

WIN JET'S \$5,000 DREAM MACHINE GIVEAWAY p.8

ISSUE 217 MARCH 2013

Better Homes and Gardens®

WOOD

The World's Leading Woodworking Resource



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Plus more great projects:

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That When I Started
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- Arbor speed: 4200 RPM
- Table height: 35 1/2"
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- Capacity: 3 1/2" @ 90°, 2 1/2" @ 45°
- Rip capacity: 36" R, 12" L
- Approx. shipping weight: 328 lbs. (G0713) 338 lbs. (G0661)



1-3/4 HP, LEFT-TILTING, SINGLE-PHASE

G0713 ONLY \$895⁰⁰

2 HP, LEFT-TILTING, SINGLE-PHASE

G0661 ONLY \$925⁰⁰



10" HYBRID TABLE SAW

With Rising Knife

- Motor: 2 HP, 110V/220V, single-phase
- Precision-ground cast iron table size w/ wings: 27" x 40" • Arbor: 3/4"
- Arbor speed: 3850 RPM
- Capacity: 3 1/4" @ 90°, 2 1/4" @ 45°
- Rip capacity: 12" L, 30" R
- Cast iron trunnions
- Approx. shipping weight: 404 lbs.

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BEAUTIFUL WHITE COLOR!



G0715P ONLY \$795⁰⁰



12" BABY DRUM SANDERS

- Sanding motor: 1 1/2 HP, 110V, single-phase
- Conveyor motor: 1/2 HP, 110V, single-phase, variable speed 5-35 FPM
- Max. stock thickness: 3 1/4"
- Min. stock length: 8"
- Sanding drum size: 4"
- Sanding belt: 3" x 70" hook & loop
- Dust collection port: 2 1/2"
- Approx. shipping weight: 160 lbs.



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G0459 ONLY \$595⁰⁰

POLAR BEAR® DAZZLING WHITE COLOR

G0459P ONLY \$595⁰⁰



8" JOINTERS

- Motor: 3 HP, 220V, single-phase, TEFC
- Precision-ground cast iron table size: 9" x 72 1/2"
- Max. depth of cut: 1/4"
- Max. rabbeting depth: 1/4"
- Cutterhead dia.: 3"
- Cutterhead speed: 5000 RPM (G0656P) 5350 RPM (G0656PX)
- Cuts per minute: 20,000 (G0656P) Cuts per minute: 21,400 (G0656PX)
- Approx. shipping weight: 500 lbs.



FREE SAFETY PUSH BLOCKS
BUILT-IN MOBILE BASE

WITH 4 KNIFE CUTTERHEAD

G0656P ONLY \$825⁰⁰

WITH SPIRAL CUTTERHEAD

G0656PX ONLY \$1225⁰⁰



15" PLANERS

- Motor: 3 HP, 220V, single-phase
- Precision-ground cast iron table size: 15" x 20"
- Min. stock thickness: 3/16"
- Min. stock length: 8"
- Max. cutting depth: 1/8"
- Feed rate: 16 FPM & 30 FPM
- Cutterhead speed: 5000 RPM
- Approx. shipping weight: 662 lbs. (G0453P) 666 lbs. (G0453PX)



BUILT-IN MOBILE BASE

WITH 3 KNIFE CUTTERHEAD

G0453P ONLY \$1095⁰⁰

WITH SPIRAL CUTTERHEAD

G0453PX ONLY \$1695⁰⁰



20" PLANER

- Motor: 5 HP, 240V, single-phase
- Max. cutting width: 20"
- Max. cutting height: 8"
- Min. stock thickness: 3/16"
- Min. stock length: 8"
- Max. cutting depth: 1/8"
- Feed rate: 16 FPM & 20 FPM
- Cutterhead diameter: 3 1/2"
- Cutterhead speed: 4800 RPM
- Feed rolls: solid serrated steel
- Overall dimensions: 55 1/2" L x 39 1/2" W x 45 1/2" H
- Approx. shipping weight: 920 lbs.



BUILT-IN MOBILE BASE



G0454 ONLY \$1650⁰⁰



14" DELUXE BANDSAW

- Motor: 1 HP, TEFC, 110V/220V, single-phase (prewired 110V)
- Amps: 11 at 110V, 5.5 at 220V
- Blade size: 93 1/2" long (1/4" - 3/4" wide)
- Cutting cap/throat: 13 1/2"
- Max. cutting height: 6"
- Overall size: 67 1/2" H x 27" W x 30" D
- Footprint: 23 1/2" x 16 1/2"
- Table height above floor: 43"
- Table tilt: 45° right, 10° left
- Approx. shipping weight: 246 lbs.



Cast Iron Wheels

G0555LX ONLY \$545⁰⁰



14" BANDSAW

- Motor: 1 HP, TEFC, 110V / 220V single-phase, 1725 RPM
- 4" dust port
- Cutting capacity/throat: 13 1/2"
- Max. cutting height: 6"
- Overall size: 66 1/2" H x 26 1/2" W x 30 1/4" D
- Precision-ground cast iron table size 14" x 14"
- Table height: 43 1/4"
- Tilt: 45° R, 10° L
- Fence construction: Deluxe extruded aluminum
- Blade speeds: 1500 & 3200 FPM
- Blade size: 92 1/2" - 93 1/2" (1/4" to 3/4" wide)
- Approx. shipping weight: 196 lbs.



G0555P ONLY \$525⁰⁰



2 HP DUST COLLECTOR

With Aluminum Impeller

- Motor: 2 HP, 240V, single-phase, 9A, 3450 RPM
- Air suction capacity: 1550 CFM
- Max. static pressure: 11"
- Bag capacity: 5.7 cu. ft.
- Impeller: 12 1/2" balanced steel, radial fin
- Height w/ bags inflated 78"
- Portable base: 21 1/4" x 33 1/4"
- Approx. shipping weight: 122 lbs.



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G1029Z2P ONLY \$325⁰⁰



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The **WOOD**® magazine difference:
We build every project, verify every fact,
and test every reviewed tool in our workshop to
guarantee your success and complete satisfaction.



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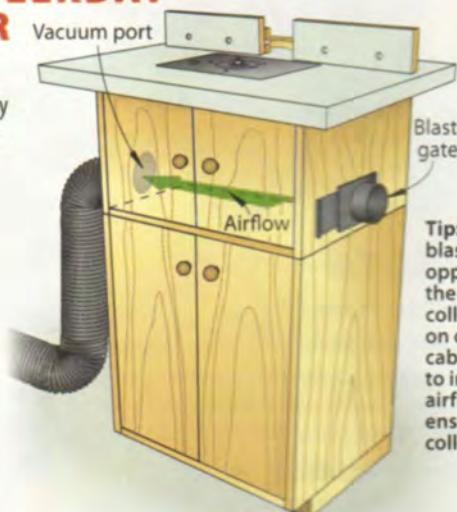
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On our website
woodmagazine.com

NEW TIP EVERY WEEKDAY OF THE NEW YEAR

The "Shop Tip of the Day" app at woodmagazine.com/tips gives you a handy tip every weekday. You can also search for past tips and find...

- Tons of tablesaw tips
woodmagazine.com/tablesawtips
- A bevy of bandsaw tips
woodmagazine.com/bandsawtips
- A fat pile of finishing tips
woodmagazine.com/finishingtips
- Reams of router tips
woodmagazine.com/routertips
- A giant-size stack of joinery tips
woodmagazine.com/joinerytips



Tip: Add a blast gate opposite the dust-collection port on closed-cabinet tools to improve airflow and ensure better collection.

GET YOUR WOOD FIX TWICE WEEKLY

Your email inbox does double its woodworking duty when you subscribe to both *WOOD* eNewsletters at woodmagazine.com/newsletter.

WOOD

What's HOT: Customized Shop Towel, The Ultimate Shop Vacuum, More Plans

WOOD e-Newsletter
by Nate Grandaw
General-interest Editor, woodmagazine.com

Give the Power Tools a Rest
We used mostly power tools around my Dad's shop, and for years I've had hand tools as well as power tools. The first time I used a sharp hand plane, that all changed. On the first cut of a piece of wood, I was amazed at the results. It's a real treat to get some impressive results.

- A Hands-On Guide to Chisel Sharpening
- Techniques for a Clean Shave
- Use a Smooth Plane to a Smooth Finish

Tools for Accuracy

- How to Make a Good Square
- A Guide to Machine Joints
- The 10 Best Layout

Enter Quick!
Judging happens tomorrow for the 2013 Woodworking Project Video Contest. Enter now! Upload a photo for a chance to win!

Handmade Hand Tools

- How to Make a Good Square
- The 10 Best Layout
- The 10 Best Layout

Keep 'em Sharp

- How to Make a Good Square
- The 10 Best Layout
- The 10 Best Layout

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Make Simple Face-frame Cabinets

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The eBlast newsletter features can't-miss offers from *WOOD* magazine, woodstore.net, and our partners every Tuesday.

GO BIG! BUILD A NEW SHOP

Not only can you find detailed plans for the best shop projects and organizers at woodmagazine.com/plans, you can also find plans for building the *entire shop!* Check out woodmagazine.com/garages.



Two- or Three-car, Eave-entry, Cape Cod Garage Plan



The "How to Build" Garage Plan



One-car Garage Plan



22' & 24'-Deep, Eave-entry, 2/3-Car Garage Plan

WOOD editors helped improve needy homes for Meredith's "Rebuilding Together" Day (rebuildingtogether.org).



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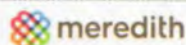
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WATCH DEMO

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Editor's Angle

Leaner, cleaner for the new year

Every year, I take time off between Christmas and New Year's Day to enjoy the holidays with my family. On one of those days, I love to give my shop a deep cleaning, weeding out some of those "gotta-have" tools and gadgets that turned out to be "never-use" tools and gadgets. The freshly organized shop always reenergizes me.

As *WOOD* magazine begins its 29th year, we've flipped through the pages and "tidied up our shop," so to speak, to make it even better for you.

► **More projects.** You asked for more variety, so starting with this issue, we'll devote about 50 percent more pages to projects, and target a broader range of skill levels. And we'll still build and prove each of those projects in our own shop to guarantee your success.

► Dangerous new voices.

We've found a lot of talented woodworkers with different ways of looking at our craft and we want to share their insights with you. So we've offered them a voice in *WOOD* magazine. It's like taking advice from a buddy instead of your dad—a little rebellious, sometimes unorthodox, but just as effective. Steve Ramsey kicks off the new series on page 20.

► **Bigger rewards.** You could win a bunch of great woodworking tools valued at more than \$5,000 in the "Jet Dream Machine Giveaway." It's our way of thanking you for your loyal readership. Check out the equipment and the details on page 8.

And, just as you wouldn't toss out a favorite old hand plane, we've kept all the things you told us you find most

useful, including Ask *WOOD*, Shop Skills, the most reliable tool reviews in the business, and more.

I'd love to hear what you think about the changes. My e-mail box is always open for you. 🌲

See you in the shop!

Dave Campbell
dave.campbell@meredith.com



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- Cutting capacity:
With track: 1³¹/₃₂" @ 90°, 1⁷/₁₆" @ 45°
Without track: 2⁵/₃₂" @ 90°, 1⁵/₈" @ 45°



W1832 Track Saw
Track not included

D4362 Track

D4363 Guide Rails

14" BANDSAW

- 1 HP, 110V/220V
- Precision ground cast iron table measures 14" x 14" x 1½"
- Blade Size: 93½" (⅞" to ¾" wide)
- Cutting capacity 13½" (throat)
- Cast iron frame and wheels
- Ball bearing blade guides
- Includes fence and mitre gauge

Feature packed, and an incredible value

W1706 14" Bandsaw



5 HP SPINDLE SHAPER

- Motor: 5 HP, 220V, single-phase, 25A, 3450 RPM
- Precision ground cast iron table measures 35½" x 28" x 2⅝"
- Spindle travel: 3¼"
- Spindle sizes: ¾", 1", 1¼"
- Spindle capacity: 4¼", 4⅝", 5⅝"

New



W1827 5 HP Spindle Shaper

10" TABLE SAWS with Riving Knife

- 3 HP, 220V, single-phase motor
- Cast iron table size:
27" x 40¼" (W1819) 53⅝" w/extension,
(W1820) 74" w/extension)
- Max. rip capacity: (W1819) 29½",
(W1820) 50"
- Camlock fence with HDPE face

Free 10" Carbide-Tipped Blade



W1819 10" Table Saw

W1820 10" Table Saw w/ Long Ext. Table

SLIDING TABLE and ROUTER TABLE ATTACHMENTS for W1819 & W1820



SAW NOT INCLUDED

W1821
SLIDING TABLE
ATTACHMENT

- Industrial grade anodized aluminum table size: 47" x 9"
- Max. cross cut: 48"

W1822
ROUTER TABLE
ATTACHMENT

- Precision-ground cast iron table size: 27" x 20"
- Universal router mount

OSCILLATING BENCHTOP SPINDLE SANDER

- ½ HP, 120V, single-phase, 3.5A
- Table size: 15" L x 11½" W
- 58 Oscillations per minute
- Stroke length: ⅝"
- 2000 RPM (½" spindle)

New



W1831 Oscillating Benchtop Spindle Sander

OUTSTANDING SHOP FOX® DUST COLLECTORS

PORTABLE CYCLONE

- Motor: 1½ HP, 110V/220V, pre-wired 110V, single-phase
- CFM: 806
- Filter: 2.0 micron, pleated
- 20 gal. steel collection drum with casters
- Inlet: 6" (or 4" x 2" with included Y)
- Maximum static pressure: 10.4"
- Includes remote control

New

Only 70½" Tall!



W1823 1½ HP Portable Cyclone Dust Collector

WALL DUST COLLECTOR

- Motor: 1 HP, 110V/220V, single-phase
- Air suction capacity: 537 CFM
- Bag capacity: 2 cubic feet
- Standard bag filtration: 2.5 micron
- Static pressure: 7.2"

SHOP FOX

New



W1826 Wall Dust Collector

3-SPEED HANGING AIR FILTER

- Motor: ⅓ HP, 120V, 60Hz, 1A single-phase
- Air flow: 260, 362, and 409 CFM
- Outer filter: 5.0 micron
- Inner filter: 1.0 micron

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New



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Need a lift? Make and mount one to your tablesaw

Heaving heavy sheet goods onto your tablesaw might be the most physically demanding task in woodworking.

Here's a solution: Add this simple, removable lift to your tablesaw and easily swing even full sheets of plywood or MDF onto the saw table without damaging the stock—or your back. To make it, fit a 12"-long hardwood insert to your tablesaw's fence tube. Then, attach the $\frac{3}{4}$ "-plywood A-frame so that it just touches the shop floor.

To use the lift, place one edge of the sheet onto the A-frame and slide it until it's centered. Lifting with your legs, swing the A-frame up until the top edge of the sheet rests on the saw table. Nudge the sheet off the frame and onto your tablesaw.

—Dan Martin, Galena, Ohio



Photography by: Wendy George



**TOP
SHOP
TIP**

We chose our fave Shop Tip; now choose yours! Vote online now at woodmagazine.com/shoptipoftheyear.

For sending this issue's Top Shop Tip, Dan receives an 8"-diameter Dado King from Forstner Saw Blades and a Jet mortiser valued at \$650.



HAVE A WOOD-WORTHY TIP?

Tell us how you've solved a workshop stumper. If we print your tip, you'll receive up to \$150. And, if the idea garners Top Shop Tip honors, we'll also reward you with a tool prize from Jet Tools worth at least \$300!

Send your best ideas, along with photos or drawings and contact info, to shoptips@woodmagazine.com or Shop Tips, WOOD magazine, 1716 Locust St., LS-221, Des Moines, IA 50309-3023.

Because we try to publish original tips, please send yours only to WOOD® magazine. Sorry, submitted materials can't be returned.



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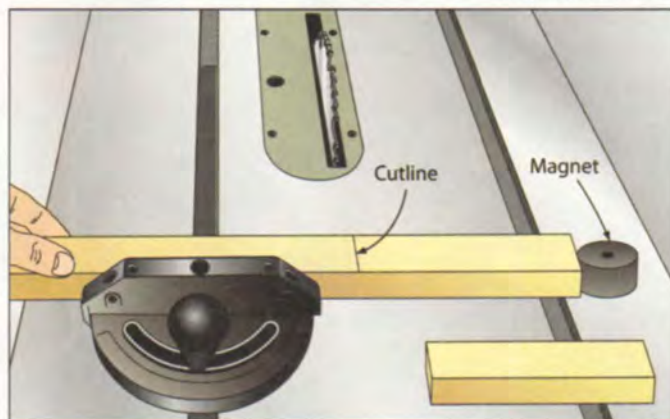
Dust Collection Since 1993.

Shop Tips

Stick on a stop for consistent crosscuts

For a down-and-dirty way to get accurate, repeatable crosscuts on your tablesaw, use a large round magnet (no. 444003, \$6.20, 888-878-1887, centaurforge.com). Line up the first cut with the blade, place the magnet at the end of the workpiece, and make the cut. For each subsequent cut, slide the workpiece over until the end rests against the magnet (being careful not to jar the magnet), and cut again.

—Bob Milko, Mentor, Ohio



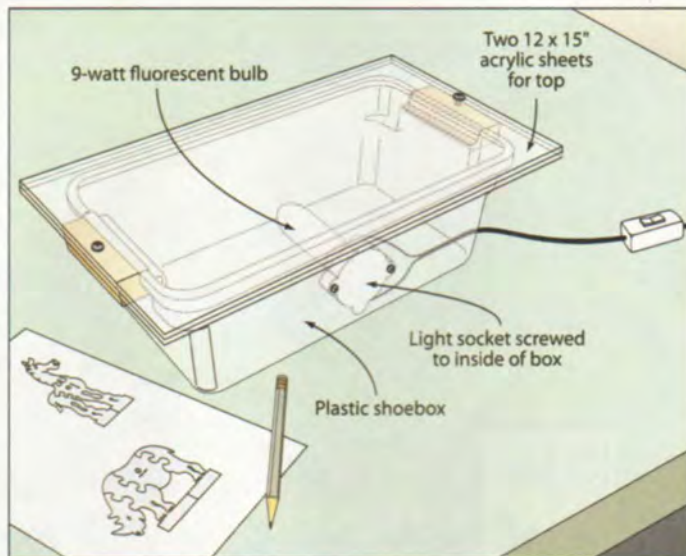
Shop-made light box = poor man's copier

Without a photocopier at home, I found myself going to the office supply store regularly to make copies of woodworking patterns. To avoid this inconvenience, I made a simple light box for tracing patterns by hand.

To make your own, install a porcelain or plastic light socket in a clear plastic shoebox, as shown. Top the box with two 12x15" acrylic sheets secured by pieces of rabbeted scrapwood.

To use the box, slide the pattern between the sheets of acrylic, lay a blank piece of paper directly above the pattern on the top piece of acrylic, turn the light on, and trace.

—Maurice Farrier, Raleigh, N.C.

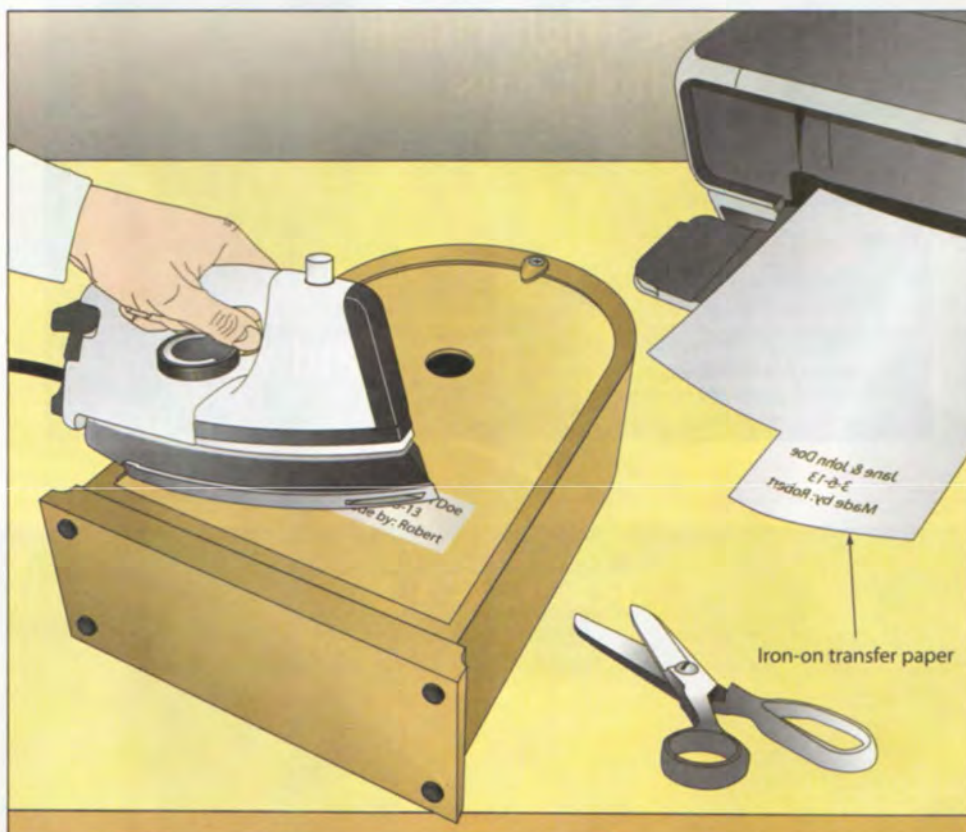


Projects wear your mark with iron-on tee-shirt labels

After building a wedding gift for friends, I wanted to mark the couple's names and the date of their big day on it. I found that iron-on transfer paper—the kind used to print tee shirts and available at many office supply stores—provided a professional look for just pennies.

To make it work, first design your "imprint" using your computer's word-processing software. (You'll need to reverse or "mirror" the text so it reads correctly when ironed on to your workpiece). Then, print the label on the transfer paper and iron it onto a smooth, discreet place on your project.

—Robert Sawdey, Rockton, Ill.



continued on page 12

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11

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Shop Tips

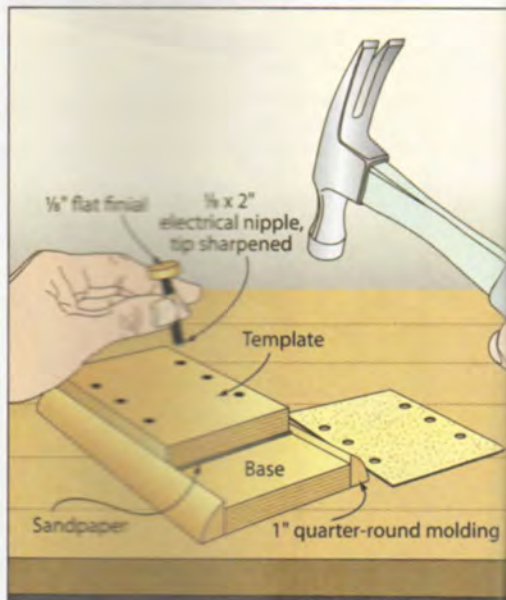
Punch your way to better dust collection

Palm sander manufacturers often include a plastic punch plate for making dust-collection holes in replacement sandpaper. But the jagged holes mine produced didn't allow for much air to move through. To improve dust collection, I made a simple jig for punching perfectly round holes.

First, make a base and template from $\frac{3}{4}$ " plywood the same width as your palm sander's pad. Crosscut the template to the same length as the sander's pad. Add 1" quarter-round molding to both edges of the base to hold the template in place during use. Now transfer the hole locations from the factory punch plate (or a sheet of sandpaper with holes already punched) to the template. Drill through the template at each marked location.

To make the punch, chuck a $\frac{1}{8}$ " x 2" electrical nipple into your drill press, and sharpen one end using a file. Screw on a $\frac{1}{8}$ " flat lamp finial (found at home centers) to the unsharpened end. Slip a piece (or pieces) of sandpaper between the template and base, insert the punch in a hole, strike it with a hammer, and repeat for the other holes.

—Alan Hoffman, North Hills, N.Y.



continued on page 14

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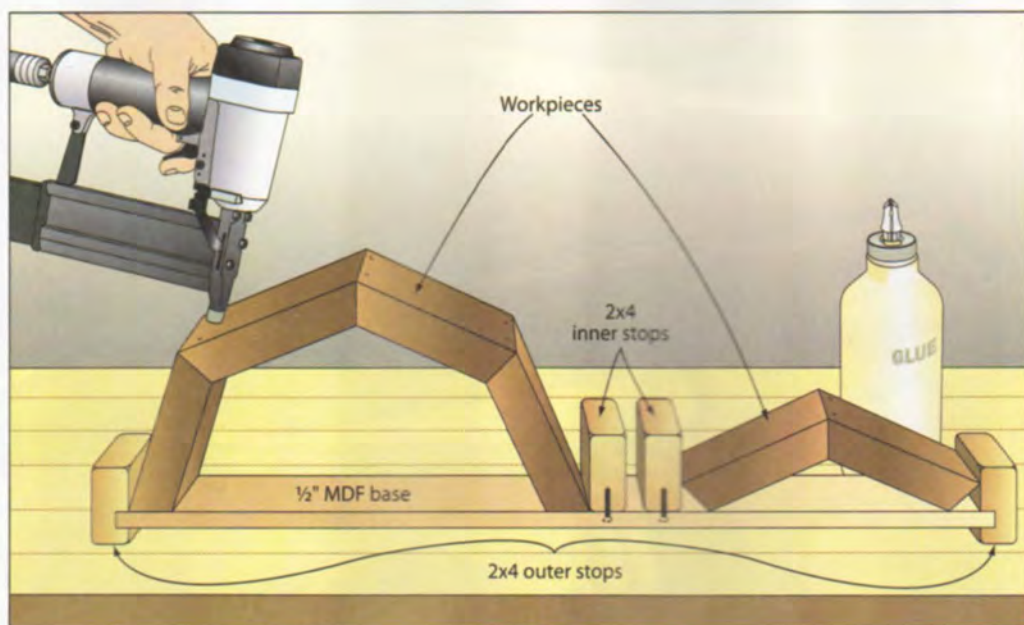
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Jig works like extra hands for mitered piece assembly

When building an octagonal frame for an outdoor ring-toss game, I struggled to hold the mitered pieces together during assembly. So I came up with this simple holding jig.

I made the jig to join two segments at one end and a pair of two-segment assemblies at the other. After building the base from MDF and 2x4s, I held two segments together as they would be when assembled—with an end against one of the outer stops—and marked the opposite end of the assembly on the base. Then, I attached one inner stop on that line. After repeating the process for a four-segment assembly at the opposite end, the jig was complete. Now, when I go to assemble the workpieces, they're fully contained, making assembly much easier.

—Robert Frost, O'Fallon, Ill.



✓Yes



✓Yes



✗No



✓Yes



✓Yes



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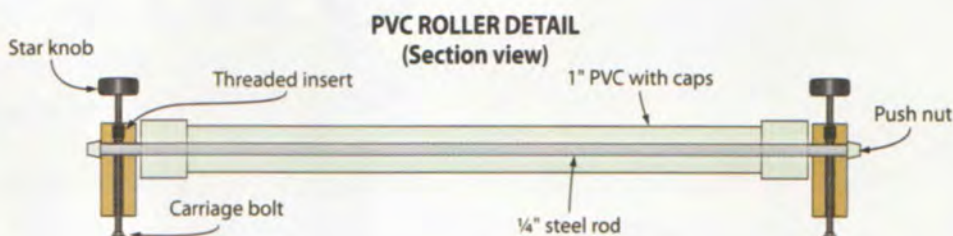
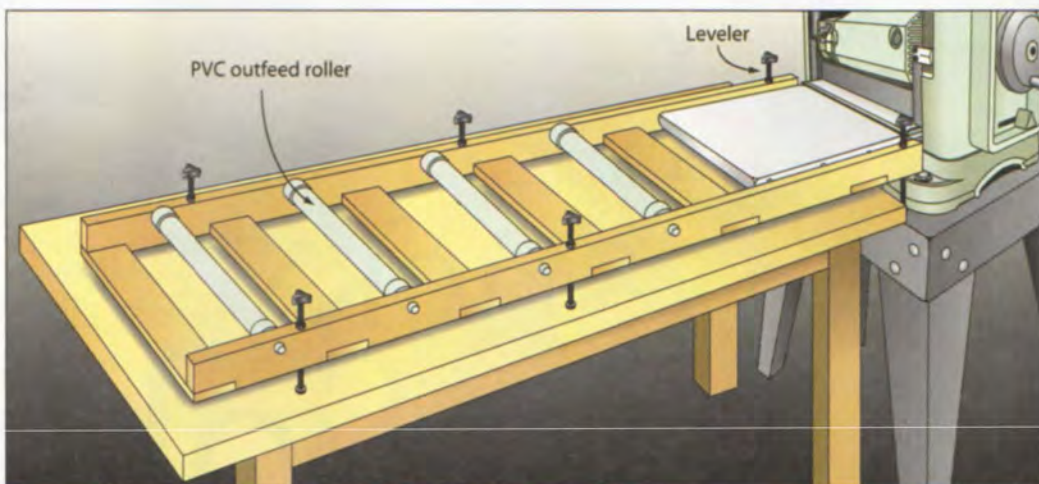
No-rock, easy-roll planer outfeed conveyor

My benchtop planer used to snipe until I came up with this inexpensive outfeed support that rests on my benchtop.

After moving my planer (on its stand) beside my workbench, I measured the height difference between the planer's outfeed table and the workbench and used that dimension to determine the approximate height of the conveyor frame.

I built the frame from $\frac{3}{4}$ " stock and installed simple "rollers" made from 1" PVC tubing with end caps drilled for $\frac{1}{4}$ " steel-rod axles. I inserted the rods through holes drilled in the frame and capped the exposed rod ends with push nuts. Finally, six levelers, made from carriage bolts, star knobs, and threaded inserts, help fine-tune the rollers to align them with the planer's outfeed table. When not in use, the conveyor stores vertically to save space. 🌲

—Don Riley, Marietta, Ohio



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15



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Sticky Solutions

Build better projects by mastering the use of spray adhesives and double-faced tape.

Frustrated by patterns you can't remove? Overwhelmed by the assortment of double-faced tapes and spray adhesives at the home center? Ease your mind with these helpful tips.

Spray adhesive: Perfect for patterns

When choosing a spray adhesive to apply paper patterns, you want one with a gentle hold—just enough to keep the pattern in place while cutting. Look

for words like “temporary” and “repositionable” on the can, and avoid those with words like “permanent” or “high-strength.” A good spray adhesive shouldn't make the paper pattern soggy, and should allow you to reposition it on the workpiece if necessary. In the *WOOD*® shop, we prefer using 3M's Spray Mount Artist's Adhesive for those same reasons.

To properly use spray adhesive, begin by spraying the back of your pattern, as

shown *bottom left*. Let it sit for 15–30 seconds. Unlike most gluing tasks in woodworking, you're not racing a setup time; in fact, applying the pattern immediately after spraying will often, depending on the adhesive used, create an even stickier bond.

If you rush the job and the pattern bonds a little too well, no worries. After machining the workpiece, simply apply mineral spirits to a rag and rub it on the pattern to dissolve the adhesive (*below*).

continued on page 18

SPRAY RIGHT TO STICK WELL



Kraft paper covers benchtop

Apply a light, even coat when spraying an adhesive, and protect your hand and tabletop from overspray.

WIPE IT ON TO TAKE IT OFF



Mineral spirits break down the glue bond so you can cleanly remove the pattern. Plus, it doesn't affect how the surface accepts oil-based finish.

Marquetry Kits

These wood marquetry artworks are unique designs from artist Christy Oates and feature laser-cut wood veneer parts, high-bond adhesive applied to a backer board, and easy to follow instructions. No gluing or sanding required. Kits include only high quality paperbacked veneer in Douglas fir, bubinga, wenge, walnut, and purpleheart species; completed kit measures 8" x 8".



