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WOODWORKER'S JOURNAL

The magazine
for Today's
Woodworker

August 1998
Volume 22, Number 4

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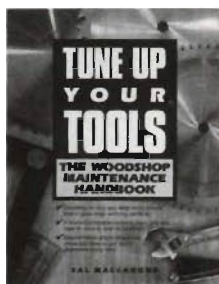
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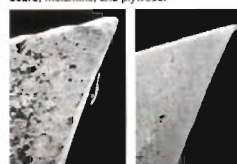
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See *American Woodworker* April 1998, pp. 64-69.

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The Woodworker's Journal

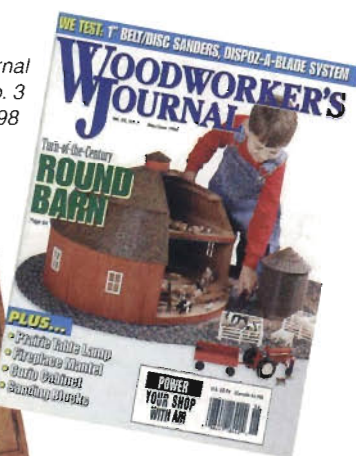
Woodworker's Journal
Volume 1, No. 1
January 1977



Today's Woodworker
Volume 1, No. 1
January 1989

We're excited by this challenge, and ask that you (all 200,000 of you!) share your thoughts with us and help guide us over the next few months. Rest assured, not one subscriber will be shorted one issue, even if you already subscribe to both magazines. That's my personal guarantee.

Woodworker's Journal
Volume 22, No. 3
May/June 1998



Today's Woodworker
Volume 10, No. 3
May/June 1998



Half of you are probably wondering why your favorite woodworking magazine has a new name on its cover. The other half are probably wondering why your favorite woodworking magazine is sporting such a different look inside.

I'll cut right to the chase. On March 20th, Rockler Press, publishers of Today's Woodworker magazine, bought the Woodworker's Journal from New York City-based Primedia Inc. (one of the largest publishers in the country). Primedia said that the Journal just did not fit into the same groups as any of their other fine publications.

Well, it sure fits for us.

You see, Rockler Press doesn't own "groups" of magazines. We own one. Plain and simple, our passion and expertise is woodworking.

In a nutshell, our goal is to create one great woodworking magazine from two very good woodworking magazines.

I think founder James McQuillan was really on to something when, way back in his first issue (January, 1977), he wrote; "The Woodworker's Journal is proud of the opportunity to play a small part in this renaissance of woodworking."

I'm here to tell you the renaissance ain't over ... and neither is the Woodworker's Journal.

Harry N. Storch

WOODWORKER'S JOURNAL™



44 Picture Frames In a Hurry

By Larry Stoiaken

Here's a great little production project that will take care of your gift budget for a while and use up some shop scraps in the bargain!

20 A Workbench to Stand the Test of Time

By John English

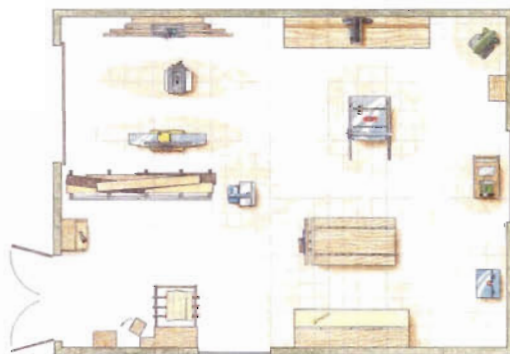
Mortise and tenon joinery the easy way, and you still end up with one sturdy workbench.



30 Designing a Workshop

By Scott Landis

Whether you use a cramped basement or possess the ultimate workshop, here are some tips to make your shop a little more efficient.



35 Greene & Greene Server Table

By Michael McGlynn

Our contributing editor takes us again to the stylings of the Greene brothers. The results are stunning!

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Can two very good magazines become one great magazine?

6 On the Level

Your editor's corner. News of this issue and things to come.

8 Tricks of the Trade

Gaining control in the shop.
(New: Win a shop toy if your idea becomes the Pick of the Tricks.)

14 Hardware Hints

An innovative new bracket from Accuride for moveable drawers.

16 Shop Talk

Where should you go this summer?
To woodworking summer school of course!

42 Yesterday's Woodworker

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48 What's In Store

Tools and books for the shop.

52 Tool Preview

DeWalt's new Workstation.

56 Shop Stumpers

Woodworking mysteries.

60 Club Spotlight

The Guild of Oregon Woodworkers shows their stuff (and wins a new "toy" for their participation).

66 End Grain

Woodworking grandpas meet the Beanie Baby challenge.



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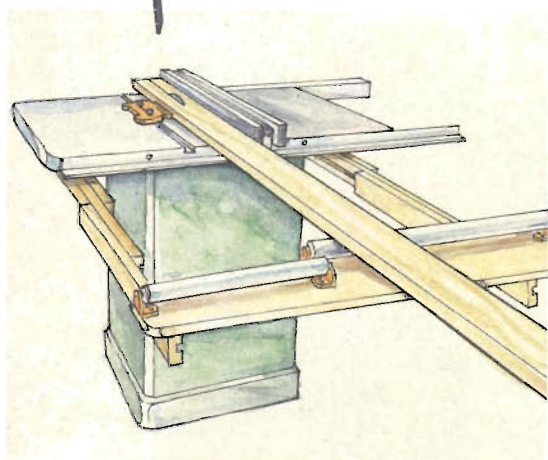
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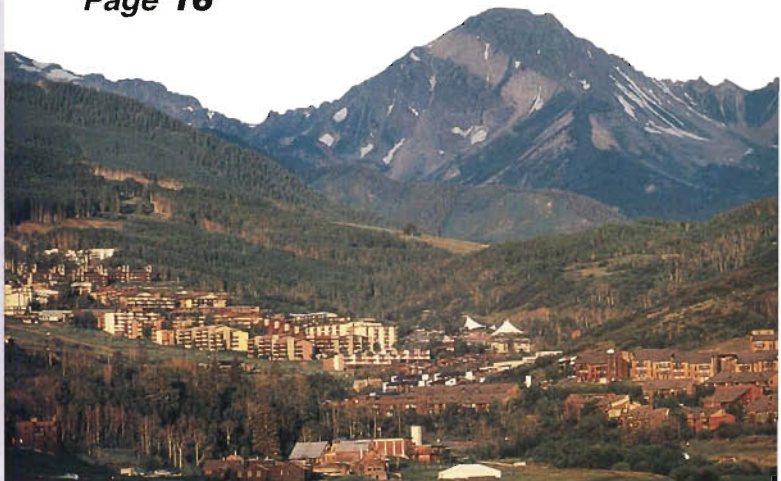
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Safety First

Learning how to properly operate power and hand tools is essential for developing safe woodworking practices. For purposes of clarity, necessary safety guards have been removed from the equipment shown in some of the photos and illustrations in Woodworkers Journal. We in no way recommend using this equipment without safety guards and urge readers to strictly follow manufacturers' instructions and safety precautions.



A Safe Landing

"I couldn't be happier with where the Woodworker's Journal is landing ... right in the hands of some real woodworkers!"

*Charles Sommers
former editor, Woodworker's Journal*

As the Woodworker's Journal and Today's Woodworker combine forces, I'm determined that the resulting new magazine take full advantage of the strengths of both of its predecessors. Loyal subscribers to the Woodworker's Journal, I know, have been relying on the insights and expertise of editor **Charles Sommers** and designer/craftsman **Dick Coers** for some years now. You don't easily replace that kind of experience and, I'm happy to say, we won't have to. Both of these topnotch gentlemen will play an important role in the new Woodworker's Journal - in fact you can look for their articles starting with our very next issue.

And, of course, our own **Rob Johnstone** and the rest of the crew here are excited about the challenge, with plans for adding an associate editor and technical illustrator already in full swing. (Anyone out there interested?) Today's Woodworker readers will continue to see old favorites like *Tricks of the Trade*, *Hardware Hints*, *What's in Store*, *Shop Talk* and *Stumpers*. Their scale has been expanded a bit, and they've been joined by new departments like *Tool Preview* (page 52) and *Club Spotlight* (page 60).

As you can well imagine, other changes are in the works, but I'll talk more about that next time. Right now I want to set the table for this issue, the first for the new Woodworker's Journal!

Helping us embark on our adventure is **Scott Landis**, whose article (page 30) walks you through the process of laying out a workshop. Workflow and convenience are at the top of his list of priorities. Of course, a shop isn't much use without a sturdy bench, and **John English's** latest effort (page 20) certainly fills the bill. This project is scaled so it won't devour your budget or your floor space.

