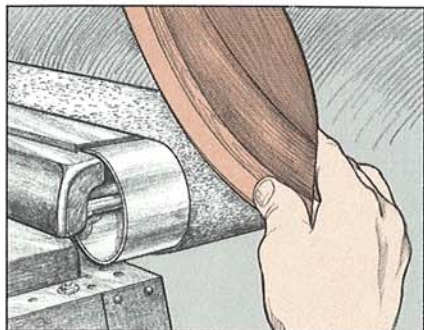
Part	Finished Size			Mati.	Qty.
	T	W	L		
A deck	$\frac{5}{8}$ "	$4\frac{1}{4}$ "	13"	P	1
B hull	$\frac{1}{4}$ "	$4\frac{1}{4}$ "	13"	P	1
C hull	$\frac{3}{8}$ "	$4\frac{1}{4}$ "	13"	M	1
D hull	1"	$4\frac{1}{4}$ "	13"	P	1
E cabin	$1\frac{1}{4}$ "	2"	7"	P	1
F pilothouse	$1\frac{1}{16}$ "	$1\frac{1}{2}$ "	$1\frac{1}{2}$ "	P	1
G cabin roof	$\frac{1}{4}$ "	$2\frac{1}{4}$ "	$7\frac{1}{4}$ "	M	1
H pilothouse roof	$\frac{1}{4}$ "	$1\frac{3}{4}$ "	$1\frac{3}{4}$ "	M	1
I smoke-stack	$\frac{5}{8}$ "	1"	1"	L	2
J dorade	$\frac{1}{4}$ " diam.	-	-	BD	4
K hydrant	$\frac{1}{8}$ "	$\frac{1}{2}$ "	1"	P	4
L base	$\frac{3}{4}$ "	6"	$14\frac{1}{2}$ "	M	1

Material key: P-padauk; M-maple; L-lamination; BD-birch dowel

Supplies: $\frac{1}{4}$ " dowel, $\frac{3}{16}$ " dowel, $\frac{1}{8}$ " dowel, hardboard, round toothpicks, $\frac{1}{16}$ " brass rod, 4- $\frac{1}{2}$ " mushroom-shaped screw-hole buttons, 1- $\frac{1}{4}$ " roundhead screw-hole button, finish.

Continued

Fireboat lamp



Now, move on to the main cabin

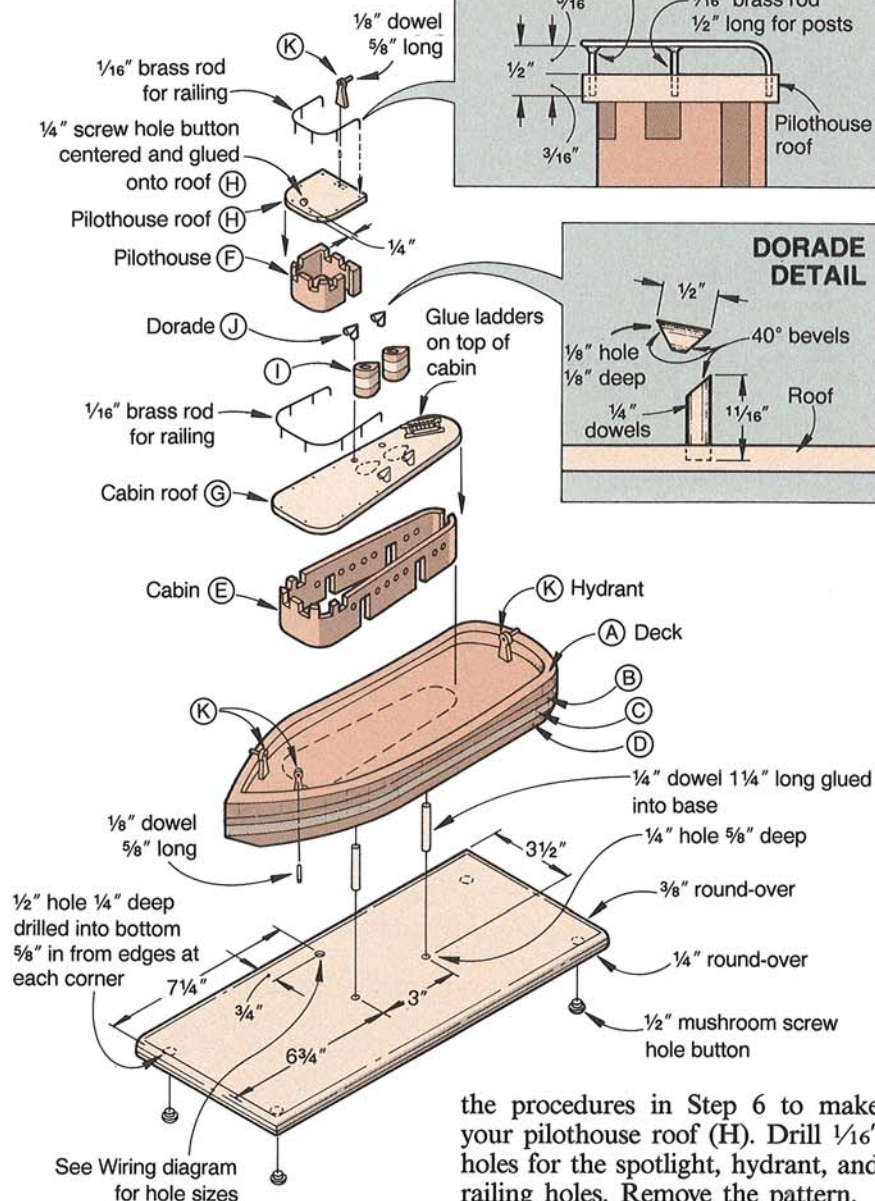
1 Rip and crosscut a block of padauk to $1\frac{1}{4}$ " thick, $2\frac{1}{4}$ " wide, and $7\frac{1}{2}$ " long for the cabin (E). Adhere the Cabin Side pattern to the side of the block. Adhere the Cabin Top pattern to the top of the block, aligning the dash lines on the pattern with the two cabin doorways. (To align, we used a try square to transfer the cabin door lines across the top of the block.)

2 Turn the block on its side, and using the pattern's center-points, drill the seven $\frac{1}{4}$ " port holes in the cabin wall. (We used a brad-point bit, and backed the block with scrap to prevent chip-out.) With a tablesaw, cut the two dados in the bottom of the block as dimensioned for the doorways. Now, bore the six $\frac{1}{2}$ " holes into the top of the block. (We used a Forstner bit.)

3 Bandsaw (we used our $\frac{1}{8}$ " blade) along the outer line of the top pattern to shape the outside of the cabin. Finish-sand the wall. Saw along the inside line of the top pattern to remove the interior.

4 Glue the cabin to the deck. (To position the cabin, we made a paper pattern for inside the deck, cut out the cabin area, and placed it on the deck. We then placed the cabin inside the pattern cutout.) Drill the three $\frac{1}{16}$ " hydrant holes.

5 For the pilohouse (F), rip and crosscut a $1\frac{1}{16} \times 2 \times 2$ " padauk block. Adhere the Pilohouse pattern to the block's top. Drill the



the procedures in Step 6 to make your pilohouse roof (H). Drill $\frac{1}{16}$ " holes for the spotlight, hydrant, and railing holes. Remove the pattern.

Let's launch this boat

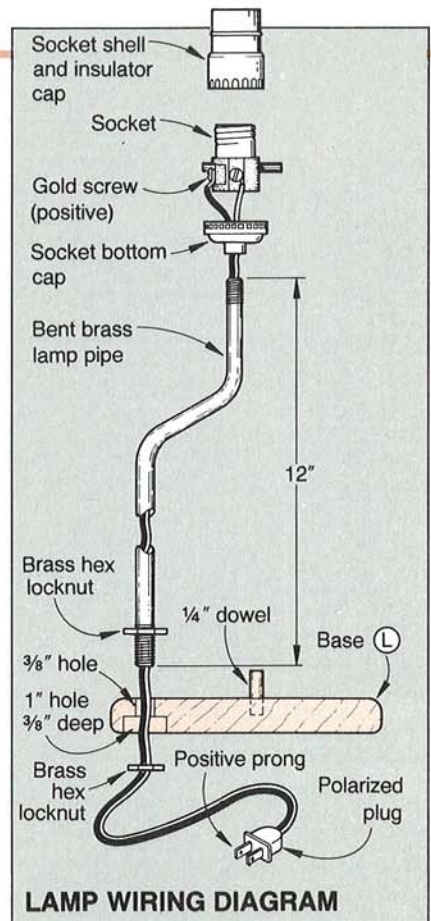
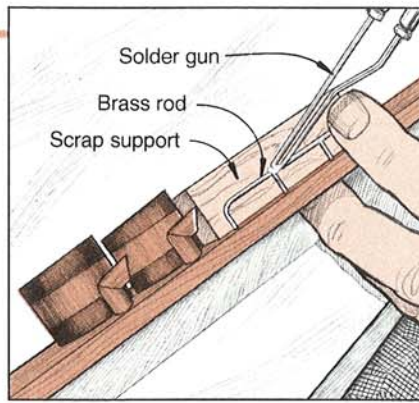
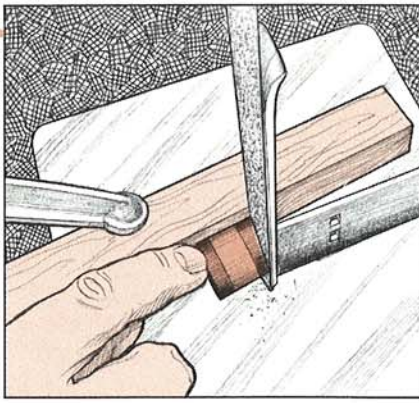
1 Glue the cabin roof, pilohouse, and pilohouse roof as shown on the Exploded View drawing. Clamp the parts until the glue has set. (We used a combination of wood handscrew and bar clamps.)

2 Laminate 1×3 " pieces of padauk and maple as dimensioned on the Smokestack drawing on page 14. After the glue dries, adhere two Smokestack patterns (page 15) to the top of the lamination. Bore $\frac{1}{2}$ " holes (we used a Forstner bit) in the center of each pattern. Next, scroll-saw or bandsaw both parts to shape.

$\frac{3}{8}$ " holes $\frac{5}{16}$ " deep. Bandsaw along the outside line. Sand the wall. Saw out the pilohouse interior.

6 To make the cabin roof (G), cut a piece of $\frac{1}{4}$ "-thick maple to $2\frac{1}{4} \times 7\frac{1}{2}$ ", and adhere the Cabin Roof pattern to it. Drill the four $\frac{1}{4}$ " holes, and the $\frac{1}{16}$ "-railing holes. Next, mark the locations of the smokestacks and pilohouse. Bandsaw the roof to shape, sand, and then remove the pattern.

7 Saw one piece of maple to $\frac{1}{4} \times 2 \times 2$ ". Adhere your Pilohouse Roof pattern to it, and follow



LAMP WIRING DIAGRAM

Sand a 15° slope on the top of each. (To sand them, we clamped a 15°-angled fence to the table on our 1" belt sander as shown *above*.) Finish-sand the smokestacks (I), and glue them to the cabin roof.

3 Make the ladders as detailed in the Ladders drawing on page 14. (We cut a $\frac{3}{16} \times \frac{3}{16}$ " groove into the face of a 10"-long piece of scrap, and inserted an 8" length of $\frac{3}{16}$ " dowel in the groove. We marked off holes $\frac{1}{4}$ " on center along the dowel, started the holes with an awl, and drilled them. We then crosscut the dowel in half, and made a 4"-long ladder. From it, we crosscut a $1\frac{1}{2}$ ", and 2" ladder.) Glue the ladders to the cabin roof.

4 To make the four dorades (J), crosscut four $\frac{1}{2}$ " and $1\frac{1}{16}$ " lengths of $\frac{1}{4}$ " dowel, sand the 40° bevels on the ends as shown on the Dorade Detail on page 12 (we used a 40°-angled fence on our 1" belt sander). Drill a $\frac{1}{8}$ " hole $\frac{1}{8}$ " deep in the front face of each $\frac{1}{2}$ " length. Now, glue and assemble the dorades. (We used fast-curing cyanoacrylate glue.) Glue the dorades in the $\frac{1}{4}$ " cabin-roof holes, turning them outward about 15°.

5 Shape the brass rails. (We made bending forms from $\frac{3}{4}$ " scrap, using the Rail patterns on page 15 as guides. For the cabin rail, we started with an 8 $\frac{1}{2}$ " length of $\frac{1}{16}$ "-diameter brass rod, and cut it to final length after making the 90° bends. We started with a 7"-long rod for the pilothouse rail, and shaped it around the pilothouse form. See the Rail Detail *top right* for more information.) Cut six $\frac{1}{2}$ " lengths of brass rod for the posts and insert them in the holes in the

cabin roof. Place the bent ends of the rod in the two end holes. Solder the rail (we used a soldering gun and rosin-core solder) to the posts as shown *above*. Prepare and solder the rail on the pilothouse roof the same way. (We purchased $\frac{1}{16}$ " brass brazing rods at a welding-supply store. Hobby shops also sell suitable brass rod.)