154706 Template



154704 Belcerebon Kit



154702 Aldebaran



154703 Altairian



154704 Belcerebon



154705 Betelgeusian

Double-faced tape: Two types, two strengths

Double-faced tape comes in two types suitable for woodworking: cloth-backed and paper-backed. As with spray adhesives, you choose the type of tape that gives just enough grip for the task at hand. See the chart (bottom) to learn the best uses for each kind.

Before applying either, first wipe clean the surfaces to be attached. Dust and oily films will prevent the tape from taking a firm hold.

After making a cut or completing an operation, you may find that the pieces you taped together won't separate (which can happen if you leave pieces taped together too long). Don't force them apart and risk damaging the wood grain. Instead, drizzle mineral spirits into the joint between the two pieces and give it a few seconds to soak in and weaken the adhesive. 🌱

More Resources

- ▶ For free plans to build a self-contained spray-adhesive drawer, visit: woodmagazine.com/spraydrawer.
- ▶ For a small fee, download the plan for this wall-hung tape dispenser at: woodmagazine.com/tapedispenser.



CLOTH-BACKED PACKS A SUPER STICK



Apply cloth-backed tape sparingly—putting it on the full length of a piece may make it impossible to separate the pieces without damaging them.

PAPER-BACKED HAS A SOFTER GRIP



Better suited to adhering pieces not subject to much shear force (like this miter-gauge extension), paper-backed tape allows for some repositioning.

THE LOWDOWN ON DOUBLE-FACED TAPES

Type	Aggressiveness	Cost per 36-yard roll	Attributes	Possible uses	Where to get it if the home center doesn't have it
Cloth-backed Tape 	Aggressive—use small pieces of tape only	\$24	Thicker than paper-backed tape (may leave a slight gap between the two adhered pieces), requires scissors to cut, good strength against shear force (sliding motion of parallel pieces)	Pattern routing, attaching turning blanks to lathe face plates, holding crown molding in place during installation	#15D25, 800-225-1153, woodcraft.com
Paper-backed Tape 	Mildly aggressive	\$19	Thin, doesn't stretch, easily tearable, repositionable	Attaching miter-gauge extensions, holding veneer or multiple small pieces together for scroll cuts, positioning drawer fronts before drilling screw holes	#15D28, 800-225-1153, woodcraft.com

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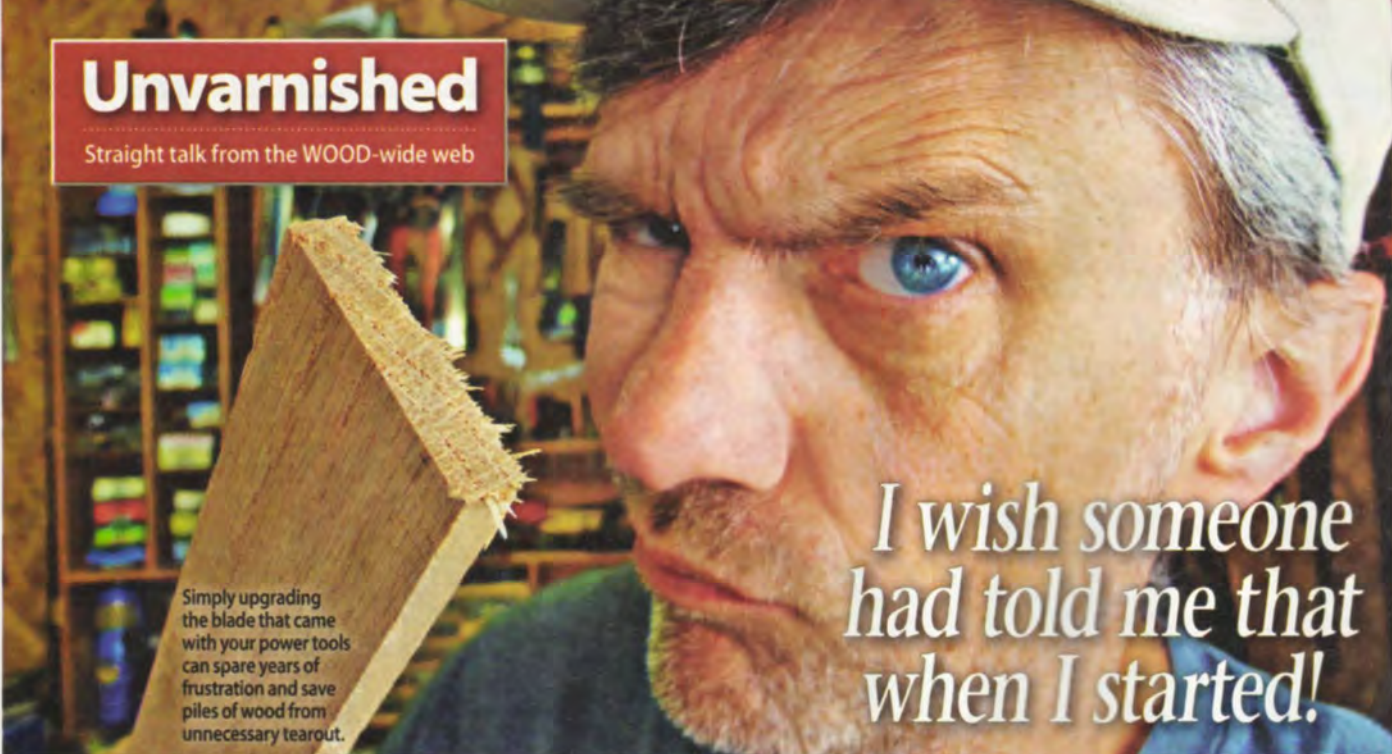
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Simply upgrading the blade that came with your power tools can spare years of frustration and save piles of wood from unnecessary tearout.

I wish someone had told me that when I started!

5 overlooked tips for new (and experienced) woodworkers

Recently, I asked my Facebook followers to think back to their woodworking beginnings to answer this question: What piece of advice do you wish someone had given you early in your woodworking journey that would have saved you hassle and frustration?

I imagined I would hear about perfecting handsaw techniques, or crafting tight-fitting joints—perhaps wisdom about the importance of buying premium tools. But as the replies rolled in, I got a completely different sense. The things people really wished they'd learned at the start were simple and, for the most part, free. So although the advice aims at brand-new

woodworkers, it serves as a wise reminder for all of us:

1 Don't get hung up on tape measures.

Instead, rely on story sticks (*bottom left*) or simply cutting pieces to fit. Sneak up on cuts, testing on scrap first and fitting along the way. If you mark your cuts with a pencil line, leave the line showing and sand to it.

2 Use sharp tools. Tear-out and chipping caused by dull blades frustrates all woodworkers. Besides, sharp tools cut with less effort, so they're safer. And because they cut cleanly, they'll save you lots of time sanding. Learn basic sharpening skills and spend a few minutes honing your tools before each use.

3 All woodworkers make mistakes.

Acknowledge them. Learn from them. But, most of all, shut up about them. Most people won't notice mistakes, so stop pointing them out when you show off your project. It will do wonders for your confidence.

4 Remember that woodworking is a hobby.

It's supposed to be fun and relaxing, so take your time, and enjoy the process. Josh Phillips, one of my very talented viewers, told me that he has "no mania for perfection." I love that line. Build to the best of your ability but don't drive yourself crazy.

5 Ask for help. Woodworkers are a helpful bunch, eager to share advice no matter what your struggle. And we live in a time in which we can quickly get answers to anything. Get actively involved in online communities such as woodmagazine.com, Facebook, WoodworkingForMereMortals.com, etc. For my videos, I rely heavily on the help given by woodworkers who continually supply solutions and inspiration that I wouldn't have thought of. 🌲



A story stick ensures marking accuracy, especially when laying out multiple parts or transferring measurements among workpieces.



Fix your goofs—such as slicing away a dried-on finish drip—and then bask in your new-found woodworking confidence.

—Steve Ramsey's quirky woodworking videos and prolific musings can be found at WoodworkingForMereMortals.com where his goal is to reclaim the woodworking hobby for the average guy.

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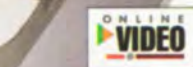
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Drill Press Mobile Base

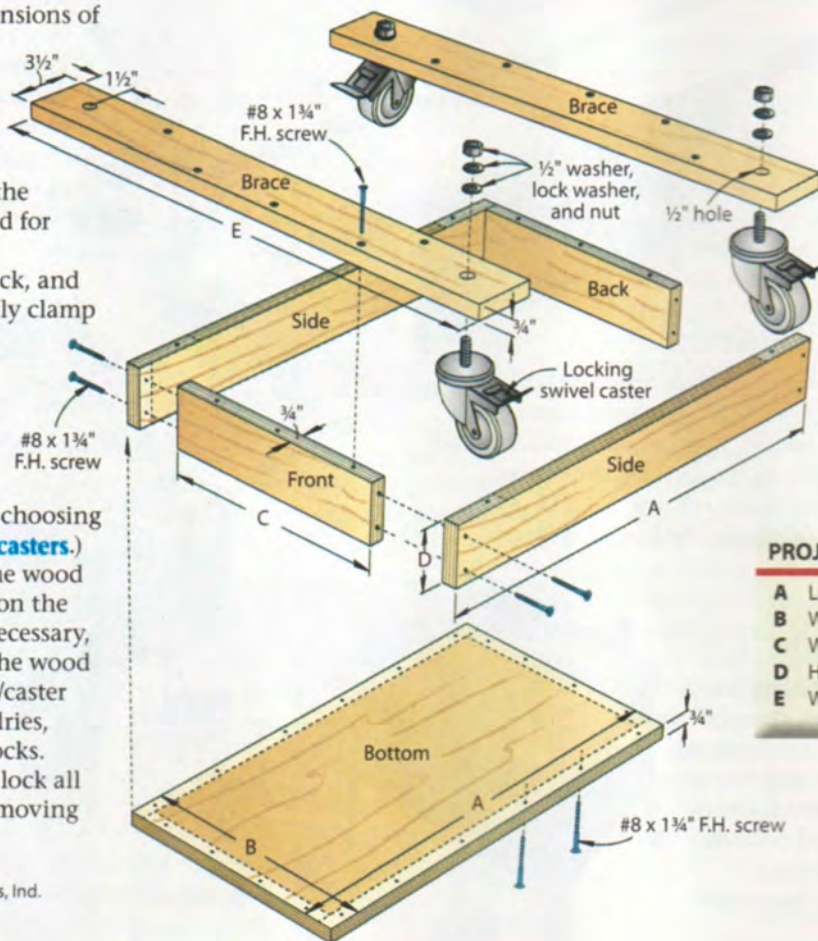
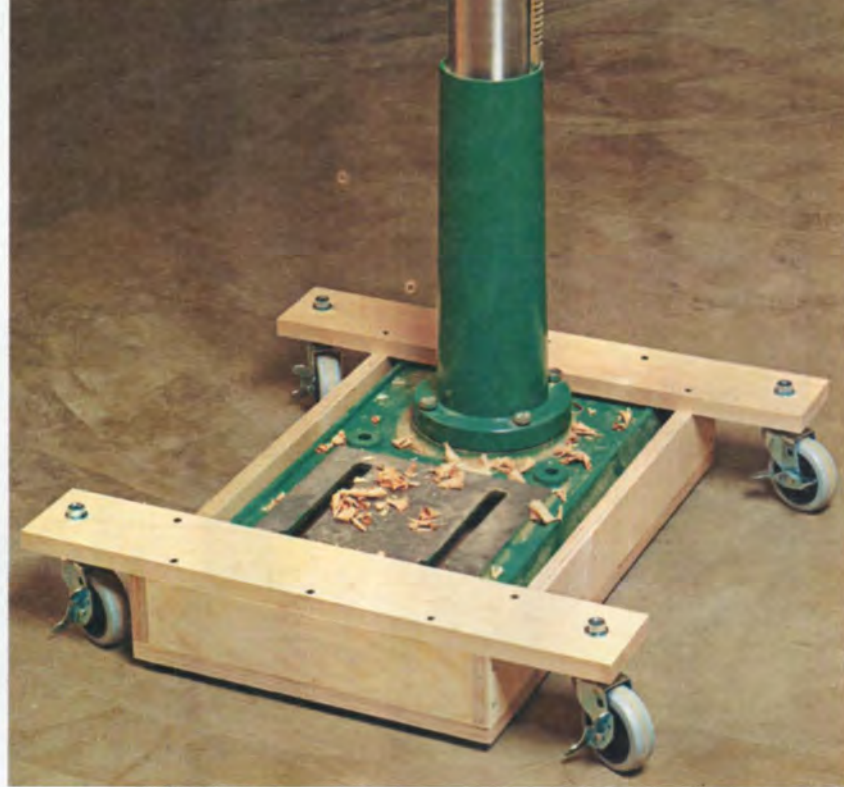
To make the most use of your shop space, put stationary tools on wheels so you can roll them out as needed and roll them back when not. This easy-to-resize project captures the metal base of your drill press and moves on locking swivel casters.

Start by measuring the dimensions of the drill press's base. Then, use the Project Part Calculator (below right) to determine the sizes of the seven wood pieces and cut all of them to size. (We used solid maple for the braces and Baltic birch plywood for the remaining pieces.)

Glue and screw the front, back, and sides to the bottom. Temporarily clamp the braces in place; then drill screw holes through the braces into the front, back, and sides. Remove the clamps, drill the caster mounting holes, and attach the casters. (Learn more about choosing casters at woodmagazine.com/casters.)

For the final assembly, rest the wood base on 1"-thick blocks sitting on the floor. Then, using a helper if necessary, position the drill press inside the wood base. Glue and screw the brace/caster assemblies, and after the glue dries, carefully remove the spacer blocks.

Before using the tool, always lock all four casters to prevent it from moving during use.



PROJECT PART CALCULATOR

- A** Length of base plus 2"
- B** Width of base plus 2"
- C** Width of base plus 1/2"
- D** Height of base plus 1/4"
- E** Width of Bottom plus 9"

Project Design: **Steve Southard**, Santa Claus, Ind.
Illustration: **Lorna Johnson**



LOVE SHOP

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How to remove a stuck bit

If raw muscle won't break a bit loose from your router's collet, fear not. Other options wait in reserve.

Loose nut, stuck bit

Arm-wrestle it free

If you've loosened the collet nut but the bit won't release, apply a few drops of penetrating lubricant, such as WD-40 or Liquid Wrench, and let it seep into the collet around the bit shank. Next, hold the spindle with a wrench (or spindle lock, if so equipped). Then, with a thick work glove on your other hand, grab the bit and twist back and forth to free it.



Tap in to pop it out

If that doesn't work the bit loose, remove the bearing and washer from the end (if so equipped). With the router standing base-up on a solid surface, hold a hardwood scrap against the bit end (to avoid damaging the threads) and tap it *lightly* with a mallet or hammer. Although driving it deeper into the collet seems counterproductive, a small amount of movement just might free the bit. If that doesn't loosen the bit, strike the block a little harder.



Stuck nut

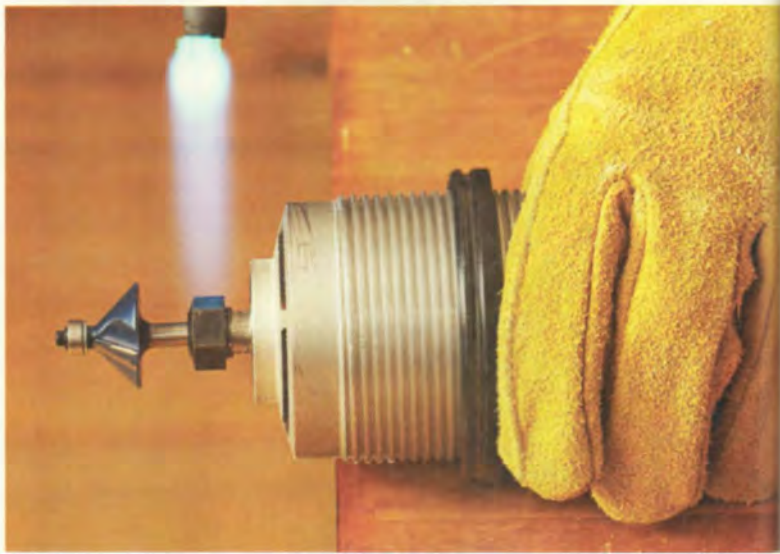
Bust the nut loose

If you can't even loosen the collet nut, then support it against a piece of hardwood and tap it lightly with a hammer, as shown. Rotate the nut and tap each face of the nut. Then break it loose with the router wrenches.



Torch it

Still stuck? Then it's time to bring the heat. Use a small propane torch to heat the collet and bit shank, as shown. Rotate the router to spread the heat evenly around the shank. Don't get it red-hot, and avoid directing flame toward the router—you don't want to damage the seals around the spindle bearings. After heating it for a short time, go back to your glove and wrench and twist the bit loose. Repeat until the bit works free.



Where there's a problem, there's a prevention

We spoke to router specialists with several tool manufacturers to get their input on this subject. They shared the following pointers for avoiding stuck bits in the first place.

► **Problem:** Giving up when the nut tightens up after initially loosening
Prevention: Although it might sound funny if you're familiar with self-releasing collets, these experts tell us they've helped countless customers who simply needed to continue loosening their collets after feeling them initially loosen. Self-releasing collets—usually identifiable by a snap ring or other device that holds the collet and nut together—have two “break” points: the initial one, and then about two turns later another that releases the bit.

► **Problem:** Dirty collet
Prevention: Blow out the collet regularly with a blast of compressed air. If needed, clean the collet and threads with a soft brush and mineral spirits. (For a self-releasing collet, you might have to remove the snap ring to disassemble it.)

► **Problem:** Dirty bit shanks
Prevention: Wipe router bit shanks with a cloth and mineral spirits; lightly sand with 320-grit abrasive to remove rust or tough grime.

► **Problem:** Overtightened nut
Prevention: You don't need to tighten a collet nut as much as you would bolts while assembling a machine, such as a tablesaw. Instead, tighten the nut only about one-eighth of a turn after it snugs up.

► **Problem:** Bottomed-out bit
Prevention: When installing a bit in the collet, push it to the bottom, and then pull it back up about $\frac{1}{8}$ " before tightening. This gives the collet some room to expand downward while compressing a firm grip on the shank.

► **Problem:** Leaving bits in a router too long
Prevention: If you're not using a bit and it's been in the collet more than a few days, remove it from your router. Humidity can cause rust even inside a collet, and that can seize a bit shank inside the collet. 🌱

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Build-to-suit Study Desk

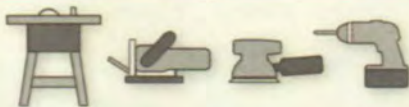
Easy to build, easy to move, and easy to customize, this smart desk will look equally at home in the den and the dorm room.



BASIC-BUILT™

GREAT PROJECTS MADE SIMPLE.

TOOLS NEEDED



Approximate materials cost: \$62

Two base arrangements with the same footprint—a front-facing pedestal and a side-facing bookcase—let you customize this desk to fit your space. The **Materials List** and **Cutting Diagram** on page 30 detail the parts needed to build the desk as shown, above. Adjust accordingly if you choose to build the desk using two pedestals or two bookcases instead.

Mix or match the pedestal and bookcase

1 From $\frac{3}{4}$ " plywood, cut two pedestal sides (A), a pedestal top and bottom (B), and a pedestal shelf (C) for each pedestal you plan to build [Drawing 1 and Materials List]. Cut two bookcase sides (F), a bookcase top and bottom (G), and a bookcase shelf (H) for each bookcase you plan to build [Drawing 2]. Cut the desktop dividers (N), bottom (O), top (P), and back (Q) to size [Drawing 3].

Edge-band all plywood edges that will be exposed using the directions on page 34. Set the desktop parts (N–Q) aside.

2 Drill $\frac{1}{4}$ " shelf-pin holes $\frac{3}{8}$ " deep in the pedestal sides (A) [Drawing 1] and bookcase sides (F) [Drawing 2]. We used a shelf-pin guide (Rockler no. 32991, \$37,

800-279-4441, rockler.com), as shown in Photo A. Or, use a scrap of perforated hardboard as a makeshift drilling guide (woodmagazine.com/fastshelfpins).

SPEED SHELF-PIN HOLES WITH A GUIDE



A Mark the first shelf-pin hole's location and use the guide when drilling it. Secure the guide with a shelf pin in the first hole and drill the remaining holes.

MAKE A SCRAP-TESTED GROOVE



After cutting the kerf in the scrap, reset the fence to widen it. Test-fit the $\frac{1}{4}$ " plywood in the groove before making the second cut on project parts.

USE A COMMON REFERENCE FOR ACCURATE BISCUIT SLOTS

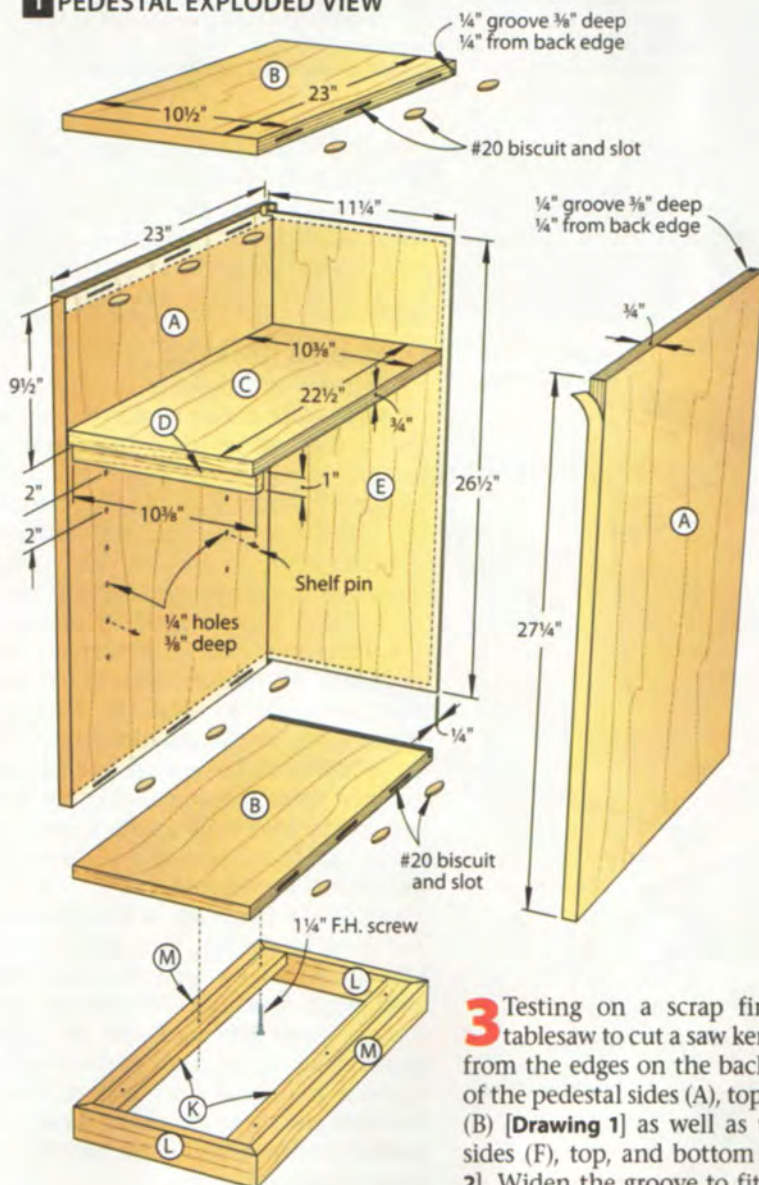


To maintain a common reference surface for slot cutting, fold back or remove the fence. Cut with the joiner base and workpiece resting on a flat surface.



The cradle's upright supports the workpiece and the base serves as the joiner's reference surface to cut slots for #20 biscuits at the marked locations.

1 PEDESTAL EXPLODED VIEW



3 Testing on a scrap first, use your tablesaw to cut a saw kerf $\frac{3}{8}$ " deep, $\frac{1}{4}$ " from the edges on the back inside faces of the pedestal sides (A), top, and bottom (B) [Drawing 1] as well as the bookcase sides (F), top, and bottom (G) [Drawing 2]. Widen the groove to fit the backs as shown in Photo B. Then, dry-fit the ped-

PUT YOUR CLAMPS ON BLOCKS



Scrapwood blocks prevent marring and distribute clamping pressure. Temporarily support them with small clamps while you position larger clamps.

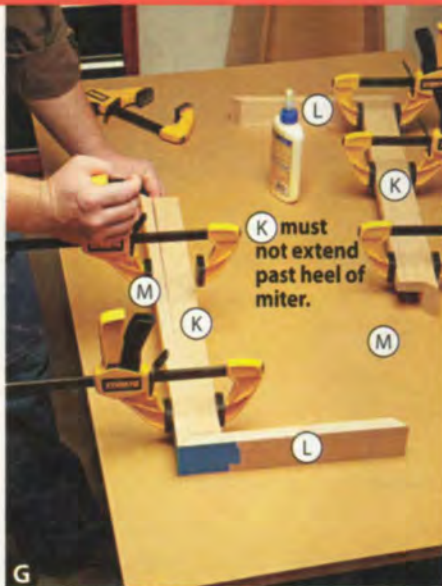
estal and bookcase. Measure from the bottoms of the grooves to determine the final dimensions of the pedestal back (E) and bookcase back (J). Then, cut the backs to size from $\frac{1}{4}$ " plywood.

4 With the outside faces down, mark locations and cut slots for #20 biscuits in the ends of the pedestal top and bottom (B) [Drawing 1 and Photo C], as well as the bookcase top and bottom (G) [Drawing 2]. Transfer the biscuit locations from the tops and bottoms to the inside faces of the adjoining pedestal and bookcase sides (A, F). Glue together scrap plywood into a biscuiting cradle and use it to support the sides as you cut biscuit slots [Photo D].

5 Sand the pedestal and bookcase sides (A, F), tops and bottoms (B, G), and backs (E, J) to 220 grit. Join the pedestal sides (A) to the bottom (B) using glue and #20 biscuits. Slide the back (E) into its groove, attach the top (B), and clamp the assembly [Photo E]. Assemble the bookcase in the same way.



F Tape the base sides (M) and ends (L) together in pairs. Add glue to the miter, fold, wipe away excess glue, and clamp the assembly to your worksurface.



G After the miter glue sets, unclamp the assembly (M/L) and glue and clamp a base cleat (K) into each half base, aligning the tops flush. Let the glue dry.



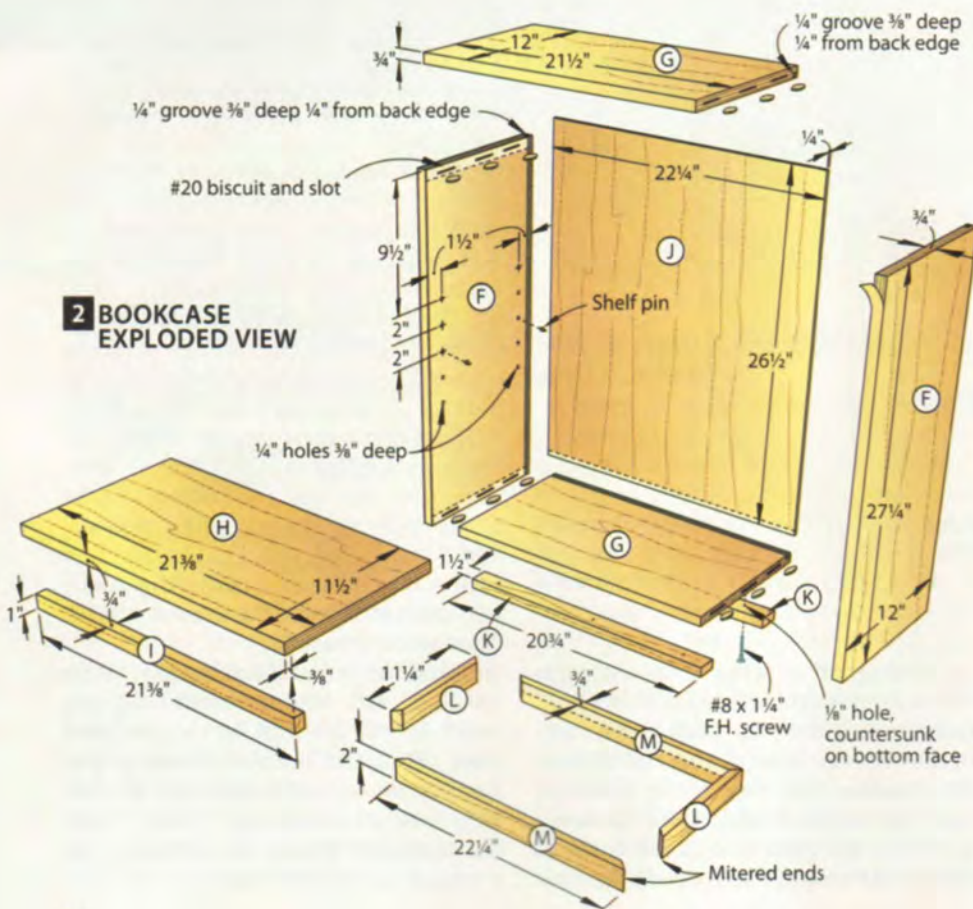
H Glue and clamp two half-bases (K/L/M) together using clamping blocks. The cleats (K) register against the ends (L) to square the assembly.

6 From $\frac{3}{4}$ " stock, cut the base cleats (K) to size [Drawing 2]. Cut the base ends (L), and sides (M) to size, mitering the ends. Then, follow the steps in **Photos F–H** to assemble the bases (K/L/M). After

the glue dries, sand the bases to 220 grit before drilling pilot holes, gluing, and screwing the bases, centered, to the bottom of the pedestal (A/B/E) and the bookcase (F/G/J).

7 From $\frac{3}{4}$ " stock, cut the pedestal shelf edging (D) and bookcase shelf edging (I) to size. Sand the shelves and shelf edging to 220 grit; then, glue and clamp the shelf edging to the shelves, recessed $\frac{3}{8}$ " from the front edge [Drawings 1, 2].

2 BOOKCASE EXPLODED VIEW



Drop on a desktop

1 Retrieve the desktop dividers (N). Mark and cut slots for #20 biscuits in the top and bottom edges [Drawing 3], as you did with the pedestal and bookcase tops and bottoms (B and G). Then, mark the edges, labeling them top, bottom, left, and right, as well as designating them as left, middle, and right to keep track of their locations and orientations.

2 Center the middle divider on the length of the desk bottom (O) and trace one side to mark its location. Transfer the biscuit locations from all three dividers to the bottom, taking care to orient them as marked. Place the bottom in the biscuiting cradle to cut the outer slots; then, use it as a guide to cut the center slots [Photo I].

3 With the best face of the plywood down, lay the top (P) next to the bottom (O) on your worksurface with the front edges touching. Transfer the biscuit locations [Photos J and K]. Once again, clamp the biscuiting cradle to the top as a guide and cut the slots. Then, assemble the desktop unit as shown in **Photos L and M**, and glue the back (Q) in place [Drawing 3].

BACK TO THE CRADLE FOR BISCUITS



Clamp the biscuiting cradle along the marked line, register the joiner base against the cradle, and cut slots for #20 biscuits at the slot marks.

TRANSFER THE DIVIDER AND BISCUIT LOCATIONS

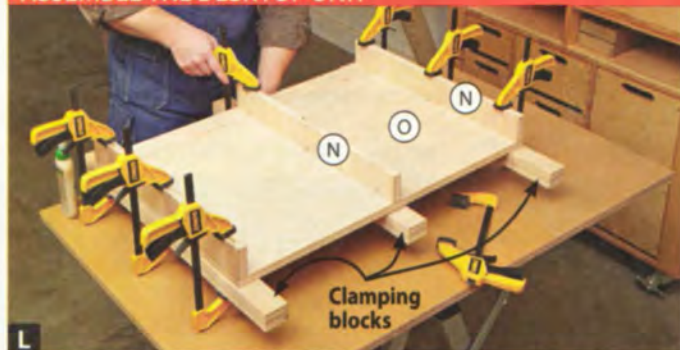


Center the bottom (O) along the top (P) and transfer the locations of the dividers (N). Extend the marks across the top with a framing square.