Once you have a surface to work on, you'll be all set to tackle contributing editor **Mike McGlynn's** re-creation of an Arts & Crafts dining room server (page 35). Mike is a master craftsman who has a fascination with the Arts & Crafts period and the Greene brothers' designs in particular.

With all the office work surrounding the merger of our two magazines, I figured some time in the shop would help me unwind. My production frames (page 44) did just that and, I'm happy to report, I've completed four gifts for the holidays already!

Larry N. Stoiaken

Project Update Sheets

When you order hardware for any project featured in Woodworker's Journal or Today's Woodworker, be sure to ask our operator if there are update sheets for that project. These may include dimension corrections, hardware changes or other items essential to your success.



If you're building the Rocking Doll Cradle from issue 55, be sure to request the update sheet before you start.

JULY/AUGUST 1998
Volume 22, Number 4

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Editorial Advisors

NORTON ROCKLER
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Contributing Editors

DICK COERS
RICHARD DORN
MIKE MCGLYNN
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ADVERTISING SALES

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PHONE (927) 392-1892 FAX (927) 392-1893

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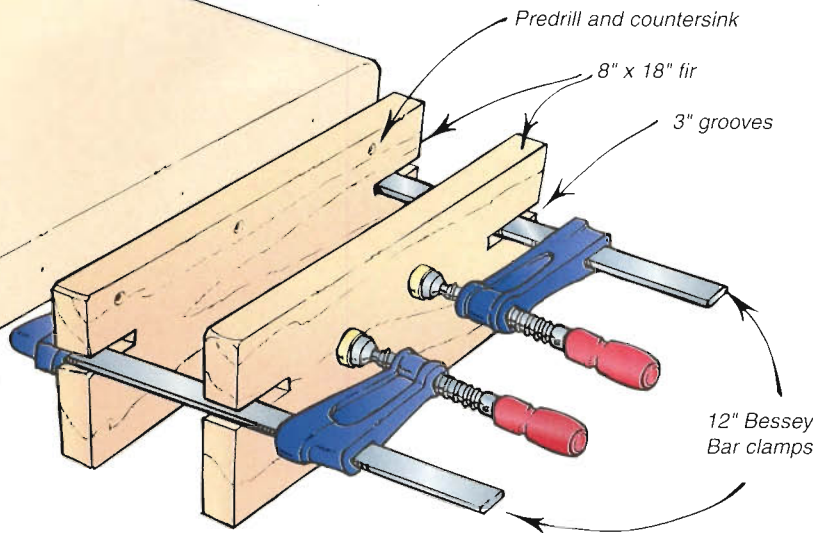
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While working on a project requiring hand cut dovetails, I came up with this simple vise idea. I took a scrap piece of hardwood 1" thick by 18" long by 8" wide and predrilled and countersunk holes 1" from the top edge. Then I cut a slot on both sides 3" deep and wide enough to accommodate my Bessey Bar clamps. I took a second

piece the same size and cut the slots in the same place. Then I fastened the first piece to the workbench, slid in the clamps, and put the second piece on with the screw ends facing out. Now, I have an extra wood vise when I need one.

*Pat Pelkey
Oswego, New York*

Control While Creating a Curve

When I have to bend a straight grain strip of wood to draw a curve, I just place the ends of the strip between the jaws of a bar clamp and adjust the screw of the clamp until the strip connects the 3 points on my layout I want.

*William Adsit
Milford, Illinois*

Blemish Control

I wanted to avoid the inevitable blemishes which occur when using wood filler to hide the finish nails used for installing molding. I came up with this simple idea. Place a short piece of masking tape down where you plan to nail. Hammer and set the nail through the tape. Apply the wood filler over the tape. When you peel off the tape, a perfect round spot is left with no dulling of the surrounding area. Use this technique anywhere prefinished wood is being nailed.

*James Vasi
Williamsville, New York*

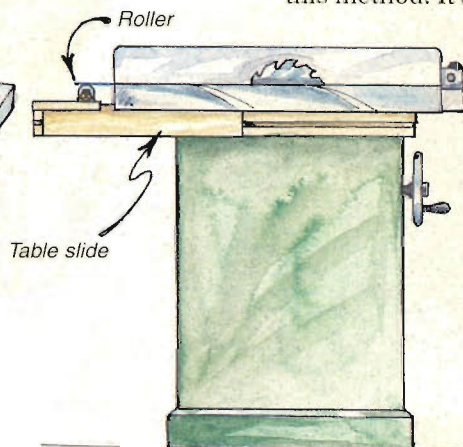
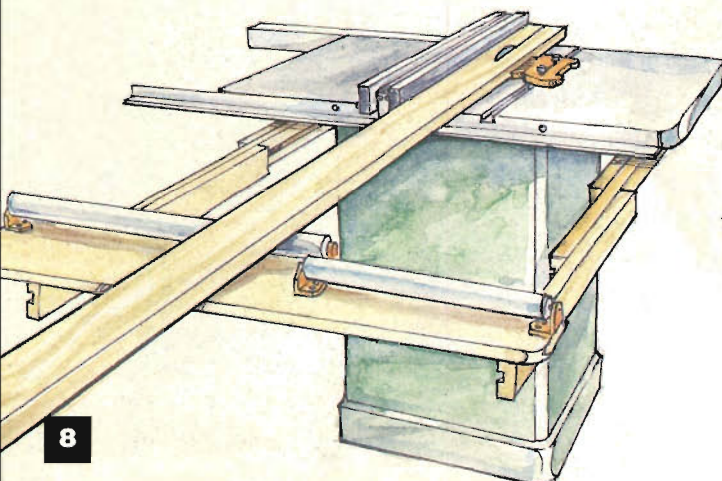
PICK OF THE TRICKS

Slide Out the Rolling Support: Control while making long cuts.

When I need to cut long boards or plywood sheets by myself, I use this method. It's merely a pair of

table slides normally used on a dining room table, with rollers mounted to support the wood. When not in use, you can push them back in so they are out of the way.

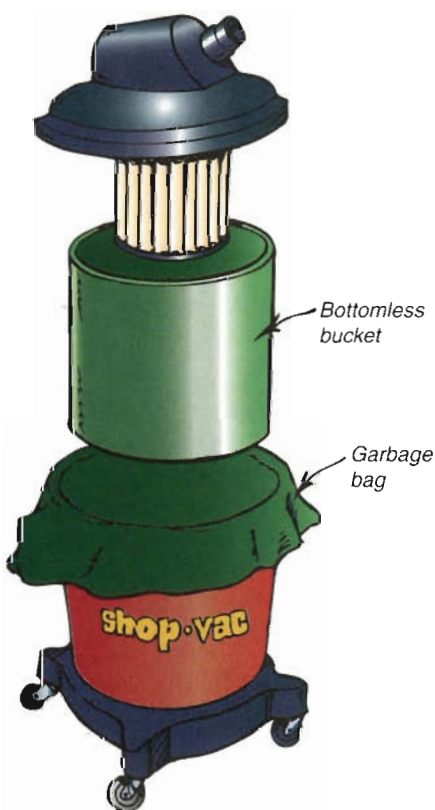
*Robert Floyd
Hilton, New York*



There's a Hole in the Bucket

I put a plastic bag in my Shop-Vac to hold the dust so it would be easier to dump out. But the bag kept getting sucked up into the filter, so I found a pail which just fits inside the plastic bag and cut the bottom out. Now, I just take the pail out first and the bag comes out easily and dust doesn't fly all over.