6 Rip and crosscut four pieces of $\frac{1}{8}$ " padauk to $\frac{3}{4} \times 1\frac{1}{2}$ ". Using double-faced tape, stack the pieces face-to-face. Adhere your Hydrant pattern (page 15) to the top piece. Drill the $\frac{1}{8}$ " hole through all four pieces. Next, scrollsaw the parts to shape. Separate the pieces, and then remove the tape and pattern. Select a drill bit that fits round wood toothpicks. Carefully drill a hole $\frac{3}{16}$ " deep into the center at the bottom of each hydrant (K). (We held each piece in a wooden hand-screw clamp while drilling.) With the same bit, drill a $\frac{3}{16}$ "-deep hole into the side of a $\frac{1}{4}$ " roundhead screw-hole button (search light).

7 Crosscut four $\frac{9}{16}$ " lengths of $\frac{1}{8}$ " dowel. Glue them in the $\frac{1}{8}$ " holes in the face of the hydrants. Glue a round wood toothpick in the hole in the bottom of each hydrant and the screw-hole button. Cut them off, leaving $\frac{1}{4}$ " of toothpick exposed. Glue the four hydrants in place. Finally, glue the screw-hole button to the pilothouse roof.

Make the base and assemble the lamp

1 Rip and crosscut a piece of $\frac{3}{4}$ " maple to $7 \times 14\frac{1}{2}$ " for the base (L). Bore the four $\frac{1}{2}$ " holes where dimensioned on the Exploded View diagram. Next, mark the cen-

terpoints for the two $\frac{1}{4}$ " holes on the top where dimensioned on the Exploded View drawing. Now, bore the holes $\frac{5}{8}$ " deep. Drill the lamp-pipe holes as dimensioned on the Lamp Wiring diagram *above*.

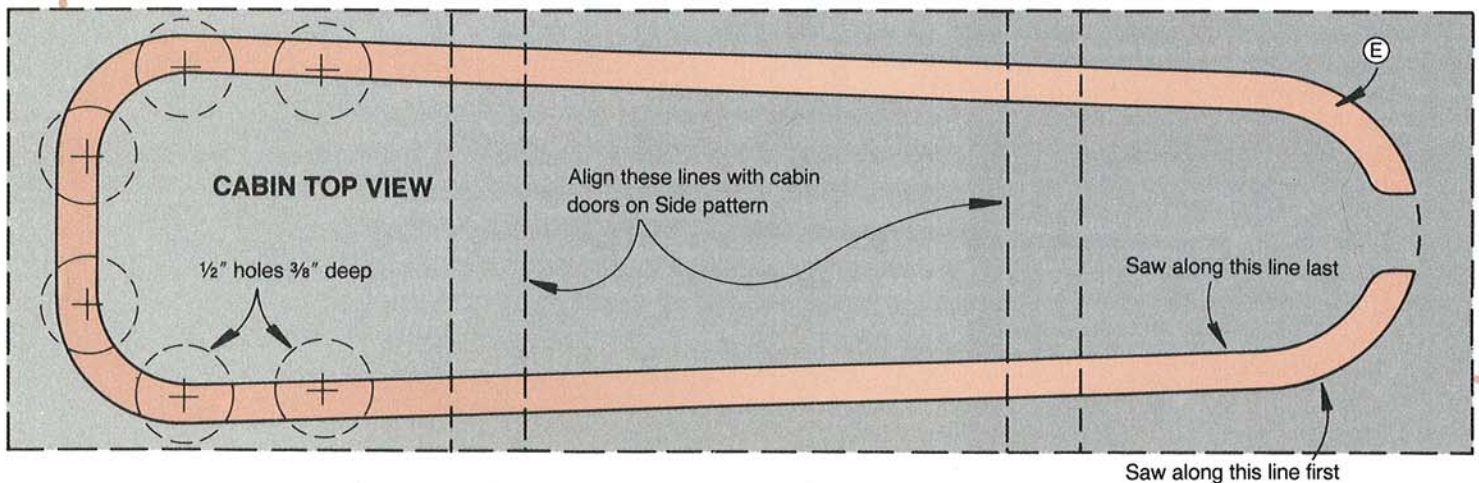
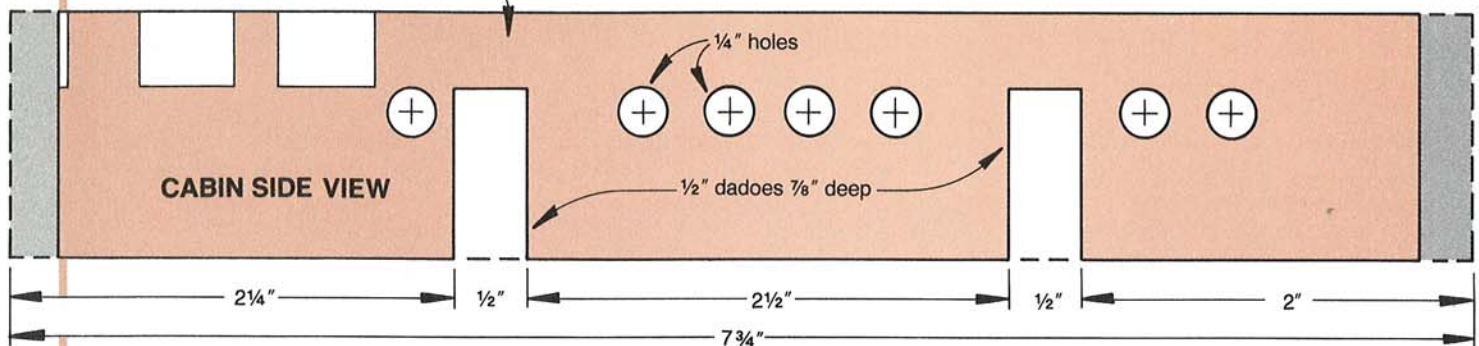
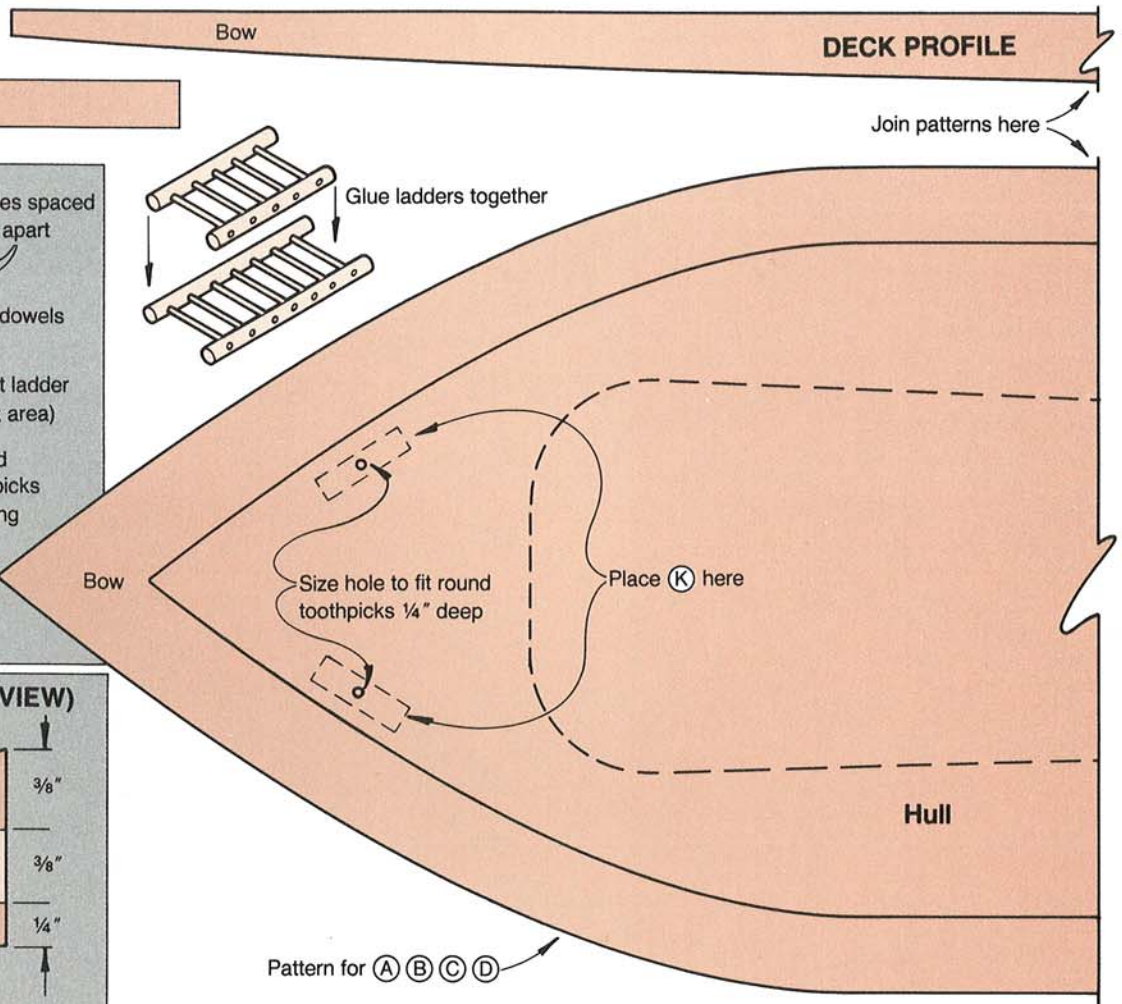
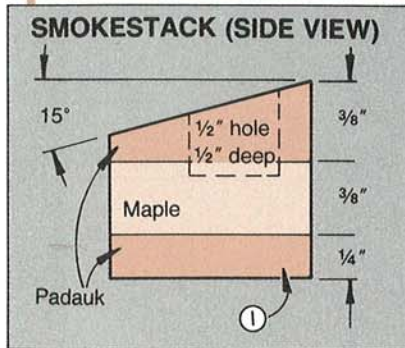
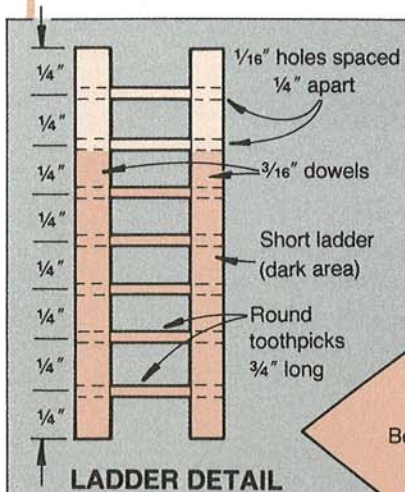
2 Rout a $\frac{3}{8}$ " round-over along the top edges of the base, and a $\frac{1}{4}$ " round-over along the bottom edges. Finish-sand the base. Crosscut two $\frac{1}{4}$ " dowels to $1\frac{1}{4}$ " long, and glue them in the holes in the base top. Glue $\frac{1}{2}$ " screw-hole buttons in the bottom holes.