Flip the dividers (N) end-for-end from the bottom (O) onto their marks $\frac{3}{4}$ " from the edge of the top (P) to transfer the biscuit locations.

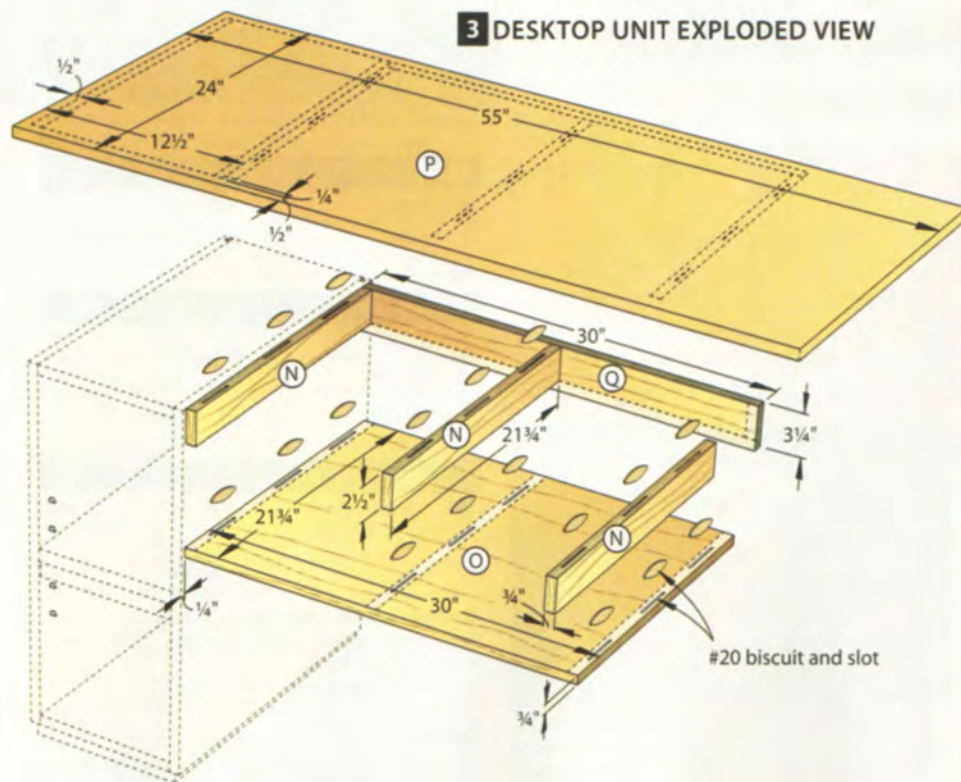
ASSEMBLE THE DESKTOP UNIT



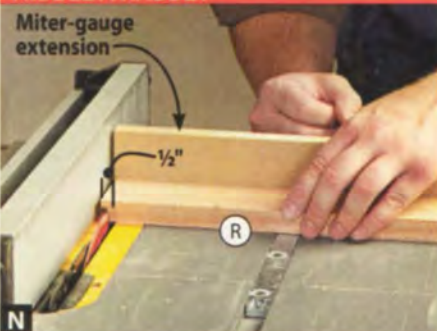
Assemble the bottom (O) and dividers (N) with glue and biscuits, clamping with blocks to distribute the pressure evenly.



Mount the bottom assembly (N/O) to the top (P) using glue and biscuits. Once again use clamping blocks to distribute clamping pressure.



NIBBLE A RABBIT



Mark the width of the rabbit on the piece, set your tablesaw fence to stop cutting at the mark, and nibble away with multiple cuts to form the rabbit.

Fill it out with drawers

1 From $\frac{3}{4}$ " stock, cut the drawer fronts and backs (R) to size [Drawing 4]. With an extension attached to your miter gauge and your tablesaw blade set to a height of $\frac{1}{2}$ ", cut a $\frac{1}{2}$ " rabbit into both ends of the fronts and backs [Photo N].

2 From $\frac{1}{2}$ " stock, cut the drawer sides (S) to size. Using the technique from Photo B, cut grooves $\frac{1}{4}$ " from the bottom edges of the drawer fronts, backs (R), and

sides [Drawing 4]. Dry-fit and measure for drawer bottoms (T) before cutting them to size from $\frac{1}{4}$ " plywood. Drill $\frac{5}{32}$ " holes centered in the drawer fronts (R) for drawer pulls. Then, glue and clamp the drawer assemblies together.

3 After the glue dries, use a brad-point bit to drill three $\frac{1}{4}$ " holes $\frac{3}{4}$ " deep into both ends of the drawer sides (S), into the end-grain of the fronts and backs (R) [Drawing 4]. Pin the holes with

$\frac{1}{4}$ " oak dowel rod [Photo O] and sand the drawers to 220 grit.

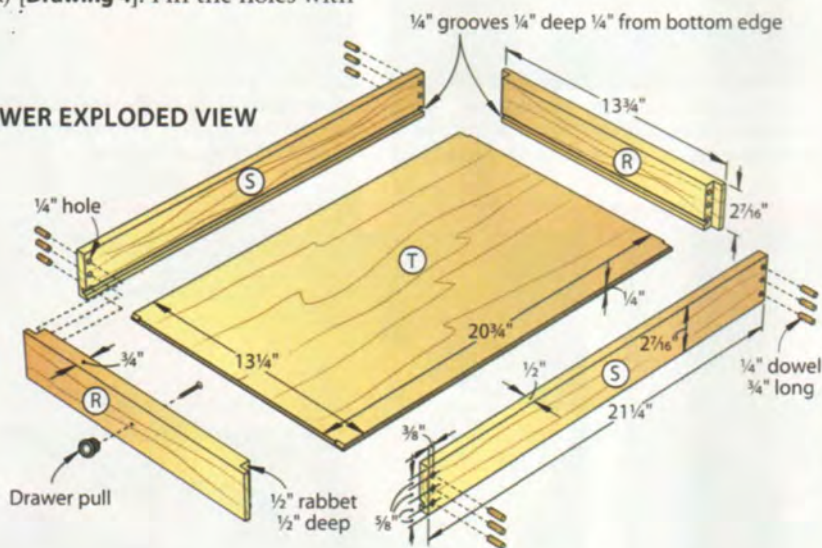
4 Apply stain, if desired; then, add a clear finish. We used Zar Salem Maple oil-based stain followed by four coats of Old Masters water-based satin polyurethane as shown on the next page.

5 After the finish dries, attach drawer pulls, stack the desktop unit on the base units, and optionally attach the top

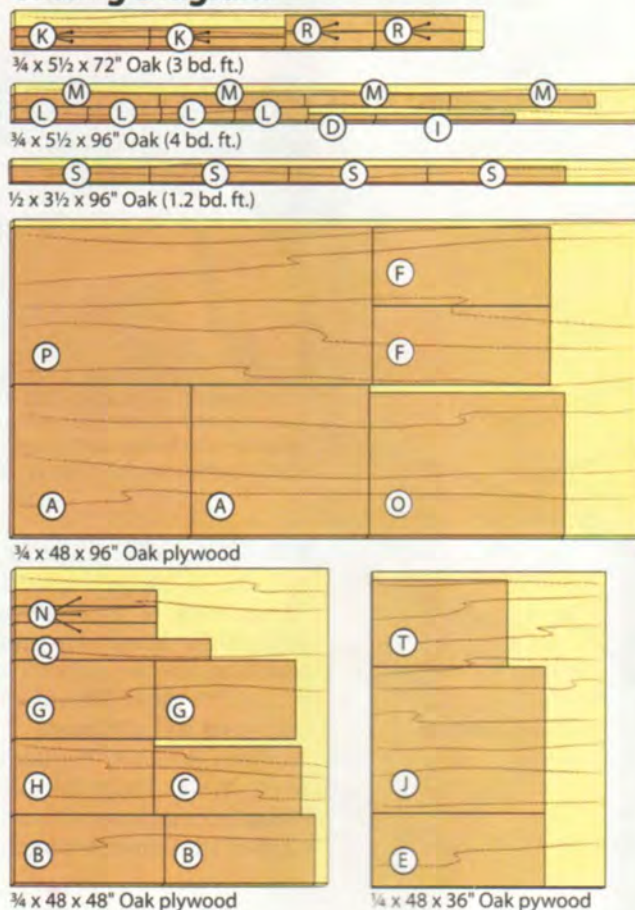
with screws from beneath the bookcase/ pedestal tops using $1\frac{1}{4}$ " screws. Now add a chair and kick your feet up!

Produced by Lucas Peters with John Olson
Project design: Kevin Boyle
Illustrations: Lorna Johnson

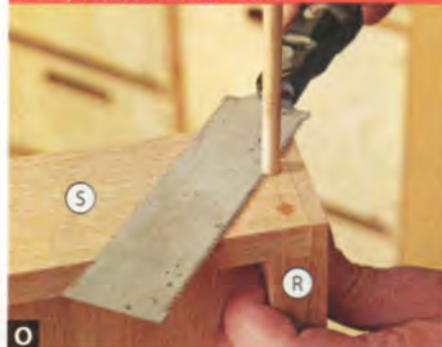
4 DRAWER EXPLODED VIEW



Cutting Diagram



PEG, THEN TRIM FLUSH



Glue the dowel in the peg hole, allow the glue to set, then use a flush-cut saw to trim the excess. Sand the side smooth, removing any blade marks.

Materials List

Part	FINISHED SIZE			Matl.	Qty.
Pedestal	T	W	L		
A sides	$\frac{3}{4}$ "	23"	27 $\frac{1}{4}$ "	OP	2
B top and bottom	$\frac{3}{4}$ "	10 $\frac{1}{2}$ "	23"	OP	2
C shelf	$\frac{3}{4}$ "	10 $\frac{3}{8}$ "	22 $\frac{1}{2}$ "	OP	1
D shelf edging	$\frac{3}{4}$ "	1"	10 $\frac{3}{8}$ "	O	1
E back	$\frac{1}{4}$ "	11 $\frac{1}{4}$ "	26 $\frac{1}{2}$ "	OP	1
Bookcase					
F sides	$\frac{3}{4}$ "	12"	27 $\frac{1}{4}$ "	OP	2
G top and bottom	$\frac{3}{4}$ "	12"	21 $\frac{1}{2}$ "	OP	2
H shelf	$\frac{3}{4}$ "	11 $\frac{1}{2}$ "	21 $\frac{3}{8}$ "	OP	1
I shelf edging	$\frac{3}{4}$ "	1"	21 $\frac{3}{8}$ "	O	1
J back	$\frac{1}{4}$ "	22 $\frac{1}{4}$ "	26 $\frac{1}{2}$ "	OP	1
Bases					
K cleats	$\frac{3}{4}$ "	1 $\frac{1}{2}$ "	20 $\frac{3}{4}$ "	O	4
L ends	$\frac{3}{4}$ "	2"	11 $\frac{1}{4}$ "	O	4
M sides	$\frac{3}{4}$ "	2"	22 $\frac{1}{4}$ "	O	4
Desktop Unit					
N dividers	$\frac{3}{4}$ "	2 $\frac{1}{2}$ "	21 $\frac{3}{4}$ "	OP	3
O bottom	$\frac{3}{4}$ "	21 $\frac{3}{4}$ "	30"	OP	1
P top	$\frac{3}{4}$ "	24"	55"	OP	1
Q back	$\frac{3}{4}$ "	3 $\frac{1}{4}$ "	30"	OP	1
Drawers					
R fronts and backs	$\frac{3}{4}$ "	27 $\frac{1}{8}$ "	13 $\frac{3}{4}$ "	O	4
S sides	$\frac{1}{2}$ "	27 $\frac{1}{8}$ "	21 $\frac{1}{4}$ "	O	4
T bottoms	$\frac{1}{4}$ "	13 $\frac{1}{4}$ "	20 $\frac{3}{4}$ "	OP	2

Materials key: OP—oak plywood, O—oak.

Supplies: #20 biscuits, oak edge banding, $\frac{1}{4}$ " oak dowel, #8x1 $\frac{1}{4}$ " flathead screws.

Bits: $\frac{1}{4}$ " self-centering bit, $\frac{1}{4}$ " brad-point bit.

Source

Drawer pulls: Chrome cabinet knob (Lowes.com, no. 340653) (2), shelf pins (Lowes.com, no. 323848) (8).

The holy grail of finishing: Safe and cheap spraying



If spray-finishing promises silky smooth finishes that go on fast and dry quickly, why doesn't everyone use it? We're all familiar with the objections: HVLP equipment is expensive. The process requires dedicated, ventilated space. Cleanup is a nightmare. And besides, it's unfamiliar territory. But we've discovered the holy grail: a spray-finishing combo that overcomes those hurdles.

Spray-finishing is a balancing act between air flow and finish flow. Tip either in the wrong direction and you could end up with spatters and runs or an unsuitably thin coat.

We started our spray-finishing setup with an inexpensive Wagner Control

Spray Max HVLP unit that we modified slightly. (See **Dialing In**, below.) Though it lacks the oomph to spray paint or unthinned varnishes, this sub-\$130 unit started to outperform its price point when we filled it with a water-based polyurethane.

Although its fast dry time makes it difficult to brush, water-based poly brings a ton of advantages to the spraying world: fewer noxious fumes, virtually no combustibility, its low viscosity requires less air volume to spray, and it cleans up easily with water.

DIALING IN: The photos show you what to look for and how we managed to get the perfect air and fluid flow.



At its minimum finish-flow setting, the gun struggles to atomize even at maximum air pressure. If the spray is readily visible, the finish goes on too thick.



So we added cardboard shims to limit trigger movement, reducing the finish flow to a level the sprayer can properly atomize.



Slowed by the simple modification, the finish atomizes well and the spray becomes nearly invisible to the naked eye.

Spraying tips

If you've never sprayed a finish before, take some time to polish your technique. A cardboard box, *right*, makes a great project stand-in, with both interior and exterior surfaces to practice on.

Unlike their oil-based counterparts, water-based finishes take a few seconds to begin soaking into the wood grain to give it the familiar wet, dark look. This can trick you into applying too much finish. A raking light more accurately reveals the finish, *far right*.

Swinging the gun in an arc causes uneven coverage. Instead, hold the gun at a constant distance from the project, trigger the spray off of one edge (essentially spraying into open space), move the gun across the project, and release

the trigger after passing over the opposite edge. (See *top photo*.)

The Wagner HVLP kit is a "bleeder" unit—meaning air constantly blows through it whether or not you are spraying. So avoid pointing the gun at the



On large surfaces, a vertical spray pattern and horizontal motion work best. Practice to dial in gun speed and distance needed for a smooth coverage.

project when you aren't spraying to keep from blasting away the wet finish.

Lightly sand between coats using 220-grit sandpaper. Add coats to your liking; for an open-pore wood, like oak, we recommend at least four coats. 🌳



A light shining across your project at a low angle makes the finish more visible as you apply it so you can instantly evaluate your results.

Fall in Love with Frameless Cabinets

Why go frameless? Two reasons: First, this style of cabinet serves equally as well as a modern, unbroken canvas for displaying gorgeous wood grain as it does for creating a traditional raised-panel kitchen. Second, they build and install easier than their face-framed cousins. But there are many more advantages to a frameless cabinet design:

- ▶ Eliminating the face frame also takes away nearly half the work—milling, math, and machining.
- ▶ No-fuss biscuit joinery speeds case construction.
- ▶ Replacing the toe-kick with a ladder base means shorter sides for the base cabinets. So each sheet of plywood yields two additional base sides for large installations, saving you money.
- ▶ The ladder-base design also makes it easier to install and level this cabinet configuration.
- ▶ Making doors and drawer fronts from edge-banded plywood reduces work, cost, and moisture-induced movement.
- ▶ Innovative hardware provides flexibility and adjustability in door and drawer mounting.

Materials and measurements

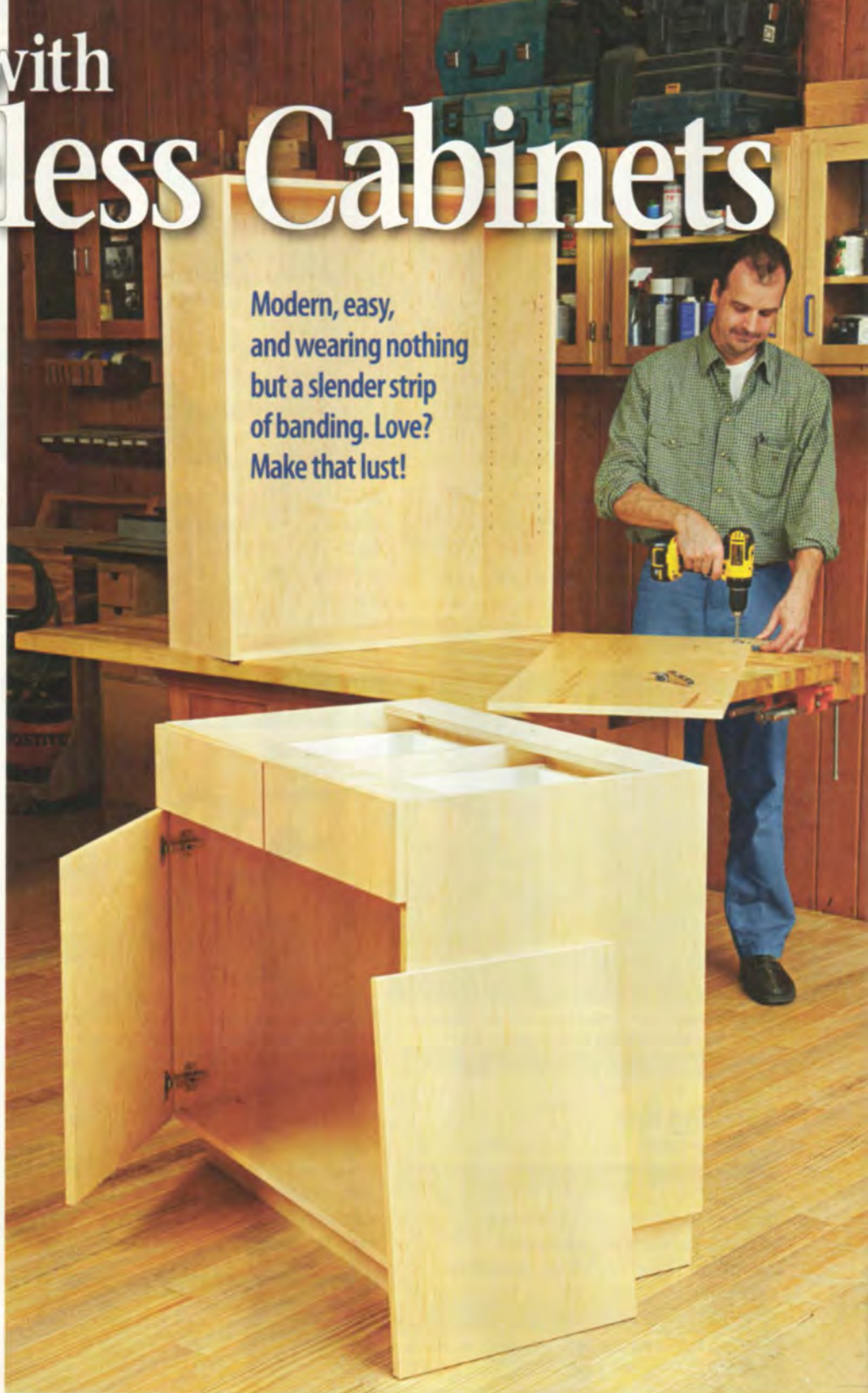
For the cabinets shown, we used maple-veneered plywood. Hardwood-veneer medium-density fiberboard (MDF) or melamine-covered particleboard also work well.

Note: Carefully check your material thickness. Sheet-goods' thickness varies, so you'll need to adjust the lengths of the stretchers and bottom slightly to compensate. The dimensions we used assume a true $\frac{3}{4}$ " plywood.

Standards provide a design assist. Cabinet dimensions have been standardized over the years based on an average person's height and comfortable reach.

▶ Standard base cabinets measure 36" high and 24" deep. Frameless cabinet design achieves these measurements with a 30½" case resting on a 4" ladder base and topped with a 1½"-thick, 24"-deep countertop.

Modern, easy,
and wearing nothing
but a slender strip
of banding. Love?
Make that lust!

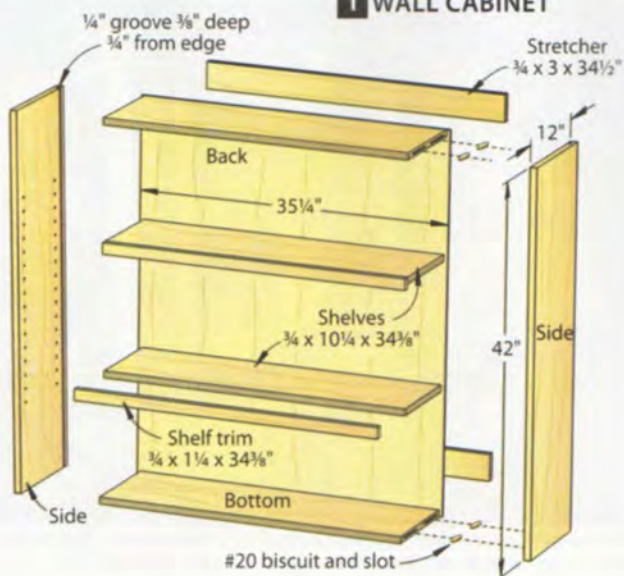


▶ Feel free to adjust the width of the cabinets to fit your space. But keep in mind that the wider the door, the greater its tendency to sag—an error that full-overlay doors amplify. Also, the wider the doors, the more clearance you'll need in front of the cabinet to open them.

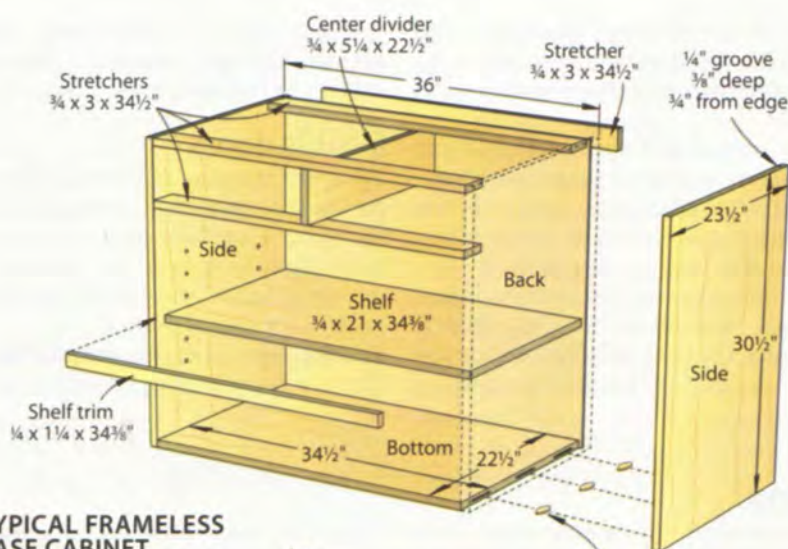
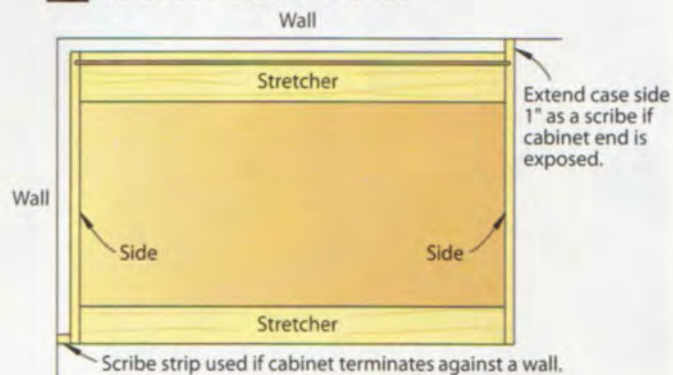
▶ For easy access to the countertop below, standard upper cabinets typically measure 12" deep or less.

▶ Upper cabinets commonly mount 18" above the countertop. This places the tops of our upper cabinets against an 8' ceiling for a floor-to-ceiling look.

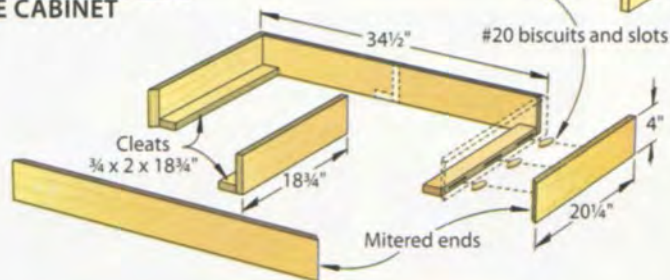
1 WALL CABINET



2a BASE CABINET TOP DETAIL



2 TYPICAL FRAMELESS BASE CABINET



stretchers, as well as the upper cabinet top and bottom. Any shelves will be 1/8" shorter than that.

For example, for a 72" wall-to-wall opening to be filled with two cabinets made from 2 3/32" plywood, cut the base bottom and stretchers and the upper top and bottom 33 3/16" long.

For a set of cabinets with an exposed end, add 1" of additional width to the rear edge of the terminating case side [Drawing 2a].

Case construction

For a base cabinet dimensioned as in Drawing 2, you'll cut all the parts except the back from a single 4x8' sheet of plywood. Start by ripping two side pieces to the cabinet's depth; then, crosscut them to length. Label them left and right on the inside faces.

From the offcut, rip four 3"-wide stretchers and crosscut them to length. Rip the center divider 1" wider than the planned drawer-box height, and save a 3"-long offcut. You'll use it as a spacer during assembly. Finally, cut to size the bottom and, if desired, a shelf and, from matching hardwood, a piece of shelf trim. Then, edgeband all front-facing plywood edges as shown on page 34, and glue the shelf trim to the shelves.

In your table saw, install a stacked dado set to match the thickness of the back material. Use the thickness of a stretcher to set the fence distance from the blade. With the blade height set to 3/8", cut a groove along the back inside face of each side. If you'll be adding an adjustable shelf, lay out and drill shelf-pin holes on both sides.

Case assembly. Mark and cut slots for #20 biscuits where parts adjoin, labeling the

Customize for your space. To fit built-in cabinets into an opening, you'll need to allow some margin for out-of-square walls in your design. To do this, make the total width of a set of cabinets at least 2" narrower than the opening, narrowing or widening cabinets to fit. (You'll fill the gap during installation.) To calculate part lengths for cabinets wider or narrower than the one shown in Drawings 1 and 2, follow this formula:

1. Measure the opening and subtract 2" for an installation flanked by two walls or 1" for an installation that abuts a wall on only one side.
2. Divide this dimension by the number of cabinets you plan to install in the opening. This is the final width of each cabinet.
3. Multiply the thickness of your cabinet side material by two and subtract this from the Step 2 result. This will be the length of the base cabinet bottoms and

BRACES SQUARE CASES



A Squared up and clamped in place, the spacer maintains the correct stretcher position. Squaring braces align the top rear stretcher and bottom.

DOUBLE-CHECK THE DIAGONALS



B When the diagonal measurements in both directions are equal, the case is square. Otherwise, loosen the clamps, adjust the case and retighten.

locations and orientation of each stretcher before setting them aside. Use the 3"-long spacer you cut earlier to aid in locating the lower front stretcher.

Lay a side panel on your workbench with the grooved face up. (The flatter the assembly surface, the less chance for twists and out-of-square joints.) Add glue and biscuits to the slots in the side; then, glue the adjoining edges and slots of the bottom and the stretchers and add them to the side, squaring as shown [Photo A]. The braces in the photo are

from Woodpecker (woodpeck.com, no. CS6075X2, \$35/pair), but you can easily make your own. (See **More Resources** on page 37.)

Glue, biscuit, and clamp the opposite side in place and check for square [Photo B]. After the glue dries, unclamp the case, measure the opening for the back, and cut the back to size from $\frac{1}{4}$ " plywood. Add glue to the grooves, insert the back, and allow the glue to dry. Then, glue the back stretcher and center divider in place to complete the case.

Minus the stretchers and drawer divider, cut and assemble the upper cabinet in the same way.

Doable doors

We chose simple, edge-banded plywood panels for doors and drawer fronts to maintain a modern look. But you can easily alter the style by choosing a different door design, such as the traditional raised panel look [Photo C].

Size the doors to fit your installation. For the base door heights, measure from the

Hide the plies with veneer edging

Iron-on edge-banding quickly and reliably covers plywood edges. And with no machining involved, you'll save a ton of time. Veneer edging comes in a variety of species to complement your plywood choice. We chose an edging (rockler.com, no. 21304, \$23 for 50 ft.) with hot-melt ethylene-vinyl acetate (EVA) glue that forms a fast-acting bond. You'll also need a few specialty tools: an electric iron

(a laundry-room castoff will work fine), a screwdriver (for burnishing), a veneer edge trimmer (rockler.com, no. 43208, \$22), and a veneer guillotine (rockler.com, no. 28542, \$43). Practice the steps, below, on scrap before banding the visible edges of your plywood panels. Watch a video of this process at woodmagazine.com/irononedging.



Using a dry iron set on medium heat, press a slightly over-length strip of edging onto the plywood. Position the edging by feel ahead of the iron, maintaining an overlap on both sides.

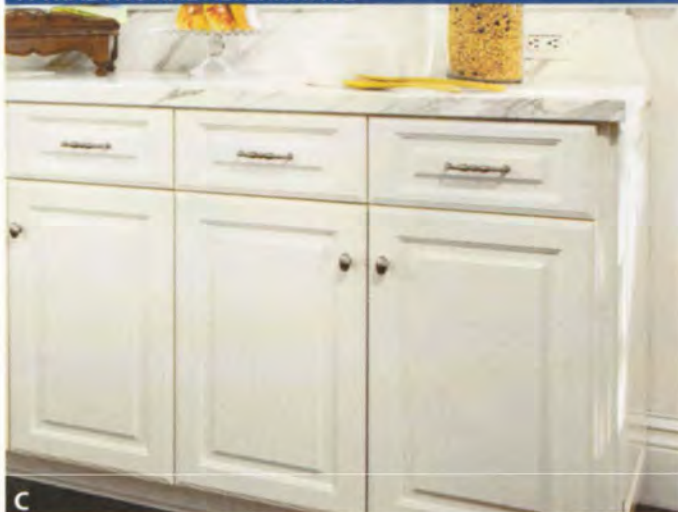


As the glue cools, seal the banding tight by burnishing it with the shaft of a screwdriver. Then use a veneer guillotine (above) to create a flush, square cut at the ends of the panels.



Last, use a veneer edge trimmer to pare away the excess along the faces. A smooth cut requires only light pressure. Clean up all the cuts with a light sanding pass using 220-grit sandpaper.

A TRADITIONAL ALTERNATIVE



C Substitute raised-panel doors and drawers in a frameless cabinet for a stylish alternative that doesn't compromise the easy construction techniques.

DRILL THE HINGE CUP HOLES



D Although the hinge instructions call for 35mm holes to fit the hinge cups, a 1 3/8" Forstner bit matches close enough to save buying a bit.

bottom of the case to the center of the lower stretcher and subtract 1/16" (for a 1/8" reveal). For the width, divide the cabinet width by two and subtract 1/16". (If you're building a bank of cabinets, subtract 1/8" from all but the end doors to maintain an even reveal among multiple doors.)