Arthur Duffie
Kalamazoo, Michigan



Solid Wood Repair

An otherwise perfect board with a beautiful grain pattern is often marred by an ugly flaw. If the center of a knot is loose or missing, I repair the flaw with a solid wood insert. A repair job that is done correctly will be difficult to detect. Draw a pattern on the board around the area to be repaired. Keep the pattern as small as possible and follow existing growth

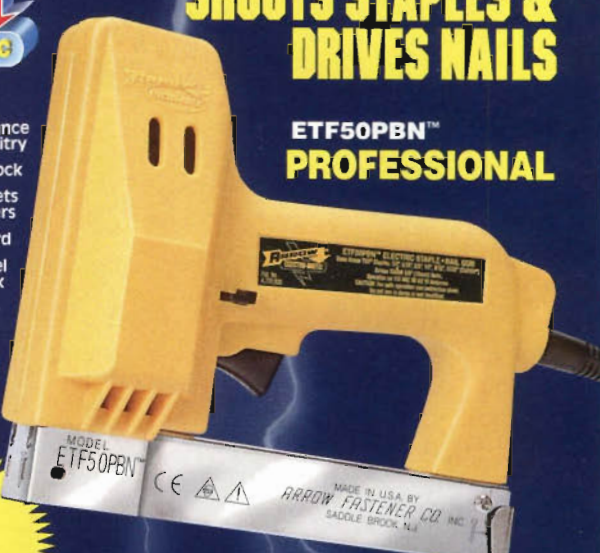
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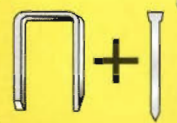


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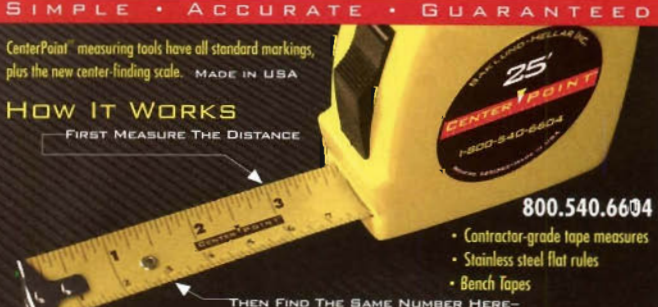
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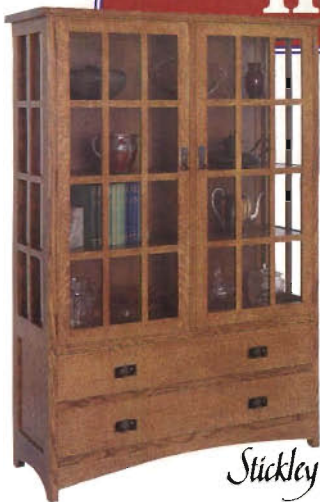
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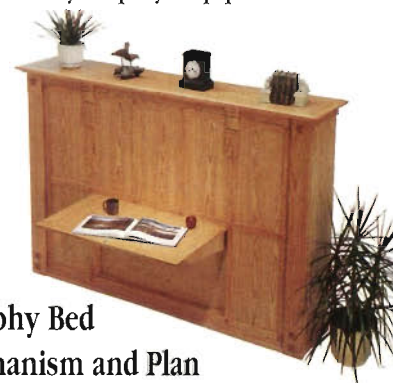
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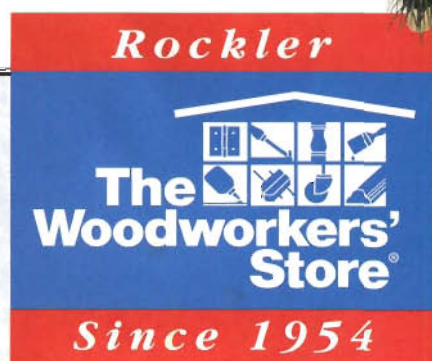
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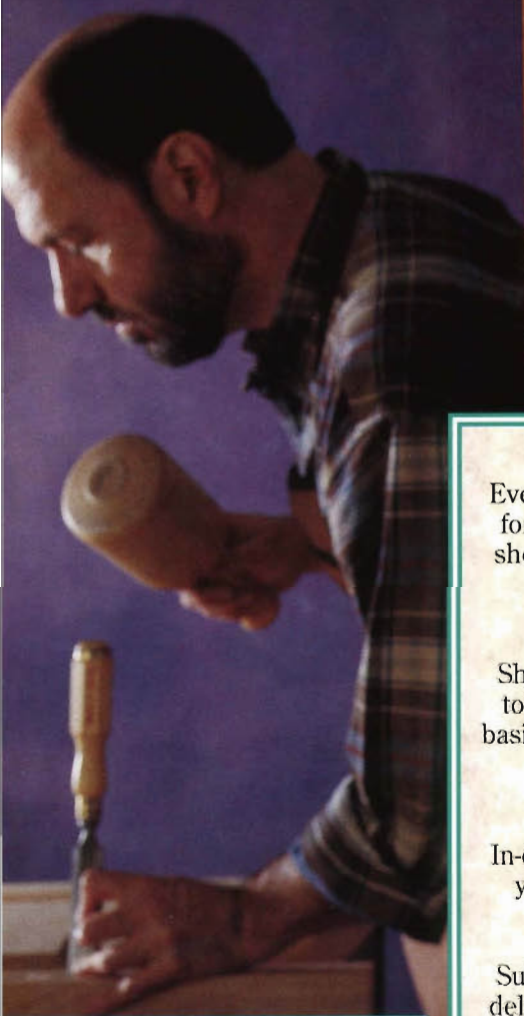
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lines so the repair will look natural. Use a router equipped with a straight bit to route the pattern approximately 1/4" deep. This is a freehand operation so hold the router firmly. Then make a paper pattern of the routed area by sketching lightly across the routed area with a pencil until the outline of the pattern is distinct. Cut out the paper pattern and transfer it to a matching piece of wood surfaced to a thickness of 1/4". Cut the filler piece slightly larger than the pattern and use a disc sander to true the edges for a perfect fit into the routed area. Glue the filler piece in place, sand the surface flush, and continue with your project.

Richard Dorn
Oelwein, Iowa

Hold Nails with Your Teeth

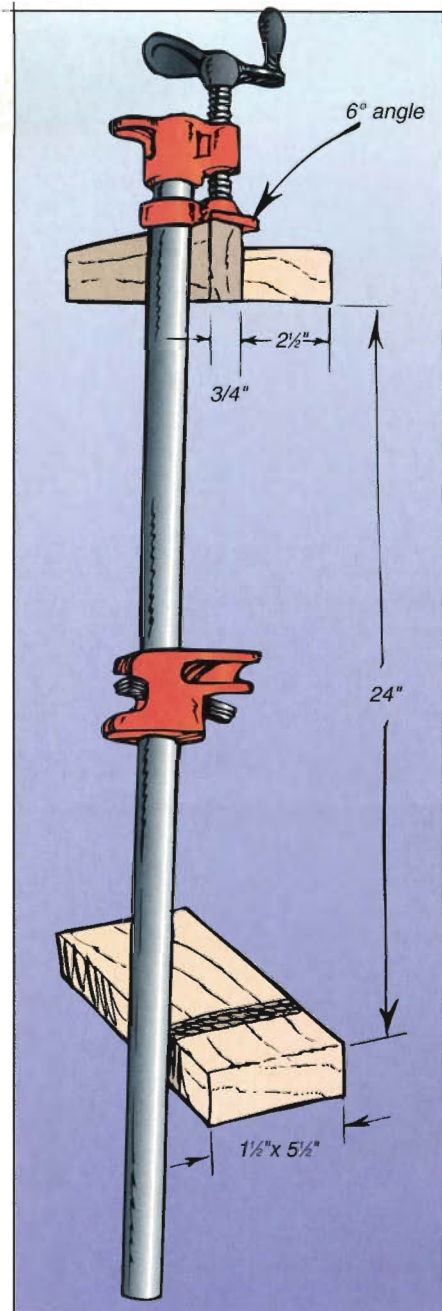
Use a pocket comb to hold small nails. Just place the nails between two of the teeth and hammer away.

Craig Kimpston
Grimes, Iowa

Three Piece Clamp Hanger

Storing pipe clamps has always been a challenge for me. I think I've contemplated every system in the world. Quite by accident, I stumbled upon the method shown at right. It requires only three pieces of wood assembled with drywall screws. The clamps are easy to put away and retrieve. And, they do stay put!

Michael Burton
Ogden, Utah



Woodworker's Journal will pay from \$50 to \$150 for all Tricks of the Trade published. In addition, the reader whose trick is selected as our "Pick of the Tricks" will receive the free tool shown at right. To be considered, submit your original, unpublished trick to the editor, complete with photos or drawings to explain your idea. Send all tricks to Woodworker's Journal, Dept. T/T, PO Box 261, Medina, MN 55340 or e-mail us at: editor@woodworkersjournal.com



For submitting this issue's Pick of the Tricks, Robert Floyd wins a Makita 14.4 volt cordless drill with a carrying case and Makita's new Nickel-Metal Hydride batteries, the highest capacity battery available.