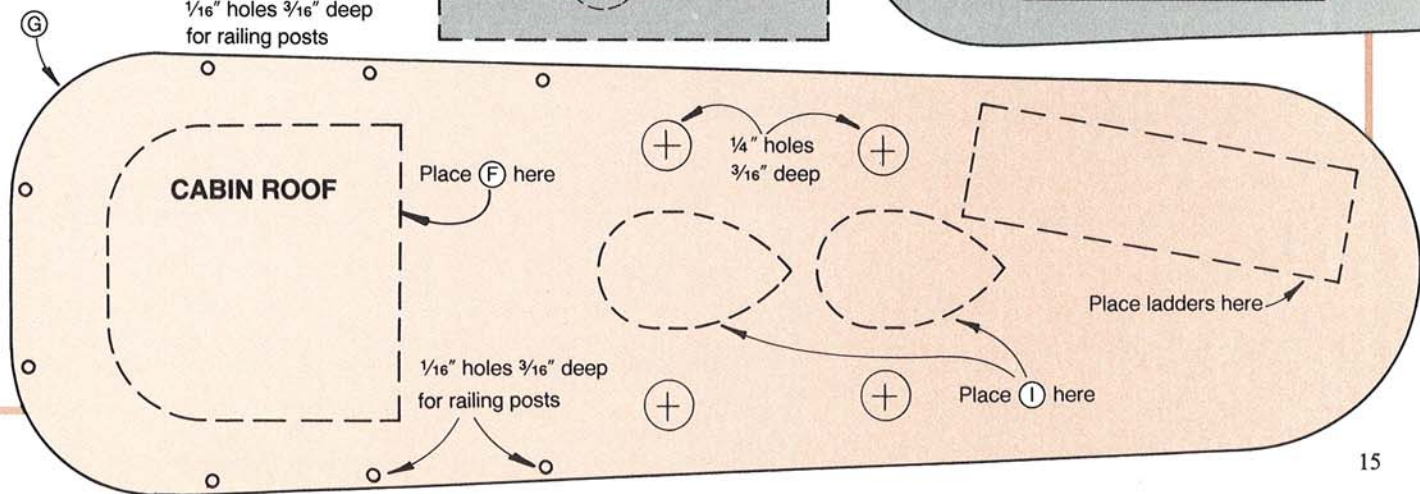
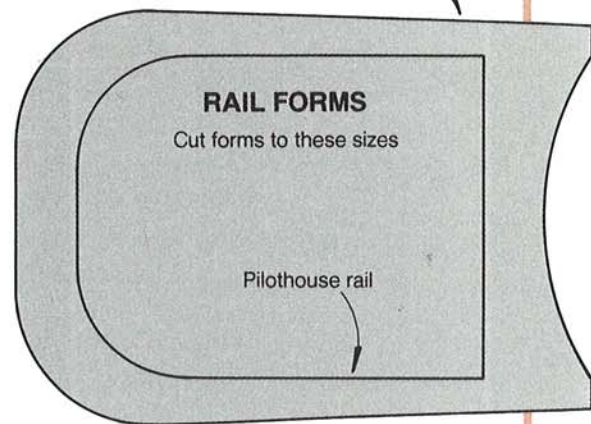
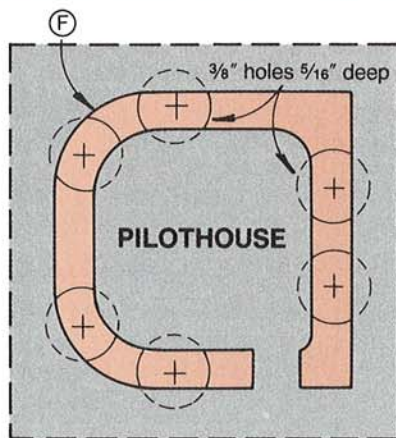
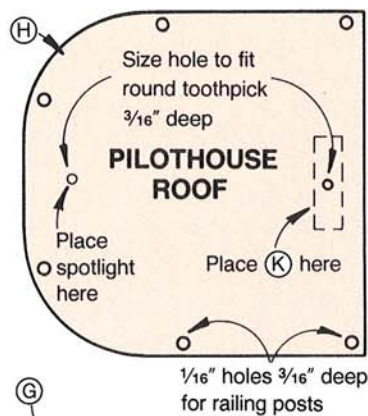
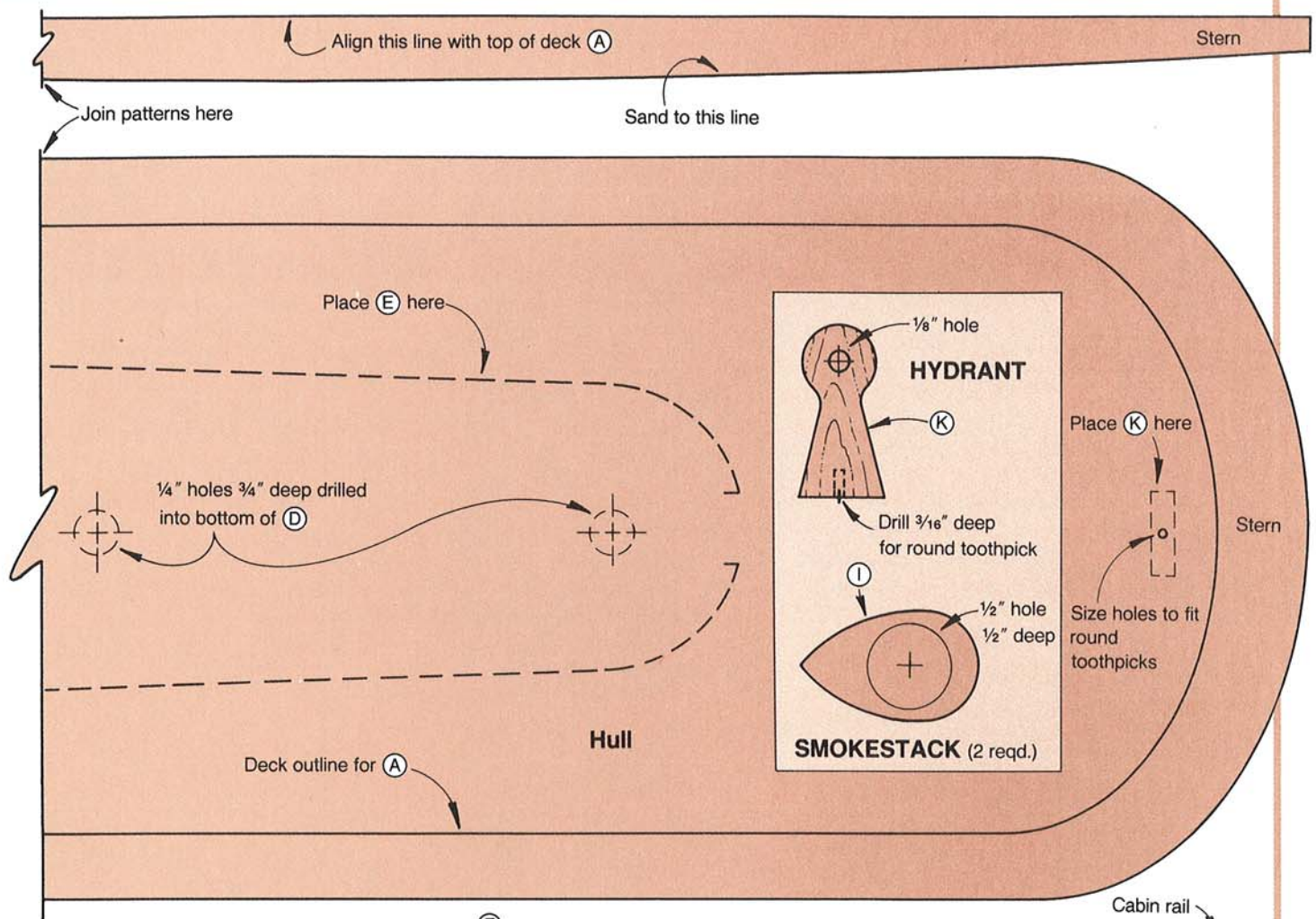
3 Apply finish to the boat and the base. (We applied three coats of spray lacquer.) Assemble the lamp, following the Lamp Wiring diagram. See the Buying Guide for our lamp-kit source.

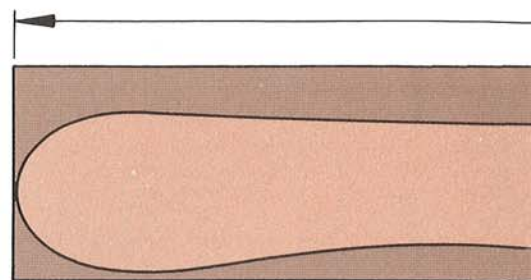
Buying Guide

● **Lamp Kit.** Brass lamp pipe, hex locknuts, push-through socket, and 8' lamp cord. Catalog no. 1691. Price: \$5.49 each, plus \$4.95 per order for shipping. Meisel Hardware Specialties, P.O. Box 70-WEW, Mound, MN 55364.

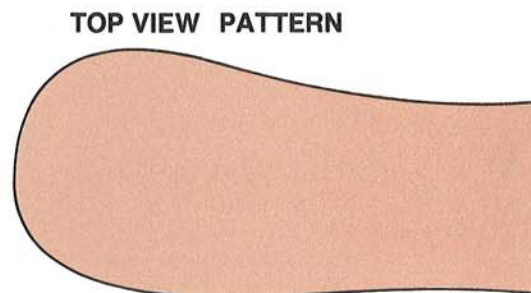
Fireboat lamp







SIDE VIEW PATTERN



TOP VIEW PATTERN

HANDS-ON SALAD SERVERS

Dinner guests will applaud your woodworking skills when they serve salad with these fun utensils. But don't be surprised if everyone begs for a pair for their table.

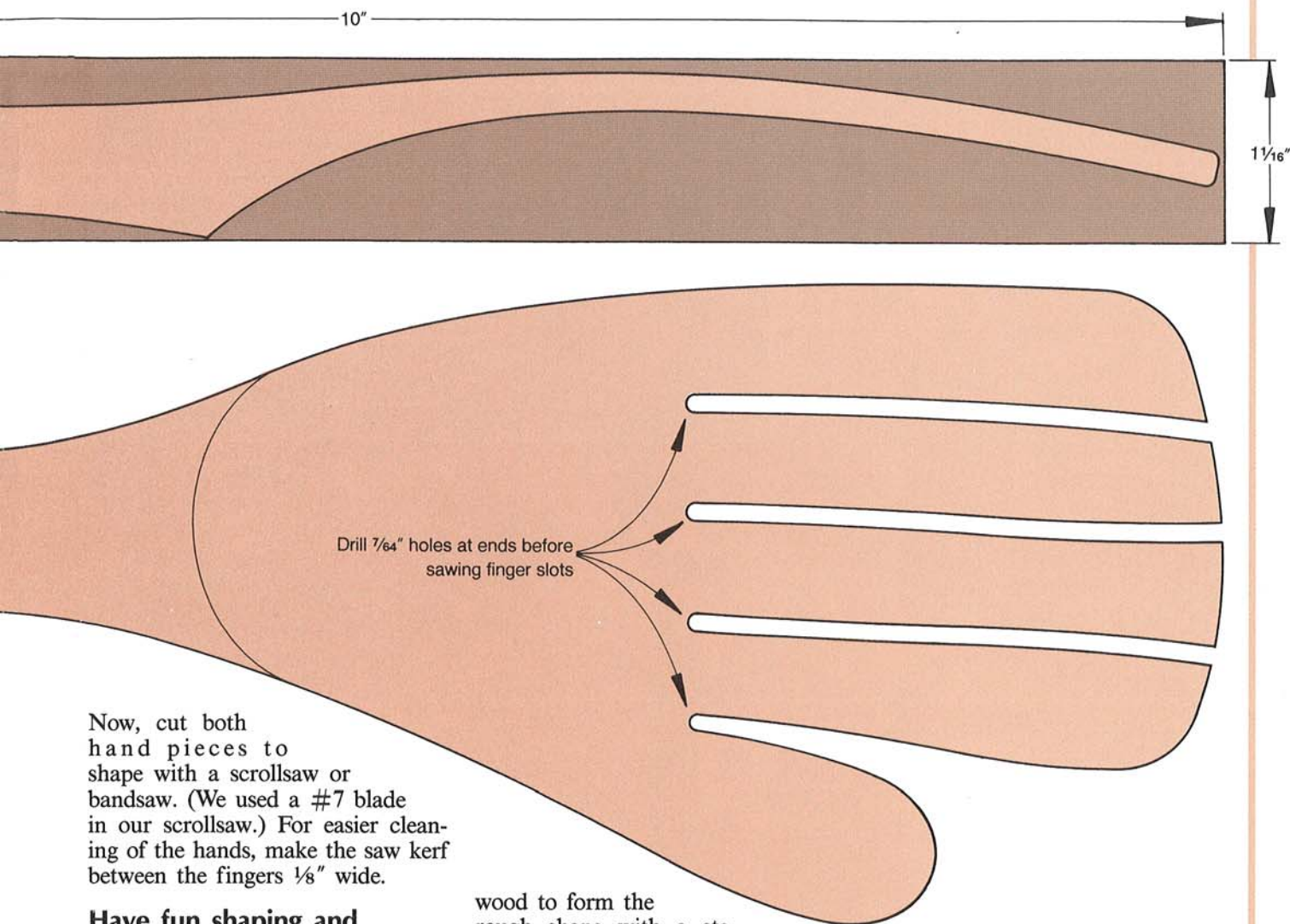
Cut the patterns and begin shaping

1 Make two copies of both full-sized patterns shown *above*. (We traced ours using carbon paper.) To make a left-hand version of the Top View pattern, hold up one copy to a window or light box, and trace the lines to the backside of the paper.

2 From 1 1/16" stock (we used maple), rip and crosscut two pieces to 4 1/2" wide by 10 1/2" long. Adhere one Side View pattern to a long edge on each piece.

3 With a bandsaw, saw each hand to shape as shown at *right*. (We used a 3/16" blade, cutting outside of the line first, and then as shown at *right center*, sanded to the line over the nose of our stationary belt sander with an 80-grit belt.

4 Glue your right- and left-hand Top View patterns to the sanded faces of the two blocks. Next, drill 7/64" holes between the fingers where directed on the Top View pattern.