Find the width of the upper doors in the same way, and make the door height 1/8" less than the height of the cabinet to clear the ceiling. After cutting the doors to size, edge-band all four edges—left and right edges first, and then top and bottom ends.

Mount the doors. Thanks to their built-in adjustability, Euro-style hinges make

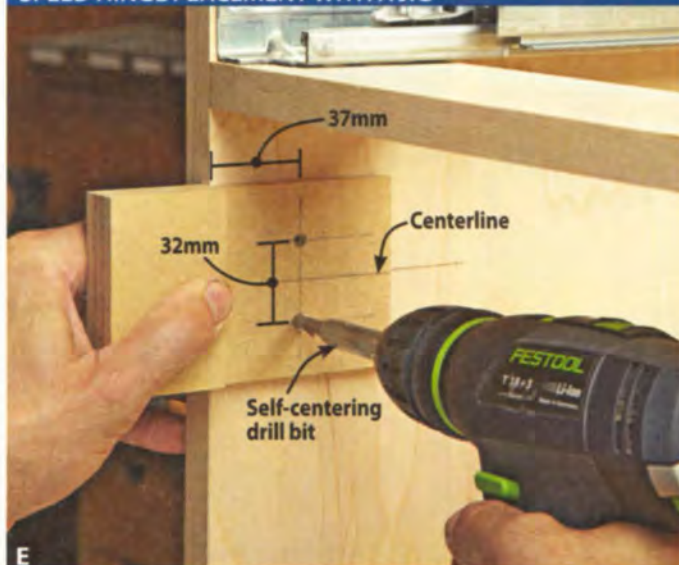
mounting and fitting doors incredibly easy. We chose Blum 120° clip-top hinges (woodcraft.com, no. 142852, \$11). We also added the optional Blumotion snap-on soft close mechanisms (woodcraft.com, no. 147966, \$4) to slow the final few inches of the hinge's closing action to eliminate door slams.

Begin the installation by drilling 1 3/8" holes 1/2" deep with a Forstner bit [Photo D]. We centered the holes 4" from the top and bottom of the door and 1 3/16" from the edge. (And we added a third, centered hinge to the upper cabinet doors to support the additional weight of the oversize door.)

Place a hinge cup in a hole, squaring it with the door edge; then mark the centers of the mounting-screw holes, drill 3/32" pilot holes, and install the hinge with #6 screws.

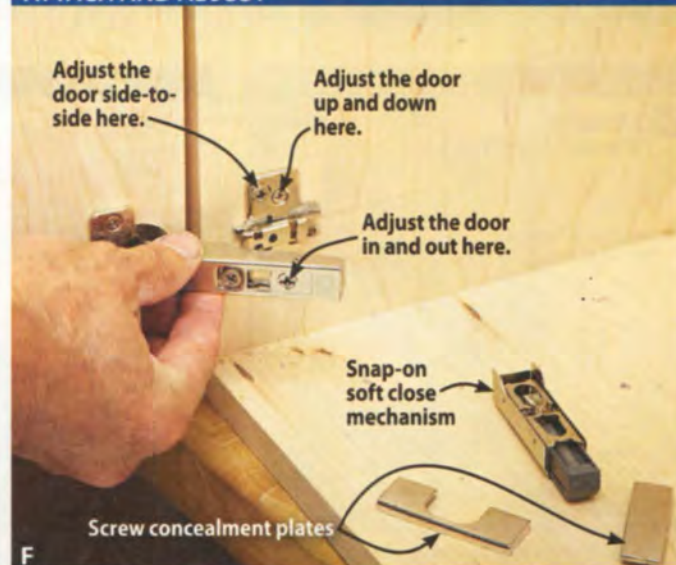
Mark centerlines 4" down from the top of the cabinet's lower cleat and 4" up from the bottom of the cabinet. Build a jig like the one pictured [Photo E] to drill the hinge mounting-plate holes. Then, install the mounting plates, clip the door in place and adjust the door location for a perfectly aligned reveal using the hinge's adjustment screws [Photo F]. Add the snap-on, soft-close mechanisms and the screw concealment plates.

SPEED HINGE PLACEMENT WITH A JIG



E The hinges include directions for screw hole layout. But a simple jig made of layers of 1/4" MDF automatically positions your drill bit.

ATTACH AND ADJUST



F Built-in hinge adjustments give you a fairly wide margin of adjustment. Use these to fine-tune the door position after installation.

INSTALL THE SLIDE INSIDE



G Clamp the slide flat against the stretcher and $\frac{1}{16}$ " back from the cabinet edge. Screw through the horizontal slot to allow for later adjustments.

ADD THE LOCKING MECHANISM



H The locking mechanism captures the front of the slide and features a side-to-side adjustment wheel that allows for fine-tuning.

Two options in adjustable drawers

European hardware manufacturers have also driven rapid improvement in drawer slide technology. For these cabinets, we used two drawer-and-slide combinations that have quickly become standards in the cabinet industry due to their easy installation and adjustability.

Build your own. The first drawer style is a shop-built lock-rabbit drawer box. A few alterations [Drawing 3] accommodate the Blum undermount, full-extension slides (www.hardware.com, no. B563.5330B, \$24) and optional locking side-to-side adjustment mechanism (www.hardware.com, no. BT51.1901, \$5).

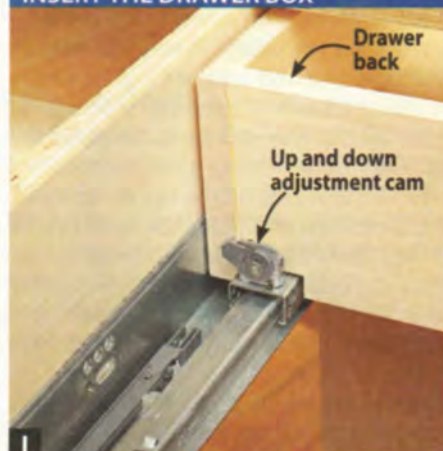
Measure the drawer openings and design the drawer boxes to leave $\frac{1}{2}$ "

clearance on both the top and bottom and $\frac{3}{16}$ " on each side. Cut the fronts and backs $\frac{3}{4}$ " shorter than the intended drawer box width to allow for the $\frac{1}{4}$ " lock-rabbit joint [Drawing 3]. For the undermount slides we used, the slide itself dictates the drawer length—21", in the case of our 23 $\frac{1}{2}$ "-deep cabinet.

After cutting the grooves, dados, and rabbets in the front, back, and sides of the drawer, use a dado blade and a miter-gauge extension to cut a notch in the drawer back to accommodate the slide [Drawing 3a]. Then drill the adjustment hole where shown.

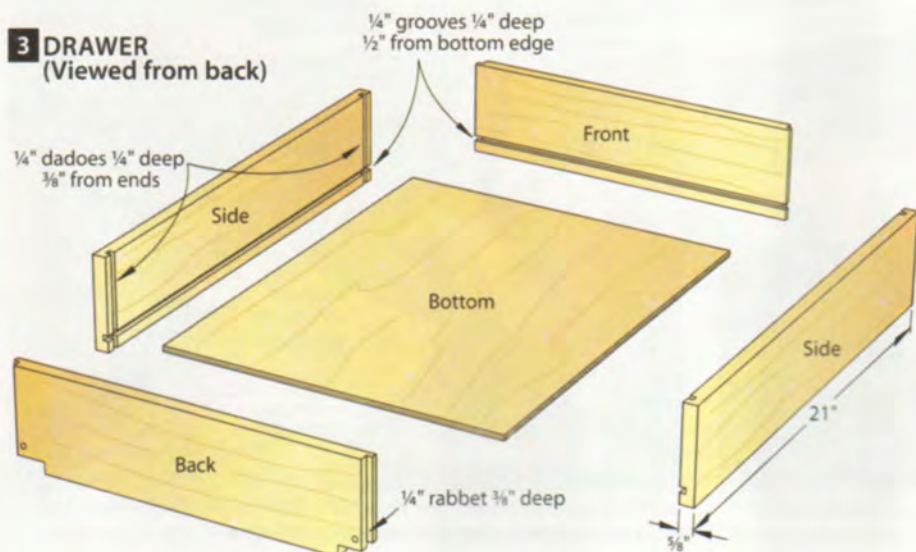
After installing the slides in the cabinet [Photo G] and the adjusters to the drawer boxes [Photo H], attach the boxes to the slides [Photo I].

INSERT THE DRAWER BOX

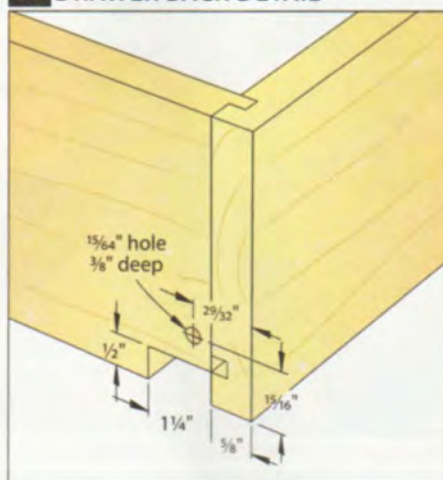


I A pin in a cam adjuster fits in the hole in the back of the drawer, allowing you to adjust the drawer up or down to align the drawer with the case.

3 DRAWER (Viewed from back)



3a DRAWER BACK DETAIL



MAINTAIN AN EVEN SPACE AS YOU ADD A FACE



Use shims and double-faced tape to temporarily position the drawer face before drilling and screwing it in place from inside the drawer box.

ASSEMBLE A BOXLESS DRAWER



Attach the clips included with side/slide combination hardware to add the drawer face. The clips engage with the adjustment mechanism.

Size the drawer faces as you did the doors, edge-band them, and attach as shown in **Photo J**.

The hardware alternative. A time-saving second option—side/slide-mount drawers—eliminates drawer construction altogether. Commonly used in utility rooms or shops, this drawer concept requires you to cut only a bottom, back, and face to the hardware's specifications. We used Hafele's Moovit drawer hardware. The online order form (hafele.com/us/products/20504.asp) lets you specify your drawer dimensions and features to order the hardware.

The hardware clips the parts in place to form an integrated drawer/slide [**Photo K**]. Like the undermount slides, these feature full adjustability for worry-free installation.

Build a ladder-like base

Constructing the base as a separate component from the case greatly simplifies the leveling and installation process. Assemble the base as shown [**Drawing 2**] and finish all of the cabinet components. Then, level and mount the base [**Photo L**]. Once leveled, simply rest the case on the base and screw it to the wall through the back stretcher, shimming where necessary between the cabinet and wall.

For cabinet installations terminating against walls, cut a scribe strip slightly wider than the clearance you allowed [**Drawing 2a**]. Tape the strip to the case side and use a compass to transfer the shape of the wall onto the scribe strip [**Photos M** and **N**]. Cut and sand to the line. Check the fit and repeat if neces-

sary before finishing the strip. Tack the piece in place through the case side.

For open-ended cabinet installations, use the same technique on the case side allowance you left before affixing the cabinet to the wall. 🌲

Produced by: **Lucas Peters** with **Kevin Boyle**
Illustrations: **Lorna Johnson**

More Resources

- ▶ Want to nix raised-panel door goofs? Go to woodmagazine.com/doorgoofs.
- ▶ For a right-angle clamping brace plan, see woodmagazine.com/clampingbrace.
- ▶ For a small fee, find instructions for traditional faceframe cabinets at woodmagazine.com/easycab.

LEVEL A LADDER BASE



Use shims to level the ladder base in both directions. Once level, attach the base to the floor, screwing through both cleats and shims.

MEASURE THE GAP



With the cabinet in place against the wall, set your compass width to match the largest gap between the scribe strip and wall.

SCRIBE AWAY WALL IMPERFECTIONS



Draw the compass along the wall to mark an exact replica of any uneven or out-of-level spots before removing the scribe strip for shaping.



Neat and Discreet Handheld-electronics Valet



If the kitchen counter turns into a rat's nest of charging cords for your family's mobile phones, portable music players, and tablet computers every night, we feel your pain. So we tackled the tangle with this tidy, tuck-away tray that mounts beneath a kitchen cabinet. And wait until you see our one-cord solution for charging multiple devices!

Nate

Nate Granzow, General-Interest Editor

First, build the box

Note: Choose a material and finish for your valet that matches or complements your cabinetry.

1 From $\frac{3}{4}$ " stock, cut the front and back (A) and sides (B) to size [Materials List, Drawing]. Cut 45° miters on the ends of each piece, making sure opposing pieces are identical lengths.

Quick Tip! Dry-fit the box assembly (A/B) to check for tight joints before moving on.

2 Mark the bottom edges of the front and back (A) and sides (B) with a pencil. Install a $\frac{3}{4}$ " straight bit in your router

A RABBET FOR THE BOTTOM



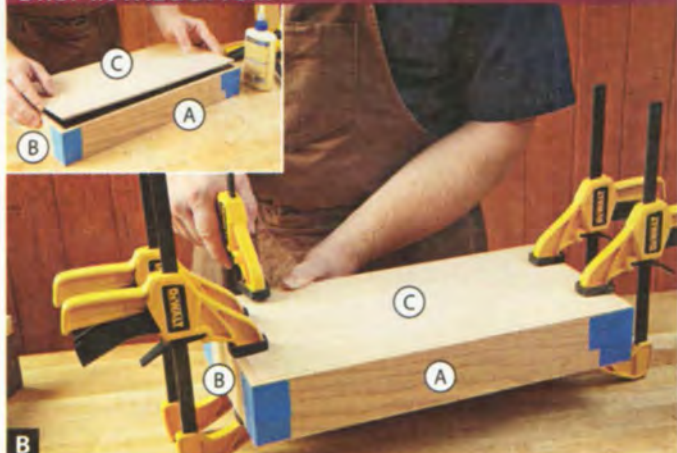
A

Adjust the bit for a $\frac{3}{8}$ "-deep cut and set the fence to cut a rabbet that matches the thickness of the $\frac{1}{4}$ " plywood bottom (C).

table, and rout a $\frac{1}{4}$ " rabbet $\frac{3}{8}$ " deep along the inside bottom edge of all four parts [Drawing, Photo A].

3 Tape together three of the mitered corners of the box assembly (A/B). Unfold the taped assembly, apply glue to

DROP IN THE BOTTOM



B Apply a thin layer of glue to the rabbets in the front and back (A) and sides (B) before dropping in the bottom (C). Clamp it in place and let dry.

SUPPORT THE TRAYS



C With two tray supports (D) cut to length, glue and clamp them to the inside faces of the valet's front and back (A), tight against the bottom (C).

each miter joint, then roll up the box—taping the final joint to complete the glue-up.

4 Measure between the rabbets in the box (A/B) to find the bottom (C) dimensions. Cut the bottom to size and glue it in place [Photo B].

5 From $\frac{1}{4}$ " plywood, cut the tray supports (D) to size [Drawing]. Trim them to length for a snug fit and glue them in place [Photo C].

Now, cut for cords

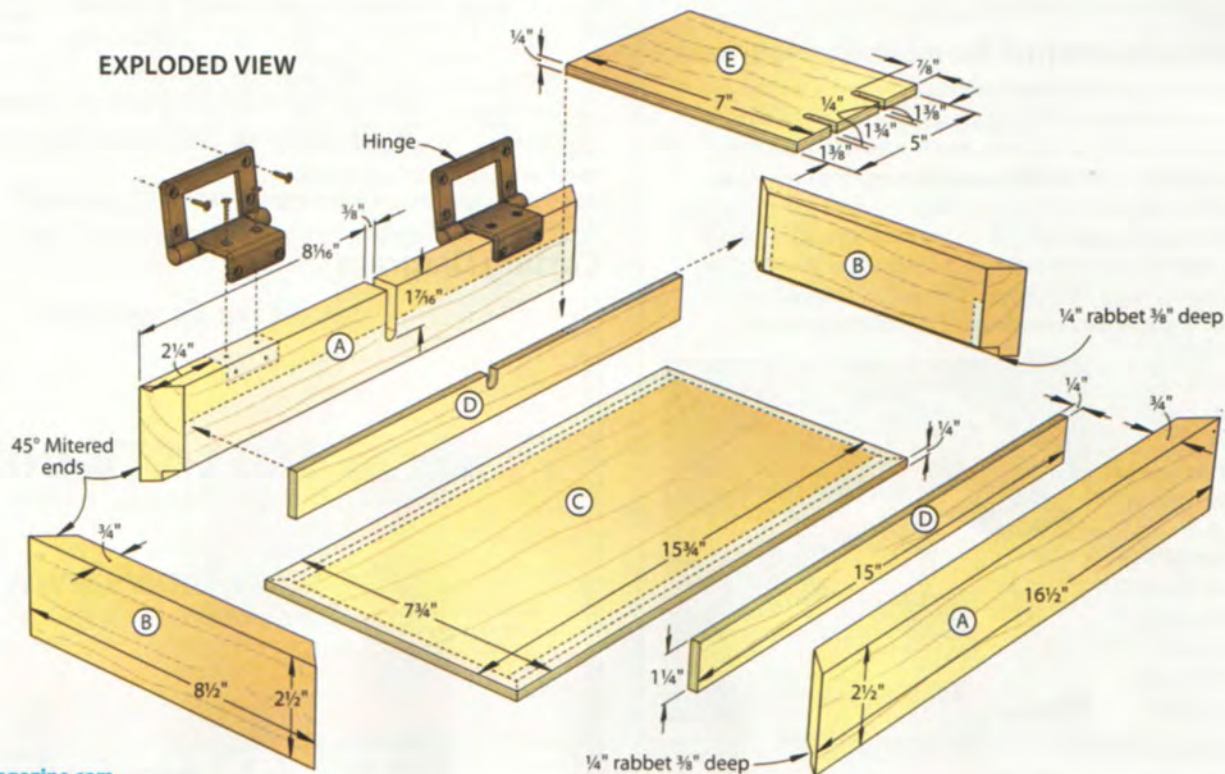
1 Lay out the location of the power-cord slot along the back (A)—a $\frac{3}{8}$ " width should accommodate most power cords. Next, clamp a scrap backing board to the inside face of the back tray support (D) and drill the bottom of the slot with a $\frac{3}{8}$ " brad-point bit [Photo D].

CALL IN BACKUP TO DEFUSE TEAROUT



D Before drilling the bottom of the power-cord slot, clamp a backing board to the tray support (D).

EXPLODED VIEW



A HANDSAW MAKES THE CUT



E For optimal results, use a short backsaw (a handsaw with a stiff rib on its back) with 14–22 teeth per inch when cutting the slot.

2 Using a handsaw, cut from the top of the back (A) to the drilled hole to complete the slot [Photo E].

3 Now, cut the trays (E) to size and test their fit atop the tray supports (D) inside the box (A/B/C). At the router table, rout cord slots in the trays [Photo F]. With the trays complete, apply adhesive-backed high-friction sheet material [Sources] to each—this keeps the electronics from sliding down when opening the charging station.

4 Apply finish to your valet to match your cabinets. When the finish dries, install hinges [Sources] on the station's back (A). For help mounting the valet, see **No-fuss template trick for mounting your valet** (below). 🌱

Produced by **Nate Granzow** with **John Olson**

Project design: **John Olson** Illustrations: **Lorna Johnson**

Sources: High-friction sheet material, \$9.90, no. 88K59.05, Lee Valley, 800-871-8158, leevalley.com; 60-pound lid-stay torsion hinges (pack of 2), \$53.99, no. 36275, Rockler, 800-279-4441, rockler.com; Belkin Mobile USB hub, \$11.99, no. N82E16817394106, 800-390-1119, newegg.com

No-fuss template trick for mounting your valet

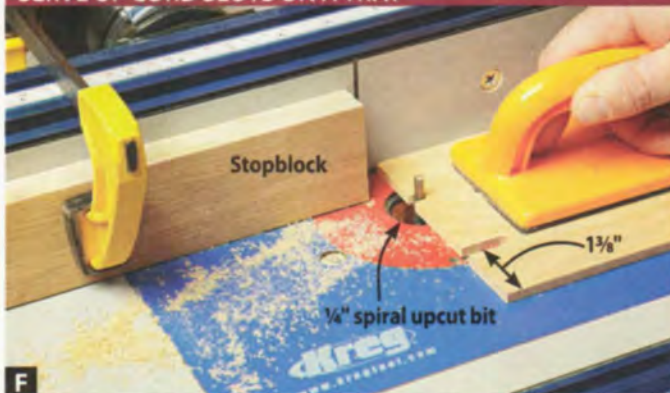
A template helps you avoid the acrobatics necessary to hold your valet in position while driving the screws. From $\frac{1}{4}$ " plywood, cut a blank the same length as the valet, and $\frac{5}{8}$ " wider (to account for the hinge barrels). Hold the blank against the valet's back (A), as shown below, and transfer the hinge holes to it with a sharp pencil. Drill pilot holes through the blank on the marked hinge locations.

Then, apply double-faced tape to the top face of the template, orient it with the pilot holes toward the wall, and stick it in place, tight behind the cabinet's face frame. Drill pilot holes into the cabinet bottom through the template's holes.

Remove the template and mount the valet in place. If your cabinet bottoms are thinner than $\frac{3}{4}$ ", leave the template in place to keep screws from poking into the cabinet.



SERVE UP CORD SLOTS ON A TRAY



F Position a $\frac{1}{4}$ " spiral upcut bit (a $\frac{1}{4}$ " straight bit will also work) $1\frac{3}{8}$ " from the router-table fence. Clamp a stopblock to make $\frac{7}{8}$ "-long slots.

QUICK TIP: SLIM USB HUB SAVES SPACE



G Rather than cram a power strip and chargers under the trays (E), drop in an AC-powered USB hub to charge your devices instead.

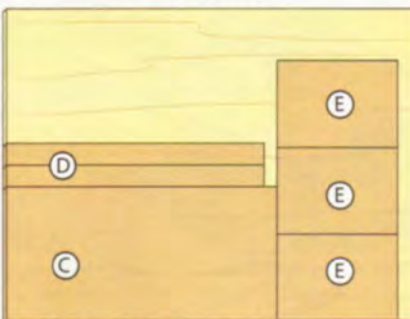
Materials List

Part	FINISHED SIZE			Matl.	Qty.
	T	W	L		
A front & back	$\frac{3}{4}$ "	$2\frac{1}{2}$ "	$16\frac{1}{2}$ "	O	2
B sides	$\frac{3}{4}$ "	$2\frac{1}{2}$ "	$8\frac{1}{2}$ "	O	2
C bottom	$\frac{1}{4}$ "	$7\frac{3}{4}$ "	$15\frac{3}{4}$ "	OP	1
D tray supports	$\frac{1}{4}$ "	$1\frac{1}{4}$ "	15"	OP	2
E trays	$\frac{1}{4}$ "	5"	7"	OP	3

Materials key: O-oak, OP-oak plywood.

Bits: $\frac{1}{4}$ " and $\frac{1}{4}$ " spiral upcut or straight router bits, $\frac{3}{8}$ " brad-point bit.

Cutting Diagram



$\frac{1}{4}$ x 18 x 24" Oak plywood



$\frac{3}{4}$ x $5\frac{1}{2}$ x 36" Oak (1.6 bd. ft.)

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SHOP TESTED

One-Hand Bar Clamps

Only buy these clamps if you intend to work with wood, tools, glue, fasteners, or need to pull two things together. To find the best, we tested 11 models from seven makers.



Because you can tighten these clamps with one hand while holding your work with the other, every shop needs a selection of one-hand bar clamps. We like 'em so much we have 142 of various lengths and brands in the *WOOD*® magazine shop! (And very few sit idle long enough to gather dust.)

The original clamp in this category, the Quick-Grip, debuted in 1989. But these days you have many models and brands to choose from; so how do you know which to buy? And in what lengths? Read on to find out.

The force may be with you

Despite most of the tested clamps being light and made of plastic composites, the majority demonstrated surprising

force. To test this aspect, we asked *WOOD* staff members to use one hand to squeeze a hydraulic ram with pressure gauge in each clamp until they "maxed out" the clamp's potential, as shown above. We then averaged the results and multiplied by the surface area of the ram (1.08") to find maximum clamping force. (See the chart on the next page for the results of our tests. Your results might vary based on your hand strength.)

Irwin's largest Quick-Grip, the XP600, topped the test with an average of 386 pounds of force. It achieves this with beefy components and the smallest jaw-travel-per-handle-squeeze ($\frac{1}{8}$ ") for greater torque. By comparison, only

one other clamp, the Lee Valley Aluminum, averaged more than 200 pounds of force. But you typically need only about 100 pounds of force to pull together well-fitted joints. So most of the clamps we tested will do the job when it comes to gluing up a project. And even the lightweight clamps that fall below this threshold work well enough for holding things in place, such as an auxiliary face to your tablesaw's rip fence or a workpiece to your benchtop while you chop dovetails.

ONE-HANDED CLAMPING POWER



In addition to clamping strength, a clamp's jaws should close parallel—and stay parallel—for best results when gluing up assemblies. The Bessey EZS and Jorgensen ISD 3 clamps did this best in our tests. On the other hand, the Quick-Grip XP600 jaws deflected more than the others, especially as we increased the force, causing glued butt joints to slip, slide, and misalign. Still, these clamps—which weigh more than any other in the test—would be suitable for construction and heavy-duty work-holding tasks.

Let's give the boys a hand

Regardless of a clamp's strength, if it doesn't feel comfortable in your hand, or squeezing the trigger to close the jaws seems unintuitive, you probably won't like it. The Craftsman clamp, shown on

page 44, feels awkward with its ratcheting trigger *behind* the handle, so you squeeze with your palm rather than your fingers. To work around this, we held the Craftsman "backwards," with the fixed jaw nearer to our bodies. Bessey's DuoKlamp, shown on page 44, also differs from the field in that its trigger and handle run inline with the bar rather than a typical pistol-grip style. In some cases, such as clamping below waist level, this orientation works well, but it takes some getting used to.

Once you tighten a clamp, at some point you have to release it. All but the Bora disengaged easily with a pull of the trigger release, but the more force we applied, the more difficult some were to unlock. With the Bora we often had to knock the release loose with a mallet.

Other considerations

► **Clamp lengths.** We like 6" and 12" clamps for their light weight and for work-holding, where their shorter bars won't get in the way. We also like 24" lengths for some larger assemblies because they weigh less than pipe or crank-handle bar clamps. However, these 2-footers lack the clamping force those heavier clamps deliver. (**Quick Tip:** Buy bar clamps in multiples of four because rectangular projects typically require four clamps at a time during assembly.)

All the tested brands have 12" models, and all but Lee Valley offer 6" lengths. DeWalt's Medium and Large clamps, though similar in appearance, perform differently based on their size: The 6" and 12" lengths have only half the strength of the 24"- and 36"-long clamps. The Jorgensen ISD 3 clamps uniquely combine by interlocking, as shown below, to double capacity and possibly save you the cost of buying additional, longer clamps. This works well, but setup takes some time.

LINK TWO CLAMPS FOR EXTRA REACH



Jorgensen's jigsaw-puzzlelike connectors at the ends of the fixed jaws hook together for added length (above). You must first flip both fixed jaws as shown (below). Either of the sliding jaws will tighten the combined clamp.



MAKING A BAD IMPRESSION

► **Jaw pads.** Most stay solidly in place, but those on the Bora clamps slipped off routinely. All but two models have smooth pads; the textured pads on the Bora and Jorgensen clamps can mar your wood, as shown at *right*.

Both jaws on the Quick-Grip XP600 pivot 3° upward or 12° downward to accommodate non-parallel assemblies, such as that shown in the *left* photo below. On the Quick-Grip SL300, only the fixed jaw pivots. The jaws on both models lock square to the bar when pivoting isn't needed.

► **Spreading.** Except for the DeWalt Medium and the Quick-Grip Mini, all the clamps feature jaws that reverse for spreading, such as when disassembling a mortise-and-tenon or dovetail project, *far right*. This proves an easy task with all but the Bora clamps, which require a screwdriver to reconfigure.



The wafflelike pattern on the Jorgensen clamp pads left indentations (revealed here by pencil rubbings) on softer woods when clamped tightly.

OUT OF SHAPE? NO PROBLEM



The jaws of the Quick-Grip XP600 can pivot, allowing them to conform to curved and angular shapes, an otherwise difficult clamp-up.

SPREAD 'EM!



Bessey's DuoKlump proved easiest to convert to a spreader: Swap the pads to the opposite jaw sides and rotate a dial on the sliding jaw.

WOOD MAGAZINE'S REVIEW-A-TOOL

Add your own review of these clamps
and read more reviews from
your fellow woodworkers at
toolreviews.woodmagazine.com.



Bessey DuoKlump
800-828-1004; besseytools.com



Bessey EZS
800-828-1004; besseytools.com



Bora
866-588-0395; boratool.com



Craftsman
800-349-4358; craftsman.com



DeWalt
800-433-9258; dewalt.com



Jorgensen ISD 3
312-666-0640; adjustableclamp.com

ONE-HAND BAR CLAMPS: QUICK, EASY, AND HANDY

BRAND/MODEL	PERFORMANCE RATINGS (1)							DIMENSIONS, INCHES				WEIGHT, LBS-OZ (3)		WARRANTY, YEARS (4)	COUNTRY OF ASSEMBLY (5)	SELLING PRICE (6)
	CLAMPING FORCE	EASE OF TIGHTENING CLAMP	EASE OF RELEASING CLAMP	PARALLEL CLAMPING ABILITY	ABSENCE OF BAR DEFLECTION	PAD RETENTION ON JAWS	EFFECTIVENESS AS SPREADER (2)	JAW TRAVEL PER SQUEEZE	JAW DEPTH	JAW WIDTH	AVAILABLE LENGTHS (MAXIMUM OPENING BETWEEN JAWS)	12" CLAMP	24" CLAMP			
BESSEY DUOKLAMP	B	A	A-	B	A-	A	B	3/16	3 3/8	1 1/16	6, 12, 18, 24	1-9	2-2	1	C	\$18-32
BESSEY EZS	B+	A	A	A	B-	A	A	3/16	3 1/4	1 1/2	6, 12, 18, 24, 36	1-13	2-5	L	T	18-32
BORA	C	C-	D	B	A-	C	D	3/8	3 1/4	1 3/8	6, 12, 18, 24, 36	1-11	2-9	1	I	17-34
CRAFTSMAN	B	B	B-	B	A	A	A	1/4	3 3/8	1 3/8	6, 12, 24, 36	2-10	2-13	L	S	17-27
DEWALT MEDIUM	C-	A-	A-	B	A-	A	N/A	1/4	3	1 1/8	6, 12	0-15.5	N/A	L	C	12-25
DEWALT LARGE	B-	A	A	B	B	A	A	3/8	4 1/8	1 3/8	24, 36	N/A	2-14	L	C	25-40
IRWIN QUICK-GRIP MINI	C-	A	A-	B	A-	B+	N/A	3/16	2 3/8	1	6, 12	0-12.5	N/A	L	C	10-17
IRWIN QUICK-GRIP SL300	B+	A	A	A-	A	A	A	1/4	2 1/8	1 1/2	6, 12, 18, 24, 36	1-8	2-5	L	C	18-30
IRWIN QUICK-GRIP XP600	A	B+	B+	C	B	A	A	1/8	1 1/8	1 1/16	6, 12, 18, 24, 36, 50	2-14	3-10	L	C	20-50
JORGENSEN ISD 3	B+	B	B	A	B-	A	A	1/4	3 3/8	1 3/8	6, 12, 18, 24, 36	1-12	2-5	1	C	18-30
LEE VALLEY ALUMINUM	A-	A-	B	A-	B-	A	A	1/4	3 1/4	1 3/8	12, 24	2-5	2-14	L	G	29-35

1. **A** Excellent
B Good
C Fair
D Poor
N/A Not applicable

2. (N/A) Not reversible for spreader use
3. (N/A) Not available in this length
4. (L) Limited lifetime warranty

5. (C) China
(G) Germany
(I) Israel
(S) Slovakia
(T) Taiwan

6. Price per clamp, current at time of article production and does not include shipping, where applicable. Price range includes all lengths listed in "Available Lengths" column.