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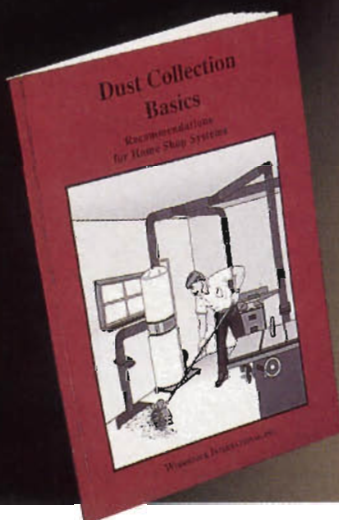
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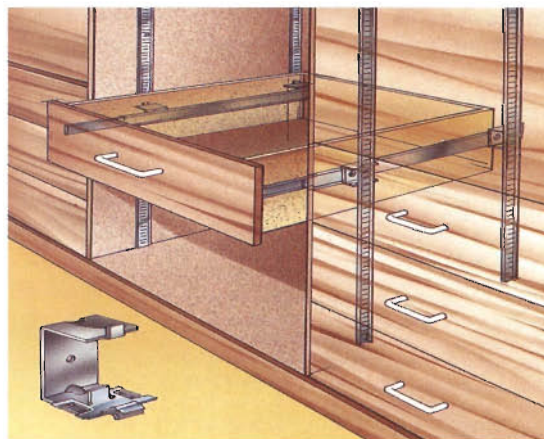
How to Make Adjustable Sliding Shelves

By Al Wolford

Flexibility is essential for keeping pace with the ever-changing world we live in. But hardware and flexibility are two words you hardly ever use in the same sentence ... except maybe "this hardware system is not flexible - at all!" Trying to fit a new component into your custom made entertainment center (which you personally designed with the utmost care), can be an upsetting experience if the new piece won't fit. Stereo and electronic systems change in size and configuration, most hardware systems do not.

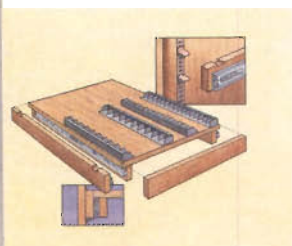
With that in mind, contributing editor Rick White came up with an ingenious system four years ago (featured in Today's Woodworker issue 36) that allowed him to incorporate adjustable, sliding media shelves into an entertainment center. His invention combined common shelf standards and supports with drawer slides. This gave him a series of infinitely adjustable sliding trays, upon which he could mount molded plastic holders for everything from cassettes and CDs to video tapes. As technology and the makeup of his collection changes, all Rick has to do is adjust the spacing of the trays.

The manufacturers of Accuride drawer slides must have been looking over Rick's shoulder: the company has come out with a simplified version of his system. Their new brackets come in sets of four - enough for one drawer or sliding tray - and are secured to the drawer slides with included nuts and bolts.



Accuride's new slide mounting brackets clip and lock into regular shelf standards. This gives you the option of reconfiguring drawers and slide out shelf positions as you wish.

A few years back, Rick White came up with this idea for installing adjustable drawers and sliding trays in our entertainment center. Now there's a bracket available from Accuride that will do exactly the same job.



Rick's system was designed for slide-out shelves, but worked so well that they're now in his kitchen.



Editorial Advisor Al Wolford is our resident hardware expert. Send questions or comments to Al at the Woodworker's Journal, Dept. HH, P.O. Box 261, Medina, MN 55340. Or you can e-mail him at editor@woodworkersjournal.com.

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Summer School for Woodworkers

By John English



Meanwhile ... Back at the Ranch

The Anderson Ranch Arts Center: bringing art and craft together

Should the most accomplished woodworkers and project designers be termed craftsmen, or artists? It's a time-weary question that may soon find its resolution high in the snowy peaks of the Colorado Rockies, at the Anderson Ranch Arts Center. This nationally recognized visual arts center has, for the last quarter of a century, brought equal emphasis to traditional crafts (like woodworking) and the essentials of fine arts.

This summer is no exception. Among the Center's diverse offerings are a weekend with Sam Maloof, one of America's best loved and most respected furnituremakers; a class on clocks,

lamps and mirrors taught by Brent Skidmore (specifically aimed at beginning woodworkers aged 12 to 15); and an in-depth look at Japanese tools and woodworking techniques with instructor Mike Laine - a session that could open up a whole new world to participating woodworkers.

You don't need to be an expert or an artist to get involved. The ranch offers over a hundred workshops each summer, all taught by respected national and international artists and craftspeople. To get your copy of the Anderson Ranch's 32 page catalog of courses, activities and other information, call 970-923-3181.



Inspired by the surrounding natural beauty of the Rockies, Clifton Monteith celebrates nature at the Anderson Ranch by using natural raw materials to build his fanciful chairs.

The Furniture Society

San Francisco conference bridges gap between East and West

Just two years old, the Virginia-based Furniture Society is already capturing the interest of serious woodworkers across

America. This summer, their second annual conference (its theme is East meets West - Visions beyond the Horizon) brings two diverse perspectives together - the contemporary work of West Coast furnituremakers and the elusive aesthetic of Japanese craftsmanship. (Aptly demonstrated by California architects Charles and Henry Greene - featured in this issue.) This theme is particularly appropriate since the Society's stated goal is to promote studio-made furniture in all media and styles.

The Furniture Society is also making serious progress in its efforts to connect individual woodworkers and regional guilds into a single, cohesive, nationwide network. This summer's conference, scheduled for late June, is being held in San Francisco.

For more information on this effort and the Society's other activities, you can visit their website at www.avenue.org/Arts/Furniture, or give them a call at 804-973-1488.

New Designs for Everyday Items

Event celebrates the life of noted wood sculptor Wharton Esherick

In his early days, renowned Valley Forge, Pennsylvania wood sculptor and furnituremaker Wharton Esherick (1887-1970) relied on strong, utilitarian, medieval influences for his inspiration. As his craft evolved, he began to combine the fluidity of sculpture with the functionality of furniture, a marriage that eventually gave rise to a body of work described as free-form furniture. Over 200 of his original pieces are now enshrined in the Wharton Esherick museum, an institution that has recently become home to an annual competition that pays homage to this master.



A sturdy but whimsical three-legged stool by Wharton Esherick. Simple Seating is the theme of this year's competition being held by the Wharton Esherick museum.

This year's competition, the fifth of its kind, celebrates the art and functionality of an Esherick favorite, the three-legged stool. Woodworkers were invited to enter original designs for a chance at cash prizes and the possibility of having their work displayed along side Esherick's this fall. Last year's competition, with a toymaking theme, resulted in an exhibition of fifteen selected pieces. The purpose of the competition is to inspire creative and imaginative new designs for everyday items, continuing a central theme which Wharton Esherick applied to his entire body of work. For more information, contact the Wharton Esherick Museum, P.O. Box 595, Paoli, Pennsylvania 19301-0595.



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The Maine Event

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An 11 acre site just outside Rockport, Maine provides an idyllic woodland setting for the Center for Furniture Craftsmanship, a 4,200 square foot learning facility on the banks of the Oyster river. Among the Center's features are a bench room that boasts an individual European-style workbench for each student, a large yet intimate classroom and a state-of-the-art machine room equipped with a full array of high quality stationary tools. All this is the brain child of noted woodworker and author Peter Korn, the facility's director.

Among the courses being offered by the Center this season is the ever popular Basic Woodworking. This is a thorough introduction to furnituremaking, with a strong emphasis on traditional hand tool skills. The five units (each about 12 days, running in sequence from



Hands-on experience is combined with friendly and expert instruction at Peter Korn's Center for Furniture Craftsmanship. Classes for beginners as well as experts are available.

June through October) will be taught by a pair of instructors: director Peter Korn will team up with noted craftsmen like Hugh Montgomery and Tom Caspar to help students create fine hand-crafted furniture. Fifteen other courses feature gems like orna-

mental and relief carving with English master carver and acclaimed author Chris Pye, and an impressive intermediate level furniture building class with Shaker stylist Chris Becksvoort. For more information, give the Center a call at 207-594-5611.

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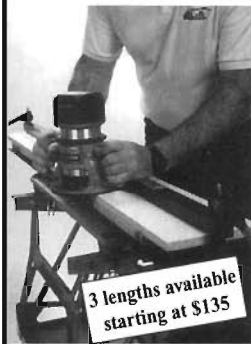
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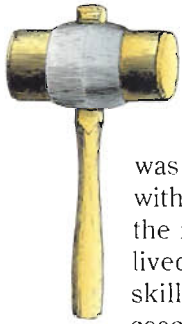
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Workshop Classic: A Bench You Can Rely On

A family tradition continues with this no-nonsense maple workbench. Granddad would likely approve.

By John English





he work-top on my grandfather's bench was a pair of railroad ties with an eight inch gap down the middle. Granddad, who lived in Ireland, was a skilled artisan who built coaches and wagons.

Dad is pretty good with his hands, too. The bench in his Dublin workshop is better suited to the work he does - refinishing antique furniture, tuning small engines - than Granddad's would be. The three inch thick hardwood top rests on a cast iron frame, but the vise is a metalworker's and the top shows the scars of butane torches, solder and even a few errant hammer blows.