Now, cut both hand pieces to shape with a scrollsaw or bandsaw. (We used a #7 blade in our scrollsaw.) For easier cleaning of the hands, make the saw kerf between the fingers $\frac{1}{8}$ " wide.

Have fun shaping and finishing the tongs

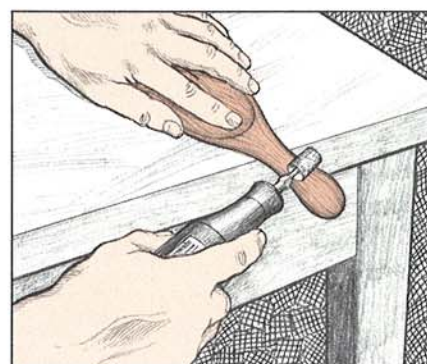
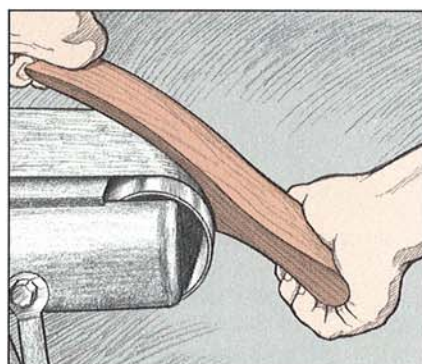
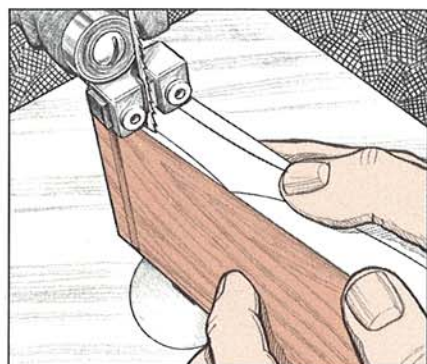
1 Chuck a $1\frac{1}{2}$ " drum sander into your portable electric drill or flexible-shaft tool. Sand to soften all of the lines as shown *below right*. (We rounded over from the back of each hand to the palm. With confidence, you can aggressively remove

wood to form the rough shape with a stationary belt sander, but check the shape frequently as it develops.)

2 Finish-sand the tongs using 220- and 320-grit sandpapers. Finish with a nontoxic material. (We applied Behlen's Salad Bowl Finish; a vegetable oil or mineral oil also would work.)

Buying Guide

● **Behlen's Salad Bowl Finish.** For wooden bowls, plates, and utensils. One pint, \$9 ppd., catalog no. 85006. Armor Products, Box 445, East Northport, NY 11731-0445. Telephone: 800-292-8296. ■

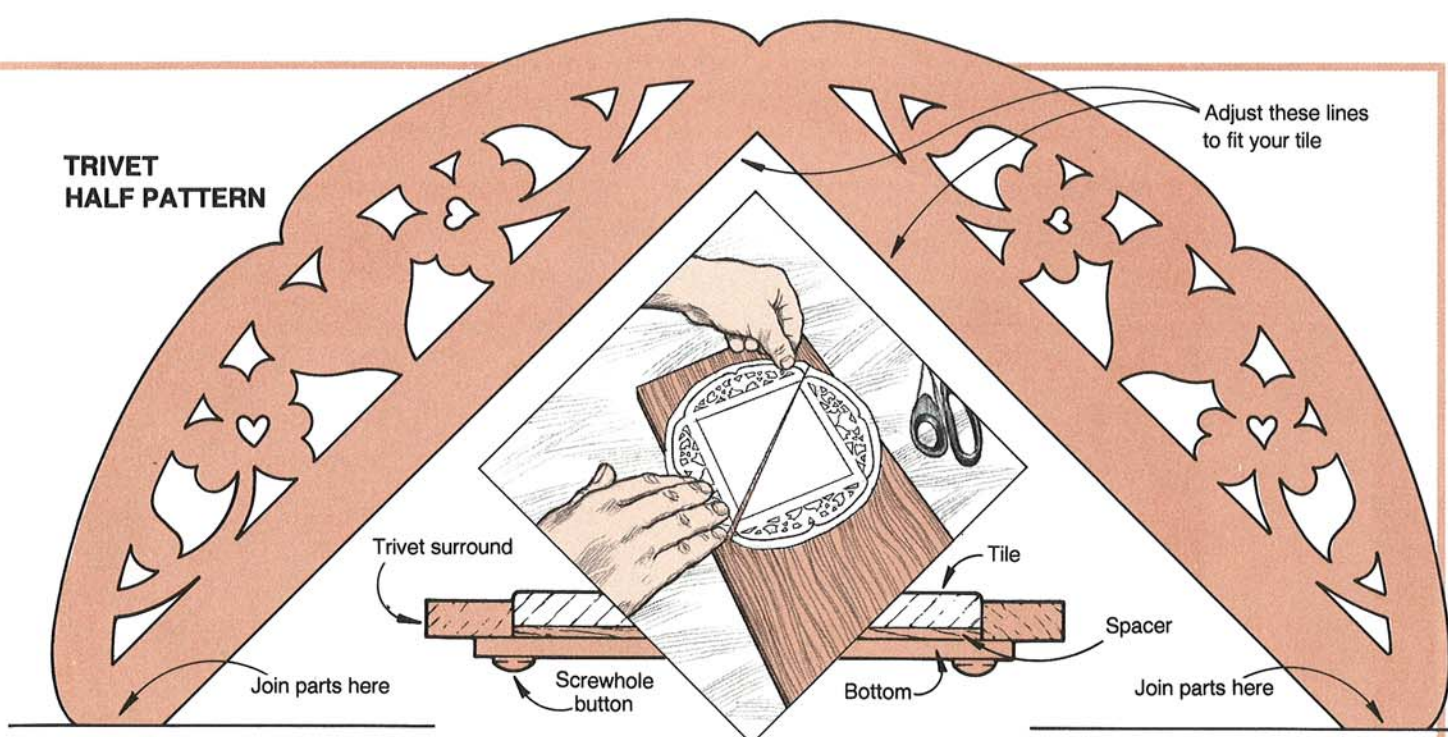


HEARTS-AND-FLOWERS TRIVET



Protect your table in stylish fashion

TRIVET HALF PATTERN



First, prepare your board and the patterns

1 Select a sound, well-seasoned piece of stock (we used mahogany) measuring at least 7¼" wide and 14" long. Plane or resaw the piece to ½" thick. Sand the board with 180- and 220-grit sandpaper.

2 Make two copies of the Trivet half pattern above. (We photocopied our patterns.) Cut around the outside of the patterns with scissors, leaving about ¼" margin. Do not cut out the triangular area within the pattern. Join the two half patterns to form a full trivet pattern, and then temporarily tape them together with masking tape.

3 Actual dimensions of 4" ceramic tiles vary, so size the pattern's center cutout to fit your specific tile. To do so, place your tile over the center of the joined pattern halves, center it on all four sides, and then scribe a pencil line along the four sides. If your tile has nibs along the edges, file or carefully grind them away before scribing the line. Now, separate the two halves.

4 To orient the wood grain in the trivet, lay out the pattern halves on your board as shown above. Next, adhere the patterns to the board in the same position. (We sprayed adhesive onto the backs of both patterns.)

Now the scrollsawing fun begins

1 Scrollsaw or bandsaw the triangular-shaped center area from both trivet halves. (We carefully sawed close to the line, and then sanded and filed to the line to get a nice straight edge.) Now, dry-assemble the two trivet halves into a circle, and test-fit your tile in the center. Trim the trivet sides if necessary for a better fit.

2 Using double-faced tape, stack the trivet pieces, aligning them along the inside edges you just cut. Now, using a ⅛" bit, drill start holes in the pattern areas.

3 Scrollsaw out the areas surrounding the heart, flowers, and stems in each side of the pattern. (We used #5 blades—.038-.039" x .015-.016"—with 12-16 teeth per inch.) Scrollsaw the outside of the pattern, and then sand the edge. (We sanded it on our 1" belt sander.) Separate the parts and remove the paper patterns.

4 From ¼"-thick hardboard, saw a 4⅞" square for the trivet bottom. Draw diagonal lines from corner to corner on the piece. Next, drill a ⅜" hole through the hardboard piece ½" in from the corner on each line; you'll glue the screw-hole button feet in these four holes after you drill them.

5 Cut a spacer (we used ⅛" hardboard) to fit loosely inside the trivet's square center. This piece elevates most standard-thickness tiles about ⅛" above the surface of the trivet for clearance between hot surfaces and the wood. Adjust the spacer's thickness to set the amount of tile exposure you want.

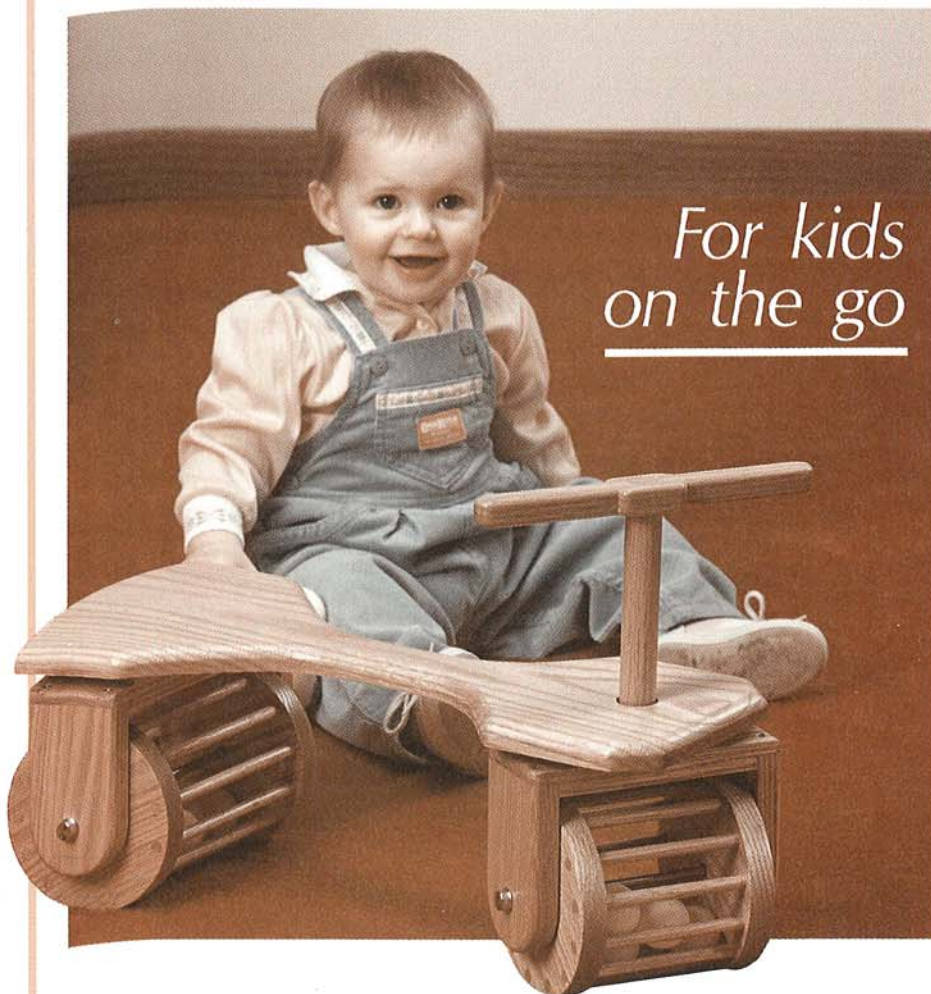
Ring the dinner bell; you're nearly finished

1 Place a piece of waxed paper on a flat surface, and then turn the trivet halves upside down on it. Glue the two joints (we used yellow woodworker's glue) and the hardboard bottom to the trivet. Wipe off glue squeeze-out with a damp cloth. (We clamped the trivet with a ¼ x 3½" rubber band stretched around the edge, and weighed down the hardboard while the glue dried.)

2 For feet, glue mushroom-type screw hole buttons in the four holes drilled in the bottom. Now, finish-sand the joints and any areas needing touch-up.

3 Apply the finish. (We applied a walnut-colored oil stain, two light coats of water-based sealer, and then two coats of water-based polyurethane, carefully sanding after each coat had dried.)

4 Using hotmelt adhesive, glue the spacer and tile in place. ■



*For kids
on the go*

TODDLER TOWN CAR

Back in 1989, our eyes lit up when we unpacked Donald Opperman's entry in *WOOD*® magazine's first toy contest. Since then, lots of youngsters have tested Don's design right here in our offices. The results? Small kids just love it—especially the rattling sound of the table-tennis balls.

Let's start with the seat

1 Rip and crosscut a piece of $\frac{3}{4} \times 9\frac{1}{4}$ " stock (we used oak) to 22" long. (See our Cutting Diagram opposite.) You may also edge-join narrow stock to get width needed.