Irwin Quick-Grip SL300
800-464-7946; irwin.com



Irwin Quick-Grip XP600
800-464-7946; irwin.com



Irwin Quick-Grip Mini
800-464-7946; irwin.com



Lee Valley
800-871-8158; leevalley.com

Go for the gold (and blue)

At the end of our tests, we found ourselves reaching most often for the Bessey EZS and the Quick-Grip SL300 clamps. They'll both do a great job with anything you ask of them, and they share our Top Tool award. The Besseys sell for about

20 percent less per clamp—effectively netting you five for each set of four Quick-Grips. But the Quick-Grip SL300 clamp exhibits slightly greater clamping force, weighs a few ounces less in the shorter lengths, and has the pivoting jaw. 🌿

Produced by **Bob Hunter** with **Matt Seiler**

Rolling Tool Cabinet

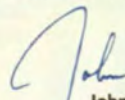
Don't settle for metal. Build a chest beautiful enough to pass for fine furniture.

Dimensions: 30½"W × 21"D × 50¾"H
Approximate materials cost: Lumber and plywood—\$320. Hardware—\$240.

The inspiration for this cabinet came from the steel mechanics' tool chests seen in so many garages. We took that basic design and classed it up to suit a woodworking shop.

For years to come, you'll gain satisfaction from tugging on the brass knobs and feeling the drawers—sized to hold everything from pencils and chisels to full-size routers—glide open effortlessly on full-extension slides. A lidded top tray provides quick access to frequently used tools and a place to set them while working. Casters hidden below the base allow you to roll everything wherever needed in your shop.

We joined the carcase with biscuits to simplify and speed up construction. And even though each drawer looks slightly taller than the one above it, we designed only three drawer-box sizes to minimize tool setups and reduce stacks of differently sized parts. Simple and strong lock-rabbet joints, cut entirely on the tablesaw with a ¼" dado blade, make drawer construction a snap.



John Olson, Design Editor

Put an edge on plywood parts

1 Using a circular saw guided by a straightedge, and following the **Cutting Diagram** on page 52, rip one 8'-long blank 18¾" wide and another 18¾" wide from a sheet of ¾" walnut plywood.

Quick Tip! To prevent chip-out, use a 60-tooth plywood blade, cut with the good face of the plywood down, and cover the cut-line on the top face with painter's tape.

Set the wider blank aside for the top/bottom panels (E), divider panel (J), and lid panel (GG).

2 From the 18¾"-wide blank, crosscut two side panels (A) to 41½" long,

5 Cut the top and bottom panels (E) to size; then glue the top/bottom panel

Technical drawing of a wooden cabinet showing dimensions and construction details. The drawing includes the following specifications:

- Top Panel:** Dimensions include 1 3/4", 4", 4", 4", and 4". It features #20 biscuit slots and #10 biscuits (labeled F, H, I).
- Side Panel (A):** Dimensions include 3 3/4", 3 3/4", 3 3/4", 4 1/8", 5 1/8", 6 1/8", 7 3/8", and 8 7/8". It features #20 biscuit slots and biscuits (labeled F).
- Bottom Panel:** Dimensions include 3 1/2", 16", and 18 1/2". It features #20 biscuit slots and biscuits (labeled F).
- Back Panel:** Dimensions include 41" and 9 3/4". It features #20 biscuit slots and biscuits (labeled F).
- Construction Details:**
 - 1/4" groove 1/4" deep 1/4" from back edge.
 - Mitered ends.
 - Labels A, B, C, D, E, F, G, H, I, J.

Inside face (A)

(B)

(C)

MDO shimmed to make flat surface

A

Support each side-panel assembly (A–C) on edge while routing the panel edging (B, C) flush with the inside faces of the side panels (A).

2 CARCASE

Diagram illustrating the assembly of the Carcase (2). The diagram shows the front, back, and side panels (A, B, C) being joined to a central frame (D, E, F, G, H, I, J, K). Key components and dimensions are labeled:

- Front Panel (A):** Dimensions include 28" for the main body height and 18 1/4" for the base width.
- Back Panel (B):** Dimensions include 28" for the main body height and 18 1/4" for the base width.
- Side Panel (C):** Dimensions include 20" for the width and 42 1/2" for the height.
- Shelves (F):** Dimensions include 28" for the length and 13 1/4" for the width.
- Drawers (G, H, I, J, K):** Dimensions include 28" for the length and 13 1/4" for the width.
- Base (D, E):** Dimensions include 28" for the length and 18 1/4" for the width.
- Assembly Instructions:**
 - No slot in top of G
 - #10 biscuit
 - #20 biscuit and slot
 - #8 x 1 1/4" F.H. screw
 - Mitered ends
 - 1/4" round-overs
 - R = 1/4"

A T-SQUARE POSITIONS THE JOINER



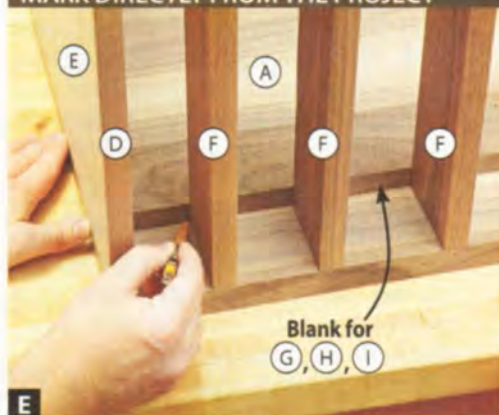
Press the base of the joiner against the T-square and align the mark on the center of the tool's fence with the mark $1\frac{3}{4}$ " from the front edge. Cut the slot.

BRACE THE SIDE PANELS FOR JOINERY



The cradle supports the side assembly (A-C) and provides a flat surface for registering the biscuit joiner while cutting the slots.

MARK DIRECTLY FROM THE PROJECT



Mark along each face of the dividers (F) to determine the exact lengths of the top, middle, and bottom vertical dividers (G, H, I).

edging (D) to the panels [Drawing 2]. After the glue dries, flush-trim both faces of the edging and finish-sand the panel assemblies (D/E).

The biscuiting begins

Note: Cut all biscuit slots on this project with the biscuit joiner fence folded up.

1 On the inside face of each side assembly (A/B/C), lay out the bottom edge of each divider (F) [Drawing 1]. Mark an intersecting line on each layout line $1\frac{3}{4}$ " from the front face of the long panel edging (B). Then lay out the five biscuit-slot locations on the short panel edging (C) and the mating locations on the top and bottom panels (D/E).

2 From 2x12" and 2x24" scraps of $\frac{3}{4}$ " plywood, build a T-square like the one shown in Photo C. Clamp it along each layout line and set the biscuit joiner to cut slots $\frac{3}{8}$ " above the base of the tool. With the base of the joiner facing the bottom of the panel and resting against the edge of the T-square, cut #20 biscuit slots for the dividers (F). To help cut the slots in the short panel edging (C), make a cradle from scrap plywood [Photo D]. Cut mating biscuit slots in the ends of the top and bottom panels (D/E).

3 Cut the dividers (F) to size [Drawing 2] and sand them to 150 grit. With their bottom faces down, cut #20 biscuit slots in each end of each divider. Place #20 biscuits in the slots and dry-fit a side assembly (A/B/C), the top panel (D/E), and the three top dividers.

4 Cut a $\frac{3}{4}$ x $3\frac{1}{2}$ x12" blank for the top, middle, and bottom vertical dividers (G, H, I) and butt it against the top panel (D/E) and the rear edges of the dividers (F) [Photo E]. Mark the lengths of the top, middle, and bottom vertical divid-

ers; then crosscut the three vertical dividers to length. To locate the groove for the back panel (K), mark the rear edge of the top panel on the side assembly (A/B/C). Cut a $\frac{1}{4}$ " groove $\frac{1}{4}$ " deep along the mark [Drawing 1].

5 Cut #10 biscuit slots centered in the ends of the top, middle, and bottom vertical dividers (G, H, I) [Drawing 1; Shop Tip below]. **Note:** Cut a slot in only the bottom end of the top vertical divider (G).

6 Clamp three dividers (F) together with their ends flush [Photo F], and mark a line $\frac{3}{8}$ " to one side of the centerline. Align the T-square with this line and cut biscuit slots centered on the length of the dividers. Set one divider aside, transfer the line around to the opposite faces of the two remaining dividers, and cut slots on these faces.

7 Glue biscuits in the slots and clamp the vertical dividers (G, H, I) to the three dividers (F). Ensure the assembly is square and that the front edges are flush. After the glue dries, cut the divider panel (J) to length [Drawing 1]. Mark three locations for #10 biscuits on the front edge of the divider panel and the rear of

CUT SLOTS IN THREE DIVIDERS



The T-square ensures that the biscuit slots for the vertical dividers (G, H, I) align across the centers of all three dividers (F).

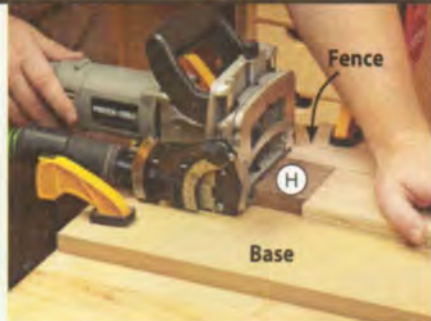
the vertical dividers, and cut slots on these marks [Shop Tip, opposite page]. Then glue the divider panel in place.

8 Begin assembling the carcass by gluing the top panel (D/E) to a side panel (A/B/C). Glue the divider assembly (F-J) to the top and side panel [Photo G]. Then glue the remaining dividers (F) and bottom panel (D/E) to the side

SHOP TIP

Secure short pieces to simplify slotting

To safely hold the vertical dividers (G, H, I), trap them in a jig made from scrap sheet goods. First, screw your biscuit joiner to a base and clamp the base to your bench. Clamp a fence on the base square to the face of the joiner. Keep your hands away from the cutter at the front of the tool by holding another scrap behind each divider as you cut the slots.



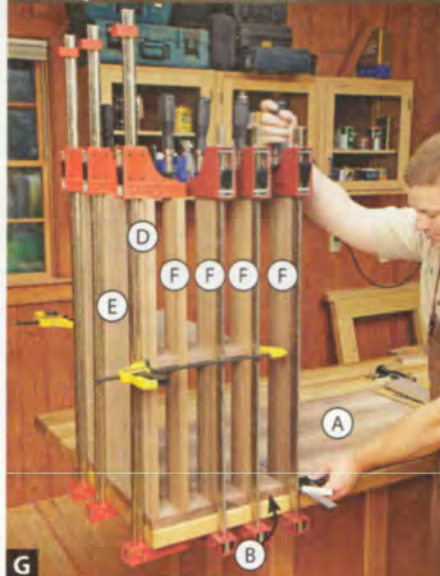
SHOP TIP

To cut slots, go over the edge

To support the divider assembly (F-I) when cutting the biscuit slots in the vertical dividers (G, H, I), extend two 3"-wide scraps past the edge of your bench. Clamp the divider assembly to the scraps and rest the biscuit joiner on the scrap when cutting the slots.



CONQUER THE DIVIDERS



G Check each divider (F) as you clamp it in place to ensure that it lies flush and square with the front of the long panel edging (B).

ALLOW FOR SLIDE ADJUSTMENTS



H Drive only two screws, each into the elongated holes in the drawer slides, to allow for adjusting the drawer positions later.

panel. Glue the remaining side panel in place and check the assembly for square.

9 Measure for the back panel (K) [Drawing 2], cut it to size, and set it aside.

Build a bunch of drawers

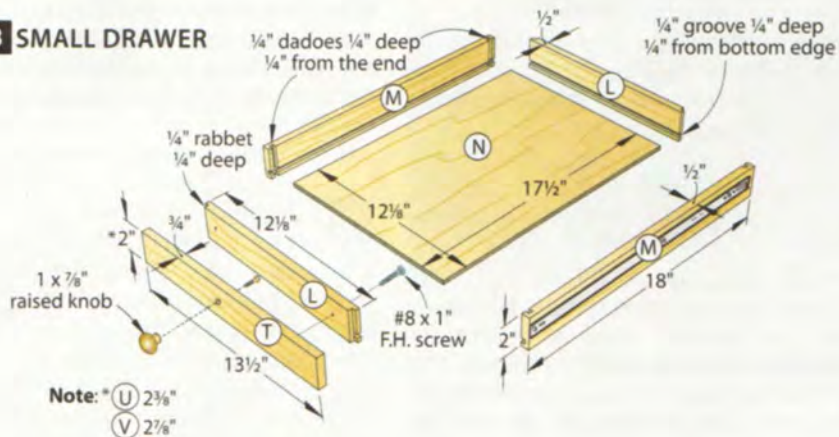
Quick Tip! Instead of planing down 3/4"-thick stock for the 1/2"-thick drawer parts, maximize your yield by resawing and planing 6/4 stock.

1 Cut the drawer fronts and backs (L, O, Q) and sides (M, P, R) to size [Materials List, Drawings 3 and 4]. To form the lock-rabbit joints, rout or cut a 1/4" dado 1/4" deep, 1/4" from the end of each drawer side. Cut rabbets on each end of the drawer fronts and backs to create tongues that fit the dados in the sides. Next, cut a 1/4"-deep groove in each piece to accept the plywood for the drawer bottoms (N, S); then cut the drawer bottoms to size. Finish-sand the inside faces of the drawer parts to 220 grit; then glue up the drawers.

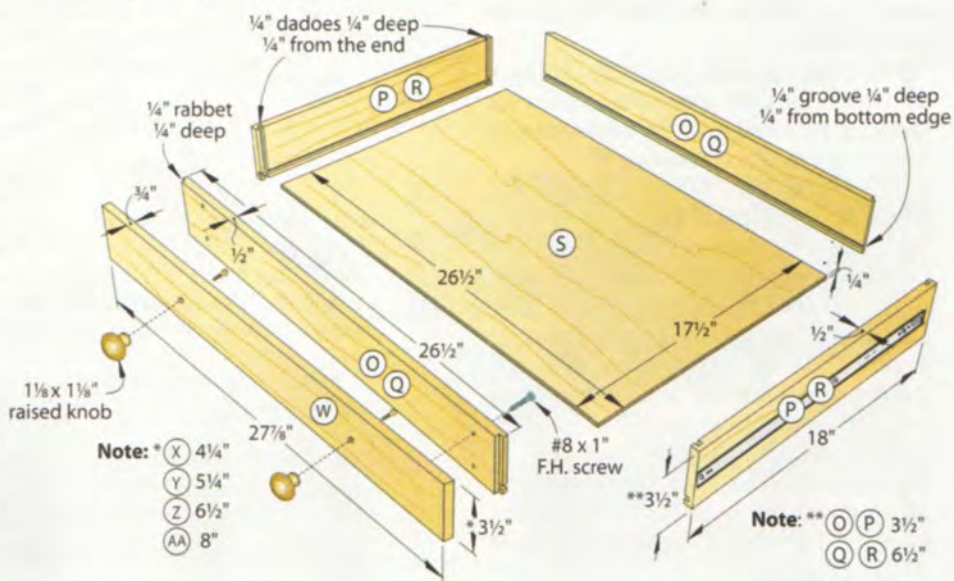
2 Draw a line across each side panel (A) and the center panel (J) centered in each drawer opening. Center the cabinet half of a drawer slide on each line, using the T-square made earlier to position it, and secure each slide with two screws [Photo H].

3 Screw the drawer half of each drawer slide to the drawer sides (M, P, R), flush with the front end and centered on the width of the side. Test the fit and operation of the drawers in the carcass. Make any needed adjustments to the drawer slides, then drive the remaining screws into each half of the slides.

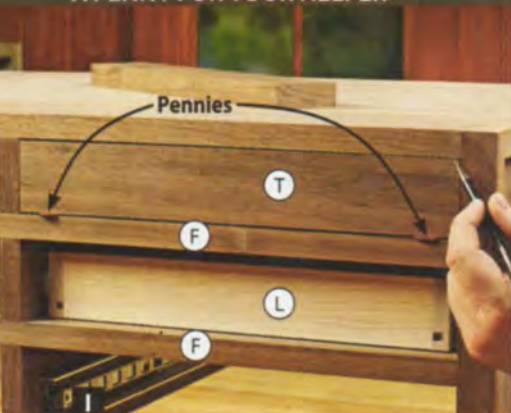
3 SMALL DRAWER



4 MEDIUM AND LARGE DRAWER



A PENNY FOR YOUR HELPER



Rest each drawer face (T-AA) on pennies to create a $\frac{1}{16}$ " gap below; then mark any areas needing to be trimmed for a uniform gap all around.

4 To allow $\frac{1}{16}$ " clearance all around, cut the drawer faces (T-AA) $\frac{1}{8}$ " narrower and shorter than their respective drawer openings. Dry-fit each drawer face in its opening, and scribe any areas that need trimming [Photo I].

Quick Tip! Label the back of each drawer face, and mark an arrow pointing up to help you realign the faces when reattaching them.

5 In the back of each drawer face (T-AA), lay out and drill counterbores and shank holes for the machine screws that secure the knobs [Drawings 3 and 4]. Install the knobs. Affix a short strip of double-faced tape to the back of each drawer face and, again resting the drawer face on pennies, press it against its respective drawer. Gently pull out the drawer and face far enough to allow you to drive screws through the drawer fronts (L, O, Q) and into the faces.

6 Remove the drawers, detach the faces (T-AA), and remove the double-faced tape and knobs. Finish-sand the drawer faces.

7 Retrieve the back panel (K). Apply a ribbon of glue into the grooves in the long panel edging (B), and slide the back panel in place [Drawing 2].

The base helps it roll

1 From 4"-wide stock, miter-cut the long base trim (BB) and short base trim (CC) to finished length [Drawing 2]. On the outside face of each piece, lay out a point $5\frac{3}{8}$ " from each end and $3\frac{3}{4}$ " from the top edge. Drill $1\frac{1}{2}$ " holes centered on these marks, and connect the top edges of the holes with a straight line.

2 Rip the bottom edge of the long and short base trim (BB, CC) to bring the pieces to $3\frac{3}{4}$ " wide. To remove the waste

ROUT A STRAIGHT EDGE



Align the edge of a $\frac{3}{4}$ " straight bit with the far side of a hole in a base trim (BB) piece. Lock the fence against the straightedge and rout away the waste.

between the holes, bandsaw to within $\frac{1}{8}$ " of the line.

3 Complete the profile by mounting a $\frac{3}{4}$ " straight bit in your table-mounted router and raising it $\frac{3}{8}$ " above the table. Adhere a straight-edged scrap to the face of each base trim piece (BB, CC), flush with the bottom edge, and rout between the holes in each piece [Photo J]. Raise

SECURE THE BASE TO THE CARCASE

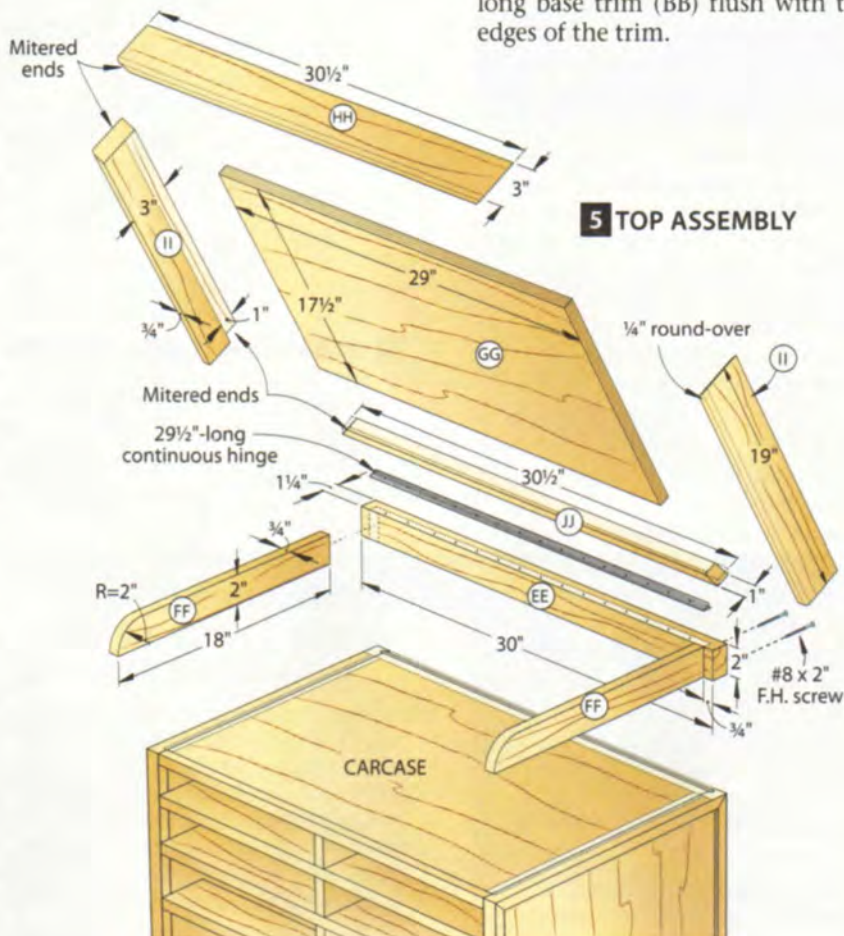


Turn the carcase upside down and center the base (BB-DD) on it. Apply glue to the base cleats (DD) and screw them to the bottom panel (E).

the bit to $1\frac{1}{16}$ " and rout away the remaining waste on each piece.

4 Switch to a $\frac{1}{4}$ " round-over bit in the router table, and round over the top outside edges of the long and short base trims (BB, CC). Cut #20 biscuit slots in the miters, and glue and clamp the base trim pieces together.

5 Cut the base cleats (DD) to size and glue them to the inside faces of the long base trim (BB) flush with the top edges of the trim.



5 TOP ASSEMBLY

MAKE IT ROLL



Drill pilot holes for the screws through the holes in each caster; then secure a caster to each corner of the base trim (BB/CC).

6 After the glue dries, glue and screw the base assembly (BB-DD) to the bottom panel (D/E) [Photo K]. Screw a caster [Source] to each corner [Photo L].

Put a lid on it

1 Laminate two pieces of $\frac{3}{4} \times 2\frac{1}{2} \times 30\frac{1}{8}$ " walnut for the tray back (EE). After the glue dries, plane it to $1\frac{1}{4}$ " thick and rip and crosscut it to 2×30 ". Cut the tray sides (FF) to size and shape the 2" radius at the front end [Drawing 5]. Glue and screw the tray sides to the tray back. After the glue dries, glue this assembly to the top panel (E) and short panel trim (C), flush at the back and centered from side to side.

2 Cut the lid panel (GG) to size [Drawing 5]. From $\frac{3}{4}$ " stock, cut the front, side, and back lid trims (HH, II, JJ) $\frac{1}{2}$ " longer than listed. Miter-cut the front ends of the side lid trims (II), clamp them to the lid panel, and miter-cut the front lid trim (HH) to fit between them. Fit the back lid trim (JJ) against the back edge of the lid panel and mark the finished length of the side lid trim. Crosscut the side lid trim on the marks.

BEGIN A PARTIAL MITER JOINT



Cut a kerf in each side lid trim (II) as deep as the width of the back lid trim (JJ). The kerf should exit right at the corner of the side lid trim.

3 Set your tablesaw miter gauge to 45° and attach an extension to it. Raise the tablesaw blade to match the width of the back lid trim (JJ) and make a cut through the extension. Clamp a side lid trim (II) to the extension, top edge down, aligning the top outside corner with the near edge of the kerf in the extension, and cut a kerf [Photo M]. Reset the miter gauge to the opposite 45° setting and repeat this procedure for the remaining side lid trim.

4 With a handsaw, trim away the waste created by the kerf in the side lid trim (II) [Photo N]. Glue and clamp the front lid trim (HH) and side lid trim to the lid panel (GG); then glue the back lid trim (JJ) in place. After the glue dries, position the lid over the tray sides (FF) and screw a length of continuous hinge to the back lid trim and tray back (EE) [Photo O, Drawing 5]. Check that the lid opens and closes, then remove it from the hinge and rout a $\frac{1}{4}$ " round-over along the outside bottom edge of the front and side lid trim.

5 Remove the continuous hinge. Apply a finish. We used the proce-

COMPLETE THE PARTIAL MITER



Draw lines on the face and end of the side lid trim (II) to connect the ends of the kerf. Saw along the lines with a handsaw to remove the waste.

ATTACH THE CONTINUOUS HINGE



Center the lid (GG-JJ) from side to side on top of the carcass. Press the side lid trim (II) against the tray back (EE) and screw the hinge in place.

dure described in **Bring out the beauty in walnut**, below.

6 Reattach the knobs, and screw the drawer faces (T-AA) to the drawers. Position the lid (GG-JJ), secure the continuous hinge, and your new cabinet is ready to house your tools. 🌳

Produced by Craig Ruegsegger with John Olson
Project design: John Olson
Illustrations: Lorna Johnson

Bring out the beauty in walnut

To more closely match walnut's light sapwood with its dark heartwood, we applied a coat of Lockwood water-based dye, no. 43 English Brown Mahogany, over all surfaces. To get a seamless result, apply the dye with a foam brush, and immediately wipe each pass with a moist rag to smear the wet edge and blend the line between adjacent passes, right. Start your strokes away from inside corners and edges where the dye may pool. Instead, use the rag to help work dye into those areas.

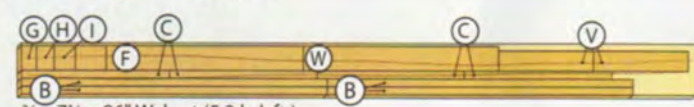
Water may raise the grain, making it feel fuzzy, so after the dye dries, sand lightly with 220-grit sandpaper. If needed, apply a second coat of dye to areas that remain too light, blending the edges with a rag.

The dye evened out the color variations in the walnut, but added a redder tone than we wanted, so we then applied a coat of Varathane stain no. 260 American Walnut for a browner hue. After the stain dried, we sprayed on three coats of a satin-finish oil-based lacquer.



continued on page 52

Cutting Diagram



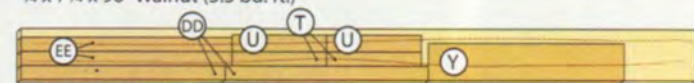
$\frac{3}{4}$ x 7 $\frac{1}{4}$ x 96" Walnut (5.3 bd. ft.)



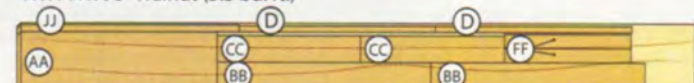
$\frac{3}{4}$ x 7 $\frac{1}{4}$ x 96" Walnut (5.3 bd. ft.)



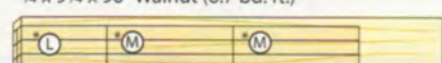
$\frac{3}{4}$ x 7 $\frac{1}{4}$ x 96" Walnut (5.3 bd. ft.)



$\frac{3}{4}$ x 7 $\frac{1}{4}$ x 96" Walnut (5.3 bd. ft.)

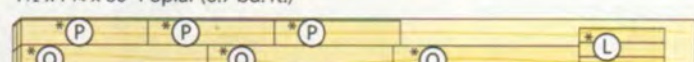


$\frac{3}{4}$ x 9 $\frac{1}{4}$ x 96" Walnut (6.7 bd. ft.)

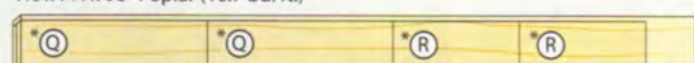


* Plane or resaw to the thickness listed in the Materials List.

1 $\frac{1}{2}$ x 7 $\frac{1}{4}$ x 60" Poplar (6.7 bd. ft.)



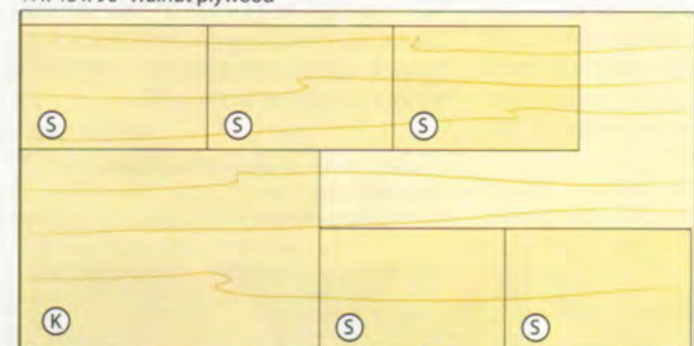
1 $\frac{1}{2}$ x 7 $\frac{1}{4}$ x 96" Poplar (10.7 bd. ft.)



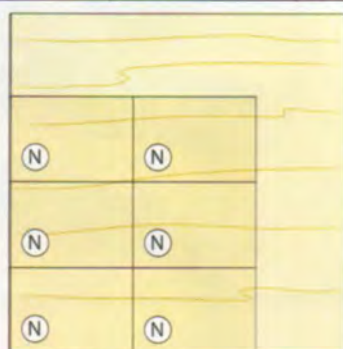
1 $\frac{1}{2}$ x 7 $\frac{1}{4}$ x 96" Poplar (10.7 bd. ft.)



$\frac{3}{4}$ x 48 x 96" Walnut plywood



$\frac{1}{4}$ x 48 x 96" Birch plywood



$\frac{1}{4}$ x 48 x 48" Birch plywood

Source

Hardware: 25x780mm brass-plate piano hinge no. 00D5225 (1), \$7.20; #3x $\frac{3}{4}$ " brass F.H. screws [10 pk] no. 91Z0305X (2), \$1.00; Frame casters, no. 00K2501 (set of 4), \$14.90; 18" 100-lb. full-extension zinc drawer slides no. 02K3018 (11), \$13.10; 1x $\frac{7}{8}$ " raised knobs no. 02W3200 (6) \$4.20; 1 $\frac{1}{8}$ x1 $\frac{1}{8}$ " raised knobs no. 02W3201 (10), \$4.50. Lee Valley Hardware, 800-871-8158, leevalley.com.

Materials List

Part		FINISHED SIZE			Matl.	Qty.
		T	W	L		
Carcase						
A*	side panels	¾"	18½"	41"	WP	2
B*	long panel edging	¾"	1"	42½"	W	4
C*	short panel edging	¾"	1"	20"	W	4
D*	top/bottom panel edging	¾"	¾"	28"	W	2
E*	top/bottom panels	¾"	18¾"	28"	WP	2
F	dividers	¾"	3½"	28"	W	7
G	top vertical divider	¾"	3½"	2⅞"	W	1
H	middle vertical divider	¾"	3½"	2½"	W	1
I	bottom vertical divider	¾"	3½"	3"	W	1
J*	divider panel	¾"	16"	9¾"	WP	1
K	back panel	¼"	28½"	42½"	BP	1
Drawers						
L	small drawer fronts/back	½"	2"	12⅞"	P	12
M	small drawer sides	½"	2"	18"	P	12
N	small drawer bottoms	¼"	12⅞"	17½"	BP	6
O	medium drawer fronts/back	½"	3½"	26½"	P	6
P	medium drawer sides	½"	3½"	18"	P	6
Q	large drawer fronts/back	½"	6½"	26½"	P	4
R	large drawer sides	½"	6½"	18"	P	4
S	medium/large drawer bottoms	¼"	17½"	26½"	BP	5
T	drawer 1** faces	¾"	2"	13½"	W	2
U	drawer 2** faces	¾"	2⅝"	13½"	W	2
V	drawer 3** faces	¾"	2⅞"	13½"	W	2
W	drawer 4** face	¾"	3½"	27⅞"	W	1
X	drawer 5** face	¾"	4¼"	27⅞"	W	1
Y	drawer 6** face	¾"	5¼"	27⅞"	W	1
Z	drawer 7** face	¾"	6½"	27⅞"	W	1
AA	drawer 8** face	¾"	8"	27⅞"	W	1
Base						
BB*	long base trim	¾"	3¾"	30½"	W	2
CC*	short base trim	¾"	3¾"	20½"	W	2
DD	base cleats	¾"	2"	29"	W	2
Lid						
EE*	tray back	1¼"	2"	30"	LW	1
FF	tray sides	¾"	2"	18"	W	2
GG*	lid panel	¾"	17½"	29"	WP	1
HH*	front lid trim	¾"	3"	30½"	W	1
II*	side lid trim	¾"	3"	19"	W	2
JJ*	back lid trim	¾"	1"	30½"	W	1

*Parts initially cut oversize. See the instructions.