The point is that a workbench is personal - it must match both the work and the worker. Neither of the benches described above would be suitable for fine woodworking, but the model shown here is ideal for building furniture and casework. And it's easily modified to suit an individual craftsman's needs.

Design Basics

I built this workbench to fit with my six foot tall body. The rule of thumb is to locate the work-top at half the height of the user (in this case, 35"). If you need to build it higher or lower, simply adjust the length of the legs (see the leg elevation drawings on page 26).

The top of the bench features two parallel rows of bench dog holes. The front row is close to the edge, but the back row is set in a few inches to help support wide subassemblies like drawers or cabinet doors. The top is large enough to clamp a standard five foot long kitchen base cabinet, with a few inches left to set down tools or hardware.

Before even sharpening a pencil for this project, make sure you have your vise and bench dogs on hand. Open the vise fully and measure the opening, then subtract the thickness of the jaw (see the Material List on page 22). This is the maximum spacing you can allow between the dog holes in the bench

"The first project of any aspiring woodworker should be a simple work bench; something sturdy enough so that boards may be planed without the bench jumping all over the room."



Jim McQuillian
Volume 1, Issue 1
Woodworker's Journal

top, but you may want to downsize a little: traditional bench builders have discovered that a space of six or seven inches works best for most projects.

Four Bench Building Basics.

1. If you regularly build furniture or cabinets, the space between the last bench dog and the wide open vise jaw should accommodate a standard five foot base cabinet.

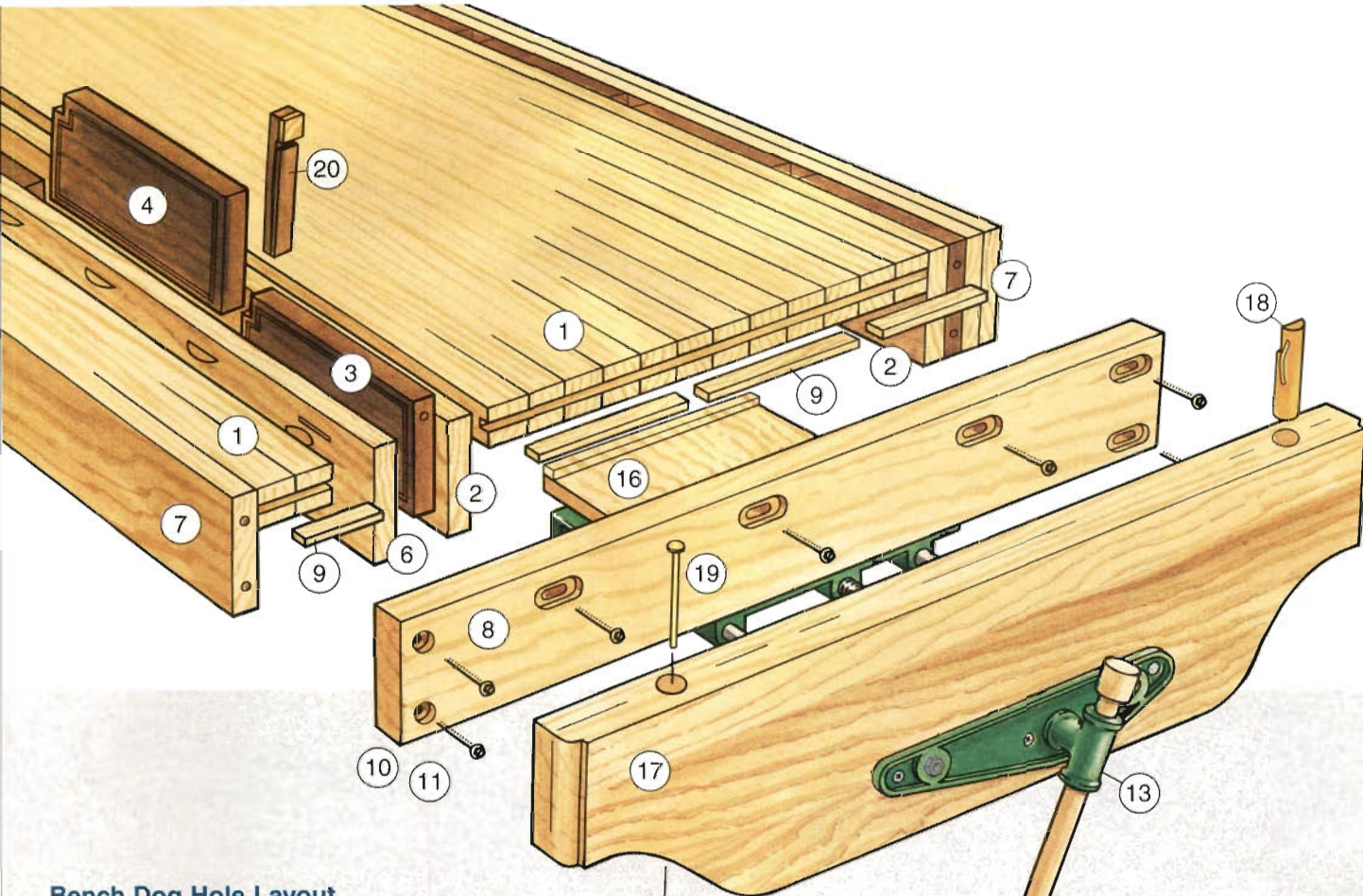


3. To ensure stability when lateral force is exerted on it, a bench should outweigh the user by about 50%.

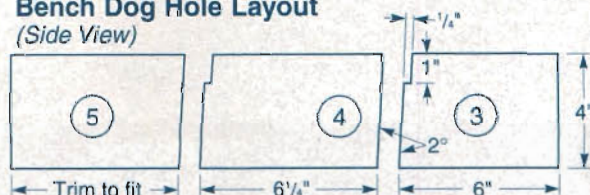
2. A good rule of thumb is to size your bench so that the top is half as tall as the primary user.



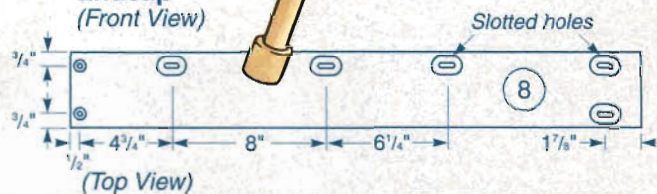
4. One row of bench dog holes should be set in a few extra inches. This makes it a little easier to support doors, drawers and other large parts during clamping.



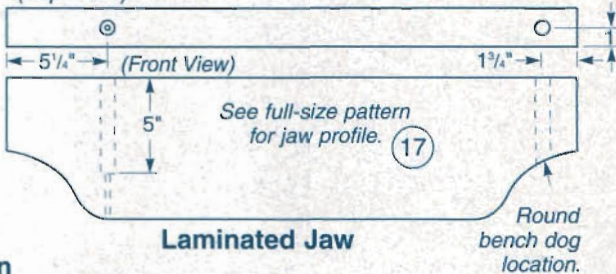
Bench Dog Hole Layout
(Side View)



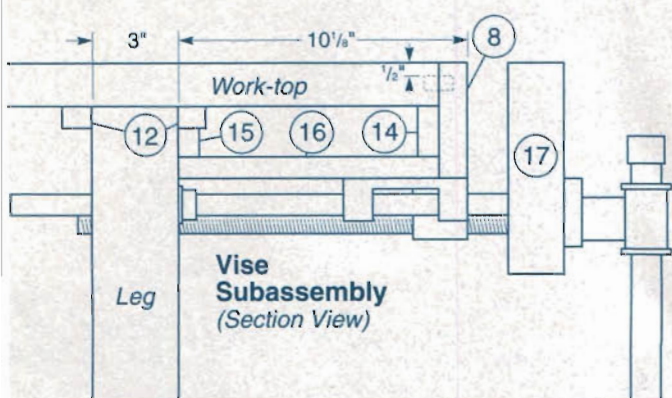
Endcap
(Front View)



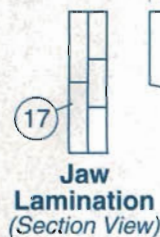
(Top View)



Vise Subassembly
(Section View)