2 Make a full-sized pattern of the seat (A) from the gridded Seat pattern on page 23. To enlarge this pattern, draw 1×1 " grids on a piece of paper measuring 10" wide and 22" long. Using the lines on the gridded pattern as your guide, mark the points where the pattern line crosses each grid line. Next, connect these points to outline the seat. Mark the centerpoint for the $1\frac{1}{8}$ " and 1" holes on the pattern. Cut out the pattern with scissors, leaving a $\frac{1}{4}$ " margin around the edge.

Note: If you prefer to work with a full-sized pattern, send for our Seat pattern. See details on page 23.

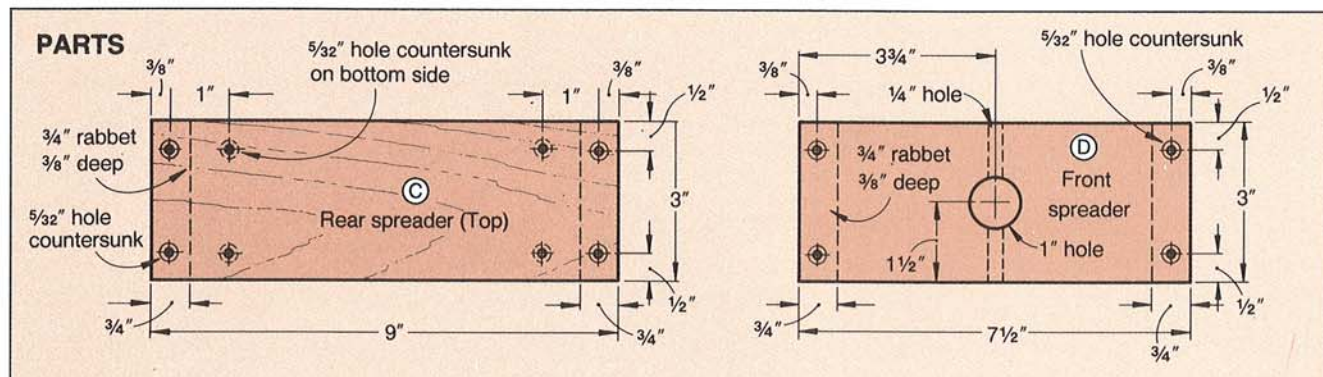
3 Apply spray adhesive to the pattern back. Adhere it to one face of the board you cut in Step 1.

4 Bore the $1\frac{1}{8}$ " hole through the piece where marked. (We used a Forstner bit in our drill press, and backed the board with scrap to prevent chip-out.) Next, plot the centerpoint for the 1"-diameter hole on the underside of the seat where shown on the pattern. Bore this hole $\frac{1}{2}$ " deep.

5 Saw the seat to shape, cutting just outside the line. (We used a hand jigsaw/sabersaw.) Sand to the line. (We used our stationary disc sander and a 2" sanding drum mounted on our drill press.) Remove the pattern. Now, using a $\frac{1}{2}$ " round-over bit, rout along the top edge of the seat.

Next, machine the parts and start assembling

1 Rip and crosscut the cleat (B), front and rear spreaders (C, D), and the four axle supports (E) from $\frac{3}{4}$ " oak, using the dimensions on the Bill of Materials. Resaw the cleat to $\frac{3}{8}$ " thickness.



2 Rip and crosscut a piece of oak to $1\frac{3}{4} \times 10\frac{1}{2}$ ". Make a full-sized copy of the Handle half-pattern on page 23, and adhere it to the face of the piece. Turn the piece on edge, and using a try square, transfer the hole centerline on the pattern across one edge. Use this line as the centerpoint to drill a $\frac{1}{4}$ " hole through the piece's edge. Now, bore the 1" hole, and then saw the handle (F) to shape, cutting outside the line, and sanding to the line.

3 With your tablesaw, cut a $\frac{3}{4}$ "-wide, $\frac{3}{8}$ "-deep rabbet on the ends of the front and rear spreaders. Next, using the dimensions on the Parts drawings above, locate centerpoints for the four holes in the underside of the rear spreader (indicated by the dotted lines), and then the four holes in the top. Drill and countersink the $\frac{5}{32}$ " holes.

4 Lay out the centerpoints for the four screw holes and the 1" dowel hole in the front spreader. Drill and countersink the $\frac{5}{32}$ " holes, and bore the 1" hole. Mark a centerpoint for the $\frac{1}{4}$ " hole in the edge of the front spreader. Now, rout a $\frac{1}{4}$ " round-over along the top edge on the ends of both spreaders. Round over the handle edges.

5 Mark the centerpoint for an axle hole on two of the axle support pieces where dimensioned on the Exploded View on page 22. From these centerpoints, scribe a $1\frac{1}{2}$ " radius on both parts. Next,

stack the marked pieces on top of the unmarked pieces using double-faced tape. Drill the $\frac{9}{32}$ " holes. Bandsaw and sand the radii. Finish-sand all of the pieces.

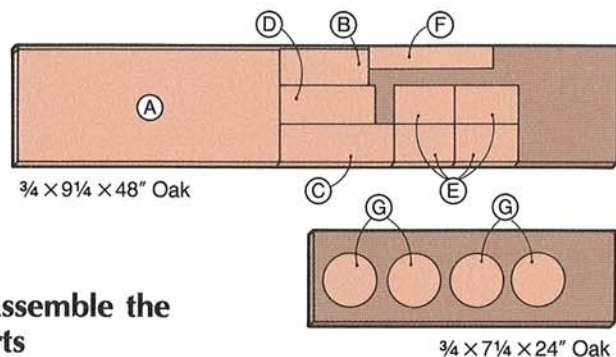
You're ready to assemble the undercarriage parts

1 Glue and screw (we used yellow woodworker's glue and #8 x $1\frac{1}{4}$ " flathead wood screws) an axle support in the rabbet on the ends of both spreaders. (We used a corner bracket to ensure square joints.) After the glue sets, rout a $\frac{1}{4}$ " round-over along the outside edges of the axle supports where shown on the Exploded View.

2 Attach the cleat and the rear spreader under the seat where shown on the Rear detail, page 22.

3 Crosscut an 8" length of 1" dowel for the steering column. Insert one end of the dowel into the 1" hole in the front spreader, and align it flush with the bottom of the hole. Using a $\frac{1}{4}$ " bit in your drill press, drill the hole in the edge of the front spreader, all the way through the spreader and dowel.

4 Crosscut one $1\frac{1}{2}$ " length and one 3" length of $\frac{1}{4}$ " dowel. (Save the $1\frac{1}{2}$ "-long dowel for Step 7.) Glue the 3" dowel in the hole



CUTTING DIAGRAM

Bill of Materials					
Part	Finished Size				
	T	W	L		
A seat	$\frac{3}{4}$ "	9"	21"	O	1
B cleat	$\frac{3}{8}$ "	3"	7"	O	1
C rear spreader	$\frac{3}{4}$ "	3"	9"	O	1
D front spreader	$\frac{3}{4}$ "	3"	7 $\frac{1}{2}$ "	O	1
E axle support	$\frac{3}{4}$ "	3"	5"	O	4
F handle	$\frac{3}{4}$ "	1 $\frac{1}{2}$ "	10"	O	1
G wheel	$\frac{3}{4}$ "	5 $\frac{1}{2}$ " diam.		O	4
Material key: O-oak					
Supplies: 1" oak dowel, 8-#6 x $\frac{1}{2}$ " round-head wood screws, #8 x $\frac{3}{4}$ "-#8 x $1\frac{1}{4}$ "-#8 x $1\frac{1}{2}$ " flathead wood screws, 4- $\frac{1}{4}$ " flat washers, 10 table-tennis balls, finish.					

Continued

Town car

you just drilled in the front spreader. Next, sand the dowel flush with the edges. Cut a $1\frac{1}{2}$ " length of 1" dowel, and glue it in the 1" hole under the seat.

5 Finish the seat and parts you've made and assembled so far. (We left the oak natural, but applied one coat of sanding sealer and two coats of polyurethane, sanding after each coat had dried with 220-grit sandpaper.)

6 Center the 3" lazy-Susan bearing around the 1" steering-column dowel, and screw it to the top of the front spreader. Turn the scooter seat upside down on the edge of your workbench. Insert the steering column through the hole in the seat. Center the lazy-Susan bearing around the hole, and screw the bearing's top plate to the underside of the seat as shown *lower right*.

7 Turn the scooter upright. Place the handle over the steering column until flush at the top. Square the handle and the front spreader with the front edge of the seat. Using the hole already in the side of the handle, drill through the steering column. Glue the handle to the column, align the holes, and glue the $1\frac{1}{2}$ "-long $\frac{1}{4}$ " dowel through the hole. Sand the dowel ends flush.

Let's cut out the wheels next

1 Rip and crosscut a piece of $\frac{3}{4}$ " oak to 7×23 ", and belt-sand both surfaces with 180-grit sandpaper. Cut out four $5\frac{1}{2}$ "-diameter wheels from the piece. (We chucked a circle cutter into our drill press, and clamped the stock to the drill-press table. We reduced the drill's

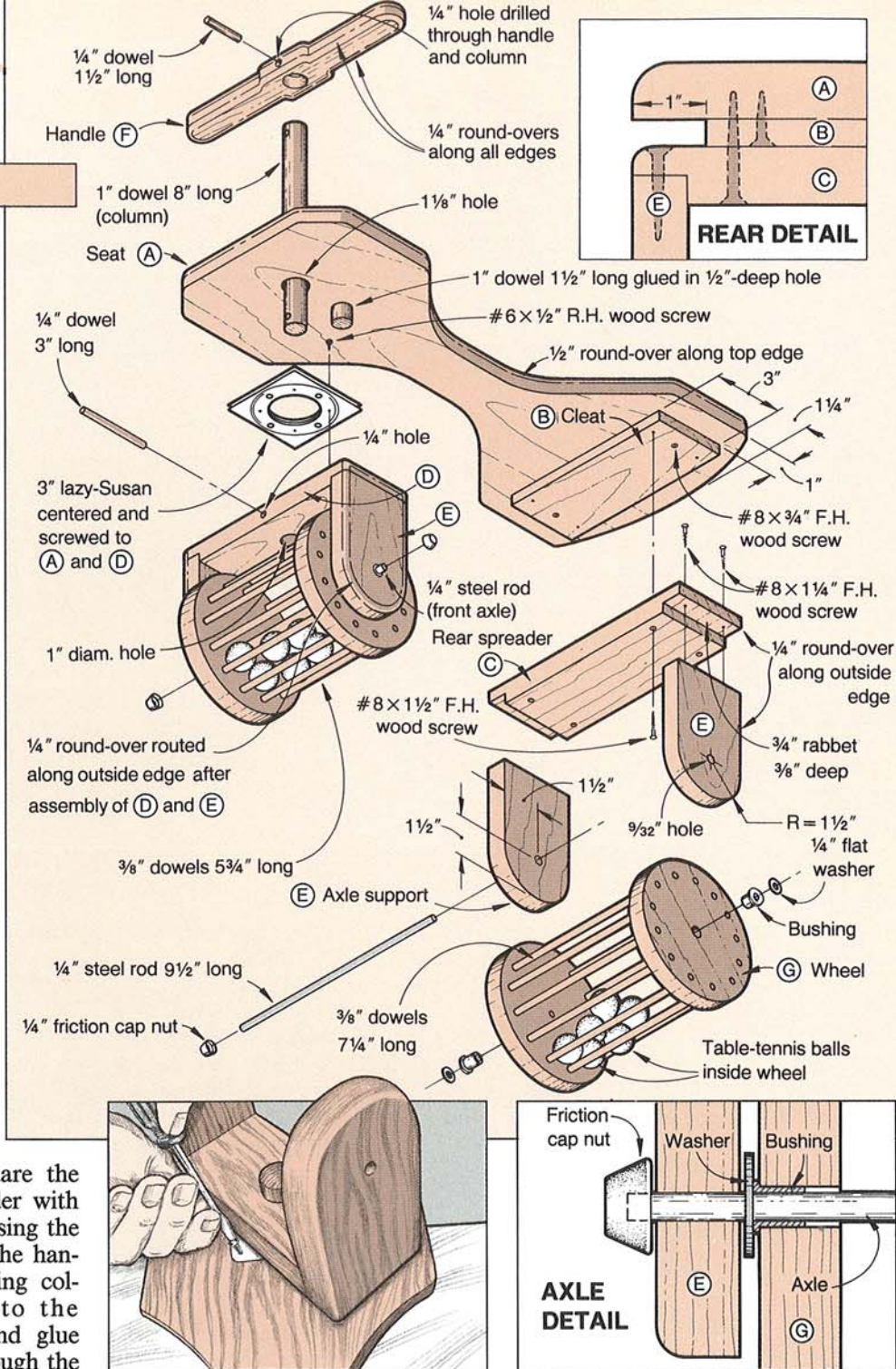
speed to 250 rpm, and cut the circles $\frac{5}{8}$ " deep. We then finished cutting the wheels on our bandsaw.)