**Drawer faces numbered from top to bottom.

Materials key: WP—walnut plywood, W—walnut, BP—birch plywood, P—poplar, LW—laminated walnut.

Supplies: Double-faced tape, #10 biscuits (8), #20 biscuits (38), #8x1" flathead screws (32), #8x1 $\frac{1}{4}$ " flathead screws (8), #8x2" flathead screws (4).

Blade and bits: Dado blade; $\frac{1}{16}$ ", $\frac{3}{32}$ ", 1 $\frac{1}{2}$ " drill bits; flush-trim, $\frac{1}{4}$ " round-over, $\frac{3}{4}$ " straight router bits.

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Mysteriously, metal paper clips cling to the top of this wood turning. The secret, of course,

is a rare-earth magnet (see **Source** on page 56) tucked away just below the domed top. With a cleverly hidden and

nearly invisible joint, friends and co-workers will wonder how you got the magnet in there.

Prepare your materials

Note: Most any scrap of wood will make a great-looking caddy. We made ours from quartersawn white oak.

Draw diagonal lines from corner to corner on both faces of a $1\frac{3}{4}\times 4\times 4$ " blank to find the centerpoint. From the centerpoint, lay out a $3\frac{3}{4}$ " diameter on one

face and a 2" diameter on both faces. Resaw the blank into a 1"-thick piece for the base and a $\frac{5}{8}$ "-thick piece for the top.

Quick Tip! Resaw as carefully as possible so the resawn faces require minimal surfacing on the lathe. This helps hide the joint line in the completed caddy.

Adhere the blanks back together with double-faced tape, and rough-cut them to just over $3\frac{3}{4}$ " in diameter. Separate the blanks, cut two $\frac{1}{4}\times 2$ "-diameter circles from scrap material, and glue one centered in the 2" circle on each blank. Allow the glue to dry.

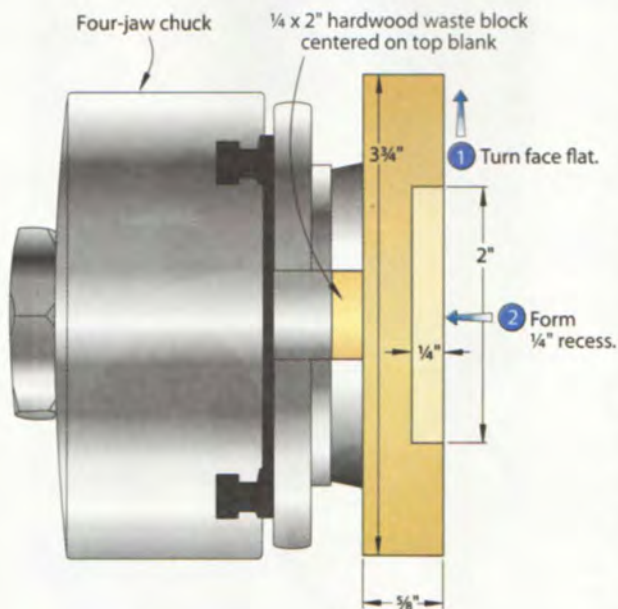
Shape the inside face of the top

Tools: $\frac{3}{8}$ " bowl gouge, square-nose scraper **Speed:** 1,500 rpm

Mount a four-jaw chuck to the headstock of your lathe and secure the waste block on the top blank in the chuck. Position

the tool rest at about a 30° angle to the face of the blank. Using your $\frac{3}{8}$ " bowl gouge, flatten the face of the top, working from the center to the outside. Work slowly and stop frequently to check your progress with a straightedge, *right*.

Reposition the tool rest parallel to the face, and mark a 2" diameter on the face of the top. To do this, make a dot with your pencil as near to the center of the top as possible. Then measure 1" from the center of the dot and, with the lathe running, lightly mark the diameter. Cut a $\frac{1}{4}$ "-deep recess inside the line using a square-nose scraper, *right*. Remove the top from the chuck; you will turn it to its final diameter later.



Turn the inside face of the base

Tools: $\frac{3}{8}$ " bowl gouge, square-nose scraper **Speed:** 1,500 rpm

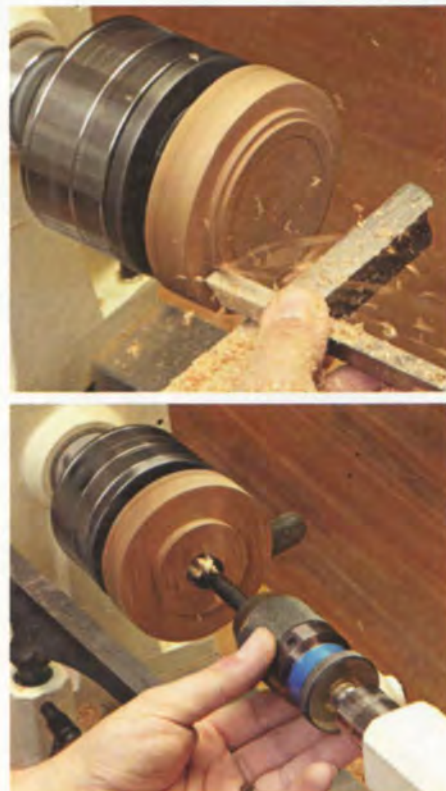
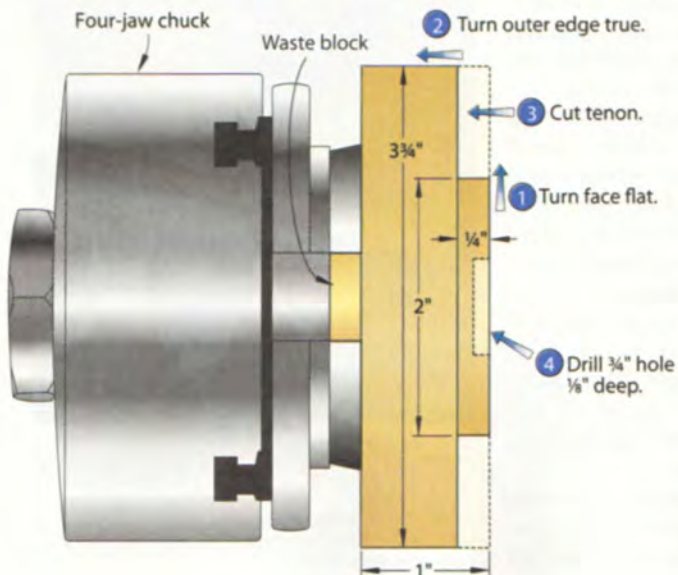
Secure the base blank's waste block in the chuck. With the bowl gouge, true up the face of the blank as you did with the top.

Reposition the tool rest parallel to the lathe bed; then, working from right to left, turn the outer edge to $3\frac{3}{4}$ " diameter. Mark a 2"-diameter circle on the face of

the blank. Measure $\frac{1}{4}$ " from the exposed face of the blank and mark a line around the edge at this point. Lock the tool rest parallel to the face of the base.

Switch to the square-nose scraper. Working from the edge toward the center, push the tool forward into the base

to create a $\frac{1}{4}$ " long tenon, *right*, stopping frequently as you get close to the line to check the fit of the tenon in the recess in the top. Once the tenon fits snug and the top seats on the base with no gap, mount a $\frac{3}{4}$ " Forstner bit in a drill chuck in the tailstock. Drill a $\frac{1}{8}$ "-deep hole in the tenon, *right*, and check the fit of the magnet in the hole. The top of the magnet should rest flush with the top of the tenon.



Give the outside of the base some curves

Tools: Parting tool, $\frac{3}{8}$ " bowl gouge **Speeds:** 1,500 rpm for shaping, 500 rpm for sanding

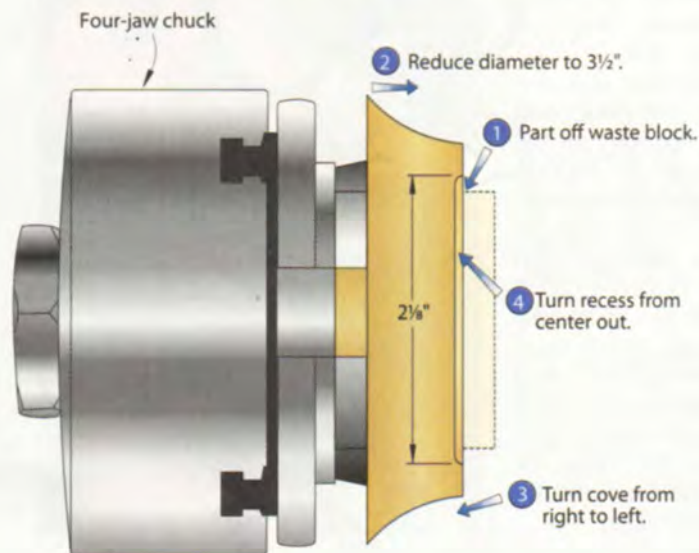
Reverse the base, gripping the tenon in the chuck. Part-off the waste block, *right*, then true the face of the base.

Continuing with the bowl gouge, reduce the blank's diameter to $3\frac{1}{2}$ ", cut-

ting from left to right. Mark a $2\frac{3}{4}$ " diameter on the bottom face. Using the left wing of your bowl gouge, swing the tool's handle to the right to shape a cove between the line and the top outer edge of the workpiece, *below right*. Cut slowly as you near the outer edge to prevent tear-out.

Mark a $2\frac{1}{8}$ " diameter centered on the face of the base. Use the bowl gouge to turn a $\frac{1}{16}$ "-deep recess inside the line.

Remove the tool rest. Slow the lathe to 500 rpm and sand the bottom and edge of the base to 220 grit. Remove the base from the lathe.



Back to the top for the dome

Tools: Parting tool, $\frac{3}{8}$ " bowl gouge **Speeds:** 1,500 rpm for shaping, 500 rpm for sanding

Mount the top blank to the lathe by expanding the chuck's jaws into the recess. Part-off the waste block; then, true the face with the bowl gouge. Reposition the tool rest and, cutting from left to right, reduce the top's outside diame-

ter to $3\frac{1}{2}$ ". Mark a dot on the centerpoint of the top's face, and form a crown from the center to the outside edge. Work carefully as you approach the edge.

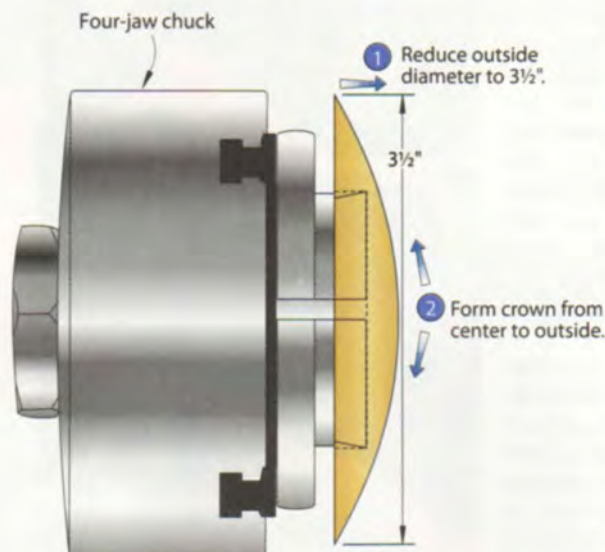
Reduce the lathe speed to 500 rpm and sand the top to 220 grit. Remove the top from the lathe and dry-fit it with the base, checking that the grain between the two aligns all around.

Quick Tip! To help realign the pieces during glue-up, put a $\frac{1}{2}$ "-long strip of painter's tape across the joint line; then open the top like a clamshell and cut the tape along the joint.

Place the magnet in the base, apply glue to the area surrounding the tenon, and reassemble the top and base, aligning the edges of the tape. Clamp the pieces until the glue dries.

Remove the painter's tape, sand the caddy to 320 grit, and apply a finish. We wiped

on three coats of an oil-and-urethane finish, buffing lightly with a 320-grit sanding sponge between coats. 🌿



Source: $\frac{3}{4} \times \frac{1}{8}$ " rare-earth magnets [pack of 6], \$15.79, no. 151008, Woodcraft, 800-225-1153, woodcraft.com.

Produced by **Craig Rueggegger** with **Brian Simmons**
Project design: **Brian Simmons**
Illustrations: **Kevin Boyle**

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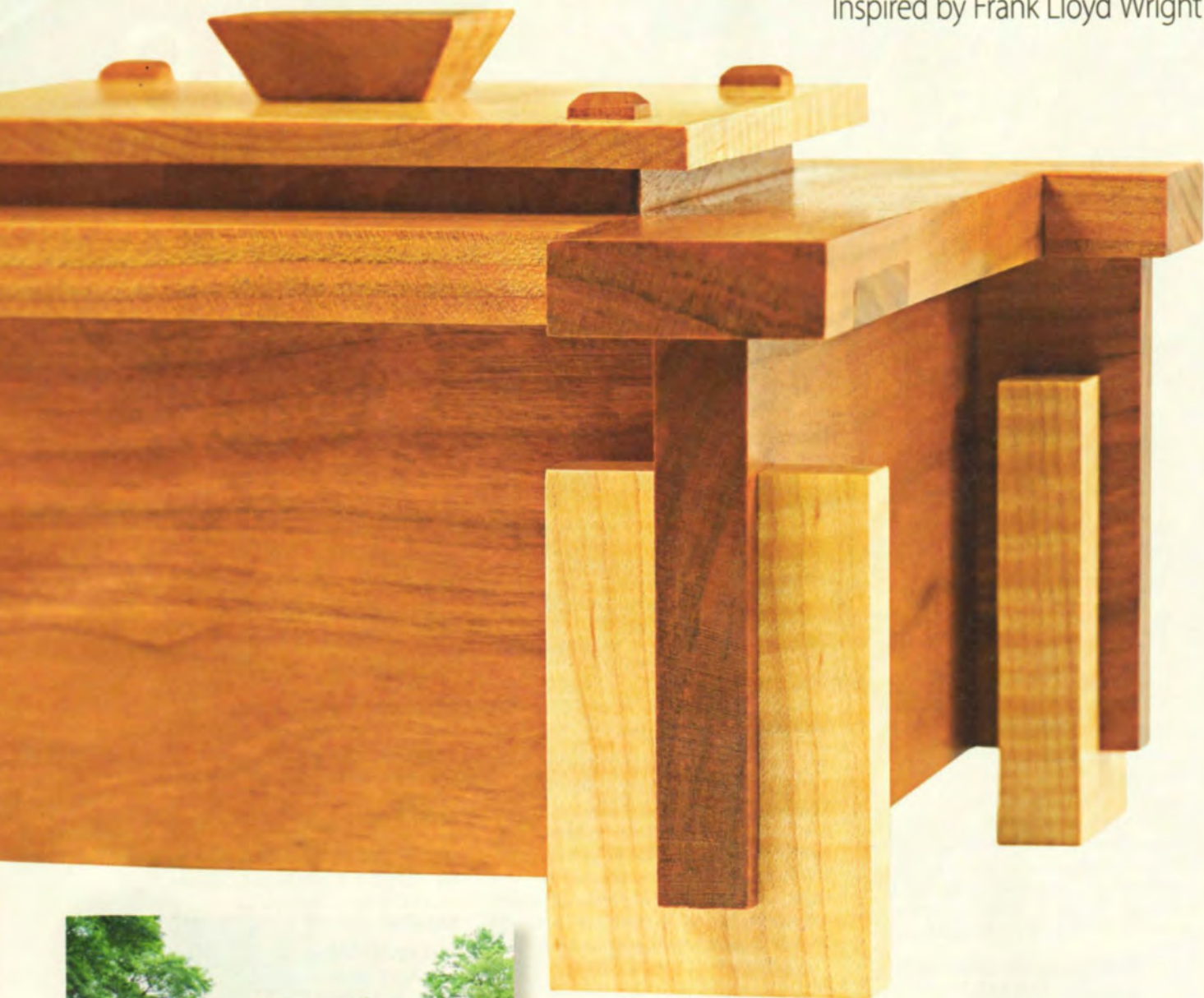
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Finely Crafted Architectural Box

Inspired by Frank Lloyd Wright



This handsome box takes design inspiration from the low profiles and horizontal lines of Prairie School architecture, *left*. Careful machining and attention to detail will reward you with a truly unique tabletop creation.



Dimensions:
8 3/4" wide x 8 3/4" deep x 5" high

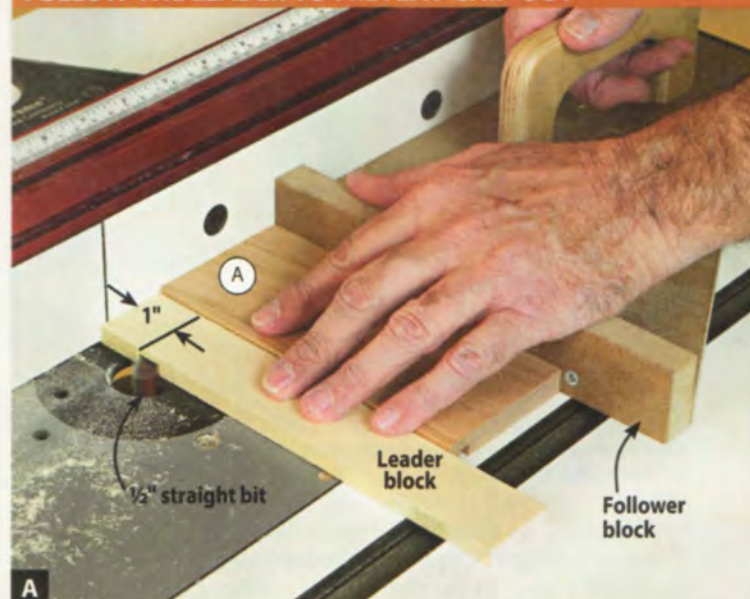
Build the base

1 To successfully complete the base, you'll need to carefully control the thickness of the sides (A) and feet (B). Start by installing a 1/2" straight bit into your table-mounted router, and rout a 1/4"-deep dado in a piece of scrap to serve as a thickness guide. Then plane a 3/4x3x30" blank for the sides and a 3/4x1 3/4x15" blank for the feet and handle (I) [Materials List, page 63] using the dado in the scrap as a guide to ensure the finished 1/2" thickness. The parts should fit tightly in the dado. Finish-sanding will make room for glue and allow for a snug assembly after the parts are machined. Cut the foot blank into two 6"-long pieces, and set aside the remaining piece for the handle blank.

2 Cut the bottom (C) to size from 1/4" plywood, and finish-sand it.

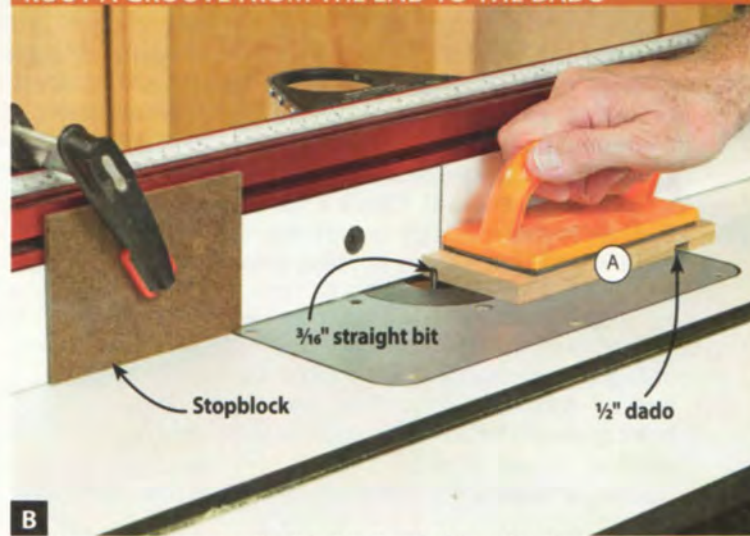
3 From the planed side blank, cut the sides (A) to their finished size. With the 1/2" straight bit in your table-mounted router, rout 1/4"-deep dados [Drawing 1, Photo A]. Then switch to a 3/16" straight bit and rout a groove for the bottom (C) in each side [Photo B]. Make one pass 1/4" from the bottom edge, reposition the fence, and make a second pass to match the thickness of the plywood bottom.

FOLLOW THE LEADER TO PREVENT CHIP-OUT



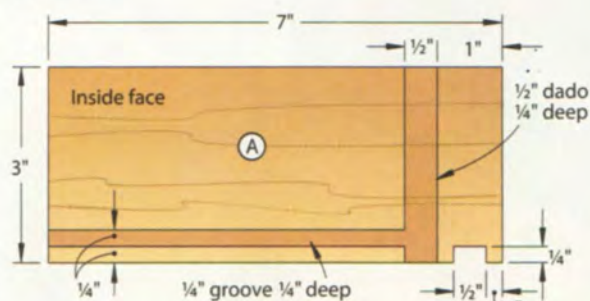
Using a leader block and a follower block to prevent chip-out, rout 1/4"-deep dados in the sides (A).

ROUT A GROOVE FROM THE END TO THE DADO

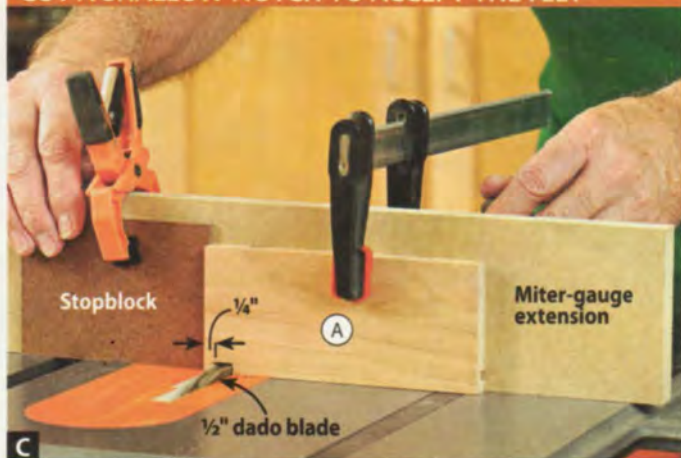


Position a stopblock to stop the sides (A) when the bit reaches the 1/2" dado, and rout grooves for the bottom (C) in two passes.

1 SIDES



CUT A SHALLOW NOTCH TO ACCEPT THE FEET



C Clamp a stopblock to the miter-gauge extension $\frac{1}{4}$ " from the blade, and cut a $\frac{1}{4}$ "-deep notch in each side (A).

4 Install a $\frac{1}{2}$ " dado blade and a zero-clearance insert into your tablesaw. Cut a $\frac{1}{4}$ "-deep dado in scrap and check the dado for a snug fit on the sides (A). Shim the dado blade as necessary. Attach an extension to the miter gauge so the blade will cut through it about 7" from the right end. (We used a $\frac{3}{4}$ " $\times$ 4" $\times$ 18" piece of MDF.) Clamp a stopblock to the extension, and cut a $\frac{1}{4}$ "-deep notch in the bottom edge of each side [Drawing 1, Photo C]. Finish-sand the sides.

5 Retrieve the two 6"-long foot (B) blanks. Raise the $\frac{1}{2}$ " dado blade to cut 2" deep, and notch both ends of each blank [Drawing 2, Photo D]. Then crosscut the feet to length and finish-sand them.

6 Glue and clamp the side (A) and bottom (C) assembly [Drawing 2, Photo E]. Check it for square. When the glue dries, apply glue sparingly to the inside surfaces of the foot (B) notches, and clamp them in place, interlocking the foot and side notches.

MAKE MIRROR-IMAGE DADOES TO FORM THE FEET



D Center the foot (B) blank on the dado blade, and flank it with stopblocks. Cut one notch, flip the blank, and cut a second notch.

ASSEMBLE THE OFFSET SIDES OF THE BASE

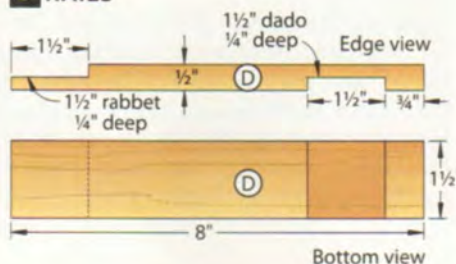


E Apply glue sparingly to the side (A), dados, and grooves, and glue and clamp the sides, capturing the bottom (C) within the grooves.

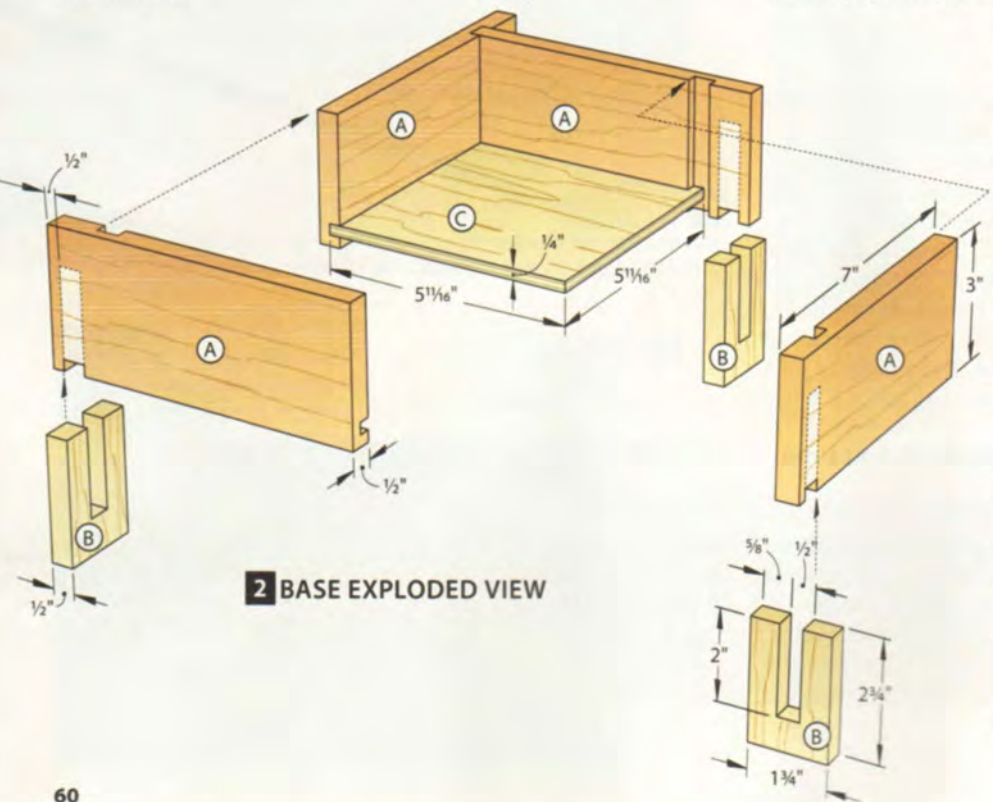
Make the lid parts

1 Cut the rails (D) to size, and finish-sand them. To test the router-table setups for cutting the rabbets and dados [Drawing 3], cut and finish-sand several extra parts from scrap. Chuck a 1" straight bit into your table-mounted router and adjust it to cut $\frac{1}{4}$ " deep. Make test cuts to verify a cutting depth equal to one-half the thickness of the rails. Then to ensure a clean cut at the end of each rail rabbet, rout a $\frac{1}{4}$ " rabbet $\frac{1}{4}$ " deep along the edge of an auxiliary fence.

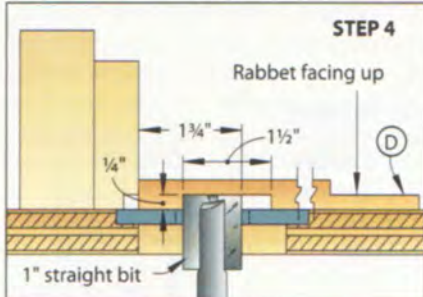
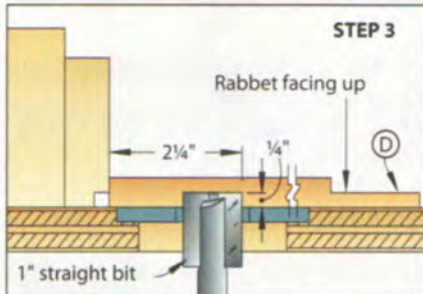
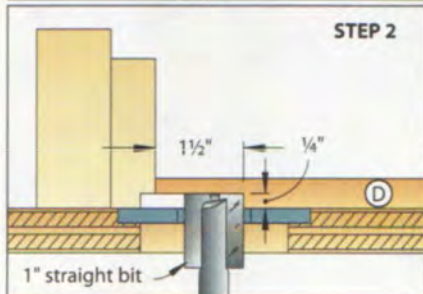
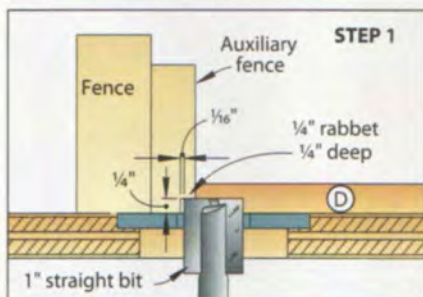
3 RAILS



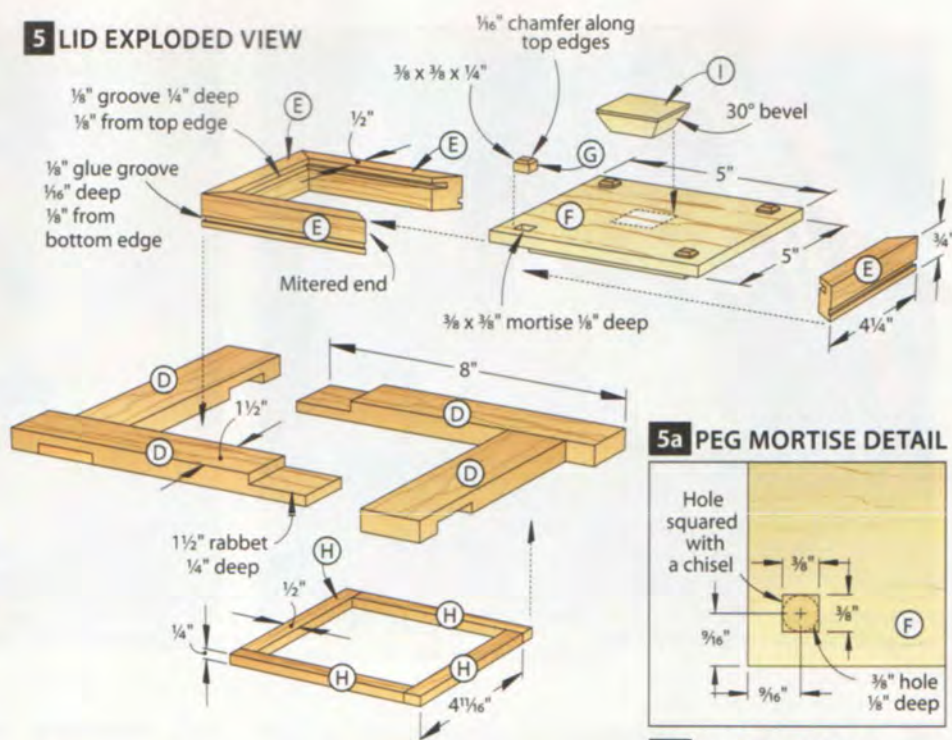
2 BASE EXPLODED VIEW



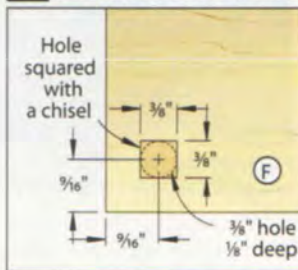
4 MACHINING THE RAILS



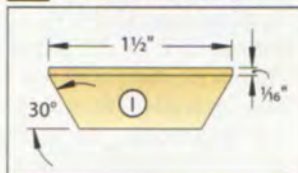
5 LID EXPLODED VIEW



5a PEG MORTISE DETAIL



5b HANDLE DETAIL



2 Attach the auxiliary fence to the router-table fence and position it so the auxiliary fence partially covers the router bit. Make the first cut on each rail and the test parts [**Drawing 4, Step 1**]. Use a follower block to keep the parts square to the fence and prevent chip-out. Reposition the fence, verify the setup with the scrap parts, and finish the rabbets [**Step 2**]. Move the fence, flip the parts over, and make the first cut to form the dados [**Step 3**]. Reposition the fence, test the setup, and finish the dados [**Step 4**].