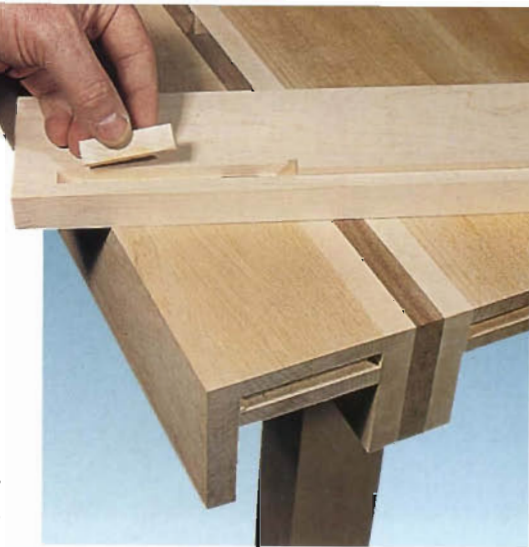
Jaw Lamination
(Section View)



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1 Work-top (1)	1 1/2" x 24 1/8" x 60"	11 Washers (14)	3/8" ID
2 Inside Liners (2)	3/4" x 4" x 60"	12 Leg Cleats (4)	3/4" x 3/4" x 20"
3 First Spacers (2)	3/4" x 4" x 6"	13 Large End Vise (1)	
4 Common Spacers (14)	3/4" x 4" x 6 1/4"	14 Vise Support Endcap Cleat (1)	3/4" x 1 3/4" x 12"
5 Last Spacers (2)	3/4" x 4" x 5 1/2"	15 Vise Support Leg Cleat (1)	3/4" x 1" x 12"
6 Outside Liners (2)	3/4" x 4" x 60"	16 Vise Support (1)	3/4" x 10" x 9"
7 Work-top Sides (2)	3/4" x 4" x 60"	17 Laminated Jaw (1)	2" x 7 3/8" x 30"
8 End Caps (2)	1" x 4" x 30"	18 Round Dogs (2)	Brass
9 Spline (1)	1/2" x 1" x 30"	19 Round Dog Button (1)	3 1/2" Brass Hinge Pin
10 Lag Screws (14)	3/8" dia. x 3 1/2" Long	20 Square Dogs (2)	Steel

Figure 1: The spline grooves on the endcap are stopped, while those on the ends of the top are through cuts. After routing the grooves in the top, a three inch wide strip is ripped off. This piece sits outside of the liners and spacers.



A Butcherblock Top

While designing this bench, I recalled something from my days in the kitchen cabinet business: one of the most common kitchen renovation is countertop replacement, and more and more homeowners are discarding their gorgeous old solid maple butcherblock tops. I got lucky on my third phone call: a shop in the city's historical district sold me an eight foot long section of 1 1/2" thick butcherblock for just \$10. It took only a few minutes to trim my find to make the work-top (piece 1). I rough cut it a bit oversized with a circular saw, after first scoring with a utility knife to help avoid tear-out.

I then clamped on a straightedge and trimmed the top to final dimensions with a straight bit chucked in my router. During this process I cut across the grain first, then with the grain: this approach virtually eliminates blowout on the corners.

If you prefer to build a top from scratch, make sure the quarter-sawn (tight) grain is visible, and the more open, wavy plainsawn becomes the gluing surface. Glue and clamp three or four overly long pieces of ripped and jointed stock together at a time. When they're dry, glue and clamp these sub-assemblies together to form the completed piece. Biscuits help to line up all these edges as you clamp. After the glue dries, take the entire piece to a cabinet shop and ask them to run it through their wide drum sander, to reduce it to final thickness. Another great option is to order your top glued-up and made to order at a local home center. This is a little more expensive, but often results in a more secure and stable top.

The Bench Dog Holes

After trimming the top to size, chuck a 1/2" rabbeting bit in your portable router to cut the spline groove in each end of the work-top (see the elevation drawings on page 22 for dimensions), as shown in **Figure 1**.



Figure 2: Dry fit the bench dogs and spacers, leaving gaps that are the size recommended by the dogs' manufacturer. When everything fits, trim the final spacer to length.

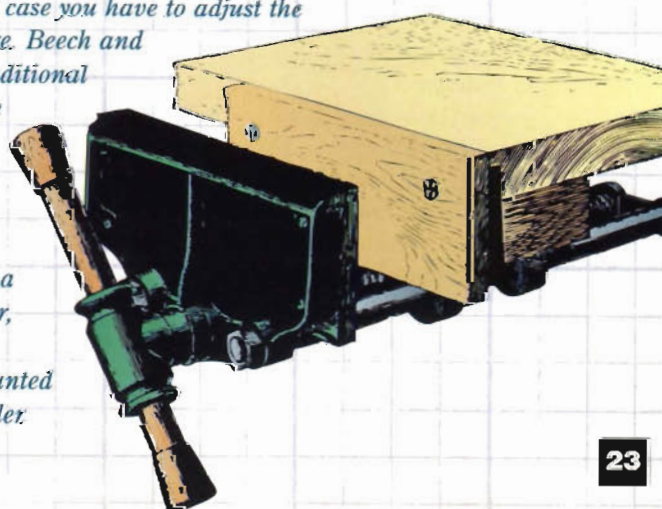
Rip a 3" wide strip off one side of the top and set it aside, then biscuit, glue and clamp the inside liners (pieces 2) in place. It helps to place the work-top on a couple of saw horses while attaching these liners, so your clamps have plenty of room to operate.

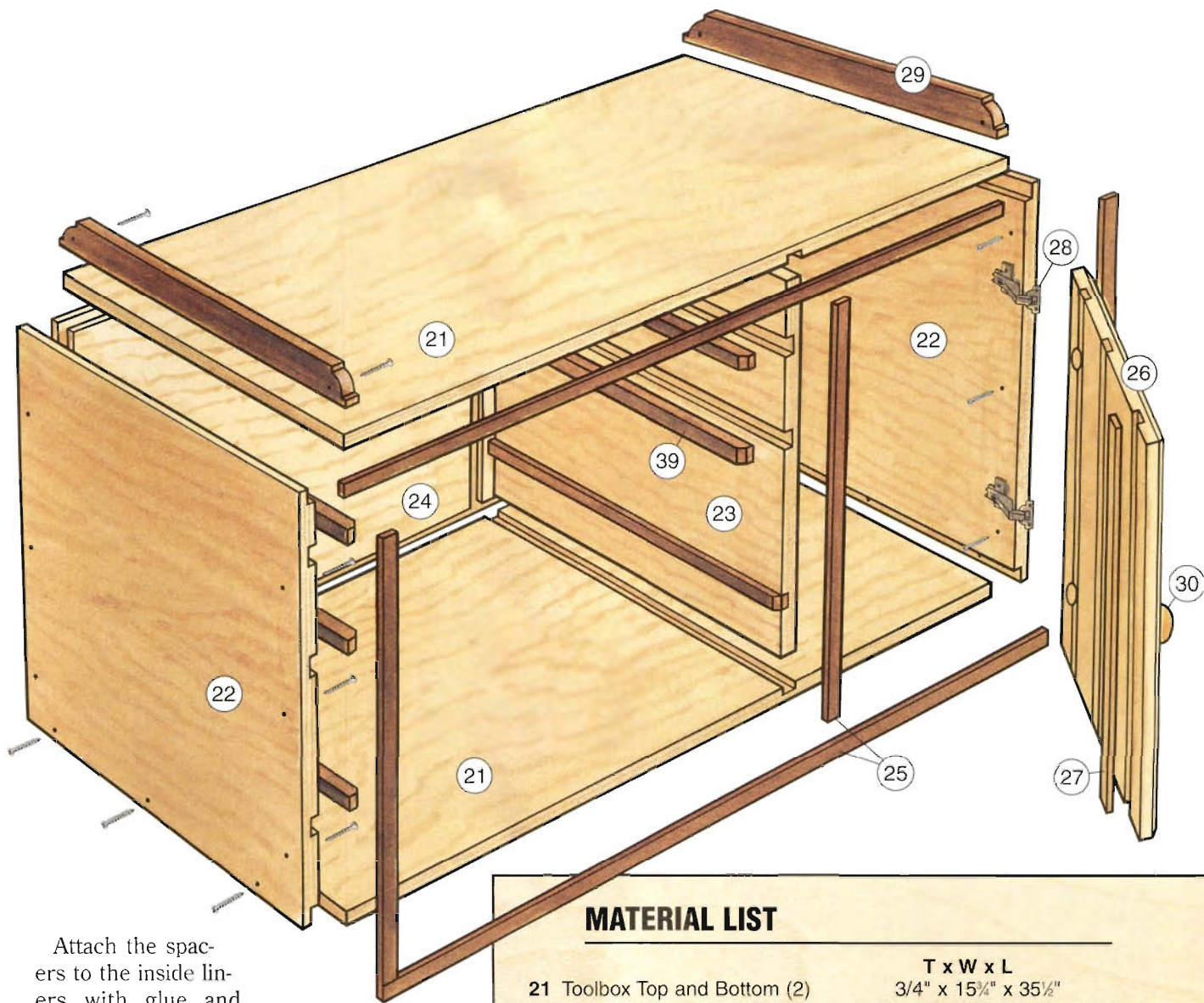
The liners need to be flush with the top of the butcherblock when it's finished: so it's a good idea to set them in place a hair proud of the top, rather than shy of it.