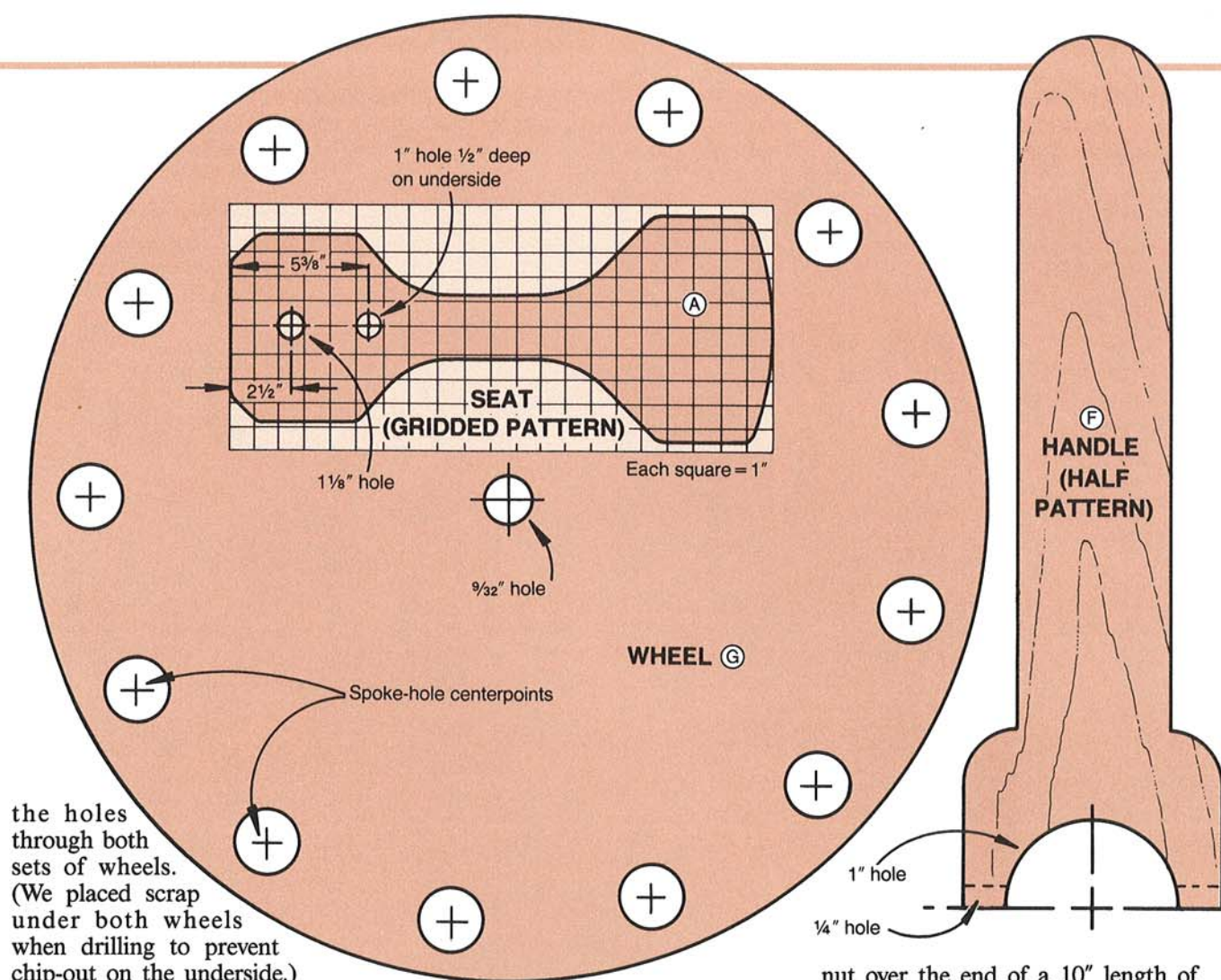
2 Make two copies of the Wheel pattern on page 23. With scissors, cut around the margin of each pattern, and remove the center hole.

3 Using double-faced tape, stack the wheels in pairs, aligning the wood grain of the wheels in each

pair. Next, insert a $\frac{1}{4} \times 3$ " carriage bolt through the center hole of each set. Place a pattern on the top wheel of each set, put a washer and nut on the bolts, and tighten.

4 Tape the pattern to hold it in place, and then mark the center-point of the 13 holes through the pattern and into the wheel. Now, using a $\frac{3}{8}$ " brad-point bit, drill





the holes through both sets of wheels. (We placed scrap under both wheels when drilling to prevent chip-out on the underside.)

5 Chuck the bolt of one wheel set into your drill press. Start the drill, and sand the outside edges of the wheels as they revolve until uniformly round. Sand the second set of wheels. Make a faint mark across the edge of each pair of wheels to help align them when assembling.) Remove the patterns. Enlarge the axle holes to $\frac{3}{8}$ " diameter to accept the bushings. Now, separate the wheels and remove the tape. (We marked one set.)

6 Crosscut 13-7 $\frac{1}{4}$ " lengths of $\frac{3}{8}$ " dowel for the back wheel spokes, and 13-5 $\frac{3}{4}$ " lengths for the front wheel spokes. Sand a slight taper on both ends of each dowel, and insert them into the spoke holes to test-assemble the wheels.

7 Glue and assemble the wheels. (We left one spoke out so we could add the table-tennis balls later.) Press the front wheel assembly together until it measures 5 $\frac{3}{4}$ " wide,

the back wheels, 7 $\frac{1}{4}$ ". Wipe off glue squeeze-out with a damp cloth. Check the wheels for square and spokes for alignment. After the glue dries, sand the spokes flush with the faces of the wheels.

Now, you're ready to finish the wheels

1 Apply the finish to the assembled wheels. (We followed the same procedures used on the seat.)

2 Place six table-tennis balls inside the rear wheel, and four inside the front wheel. (Omit the balls if you prefer a quiet scooter.) Glue the 13th spoke in each wheel. Now, cover the balls inside the wheels with a sheet of paper, and finish the 13th spoke.

3 Insert a bushing into the axle holes (outside face) of each wheel and lubricate the inside of each with white grease or powdered graphite. Place a $\frac{1}{4}$ " friction cap

nut over the end of a 10" length of $\frac{1}{4}$ "-diameter steel rod. Set the nut with a hammer and block of wood.

4 Using the Exploded View drawing and Axle detail *opposite*, assemble the rear wheel as shown.

Buying Guide

● **Town car kit:** Lazy-Susan bearing, four $\frac{1}{4} \times \frac{3}{8} \times .400$ " oilite bushings, $\frac{1}{4}$ " steel rod, 4- $\frac{1}{4}$ " cap nuts. \$7.49 each, plus \$4.95 postage each order. From: Meisel Hardware Specialties, P.O. Box 70-WEW, Mound, MN 55364. ■

A full-sized pattern will make it easier

For a full-sized seat pattern, send a stamped, self-addressed business-sized envelope and \$1 to: **Toddler Town Car, Weekend Woodworking Projects, P.O. Box 11022, Des Moines, IA 50336-1022.**



BIG FRAME SMALL INVESTMENT

It's quick and easy to build frames with inexpensive lumberyard moldings

If you noticed that this framing material vaguely resembles chair-rail molding, you have an attentive eye. This is just one readily available molding with framing potential. And who can pass up a bargain for custom frames at less than \$1.45 a running foot?

First, prepare the stock

1 Measure the outside circumference of your framing project to determine the amount of frame stock you'll need. Be generous and buy enough material to allow for the mitered corners. Later, you'll calculate the specific length of each frame member. (We bought 8' of molding for our 16×16" frame.)

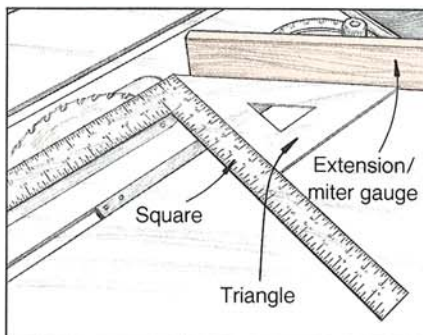
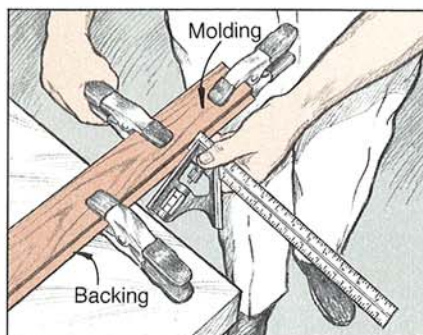
Note: Buying precut moldings eliminates extensive shaping and sawing. We purchased red oak chair-rail molding at a lumberyard. You should be able to find this—and other suitable moldings—in a variety of soft and hardwoods at homecenters and lumberyards. The dimensions given here apply only to this molding.

2 Add thickness of the cover glass, mat boards, art work, mounting board if used, and the backing material. The combined thickness of these items, *plus* an additional 1/8" for clearance, determines how deep you need to make the frame's rabbet.

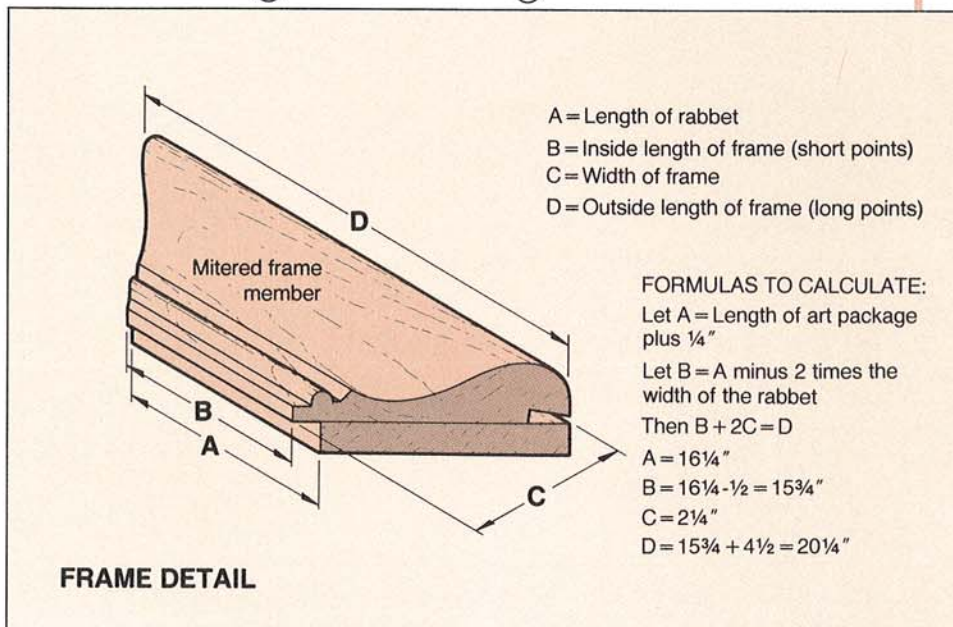
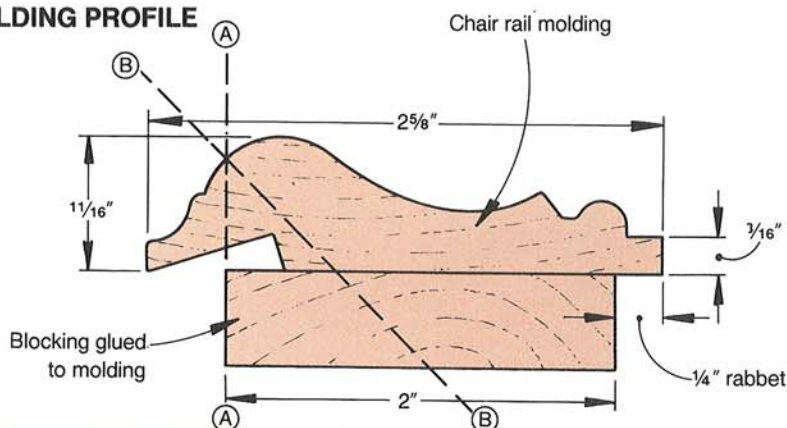
3 To make the blocking, first rip a length of 3/4" stock (we used red oak to match the molding) to 2" wide and as long as your piece of molding. Next, plane or resaw the strip to the rabbet thickness you determined in Step 2. Our art needed a 1/2"-thick rabbet or blocking.