3 Cut a $\frac{1}{2} \times \frac{3}{4} \times 18"$ blank for the risers (E). Cut a $\frac{1}{8}"$ groove $\frac{1}{4}"$ deep $\frac{1}{8}"$ from the top edge into the inside face, and a

$\frac{1}{8}$ " groove $\frac{1}{16}$ " deep $\frac{1}{8}$ " from the bottom edge into the outside face [**Drawing 5**]. Miter-cut the risers to length for a snug fit into the rail (D) frame opening.

4 Cut the panel (F) to size. To form mortises for the decorative pegs (G), drill $\frac{1}{8}$ "-deep holes with a Forstner bit and square them with a chisel [Drawings 5 and 5a]. To make perfectly placed, perfectly square mortises, see the **Shop Tip**, below.

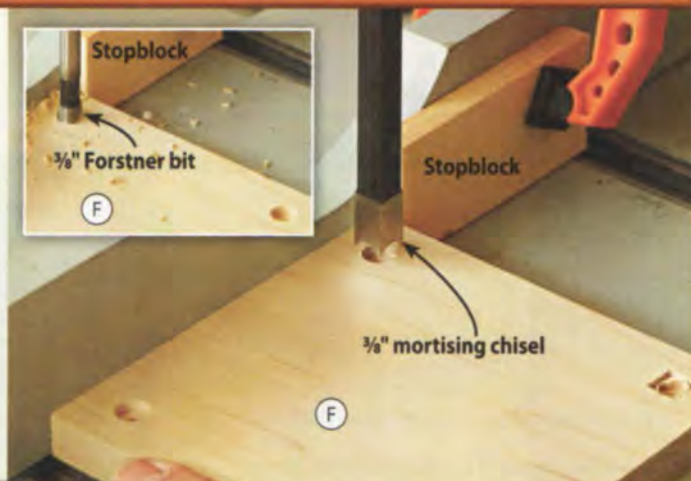
SHOP TIP

Make a perfect square from a round hole

When covering a screwhead with a round plug, carefully matching the grain and color of the plug to the surrounding wood can make the plug nearly invisible. But just as often, what looks perfect in the raw emerges as an unsightly dot during finishing. Using a slightly protruding square peg in a contrasting wood species turns a cover-up into a design element.

In the usual method of drilling a round hole and squaring it with a chisel, the challenge is forming a clean-edged, perfectly square mortise. Using the lid panel (F) as an example, here's how to get flawless results.

Chuck a $\frac{3}{8}$ " Forstner bit into your drill press, and position the fence and a stopblock to center the bit on the peg (G) locations on the panel (F). Drill a $\frac{1}{8}$ "-deep hole at each corner, as shown *inset*. Remove the Forstner bit, and chuck a $\frac{3}{8}$ " hollow mortising chisel (the type made for a mortising machine) into the drill press, aligning the chisel edges with the panel edges. (Visit grizzly.com for an inexpensive $\frac{3}{8}$ " mortising chisel.) Lower the drill-press quill, as shown at *right*, driving the chisel into the wood $\frac{1}{8}$ " deep. Clean out the mortises with a $\frac{1}{4}$ " hand chisel.



FORM SIMPLE AND PRECISE HANDLE BEVELS



F Fasten the top face of the handle (I) to the end of a 1½×1½×8" carrier block, and disc-sand the bevels to the marked lines.

TOP THINGS OFF BY ASSEMBLING THE LID



G First, tip the outside edge of each rail pair up. Then, slide the rabbets into the mating dados. Finally, tip the pairs down, flattening the frame.

5 To form the overhanging edge of the panel (F) and the tongue that fits into the upper inside grooves on the risers (E) [Drawings 5 and 6], first cut a ¼"-deep saw kerf into the bottom face of the panel near each edge [Drawing 7, Step 1]. Then with the panel top face against the fence, cut a saw kerf into each edge [Step 2]. Make sure the tongue on the bottom face fits into the saw kerfs in the risers (E).

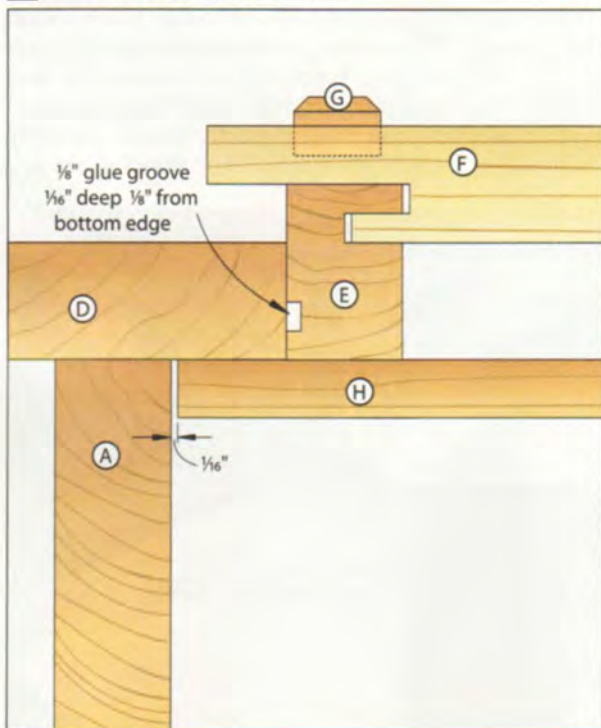
6 For the pegs (G), cut a ¾×¾×12" blank, testing it for a snug fit into the panel (F) mortises. Sand chamfers on both

ends [Drawing 8, Step 1], and cut one peg from each end [Step 2]. Repeat to make a total of four pegs.

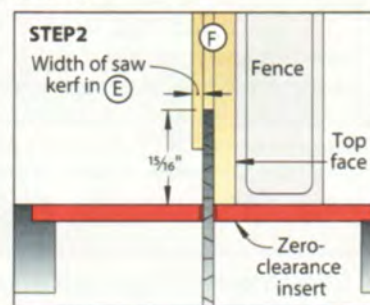
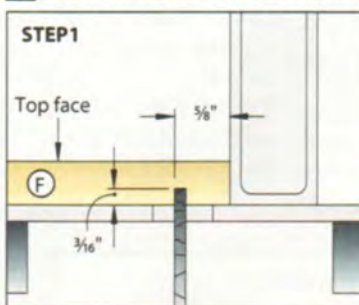
7 Cut a ¼×½×20" blank for the stops (H), and then cut the parts to length. Dry-assemble the stops in the bottom of the base to check for a total gap of ⅛" in each direction between the stop assembly and the sides (A).

8 Retrieve the handle (I) blank and cut it to size. Mark lines on the sides ⅛" from the top edge [Drawing 5a], and disc-sand the bevels [Photo F]. Finish-sand the handle.

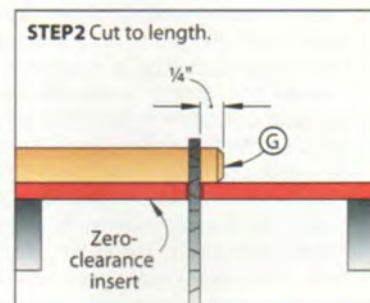
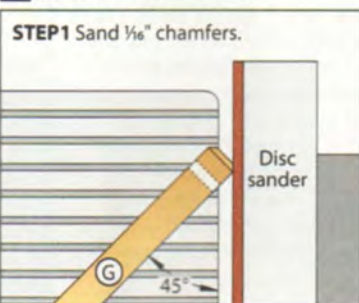
6 LID SECTION VIEW DETAIL



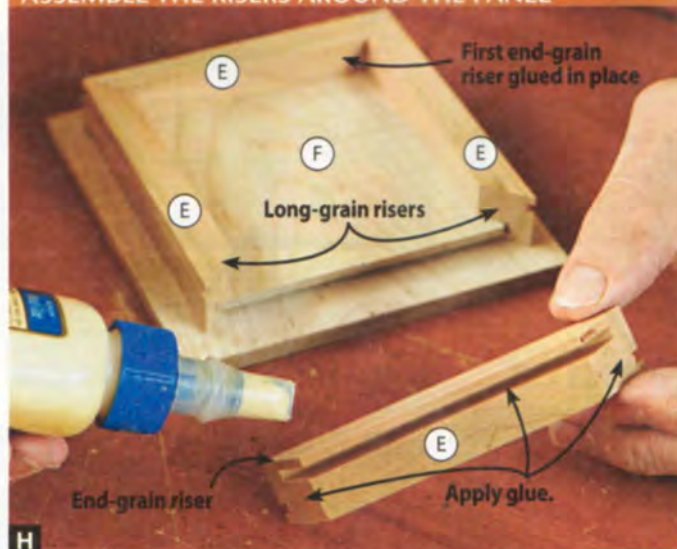
7 CREATING THE PANEL EDGE PROFILE



8 MAKING THE PEGS



ASSEMBLE THE RISERS AROUND THE PANEL



H Apply glue sparingly onto the mitered ends of the two remaining risers (E) and into the center of each groove.

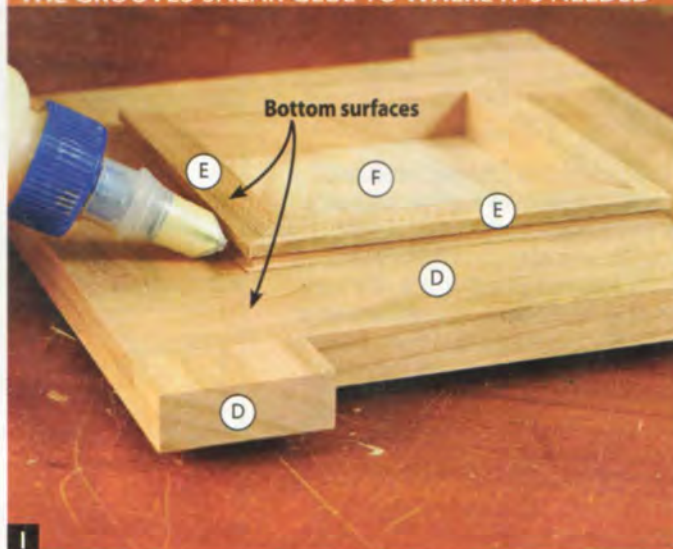
Assemble the lid

1 Glue and clamp the rails (D) in pairs. Make sure the rabbets face up, the dadoses down, and that the end offsets overhang the same sides as the base offsets [Drawings 2 and 5]. With the glued pairs dry, apply glue to the center of the exposed rabbets, and assemble the rail frame [Photo G]. Clamp the joints until the glue dries. Sand the joints smooth.

2 Slip two risers (E), without glue, onto the panel (F) long-grain tongues. Apply glue to the two remaining risers [Photo H], and slip them onto the panel end-grain tongues.

3 Immediately slide the riser (E) frame into the rail (D) frame from the top until the panel (F) seats onto the rails. Turn the assembly over and squeeze glue into the riser frame grooves [Photo I]. Then push the riser frame back into the rail frame until the riser frame and rail frame bottom surfaces are flush. Wipe away any excess glue with a damp cloth. Let the glue dry, and finish-sand the bottom surfaces.

THE GROOVES SNEAK GLUE TO WHERE IT'S NEEDED



I With the lid assembly upsidedown and the riser (E) frame protruding, squeeze glue into the exposed riser frame grooves.

4 Glue and clamp the stops (H) to the bottom of the rail (D) frame, centering the stop frame. Then glue the pegs (G) into the panel (F) mortises. Glue and clamp the handle (I) in place, centered on the panel.

Apply the finish

1 Inspect all the assemblies and finish-sand to 220 grit where needed.

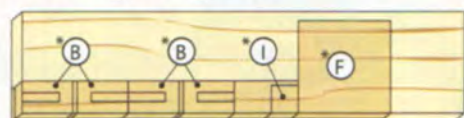
2 Apply a clear finish. (To bring out the grain of the curly maple and the color of the cherry, we applied a coat of Minwax Antique Oil Finish, and let it dry for 24 hours. Then we topcoated the box with two coats of aerosol lacquer, sanding between coats with 320-grit sandpaper.)

Produced by Jan Svec with Chuck Hedlund

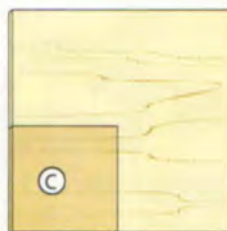
Project design: Jeff Mertz

Illustrations: Roxanne LeMoine

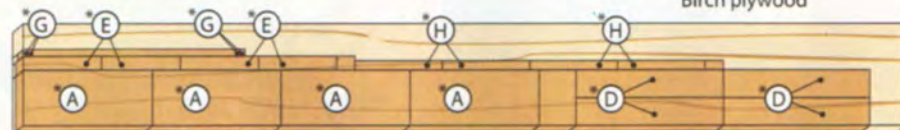
Cutting Diagram



$\frac{3}{4}$ x $5\frac{1}{2}$ x 24" Curly maple (1 bd. ft.)



$\frac{1}{4}$ x 12 x 12" Birch plywood



$\frac{3}{4}$ x $5\frac{1}{2}$ x 48" Cherry (2 bd. ft.)

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

Materials List

Base	FINISHED SIZE			Matl.	Qty.
	T	W	L		
A* sides	$\frac{1}{2}$ "	3"	7"	C	4
B* feet	$\frac{1}{2}$ "	$1\frac{3}{4}$ "	$2\frac{3}{4}$ "	CM	4
C bottom	$\frac{1}{4}$ "	$5\frac{1}{8}$ "	$5\frac{1}{8}$ "	BP	1
Lid					
D rails	$\frac{1}{2}$ "	$1\frac{1}{2}$ "	8"	C	4
E* risers	$\frac{1}{2}$ "	$\frac{3}{4}$ "	$4\frac{1}{4}$ "	C	4
F panel	$\frac{1}{2}$ "	5"	5"	CM	1
G* pegs	$\frac{3}{8}$ "	$\frac{3}{8}$ "	$\frac{1}{4}$ "	C	4
H* stops	$\frac{1}{4}$ "	$\frac{1}{2}$ "	$4\frac{1}{8}$ "	C	4
I* handle	$\frac{1}{2}$ "	$1\frac{1}{2}$ "	$1\frac{1}{2}$ "	CM	1

*Parts initially cut oversize. See the instructions.

Materials key: C—cherry, CM—curly maple, BP—birch plywood.

Blade and bits: $\frac{3}{16}$ ", $\frac{1}{2}$ ", and 1" straight router bits; stack dado set; $\frac{3}{8}$ " Forstner bit.

HARBOR FREIGHT TOOLS

Quality Tools at Ridiculously Low Prices

LIFETIME WARRANTY
ON ALL HAND TOOLS!

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How does Harbor Freight Tools sell high quality tools at such ridiculously low prices? We buy direct from the factories who also supply the major brands and sell direct to you. It's just that simple! See for yourself at one of our 400 Stores Nationwide and use this 20% Off Coupon on one of our 7,000 products*, plus pick up a Free 9 LED Aluminum Flashlight, a \$6.99 value. We stock Shop Equipment, Hand Tools, Tarps, Compressors, Air & Power Tools, Woodworking Tools, Welders, Tool Boxes, Generators, and much more.

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- No Hassle Return Policy!
- 100% Satisfaction Guaranteed!
- Over 400 Stores Nationwide

Nobody Beats Our Quality, Service and Price!

SUPER COUPON!

FREE!
WITH MINIMUM PURCHASE OF \$9.99

3-1/2" SUPER BRIGHT NINE LED ALUMINUM FLASHLIGHT
ITEM 65020/69052/69111
REG. PRICE \$6.99



Item 65020 shown

LIMIT 1 - Only available with qualifying minimum purchase (excludes gift value). Coupon good at our stores or website or by phone. Cannot be used with other discount, coupon or prior purchase. Offer good while supplies last. Shipping & Handling charges may apply if not picked up in-store. Original coupon must be presented. Non-transferable. Valid through 5/13/13. Limit one coupon per customer per day.



SUPER COUPON!

20% OFF

ANY SINGLE ITEM!

LIMIT 1 - Save 20% on any one item purchased at our stores or website or by phone. *Cannot be used with other discount, coupon, gift cards, Inside Track Club membership, extended service plans or on any of the following: compressors, generators, tool storage or carts, welders, floor jacks, Towable Ride-on Trencher (Item 65162), open box items, in-store event or parking lot sale items. Not valid on prior purchases after 30 days from original purchase date with original receipt. Non-transferable. Original coupon must be presented. Valid through 5/13/13. Limit one coupon per customer per day.

SUPER COUPON!

PITTSBURGH

12" RATCHET BAR CLAMP/SPREADER
LOT NO. 46807/68975/69221/69222



Item 46807 shown

SAVE 63%

\$1.99 REG. PRICE \$5.49

LIMIT 9 - Good at our stores or website or by phone. Cannot be used with other discount or coupon or prior purchases after 30 days from original purchase with original receipt. Offer good while supplies last. Non-transferable. Original coupon must be presented. Valid through 5/13/13. Limit one coupon per customer per day.

SUPER COUPON!

ALUMINUM OXIDE SANDING SPONGES - PACK OF 10

SAVE 41%

YOUR CHOICE!

\$3.49 REG. PRICE \$5.99

COARSE LOT NO. 46751
MEDIUM LOT NO. 46752
FINE LOT NO. 46753



LIMIT 5 - Good at our stores or website or by phone. Cannot be used with other discount or coupon or prior purchases after 30 days from original purchase with original receipt. Offer good while supplies last. Non-transferable. Original coupon must be presented. Valid through 5/13/13. Limit one coupon per customer per day.

SUPER COUPON!

12" COMBINATION SQUARE SET
PITTSBURGH
LOT NO. 92471



SAVE 50%

\$4.99 REG. PRICE \$9.99

LIMIT 7 - Good at our stores or website or by phone. Cannot be used with other discount or coupon or prior purchases after 30 days from original purchase with original receipt. Offer good while supplies last. Non-transferable. Original coupon must be presented. Valid through 5/13/13. Limit one coupon per customer per day.

SUPER COUPON!

CENTRALPNEUMATIC
HIGH SPEED METAL SAW
LOT NO. 91753/60568



Item 91753 shown

SAVE 66%

\$9.99 REG. PRICE \$29.99

LIMIT 6 - Good at our stores or website or by phone. Cannot be used with other discount or coupon or prior purchases after 30 days from original purchase with original receipt. Offer good while supplies last. Non-transferable. Original coupon must be presented. Valid through 5/13/13. Limit one coupon per customer per day.

SUPER COUPON!

2 HP INDUSTRIAL 5 MICRON DUST COLLECTOR
LOT NO. 97869



SAVE \$100

\$149.99 REG. PRICE \$249.99

LIMIT 3 - Good at our stores or website or by phone. Cannot be used with other discount or coupon or prior purchases after 30 days from original purchase with original receipt. Offer good while supplies last. Non-transferable. Original coupon must be presented. Valid through 5/13/13. Limit one coupon per customer per day.

SUPER COUPON!

MECHANIC'S GLOVES
LARGE LOT NO. 93640/60447
X-LARGE LOT NO. 93641/60448



Item 93640 shown

SAVE 56%

YOUR CHOICE! \$3.49 REG. PRICE \$7.99

LIMIT 8 - Good at our stores or website or by phone. Cannot be used with other discount or coupon or prior purchases after 30 days from original purchase with original receipt. Offer good while supplies last. Non-transferable. Original coupon must be presented. Valid through 5/13/13. Limit one coupon per customer per day.

SUPER COUPON!

1500 WATT DUAL TEMPERATURE HEAT GUN (572°/1112°)
drillmaster
LOT NO. 96289



SAVE 60%

\$7.99 REG. PRICE \$19.99

LIMIT 5 - Good at our stores or website or by phone. Cannot be used with other discount or coupon or prior purchases after 30 days from original purchase with original receipt. Offer good while supplies last. Non-transferable. Original coupon must be presented. Valid through 5/13/13. Limit one coupon per customer per day.

SUPER COUPON!

JACK AND PLANE SET
LOT NO. 92553



SAVE 33%

\$9.99 REG. PRICE \$14.99

LIMIT 8 - Good at our stores or website or by phone. Cannot be used with other discount or coupon or prior purchases after 30 days from original purchase with original receipt. Offer good while supplies last. Non-transferable. Original coupon must be presented. Valid through 5/13/13. Limit one coupon per customer per day.

SUPER COUPON!

EIGHT DRAWER WOOD TOOL CHEST
WINDSOR DESIGN
LOT NO. 94538



SAVE \$40

\$59.99 REG. PRICE \$99.99

LIMIT 3 - Good at our stores or website or by phone. Cannot be used with other discount or coupon or prior purchases after 30 days from original purchase with original receipt. Offer good while supplies last. Non-transferable. Original coupon must be presented. Valid through 5/13/13. Limit one coupon per customer per day.

SUPER COUPON!

CENTRALPNEUMATIC
18 GAUGE 2-IN-1 NAILER/STAPLER
LOT NO. 68019



WE CARRY A FULL LINE OF FASTENERS

SAVE 55%

\$15.99 REG. PRICE \$35.99

LIMIT 4 - Good at our stores or website or by phone. Cannot be used with other discount or coupon or prior purchases after 30 days from original purchase with original receipt. Offer good while supplies last. Non-transferable. Original coupon must be presented. Valid through 5/13/13. Limit one coupon per customer per day.

SUPER COUPON!

OSCILLATING SPINDLE SANDER
LOT NO. 95088/69257



SAVE \$60

\$89.99 REG. PRICE \$149.99

LIMIT 5 - Good at our stores or website or by phone. Cannot be used with other discount or coupon or prior purchases after 30 days from original purchase with original receipt. Offer good while supplies last. Non-transferable. Original coupon must be presented. Valid through 5/13/13. Limit one coupon per customer per day.

SUPER COUPON!

12" DOUBLE-BEVEL SLIDING COMPOUND MITER SAW WITH LASER GUIDE
CHICAGO ELECTRIC POWER TOOLS
LOT NO. 98194/69684



Item 98684 shown

SAVE \$80

\$119.99 REG. PRICE \$199.99

LIMIT 5 - Good at our stores or website or by phone. Cannot be used with other discount or coupon or prior purchases after 30 days from original purchase with original receipt. Offer good while supplies last. Non-transferable. Original coupon must be presented. Valid through 5/13/13. Limit one coupon per customer per day.

SUPER COUPON!

60" WORKBENCH WITH FOUR DRAWERS
WINDSOR DESIGN
LOT NO. 93454/69054



Item 93454 shown

SAVE \$90

\$139.99 REG. PRICE \$229.99

LIMIT 3 - Good at our stores or website or by phone. Cannot be used with other discount or coupon or prior purchases after 30 days from original purchase with original receipt. Offer good while supplies last. Non-transferable. Original coupon must be presented. Valid through 5/13/13. Limit one coupon per customer per day.

SUPER COUPON!

PITTSBURGH
RAPID PUMP® 3 TON HEAVY DUTY STEEL FLOOR JACK
LOT NO. 68048/69227



Item 68048 shown

SAVE \$70

\$69.99 REG. PRICE \$139.99

WEIGHS 74 LBS.

LIMIT 4 - Good at our stores or website or by phone. Cannot be used with other discount or coupon or prior purchases after 30 days from original purchase with original receipt. Offer good while supplies last. Non-transferable. Original coupon must be presented. Valid through 5/13/13. Limit one coupon per customer per day.

SUPER COUPON!

HaulMaster MOVER'S DOLLY
 LOT NO. 93888/60497



1000 LB. CAPACITY

SAVE 46%

Item 93888 shown

\$7.99

REG. PRICE \$14.99

55183362

LIMIT 7 - Good at our stores or website or by phone. Cannot be used with other discount or coupon or prior purchases after 30 days from original purchase with original receipt. Offer good while supplies last. Non-transferable. Original coupon must be presented. Valid through 5/13/13. Limit one coupon per customer per day.

SUPER COUPON!

PITTSBURGH 24" CLAMP AND CUT EDGE GUIDE



SAVE 46%

LOT NO. 66126

\$6.99

REG. PRICE \$12.99

43155144

LIMIT 8 - Good at our stores or website or by phone. Cannot be used with other discount or coupon or prior purchases after 30 days from original purchase with original receipt. Offer good while supplies last. Non-transferable. Original coupon must be presented. Valid through 5/13/13. Limit one coupon per customer per day.

SUPER COUPON!

29 PIECE TITANIUM NITRIDE COATED DRILL BIT SET
drillmaster
 LOT NO. 5889



SAVE 60%

\$9.99

REG. PRICE \$24.99

48135490

LIMIT 6 - Good at our stores or website or by phone. Cannot be used with other discount or coupon or prior purchases after 30 days from original purchase with original receipt. Offer good while supplies last. Non-transferable. Original coupon must be presented. Valid through 5/13/13. Limit one coupon per customer per day.

SUPER COUPON!

CENTRAL PNEUMATIC 3 GALLON, 100 PSI OILLESS PANCAKE AIR COMPRESSOR
 LOT NO. 95275/69486/60637



SAVE 50%

\$39.99

REG. PRICE \$79.99

48450128

LIMIT 6 - Good at our stores or website or by phone. Cannot be used with other discount or coupon or prior purchases after 30 days from original purchase with original receipt. Offer good while supplies last. Non-transferable. Original coupon must be presented. Valid through 5/13/13. Limit one coupon per customer per day.

SUPER COUPON!

4 PIECE WOOD CHISEL SET
 LOT NO. 42429/69471



SAVE 43%

\$4.49

REG. PRICE \$7.99

85490489

LIMIT 6 - Good at our stores or website or by phone. Cannot be used with other discount or coupon or prior purchases after 30 days from original purchase with original receipt. Offer good while supplies last. Non-transferable. Original coupon must be presented. Valid through 5/13/13. Limit one coupon per customer per day.

SUPER COUPON!

WIRELESS DRIVEWAY ALERT SYSTEM
Bunker Hill Security
 LOT NO. 93068/69590



SAVE 60%

\$11.99

REG. PRICE \$29.99

75537434

LIMIT 6 - Good at our stores or website or by phone. Cannot be used with other discount or coupon or prior purchases after 30 days from original purchase with original receipt. Offer good while supplies last. Non-transferable. Original coupon must be presented. Valid through 5/13/13. Limit one coupon per customer per day.

SUPER COUPON!

HIGH VOLUME LOW PRESSURE SPRAY GUN KIT
CHICAGO ELECTRIC POWER TOOLS
 LOT NO. 44677



SAVE \$40

\$89.99

REG. PRICE \$129.99

98571074

LIMIT 4 - Good at our stores or website or by phone. Cannot be used with other discount or coupon or prior purchases after 30 days from original purchase with original receipt. Offer good while supplies last. Non-transferable. Original coupon must be presented. Valid through 5/13/13. Limit one coupon per customer per day.

SUPER COUPON!

FLUORESCENT WORK LIGHT
CHICAGO ELECTRIC POWER TOOLS
 LOT NO. 92079



SAVE 33%

\$9.99

REG. PRICE \$14.99

25953464

LIMIT 6 - Good at our stores or website or by phone. Cannot be used with other discount or coupon or prior purchases after 30 days from original purchase with original receipt. Offer good while supplies last. Non-transferable. Original coupon must be presented. Valid through 5/13/13. Limit one coupon per customer per day.

SUPER COUPON!

CENTRAL PNEUMATIC RETRACTABLE AIR HOSE REEL WITH 3/8" x 25 FT. HOSE
 LOT NO. 46104/69234/69266



SAVE 42%

\$39.99

REG. PRICE \$69.99

77623084

LIMIT 5 - Good at our stores or website or by phone. Cannot be used with other discount or coupon or prior purchases after 30 days from original purchase with original receipt. Offer good while supplies last. Non-transferable. Original coupon must be presented. Valid through 5/13/13. Limit one coupon per customer per day.

SUPER COUPON!

16" VARIABLE SPEED SCROLL SAW
CENTRAL MACHINERY
 LOT NO. 93012



SAVE 25%

\$59.99

REG. PRICE \$79.99

29916518

LIMIT 3 - Good at our stores or website or by phone. Cannot be used with other discount or coupon or prior purchases after 30 days from original purchase with original receipt. Offer good while supplies last. Non-transferable. Original coupon must be presented. Valid through 5/13/13. Limit one coupon per customer per day.

SUPER COUPON!

90 AMP FLUX WIRE WELDER
CHICAGO ELECTRIC WELDING
 LOT NO. 68887



SAVE \$60

\$89.99

REG. PRICE \$149.99

3344921198

LIMIT 4 - Good at our stores or website or by phone. Cannot be used with other discount or coupon or prior purchases after 30 days from original purchase with original receipt. Offer good while supplies last. Non-transferable. Original coupon must be presented. Valid through 5/13/13. Limit one coupon per customer per day.

SUPER COUPON!

2 HP FIXED BASE ROUTER
drillmaster
 LOT NO. 68341



SAVE 25%

\$44.99

REG. PRICE \$59.99

70636660

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SUPER COUPON!

HaulMaster 500 LB. CAPACITY ALUMINUM CARGO CARRIER
 LOT NO. 92655/69688



SAVE \$60

\$69.99

REG. PRICE \$129.99

28255229

LIMIT 3 - Good at our stores or website or by phone. Cannot be used with other discount or coupon or prior purchases after 30 days from original purchase with original receipt. Offer good while supplies last. Non-transferable. Original coupon must be presented. Valid through 5/13/13. Limit one coupon per customer per day.

SUPER COUPON!

45 WATT SOLAR PANEL KIT
THUNDERBOLT solar
 LOT NO. 68751/90599



SAVE \$90

\$139.99

REG. PRICE \$229.99

14616408

LIMIT 4 - Good at our stores or website or by phone. Cannot be used with other discount or coupon or prior purchases after 30 days from original purchase with original receipt. Offer good while supplies last. Non-transferable. Original coupon must be presented. Valid through 5/13/13. Limit one coupon per customer per day.

SUPER COUPON!

6.5 HP OHV HORIZONTAL SHAFT GAS ENGINES (212 CC)
PREDATOR ENGINES
 LOT NO. 68120/69730/60363
 LOT NO. 68121/69727
 CALIFORNIA ONLY



SAVE \$80

\$99.99

REG. PRICE \$179.99

70655144

LIMIT 6 - Good at our stores or website or by phone. Cannot be used with other discount or coupon or prior purchases after 30 days from original purchase with original receipt. Offer good while supplies last. Non-transferable. Original coupon must be presented. Valid through 5/13/13. Limit one coupon per customer per day.