The bench dog holes are formed when a series of spacers (pieces 3, 4 and 5) are attached to the liners. The business edge of these spacers are cut at a 2° angle (verify this angle by reading the bench dog manufacturer's instructions), and notched to allow the bench dogs to be stored below the work-top surface. All of these dimensions are shown on the elevation drawings, and the cuts can be made on a band saw. Dry fit and mark the spacer locations on the inside liners, verifying each placement with a bench dog (see **Figure 2**). Score a shallow line about a 1/4" in from the edge on both sides of each spacer - use a sharp knife or a rotary tool - to create a glue well: this will limit excessive squeeze-out.

Getting Started:

You should have the vise and bench dogs on hand before construction begins, in case you have to adjust the plan to fit the hardware. Beech and hard maple are the traditional species of choice for the frame and top, and walnut makes an excellent accent. During the course of construction you'll use a table saw, biscuit joiner, band saw, drill press, portable and table-mounted routers and a belt sander.





Attach the spacers to the inside liners with glue and clamps. When they're dry, you can glue and clamp the outside liners (pieces 6) in place. Use biscuits and glue to attach the remaining 3" wide butcherblock strip to one of the outside liners (see the exploded view on page 22 for its location), then glue and clamp the work-top sides (pieces 7) in place.

Splined Endcaps

As woodworkers well know, wood has an annoying habit of shrinking and swelling across the grain. To cope with this tendency in a large assembly such as the work-top, the endcaps (pieces 8) are splined and attached with lag screws driven through oversized, slotted holes (See elevations on page 22 for the slotted hole locations).

Chuck the rabbeting bit (the one you used earlier to create grooves in the work-top ends) in your portable router and, with the work-pieces held securely, create a stopped groove in each end cap. Then mark the locations of the lag screw holes in each groove.

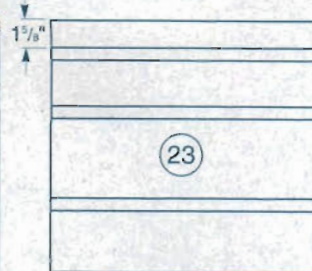
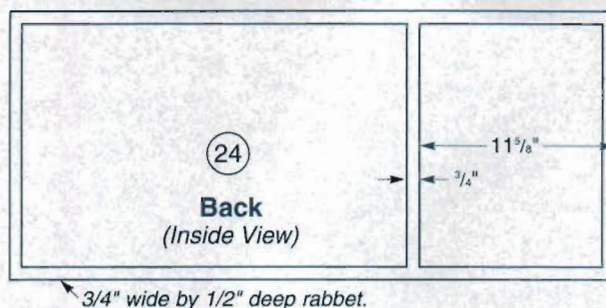
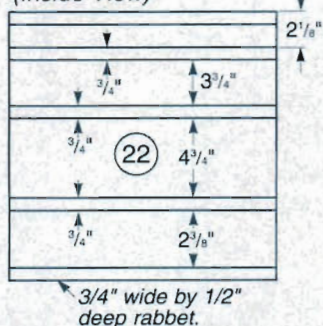
Trim splines (pieces 9) to fit around the lag screws, then move to the drill press to bore the two-

step elongated and round lag screw holes, as shown in **Figure 3**. Note that the endcaps are not identical, but are mirror images. Use the drilled endcaps to locate pilot holes in the work-top, drill these holes, insert the splines and attach the endcaps with lag screws and washers (pieces 10 and 11). Don't glue the splines in, the work-top will buckle or crack if not allowed to move.

MATERIAL LIST

	T x W x L
21 Toolbox Top and Bottom (2)	3/4" x 15 3/4" x 35 1/2"
22 Toolbox Sides (2)	3/4" x 15 3/4" x 16"
23 Toolbox Divider (1)	3/4" x 15" x 15"
24 Toolbox Back (1)	3/4" x 16" x 36"
25 Toolbox Trim (1)	1/4" x 3/4" x 120"
26 Door (1)	3/4" x 11 1/8" x 14 3/4"
27 Door Stiffeners (3)	1/2" x 3/4" x 14 3/4"
28 Hinges (2)	European Style
29 Toolbox Top Trimmers (2)	3/4" x 1 1/2" x 16 1/4"
30 Knobs (4)	Brass

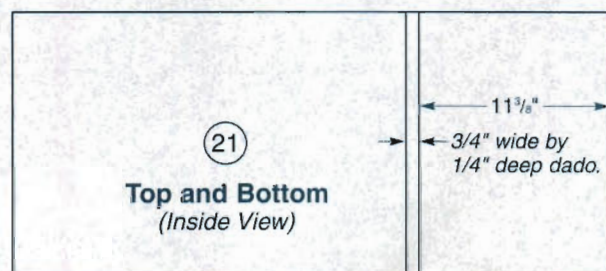
Side (Inside View)



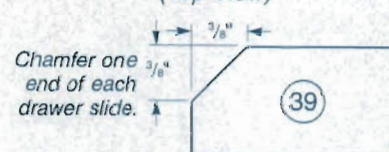
Divider (Inside View)

Toolbox Elevations

Set up your router table with a 3/4" straight bit and make multiple passes for these rabbets, grooves and dados, removing a small amount of stock with each pass.



Drawer Slide (Top View)



Brace-up for Some Brackets

Turn the benchtop upside down and mark locations for the leg cleats (pieces 12), using the dimensions on the section view on page 22. You'll use these locations as a reference as you build up a support structure for the large end vise (piece 13). Begin by screwing and gluing a vise support cleat (piece 14), to the endcap, located 3/4" up from the bottom (see the elevations and detail drawings on page 22). Drill pilot holes and screw a second cleat (piece 15) to the vise support (piece 16) at the location shown on the elevations drawings, then dry fit the vise support to the endcap cleat and complete drilling your pilot

holes. When all the screw holes have been established, remove the screws until the legs and the laminated jaw (piece 17) are installed. At that time, you'll also address the bench dogs (pieces 18, 19 and 20).

The Toolbox

Stability is perhaps the number one requirement in a workbench, so the storage area on this bench is designed to add weight and lateral stability to the legs, while also providing three drawers, a cupboard and a large shelf for tool storage.

The toolbox top, bottom, sides, divider and back (pieces 21, 22, 23 and 24) are cut from one sheet of 3/4" hardwood veneered plywood.

I used birch ply, a good color and grain match for the maple in the rest of the bench, and far easier to find as a stock lumberyard item than maple ply. Use the elevations drawings above to lay out rabbets on the appropriate edges of these pieces, then mill them with a 3/4" straight bit chucked in your router table. For clean and safe cuts, make several passes to mill each rabbet.

Use the same bit to plow dados for the drawer slides and divider, then glue and clamp the top and bottom to the sides. Dry fit the

back, check for squareness and glue it in place.

The front edges of the case are trimmed with walnut (piece 25). Apply this with glue and 3d finish nails, predrilling the walnut so it doesn't crack. Set the heads and fill them after the glue dries, then scrape or plane the trim flush with the plywood. Now you need to build and install the legs, before coming back to finish up the rest of the toolbox - the door, top trimmers and knobs (pieces 26 through 30).

Stile and Rail Legsets

The bench's legs are standard stile and rail construction, with a twist: both stiles and rails are built-up laminations. This allows you to assemble the legsets with mortise and tenon joinery - without ever having to chop a single mortise.

After cutting all the leg parts (including the feet, pieces 31) to the sizes on the Material List, dry fit the stile center laminations (pieces 32) to the outside laminations (pieces 33): their dimensions are shown on the leg elevations on page 26. Face glue and clamp each set of three laminations together to create four individual legs, then set them aside to dry.