4 Glue (we used yellow woodworker's glue) the blocking to the underside of your chair-rail strip, offsetting it 1/4" from your molding's front edge to form the rabbet as shown *top right*. Also, see the Molding Profile drawing *opposite*. Clamp until the glue dries. (We placed a spring clamp every 10".) If you don't have spring clamps, place large dowels in the concave area to provide a clamping surface.

5 Set your saw's rip fence 2 1/4" from the inside face of the saw blade, place the rabbeted edge of the molding against the fence, and rip the lamination (line A-A on the Molding Profile drawing) to square the edge. Finish-sand the molding.



MOLDING PROFILE



6 Calculate the required length of the four frame sides (long point to long point) by substituting actual dimensions for the appropriate letters in the formulas included with the Frame Detail drawing at right. (Our mat board measured 16" on all sides. To this, we added 1/4" for fitting and recutting, making the rabbet length [A] 16 1/4". From this value, we subtracted 1/2" [two times the rabbet width] to get 15 3/4" for length of the inside frame lip [B]. We ripped the framing stock 2 1/4" wide, and that became the width [C]. So, the outside length of the frame [D] needs to be 15 3/4" plus 4 1/2" [B + 2C = D], or 20 1/4" long.) All sides of our mat board were equal length, so we needed just one calculation. If your frame isn't square, you'll need to calculate the length of both pairs.

Now, let's cut the frame

1 Crosscut your frame stock into four oversized lengths. (We cut each of ours 24" long.)

2 Attach a wood extension to your miter gauge. Cut it 6" longer than the longest frame member and mount it to the miter gauge so its leading end extends 2" beyond the blade when angled at 45°. (We

used a piece of 3/4" oak.) Place the miter gauge in one of your saw table's slots (we started in the left slot), and set it to cut a 45° miter. (See the illustration above left for how we set the miter gauge.) Cut a test miter on a piece of scrap, and verify cut against a known 45° angle. If not accurate, adjust the miter gauge and retest. With the rabbeted side of the frame facing the blade, miter-cut one end on each piece. (We clamped the frame members to the extension to keep it from creeping while sawing the miter.)

3 Move the miter gauge to the slot on the opposite side of your saw's blade. Reset the angle of the gauge to 45°, following the same procedure used in Step 2. Make a test miter on a second piece of

scrap, and then join it to your first test miter. Using a framing square or try square, check the corner formed by the two mitered pieces. If it's not accurate, adjust the miter gauge, recut, and check this angle again. Adjust as needed to square.

Note: If the frame corner gaps at the outside point (toe), increase the miter angle to move the inside point (heel) toward the blade. If the frame corner gaps at the inside point (heel), decrease the angle to move the heel further from the blade.

4 Mark the cutoff point on the top outside edge of one frame member. Place it against the miter-gauge extension, align the mark with the blade, and then clamp the frame member to the extension. Clamp a stop block to the extension

FORMULAS TO CALCULATE:

Let A = Length of art package plus 1/4"

Let B = A minus 2 times the width of the rabbet

Then $B + 2C = D$

$A = 16 1/4"$

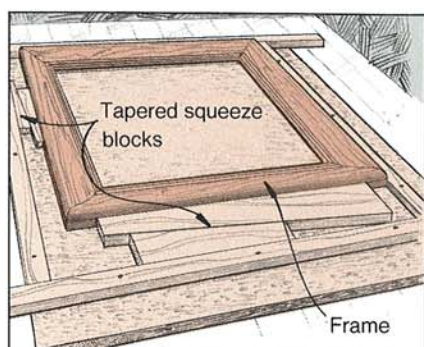
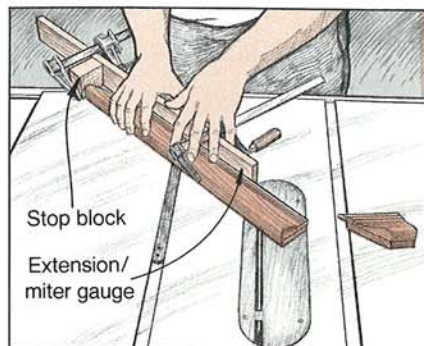
$B = 16 1/4 - 1/2 = 15 3/4"$

$C = 2 1/4"$

$D = 15 3/4 + 4 1/2 = 20 1/4"$

Continued

Picture frame

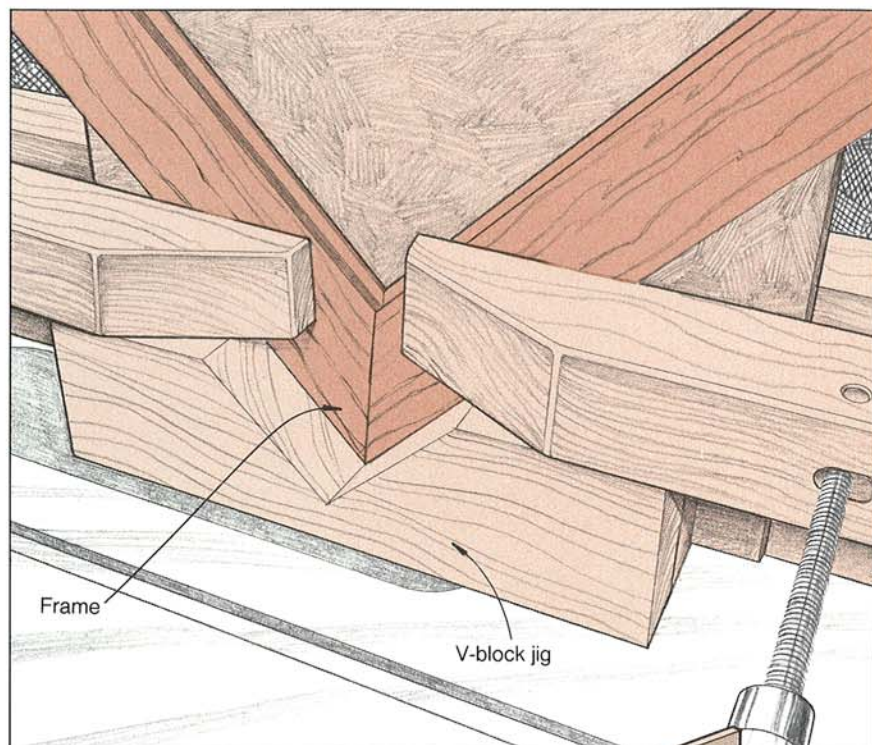


at the far end of the frame member. See our setup shown *above top*. This stop block enables you to cut all frame members to identical length when sawing the second miter. If you have two different lengths to cut, reset the stop block, and cut the second pair the same way.

Now, we're ready to assemble the frame

1 Dry-assemble the frame to check the fit of the corners and to size your clamps. (We made the 24×30" clamping frame shown *above*, and used tapered sliding inserts to squeeze the frame from one side and one end. You also may use clamps.) Now, glue the mitered corners and clamp. Check for square, and adjust if necessary. Wipe off glue squeeze-out with a damp cloth. Don't worry if the corners don't fit perfectly—we'll resaw them.

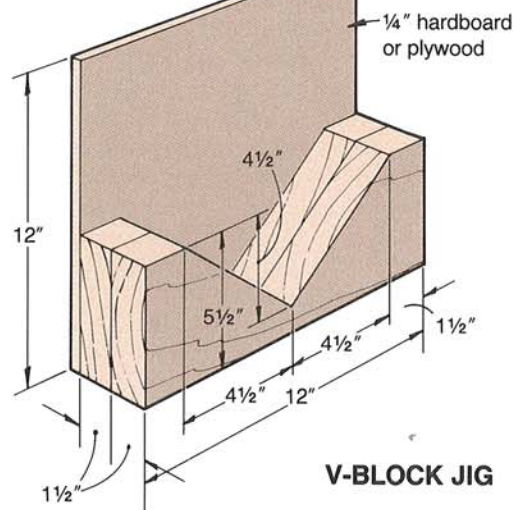
2 To resaw, first mark the corners so you can match the parts when reassembling. Place your miter gauge in one of the slots in the



saw's table top, and set it to cut a 45° miter. (If you have a second miter gauge, place it in the other slot and set at 45°, and then use both together when recutting the corners.) Place the assembled frame in front of and against the miter gauge, center your saw blade on the point of the corner, and saw through it. Saw the other three corners. Now, reassemble, glue, and clamp the frame as described in the previous step.

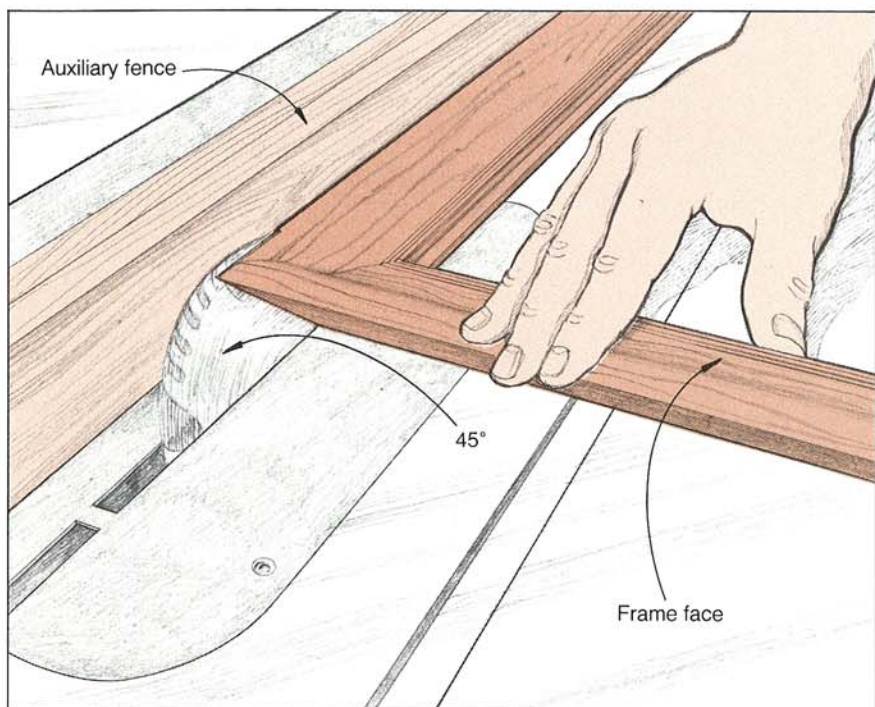
3 While the glue cures, make the V-Block jig shown at *right*. Set your table-saw rip fence $\frac{3}{4}$ " from the inside of the saw blade. Elevate the blade to $3\frac{1}{4}$ " above the table top. (We used a 10" diameter, $\frac{1}{8}$ " carbide-tipped blade.) Place the hardboard back of the jig against the fence, turn on the saw, and then saw a kerf lengthwise through the jig.

4 Lower the blade so you can cut a $1\frac{1}{2}$ "-deep spline slot in each frame corner. Place a corner of the frame into the jig's "V", and clamp the frame firmly in place.



(We test-cut a piece of scrap framing first to make certain the blade did not cut through the face of the frame.) Push the jig and frame across the saw blade to saw a spline slot as shown *above*. Now, saw a spline slot in the three remaining corners the same way.

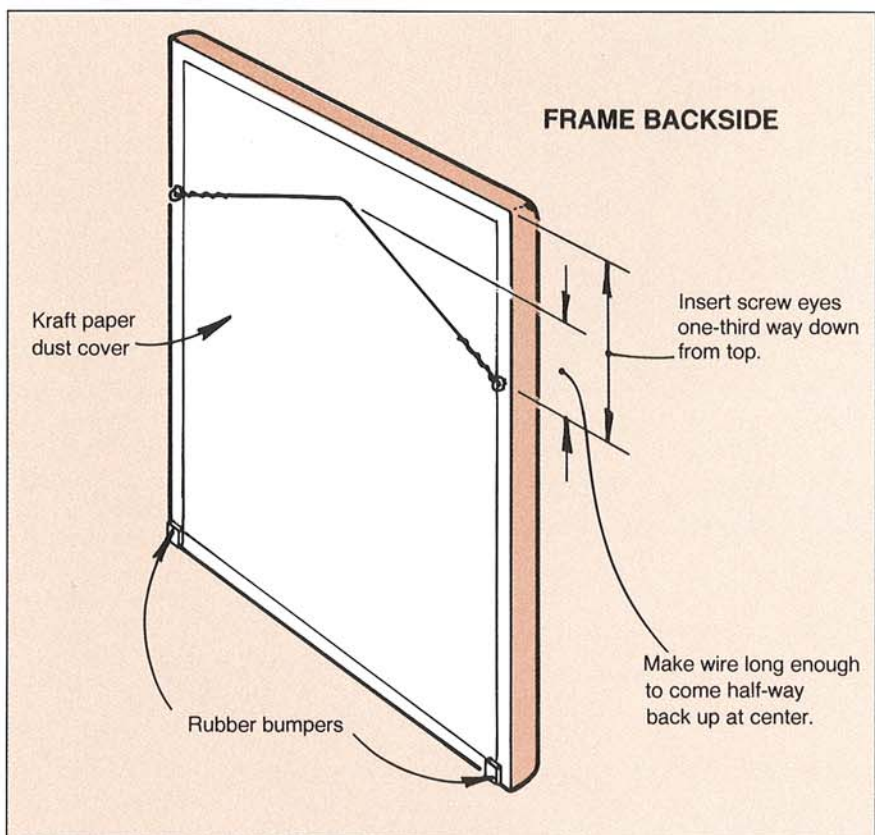
Note: If you can't elevate your saw's blade high enough above the table to cut a $1\frac{1}{2}$ "-deep slot in the corners, you may remove up to $\frac{5}{16}$ " of material from the bottom of the jig.