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GRAND OPENINGS

Avondale, AZ Clifton, NJ Union, NJ Pearland, TX
 Kenneth City, FL East Brunswick, NJ Lawton, OK Federal Way, WA

HARBOR FREIGHT TOOLS

Quality Tools at Ridiculously Low Prices

LIFETIME WARRANTY
ON ALL HAND TOOLS!

SUPER COUPON!

6" DIGITAL CALIPER PITTSBURGH

LOT NO. 47257

SAVE 66%

Includes two 1.5V button cell batteries.

\$9.99 REG. PRICE \$29.99

SUPER COUPON!

OSCILLATING MULTIFUNCTION POWER TOOL

LOT NO. 68861/68303/60428

8 Functions: Sanding, Cut Flooring, Cut Metal, Scrape Concrete, Remove Grout, Cut Plastic, Scrape Flooring, Plunge Cut

SAVE 73%

\$15.99 REG. PRICE \$59.99



Accessories sold separately.

SUPER COUPON!

12 PIECE CUSHION GRIP SCREWDRIVER SET PITTSBURGH

LOT NO. 68868/69421

SAVE 58%

\$4.99 REG. PRICE \$11.99



SUPER COUPON!

3 PIECE TITANIUM NITRIDE COATED HIGH SPEED STEEL STEP DRILLS drillmaster

LOT NO. 91616/69087/60379

SAVE 60%

\$7.99 REG. PRICE \$19.99



Item 91616 shown

SUPER COUPON!

11 PIECE WOOD CARVING SET

LOT NO. 4855/60655

SAVE 40%

\$2.99 REG. PRICE \$4.99



Item 4855 shown

SUPER COUPON!

15" x 13" ALL PURPOSE SHOP TOWELS PACK OF 50

LOT NO. 46163/68442/69649

SAVE 40%

\$8.99 REG. PRICE \$14.99



Item 46163 shown

SUPER COUPON!

3 TON HEAVY DUTY JACK STANDS PITTSBURGH

LOT NO. 38846/69597

SAVE 54%

\$15.99 REG. PRICE \$34.99



Item 38846 shown

SUPER COUPON!

12" x 33-3/8" WOOD LATHE WITH REVERSIBLE HEAD

LOT NO. 34706

SAVE \$150

\$199.99 REG. PRICE \$349.99



Item 34706 shown

SUPER COUPON!

P95 MAINTENANCE-FREE DUAL CARTRIDGE RESPIRATOR MEDIUM

LOT NO. 66554

LARGE

LOT NO. 67727

SAVE 30%

\$13.99 REG. PRICE \$19.99



Item 66554 shown

SUPER COUPON!

12 SPEED BENCH DRILL PRESS CENTRAL MACHINERY

LOT NO. 44836/60237

SAVE \$70

\$99.99 REG. PRICE \$169.99



Item 44836 shown

SUPER COUPON!

10/25 AMP, 6/12 VOLT BATTERY CHARGER/ENGINE STARTER CHICAGO ELECTRIC POWER TOOLS

LOT NO. 66783/60581/60653

SAVE 53%

\$27.99 REG. PRICE \$59.99



Item 66783 shown

SUPER COUPON!

PNEUMATIC ADJUSTABLE ROLLER SEAT US*GENERAL

LOT NO. 46319

SAVE 33%

\$19.99 REG. PRICE \$29.99



300 LB. CAPACITY

SUPER COUPON!

580 LB. CAPACITY FOUR DRAWER TOOL CART US*GENERAL

LOT NO. 95659

SAVE \$130

\$99.99 REG. PRICE \$229.99



SUPER COUPON!

3200 RATED WATTS/4000 MAX. WATTS PORTABLE GENERATORS (212 CC) PREDATOR GENERATORS

LOT NO. 68528/67560/69676/69728

SAVE \$160

\$289.99 REG. PRICE \$449.99



Item 68528 shown

SUPER COUPON!

2 PIECE STEEL LOADING RAMPS Haul Master

LOT NO. 44649/69591/69646

SAVE 50%

\$39.99 REG. PRICE \$79.99



Item 44649 shown

SUPER COUPON!

LIMIT 3 - Good at our stores or website or by phone. Cannot be used with other discount or coupon or prior purchases after 30 days from original purchase with original receipt. Offer good while supplies last. Non-transferable. Original coupon must be presented. Valid through 5/13/13. Limit one coupon per customer per day.

SUPER COUPON!

LIMIT 4 - Good at our stores or website or by phone. Cannot be used with other discount or coupon or prior purchases after 30 days from original purchase with original receipt. Offer good while supplies last. Non-transferable. Original coupon must be presented. Valid through 5/13/13. Limit one coupon per customer per day.

SUPER COUPON!

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SUPER COUPON!

4 PIECE 1" x 15 FT. RATCHETING TIE DOWN SET
LOT NO. 90984/60405

SAVE 52%

\$7⁹⁹ REG. PRICE \$16.99

Item 90984 shown

26911883

IFIT

LIMIT 7 - Good at our stores or website or by phone. Cannot be used with other discount or coupon or prior purchases after 30 days from original purchase with original receipt. Offer good while supplies last. Non-transferable. Original coupon must be presented. Valid through 5/13/13. Limit one coupon per customer per day.

SUPER COUPON!

7 FT. 4" x 9 FT. 6" ALL PURPOSE WEATHER RESISTANT TARP
LOT NO. 877/69121/69137/69249/69129

SAVE 60%

\$2⁷⁹ REG. PRICE \$6.99

Item 877 shown

10664277

IFIT

LIMIT 8 - Good at our stores or website or by phone. Cannot be used with other discount or coupon or prior purchases after 30 days from original purchase with original receipt. Offer good while supplies last. Non-transferable. Original coupon must be presented. Valid through 5/13/13. Limit one coupon per customer per day.

SUPER COUPON!

17 PIECE AIR TOOL ACCESSORY KIT
LOT NO. 68236

SAVE 50%

\$4⁹⁹ REG. PRICE \$9.99

Item 68236 shown

44301340

CENTRALPNEUMATIC

LIMIT 8 - Good at our stores or website or by phone. Cannot be used with other discount or coupon or prior purchases after 30 days from original purchase with original receipt. Offer good while supplies last. Non-transferable. Original coupon must be presented. Valid through 5/13/13. Limit one coupon per customer per day.

SUPER COUPON!

CHICAGO ELECTRIC WELDING MIG-FLUX WELDING CART
LOT NO. 69340/90305

SAVE 41%

\$34⁹⁹ REG. PRICE \$59.99

Welder and accessories sold separately

Item 69340 shown

42764339

CHICAGO ELECTRIC

LIMIT 3 - Good at our stores or website or by phone. Cannot be used with other discount or coupon or prior purchases after 30 days from original purchase with original receipt. Offer good while supplies last. Non-transferable. Original coupon must be presented. Valid through 5/13/13. Limit one coupon per customer per day.

SUPER COUPON!

NEW! 44" 13 DRAWER INDUSTRIAL QUALITY ROLLER CABINET
LOT NO. 68784/69387

SAVE \$240

\$359⁹⁹ REG. PRICE \$599.99

2900 LB. CAPACITY
WEIGHS 306 LBS.

Item 68784 shown

46767869

US GENERAL

LIMIT 5 - Good at our stores or website or by phone. Cannot be used with other discount or coupon or prior purchases after 30 days from original purchase with original receipt. Offer good while supplies last. Non-transferable. Original coupon must be presented. Valid through 5/13/13. Limit one coupon per customer per day.

Order at HarborFreight.com or 800-423-2567
We FedEx Most Orders in 24 Hours for as Low as \$6⁹⁹

SUPER COUPON!

drillmaster ORBITAL PALM SANDER
LOT NO. 40070

SAVE 55%

\$8⁹⁹ REG. PRICE \$19.99

11,000 OPM

Item 40070 shown

96661647

drillmaster

LIMIT 6 - Good at our stores or website or by phone. Cannot be used with other discount or coupon or prior purchases after 30 days from original purchase with original receipt. Offer good while supplies last. Non-transferable. Original coupon must be presented. Valid through 5/13/13. Limit one coupon per customer per day.

SUPER COUPON!

Bunker Hill Security 36 LED SOLAR SECURITY LIGHT
LOT NO. 98085/69644/69890/60498

SAVE 28%

\$17⁹⁹ REG. PRICE \$24.99

Includes 1.2 volt, 600mAh/6 volt NiCd rechargeable battery pack.

Item 98085 shown

73162308

Bunker Hill Security

LIMIT 8 - Good at our stores or website or by phone. Cannot be used with other discount or coupon or prior purchases after 30 days from original purchase with original receipt. Offer good while supplies last. Non-transferable. Original coupon must be presented. Valid through 5/13/13. Limit one coupon per customer per day.

SUPER COUPON!

400 WATT CONTINUOUS/800 WATT PEAK POWER INVERTER
CHICAGO POWER ELECTRIC SYSTEMS
LOT NO. 66814

SAVE 50%

\$19⁹⁹ REG. PRICE \$39.99

Item 66814 shown

20628406

CHICAGO POWER ELECTRIC SYSTEMS

LIMIT 4 - Good at our stores or website or by phone. Cannot be used with other discount or coupon or prior purchases after 30 days from original purchase with original receipt. Offer good while supplies last. Non-transferable. Original coupon must be presented. Valid through 5/13/13. Limit one coupon per customer per day.

SUPER COUPON!

9 PIECE FULLY POLISHED COMBINATION WRENCH SETS
PITTSBURGH SAE METRIC
LOT NO. 42304/69043 LOT NO. 42305/69044

SAVE 53%

\$6⁹⁹ REG. PRICE \$14.99

YOUR CHOICE!

Item 42304 shown

97248622

PITTSBURGH

LIMIT 3 - Good at our stores or website or by phone. Cannot be used with other discount or coupon or prior purchases after 30 days from original purchase with original receipt. Offer good while supplies last. Non-transferable. Original coupon must be presented. Valid through 5/13/13. Limit one coupon per customer per day.

SUPER COUPON!

2000 LB. ELECTRIC WINCH WITH REMOTE CONTROL AND AUTOMATIC BRAKE
LOT NO. 68146

SAVE \$50

\$49⁹⁹ REG. PRICE \$99.99

Item 68146 shown

57977118

BADLAND

LIMIT 4 - Good at our stores or website or by phone. Cannot be used with other discount or coupon or prior purchases after 30 days from original purchase with original receipt. Offer good while supplies last. Non-transferable. Original coupon must be presented. Valid through 5/13/13. Limit one coupon per customer per day.

Grand OPENINGS
Covina, CA
Indio, CA
Lakewood, CO
Waterbury, CT
Chicago, IL
Kansas City, MO
Green Brook, NJ
Bronx, NY

SUPER COUPON!

CENTRAL MACHINERY 4" x 36" BELT/6" DISC SANDER
LOT NO. 97181/93981

SAVE \$45

\$54⁹⁹ REG. PRICE \$99.99

Item 97181 shown

559162813

CENTRAL MACHINERY

LIMIT 6 - Good at our stores or website or by phone. Cannot be used with other discount or coupon or prior purchases after 30 days from original purchase with original receipt. Offer good while supplies last. Non-transferable. Original coupon must be presented. Valid through 5/13/13. Limit one coupon per customer per day.

SUPER COUPON!

2.5 HP 12" PLANER WITH DUST COLLECTION
CENTRAL MACHINERY
LOT NO. 95082

SAVE \$80

\$219⁹⁹ REG. PRICE \$299.99

Item 95082 shown

703665260

CENTRAL MACHINERY

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SUPER COUPON!

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Help stop the burn!

I get burn marks when rounding over the ends of glued-up cutting boards. I thought I was moving the trim router fast enough, and the bit is sharp and clean, so why does the wood scorch?

—Curtis Severson, North Platte, Neb.

A Curtis, some wood species, such as cherry and maple, tend to burn easier than others, so your situation is not uncommon. And your idea to use a quicker feed rate usually helps.

If you've ruled out feed rate as the problem, and you have a sharp bit, consider the router as the culprit. If it has a single speed—usually around

25,000 rpm or faster—that high speed could be causing the burns. In that case, rout the profile in two passes, removing most of the wood the first time through, and then following up with a quicker, shaving-thin pass. If your router has variable speed, dial it back to about 18,000 rpm or so. That should alleviate the friction burns.



How do you sharpen around corners?

I use a spring-loaded corner chisel (below)—and a few mallet taps—to square up corners of hinge mortises and similar recesses. But how do I sharpen it after the cutting edge dulls?

—Jessica Petrey, Danielson, Conn.

A Remove the plate that holds the chisel in its housing, Jessica, taking care to not lose the spring concealed inside the

housing. Then use a diamond file (woodcraft, no. 852974, \$35, 800-535-4482, woodcraft.com) to hone the inside bevels of the 90° tip. Keep the file flat against the beveled edges and make about 10–20 strokes per side; repeat until sharp. When finished, make a couple of passes on the flat back side to remove any burr, and reinstall the plate.



Soak up moisture so your biscuits won't

How can I store biscuits to prevent swelling caused by humidity?

—John Albertson, Gainesville, Fla.

A You have an easy fix within reach, John. First, keep your biscuits in a lidded container that seals well; many brands of biscuits come in such containers. Add a silica-gel dessiccant pack, as shown at right, to soak up whatever humidity gets trapped in the container. You can often find free ones packed in shipping boxes, or buy them in multi-packs for about 40 cents apiece at office-supply and crafts stores.



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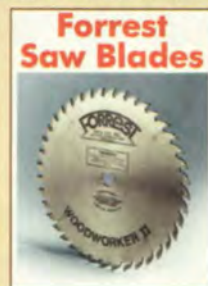
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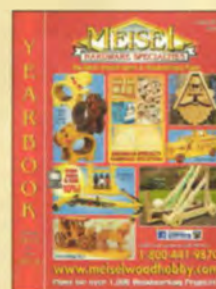
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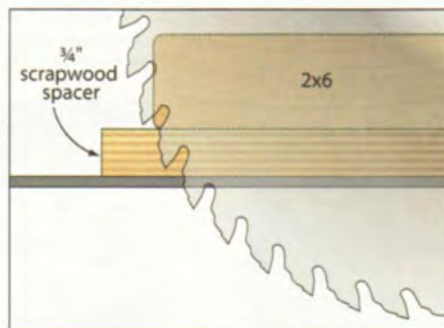
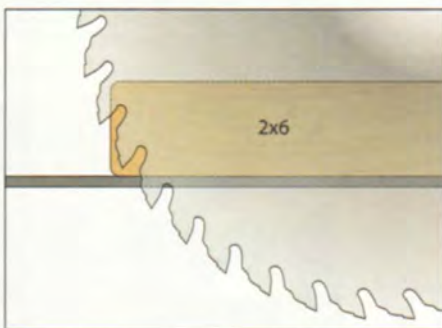
20 WOOD MAGAZINE BACK ISSUE DVD – Free catalog containing WOOD's newly updated back-issue DVD and shop-tested plans. woodstore.net/cowmacoondv.html

Add a little height to get more width

My 10" compound mitersaw can't quite cut completely through a 2x6, leaving a tiny corner uncut. It's awkward to flip the board and finish the cut without it breaking and splintering, and I don't always get it lined up with the first cut. Is there a way to squeeze just a little more capacity out of my mitersaw?

—Mark Silva, Sacramento, Calif.

There sure is, Mark: If you can't cut wider, go deeper. Simply raise the 2x6 by placing a 3/4"-thick scrapwood spacer between the board and your saw's table. By doing this, you use more of the blade's width and cut cleanly through the board in one pass. Be sure to hold the spacer and 2x6 firmly to prevent shifting during the cut. If you need to make more than a couple of cuts, secure the spacer to the mitersaw table with double-faced tape.



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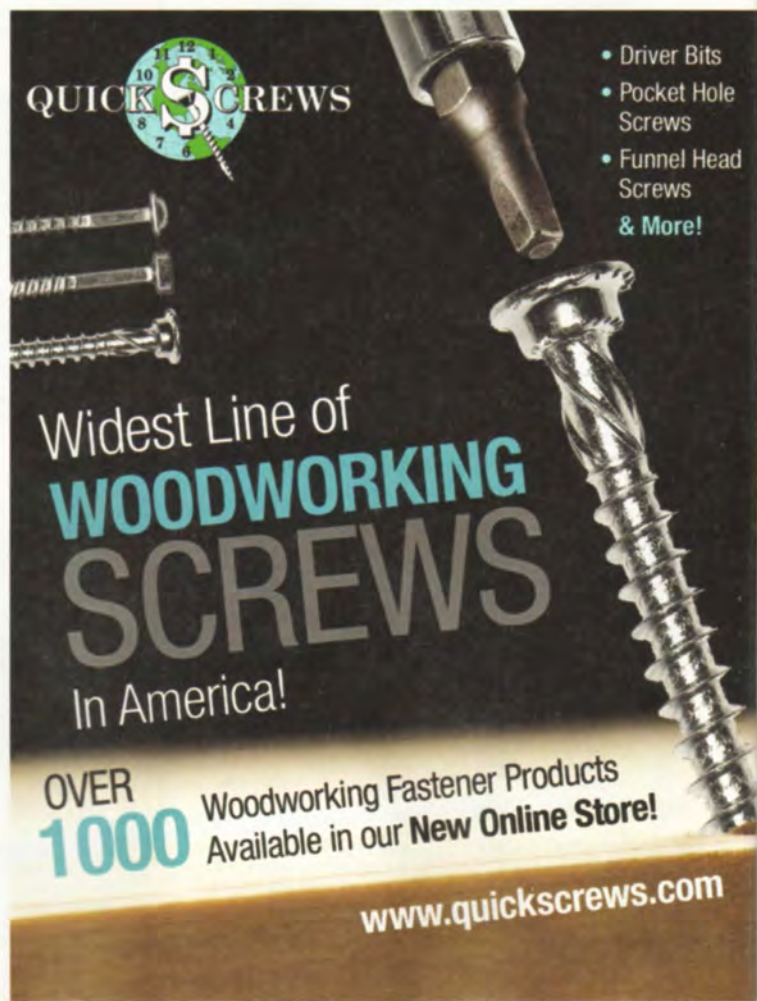


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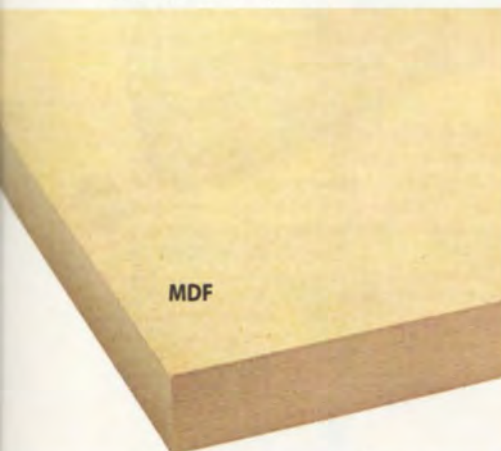
Is MDO a cousin to MDF?

I've seen you use MDF in projects and jigs many times in *WOOD*® magazine. Then I heard on a TV remodeling show about something called MDO. What's that?

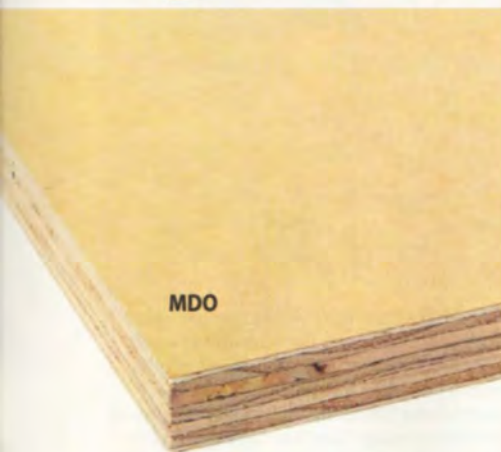
—Greg Montano, North Wilkesboro, N.C.

Medium-density fiberboard (MDF) is manufactured from fine wood fibers and resin bonded together, **Greg**, and compressed into sheets to give it a smooth, flat surface. Medium-density overlay board (MDO) has a similar, smooth surface about 1/16" thick on each face, bonded to a plywood core. Because MDO's faces contain more resin than MDF, MDO works well for exterior use, such as painted signs. Stronger than MDF, MDO weighs less and doesn't create a cloud of choking dust when you saw it. It also costs about a third more.

You'll find MDO at some home centers, but will have better luck at a lumberyard or hardwood retailer that sells sheet goods.



MDF



MDO

continued on page 72



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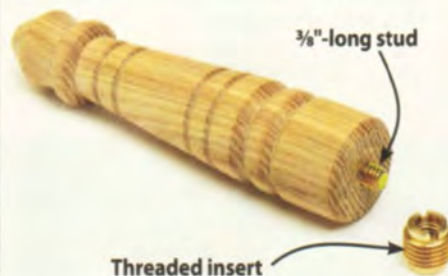
Ask **WOOD**

Bolt-on legs come up short

Recently, I bought four short, turned furniture legs from a home center, but hit a brick wall when it came time to install them. How do I attach the short ($\frac{3}{8}$ " long) threaded studs to my bookcase? There were no instructions included with the legs.

—Henry Watkins, Columbus, Ohio

You'll find the solution at most hardware and woodworking stores, Henry: threaded inserts. Begin by measuring the diameter of the threads, as well as the diameter of the barrel (as if there were no threads). Then drill a hole with a diameter about midway between those measurements, deep enough to seat the insert. (Do this on a drill press, if possible.) Next, install each insert as shown below. Finally, thread the legs into the inserts.



Threaded inserts have slots across the open ends, but an ordinary flat screwdriver won't help much. Instead, thread a couple of nuts onto a bolt, then thread the bolt into the insert. Snug the bottom nut against the insert, and then the top ("jam") nut against the first one. Finally, drive the insert flush using a drill and socket on the bolt head. 🌲

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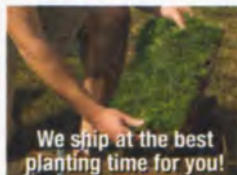
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Easy on, easy off fence holds solidly

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The MagJigs held the fence securely even when I resawed planks from a big white-oak slab. To adjust slightly for blade drift, I just released one magnet, nudged the fence, and then reengaged the magnet. As a bonus, the MagJigs dismount from the fence so I could also use them with other shopmade jigs.

The 3x15" Magfence II has T-slots on its face and top for attaching jigs and accessories, such as a 5" UHMW wear plate (MF2-SWF5, \$29.95, shown) available from Carter. There's also a 3" version: MF2-SWF3, \$24.95. You don't need these slick wear plates to rip with the Magfence II—you could instead make your own from wood scraps—but I like them for keeping the aluminum fence safely away from the blade, especially when ripping thin strips or slabs.

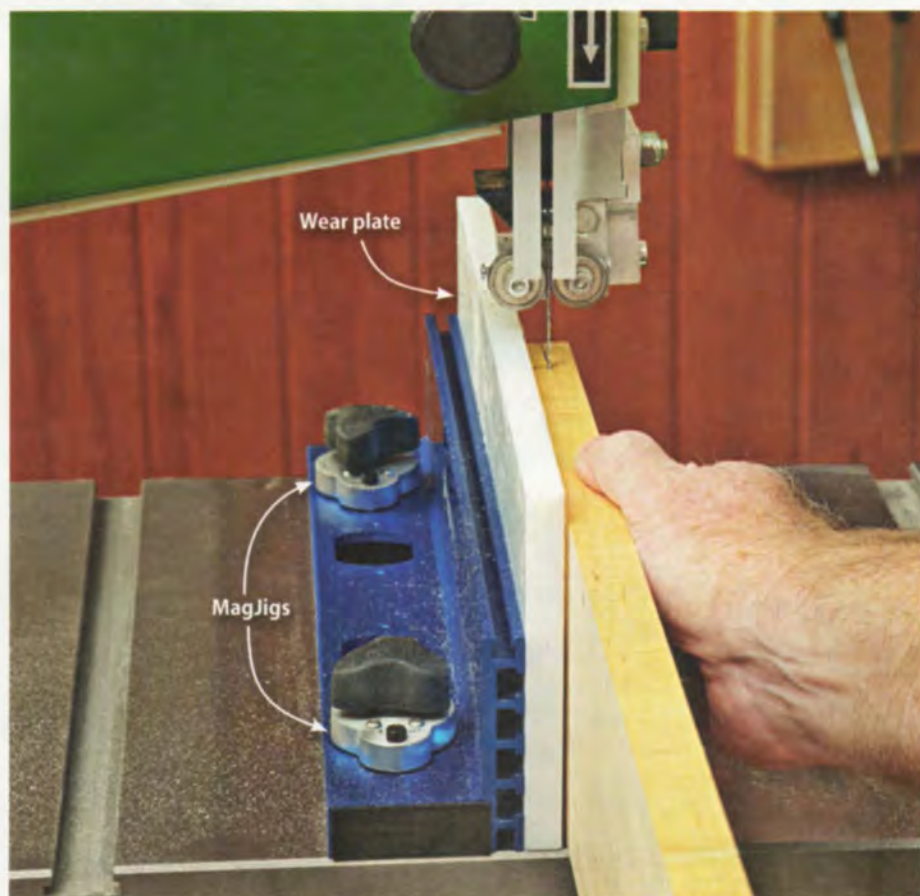
—Tested by Bob Hunter,
Tools Editor



Magfence II bandsaw fence (MF-II)

Performance	★★★★★
Price	\$100

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About our product tests

We test hundreds of tools and accessories, but only those that earn at least three stars for performance make the final cut and appear in this section of our magazine. The products shown here, and those that don't make the cut, are also reviewed at toolreviews.woodmagazine.com. Prices shown are current at the time of article production and do not include shipping, where applicable.

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—Tested by Kevin Boyle,
Senior Design Editor



Spray wax

Performance	★★★★★
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continued on page 76

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—Tested by Dave Campbell,
Editorial Content Chief



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Chicago Doctor Invents Affordable Hearing Aid Outperforms Many Higher Priced Hearing Aids

Reported by J. Page

CHICAGO: A local board-certified Ear, Nose, Throat (ENT) physician, Dr. S. Cherukuri, has just shaken up the hearing aid industry with the invention of a medical-grade, affordable hearing aid. **This revolutionary hearing aid is designed to help millions of people with hearing loss who cannot afford—or do not wish to pay—the much higher cost of traditional hearing aids.**

**"Perhaps the best quality-to-price ratio in the hearing aid industry" – Dr. Babu, M.D.
Board Certified ENT Physician**

Dr. Cherukuri knew that untreated hearing loss could lead to depression, social isolation, anxiety, and symptoms consistent with Alzheimer's dementia. **He could not understand why the cost for hearing aids was so high when the prices on so many consumer electronics like TVs, DVD players, cell phones and digital cameras had fallen.**

Since Medicare and most private insurance do not cover the costs of hearing aids, which traditionally run between \$2000-\$6000 for a pair, many of the doctor's patients could not afford the expense. Dr. Cherukuri's goal was to find a reasonable solution that would help with the most common types of hearing loss at an affordable price, not unlike the **"one-size-fits-most" reading glasses** available at drug stores.

He evaluated numerous hearing devices and sound amplifiers, including those seen on television. Without fail, almost all of these were found to amplify bass/low frequencies (below 1000 Hz) and not useful in amplifying the frequencies related to the human voice.

Inspiration from a surprising source

The doctor's inspiration to defeat the powers-that-be that kept inexpensive hearing aids out of the hands of the public actually came from a new cell

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phone he had just purchased. "I felt that if someone could devise an affordable device like an iPhone® for about \$200 that could do all sorts of things, I could create a hearing aid at a similar price."

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"I have a \$2,000 Resound Live hearing aid in my left ear and the MDHearingAid PRO® in the right ear. I am not able to notice a significant difference in sound quality between the two hearing aids." — Dr. May, ENT Physician

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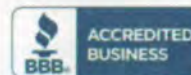
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A glimpse inside the
May issue (on sale March 12)



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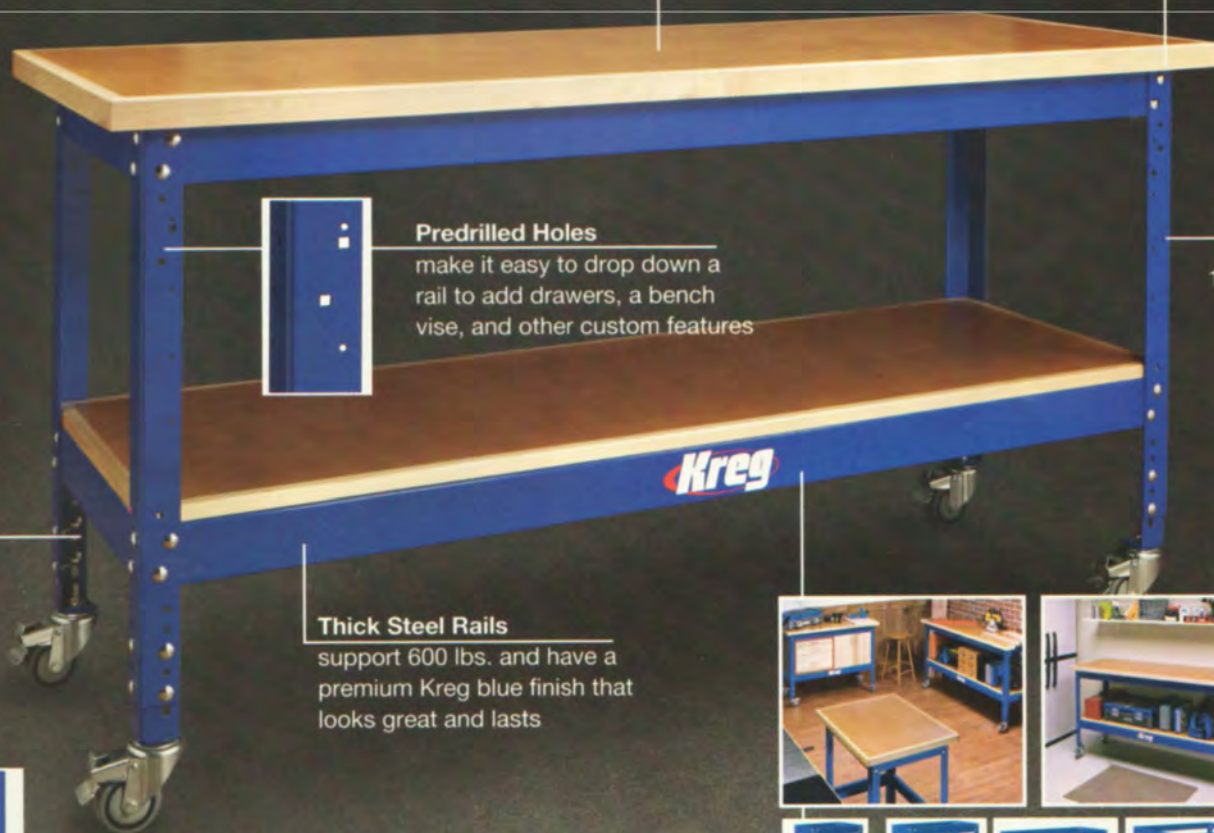
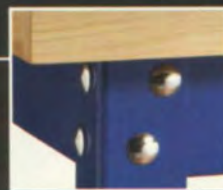
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When your woodworking calls for speed...Think Instant Bond!

Although our core Titebond® Wood Glue product line is ideal for a vast majority of woodworking applications, we realize there is a growing need for faster, and in some cases, "instant" adhesion capabilities. For this reason, we now offer the Titebond Instant Bond line of ethyl-cyanoacrylate-based wood adhesives (a.k.a. super glues), complete with an adhesive activator that accelerates the bonding process.

Titebond Instant Bond is a two-part bonding system that takes between 5-15 seconds to set and 30-60 seconds for initial cure. The adhesives provide a strong, permanent bond and are ideal for hard to reach joints or surface areas that are difficult to clamp. Designed primarily for wood and wood products, Instant Bond adhesives are also very effective on a wide variety of materials and substrates.