5 Cut splines from $\frac{1}{8}$ " plywood to fit the slots. Glue the splines in the slots. Trim, or sand the outside edges flush with the frame.

6 Attach an auxiliary wood fence to your saw's rip fence. Tilt the blade to 45° from perpendicular, and elevate it high enough to cut through the frame. Start the saw, and move the rip fence against the blade to cut into the wood face. Stop the saw. Now, viewing from the out-feed side, place an edge of your frame up to the blade, and then position the fence so you can cut away the frame's outside edge. Moving the fence away from the blade will cause it to cut higher into the crown of the molding and reduce the slope on the outside.

7 Lock the fence. Now, with frame facing up, bevel-cut the sides (line B-B on the Molding Profile drawing) as shown at *left*.



You're nearly ready to hang the frame

1 Finish-sand the beveled sides and any areas that need touching up. (We belt-sanded the beveled edge using 180-grit sandpaper, then switched to a pad sander using 220-grit sandpaper.)

2 Apply finish. (We first wiped on a medium-dark oak oil stain and let it dry for two days. Next, we applied a coat of clear sanding sealer, and let it dry. Next, we lightly sanded it with a fine Scotch-brite pad to minimize cutting through the finish on the edges. We then added two coats of semigloss lacquer, rubbing lightly between coats.)

3 Turn the frame over, and mount the art package in the rabbet. Secure it in place with small brads driven into the side of the rabbet. Hang the frame, following instructions on the drawing at *left*. ■

Supplies: Molding, $\frac{3}{4}$ " stock, $\frac{1}{8}$ " plywood, stain and finish, screw eyes, picture wire, rubber bumpers.

Barn—again shadow box

FARM FAVORITES



Bring the country inside! After you erect this barn, round up a whole farmyard of miniatures and fill up the stalls for an agrarian setting.

Note: We built our barn of clear white pine. However, redwood, cedar, poplar, or similar woods would work equally well.

Prepare your stock, and assemble the silo

1 Plane or resaw your stock to $\frac{1}{4}$ " thickness. (As shown by the Cutting Diagram right, we cut all the required parts, including the seven $\frac{1}{8}$ "-thick pieces, from one $\frac{1}{4} \times 7\frac{1}{4} \times 72$ " board.) Sand both faces of the piece.

2 Rip two lengths of $1\frac{1}{2}$ "-wide stock. Finish-sand the edges on each strip. From them, crosscut one A, one B1, and one B2, using the dimensions listed on the Bill of Materials. Next, crosscut six Cs and one D. Set two of the Cs aside for later. (We found it helpful and time-saving to letter each part after cutting it to length.)

3 Using the Front View drawing for reference, attach B1 to A. Check the assembly for square. (To assemble the barn parts, we pushed in $\frac{1}{2}$ " $\times$ 18 brads with a long-nose pliers. We used yellow woodworker's glue and clamped the joints when possible.) Next, attach B2 to A, using several Cs as spacers. Using the Cs as spacers again, mark and bevel-cut the ends of D, and then attach it at the top of B1 and B2. Now, check the silo assembly for square.

4 Bevel-cut four $1\frac{7}{8}$ "-long Es for the silo's roof, noting the beveled angles as you work. Now, attach them to the top of the silo.



5 Position the three lower Cs in the silo and glue and nail where shown. (We left out the top C, then added it later, after attaching the barn roof. We also cut 2"- and 1½"-long blocks from ¾" scrap, and used them to support the shelves while nailing.)

1 For the barn side F, bevel-cut one end on your 1½"-wide stock at 65°, and then crosscut it to a final length of 8⅞". Crosscut two Gs to 9" long, and one H to 3⅝" long, bevel-cutting the ends to the angles noted on the Front View drawing.

[illegible]

Part	Finished Size			Matl.	Qty.	Part	Finished Size			Matl.	Qty.
	T	W	L				T	W	L		
A	¼"	1½"	12¾"	P	1	M	¼"	1½"	4¾"	P	1
B1	¼"	1½"	12½"	P	1	N	¼"	1½"	1¼"	P	1
B2	¼"	1½"	12¼"	P	1	O	¼"	1½"	3"	P	1
C	¼"	1½"	3½"	P	6	P	¼"	¼"	2¾"	P	2
D	¼"	1½"	4"	P	1	Q	¼"	¼"	1½"	P	2
E	¼"	1½"	17⁄8"	P	4	R	¼"	1½"	2¼"	P	1
F	¼"	1½"	87⁄8"	P	1	S	¾"	15⁄8"	2¼"	P	1
G	¼"	1½"	9"	P	2	T	¼"	¼"	3"	P	4
H	¼"	1½"	35⁄8"	P	1	U	⅞"	15⁄8"	2¼"	P	1
I	¼"	29⁄8"	45⁄8"	P	2	V	⅞"	3¼"	13¼"	P	4
J	¼"	1½"	313⁄16"	P	1	Material key: P-pine Supplies: ½"×18 and ¾"×18 brads; paint.					
K	¼"	1½"	4½"	P	1						
L	¼"	1½"	1½"	P	3						

29

Barn shadow box

the roof parts (I), using the dimensions on the Roof Parts detail at right. Bevel-cut the ends at the angles indicated on the Front View drawing. Next, crosscut one J, one K, and three Ls to length.

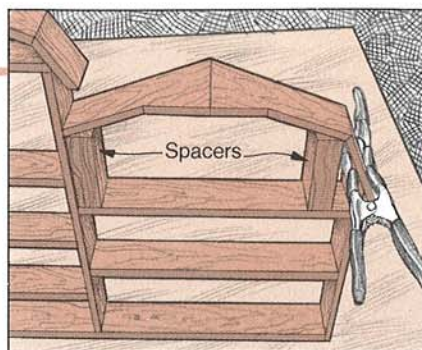
3 Glue and nail the Fs and Gs in place. Next, glue and nail the roof parts (H, I) in place. (As shown right, we cut two 3"-long spacers from scrap to support the roof.) Now, glue and nail one J, K, and L in place to complete the top loft. (When possible, we preassembled the smaller, inside parts like these first, and then installed them inside the barn.) Note on the Exploded View at right, which edges to round over. Attach the top C inside the silo.

4 Crosscut one M, N, and O. Now, using these parts and the two remaining Ls you cut earlier, assemble the middle loft. Glue and nail the two remaining Cs in position on the lower level.

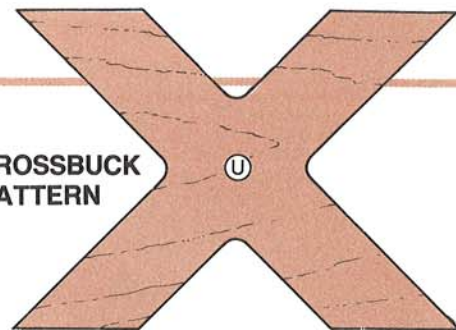
5 Crosscut two Ps, two Qs, and one R from the 1/4" stock. Glue and nail them in place. For S, cut a 1 5/8 x 2 1/4" piece from 3/4" scrap. Now, using the Manger detail at right for reference, bevel-cut the four manger staves (T).

6 Plane or resaw the remaining stock to 1/8" thickness. Make a copy of the Crossbuff pattern at above right, and use it to cut one "U" to shape. Glue the crossbuff to the front of S, and then glue and nail the assembly in place, flush with the front edge of A and C.

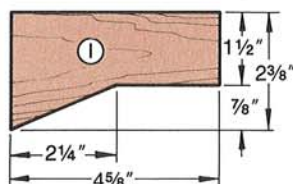
7 Rip and crosscut four pieces of the 1/8" material to 3 1/4" wide and long enough to fit your barn's back (V). Turn the barn over, and starting at the bottom, glue and nail three of the pieces to the barn frame. Place the fourth piece in position and with pencil, scribe the outline of the silo and barn roof on it. Now, cut the part to shape and attach it to the barn frame. Fill in the opening at the top of the silo.



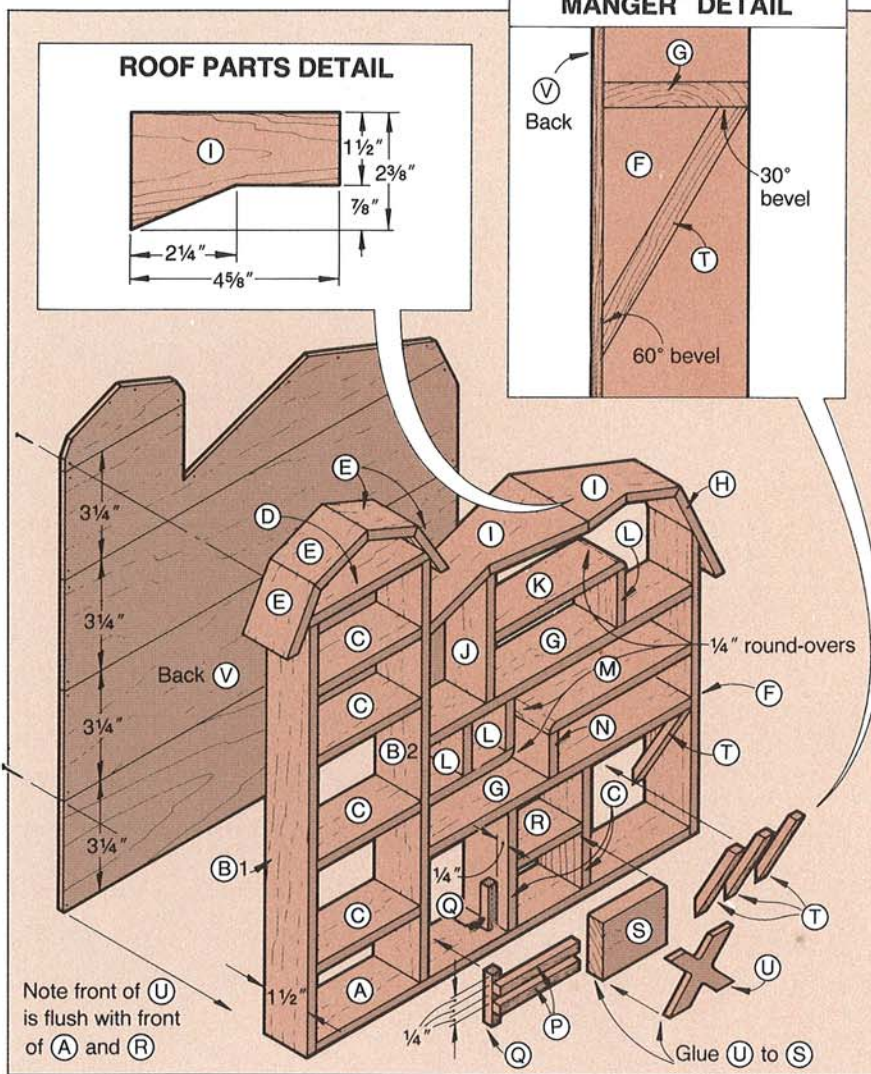
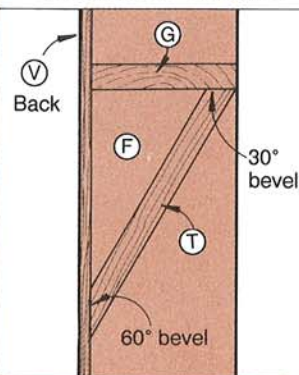
CROSSBUCK PATTERN



ROOF PARTS DETAIL



MANGER DETAIL



8 Turn the barn over and glue the four manger pieces in place. Locate, and then drill, the two 5/32" wall-mounting holes through the back where shown on the Front View drawing on page 29.

9 Set the nails, and fill the holes with wood putty, let dry, and sand. Apply the finish of your choice. (We painted ours redwood color.) Now, hang the shadow box

on your wall (we used #8 x 1 1/2" wood screws), and arrange your favorite miniatures on the shelves.

Note: The barnyard critters and miniatures displayed on our barn shadow box may be purchased from the designers. For a price list, send a self-addressed, stamped business-sized envelope to: Lindsey Originals, 9021 E 87th, Raytown, MO 64138. Telephone: 816/356-6937. ■