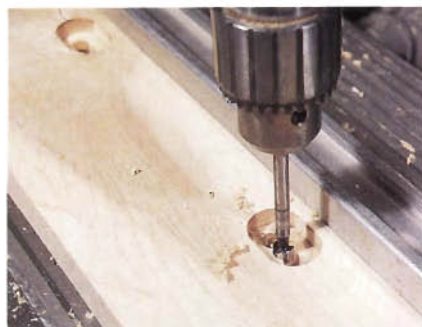
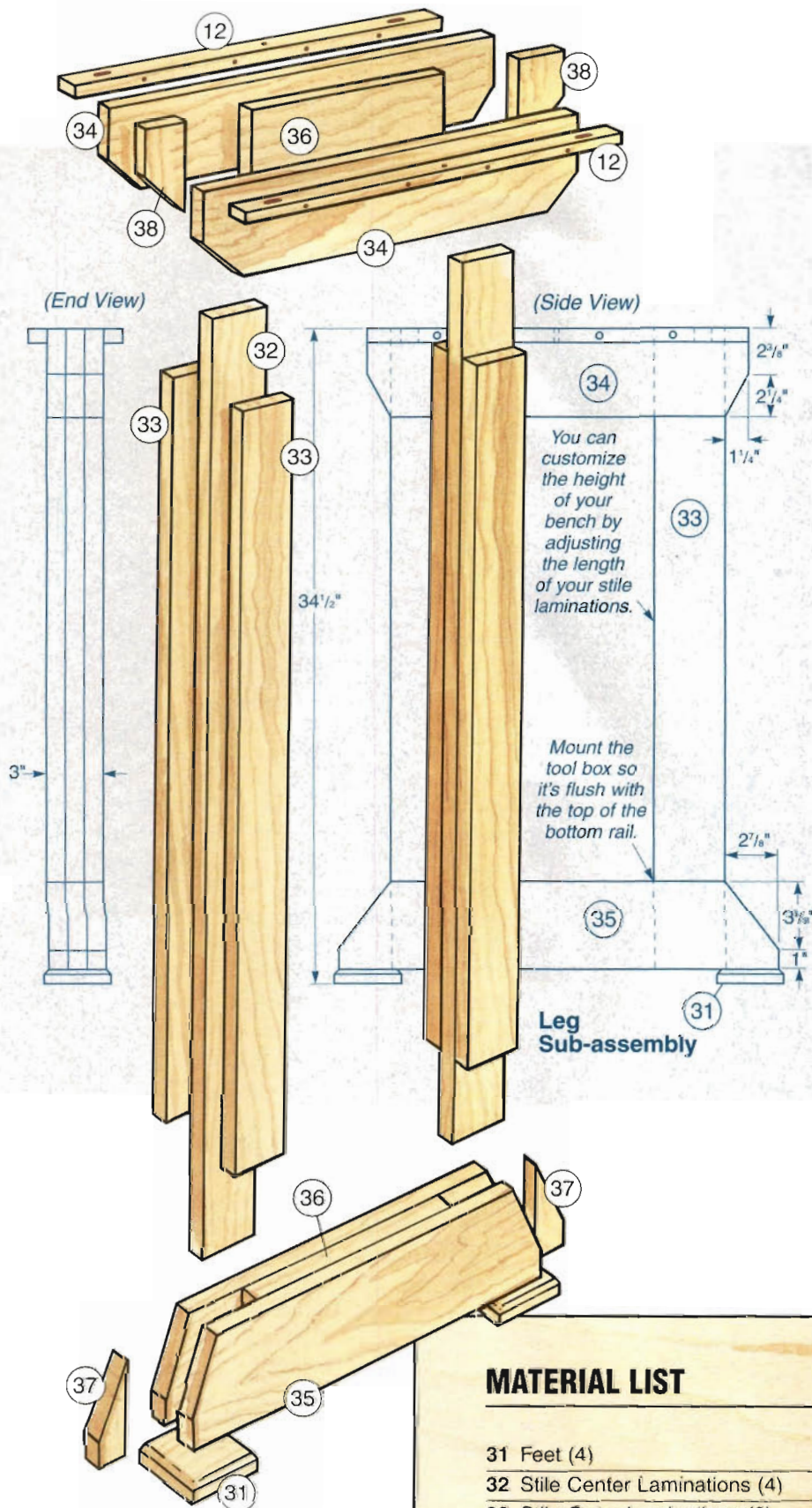


Figure 3: Use your drill press to bore two step slotted holes in the endcaps: these will allow the benchtop to adjust to various levels of moisture in the workshop.



Don't be overly anxious about perfect matches or glue squeeze-out ... after the glue dries, you can scrape off any excess and then joint the uneven edges.

Use the elevation drawings at left to lay out the top and bottom rails' outside laminations (pieces 34 and 35), then cut these to shape on your band saw. Dry fit these and the rail center laminations (pieces 36) to the legs, then temporarily clamp them in place. Use this setup as a template to lay out and mark the foot and top inserts (pieces 37 and 38), as shown in **Figure 4**. Trim the inserts to size on your band saw, glue and clamp each legset together and set them aside to dry.

Attaching the Legs to the Top

Sand the work-top thoroughly, then turn it upside down. Use your drill press to create slots in one face of the leg cleats (pieces 12), and pilot holes in the other face of the piece. Attach the cleats flush to the top of the legs with glue and screws driven through the holes - not the slots. When the glue dries, attach the legs to the toolbox (flush with the top of the bottom rail) by temporarily clamping everything in place. Predrill the inside of the toolbox for 2" screws and, when everything is lined up, drive them home.

Round up some strong help and set the leg assembly upside-down on the underside of the work-top. Complete the assembly driving

MATERIAL LIST

	T x W x L
31 Feet (4)	3/4" x 3 1/2" x 3 1/2"
32 Stile Center Laminations (4)	1" x 3 3/4" x 33 1/4"
33 Stile Outer Laminations (8)	1" x 3 3/4" x 24 1/2"
34 Top Rail Outer Laminations (4)	1" x 4 5/8" x 20"
35 Bottom Rail Outer Laminations (4)	1" x 4 5/8" x 23 1/4"
36 Rail Center Laminations (4)	1" x 4 5/8" x 10"
37 Foot Inserts (4)	1" x 4 5/8" x 2 7/8"
38 Top Inserts (4)	1" x 4 5/8" x 2 7/8"



Figure 4: Dry fit the elements of the legsets together, then use this as a template to determine the shape of the foot and top inserts.

screws through the cleat slots into your predrilled holes in the underside of the work-top. This secures the legs and toolbox to the top, at the locations shown on the elevation drawings.

Installing the Vise

You have already made all the parts for the vise support assembly. Now, begin the vise installation by positioning the vise on its support at the location shown on the elevation drawings. Next, use the vise as a template to mark mounting holes on the support. Predrill these holes (see the manufacturer's instructions), then install the cleat sub-assembly you made earlier with screws. (See section view on page 22.) You can now begin to mount the vise to the bench.

Again using the vise as a template, gently wind in the jaw until the two guide rods just touch the leg rail. Mark the rod locations, and also mark the locations of the screw holes in the guide rod bushings (they come with the vise), as shown in **Figure 5**.

Remove the vise and platform, then use a Forstner bit to drill slightly oversized holes in the leg's rail assembly for the rods and screw to pass through. You may want to remove the legs and perform this step on your drill press to ensure truly vertical bores. Then screw the bushings in place.

Workbench Supplies

The following hardware is available from *Woodworker's Journal*.

Large End Vise #59584	\$69.99
Square Bench Dogs #69880 (pair)	\$31.99
Round Bench Dogs #64220 (pair)	\$21.99
Drawer/Door Knobs #36467 (three required)	\$3.99
European Hinges #46497	\$10.99

To order your supplies, call 800-610-0883.

The Laminated Jaw

There are two good reasons to use five separate boards to laminate a blank for the moveable vise jaw (piece 17): it will be more stable than a single board, and it will be far stronger. Follow the lamination layout on page 22 to face glue and clamp the blank together.

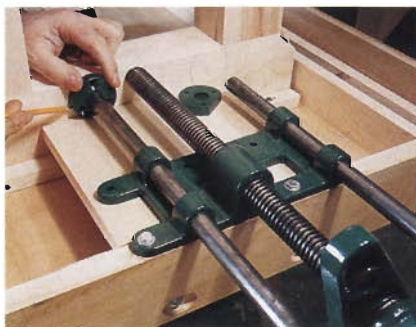


Figure 5: The vise attaches to both the endcap and vise support. With two screws holding the unit in place, establish the locations for the guide rod and center screw holes in the legs.

Using the **Full-size Pattern**, cut the jaw to shape on your band saw, and sand out the saw marks with a 2" drum sander. Shape the outside bottom and side edges with a 1/2" radius guided beading bit chucked in your portable router.

To locate the holes in the jaw for the guide rods and screw, remove the screw and guide rods, clamp the jaw in place and use the vise mounting plate as a guide to locate the three holes. Drill these holes 1/8" oversize.

Slip the laminated jaw over the guide rods and the screw, then gently wind the vise closed. Position the wooden jaw flush with the top and sides of the work-top's endcap, drill pilot holes for the mounting screws and drive them home.

Building the Drawers

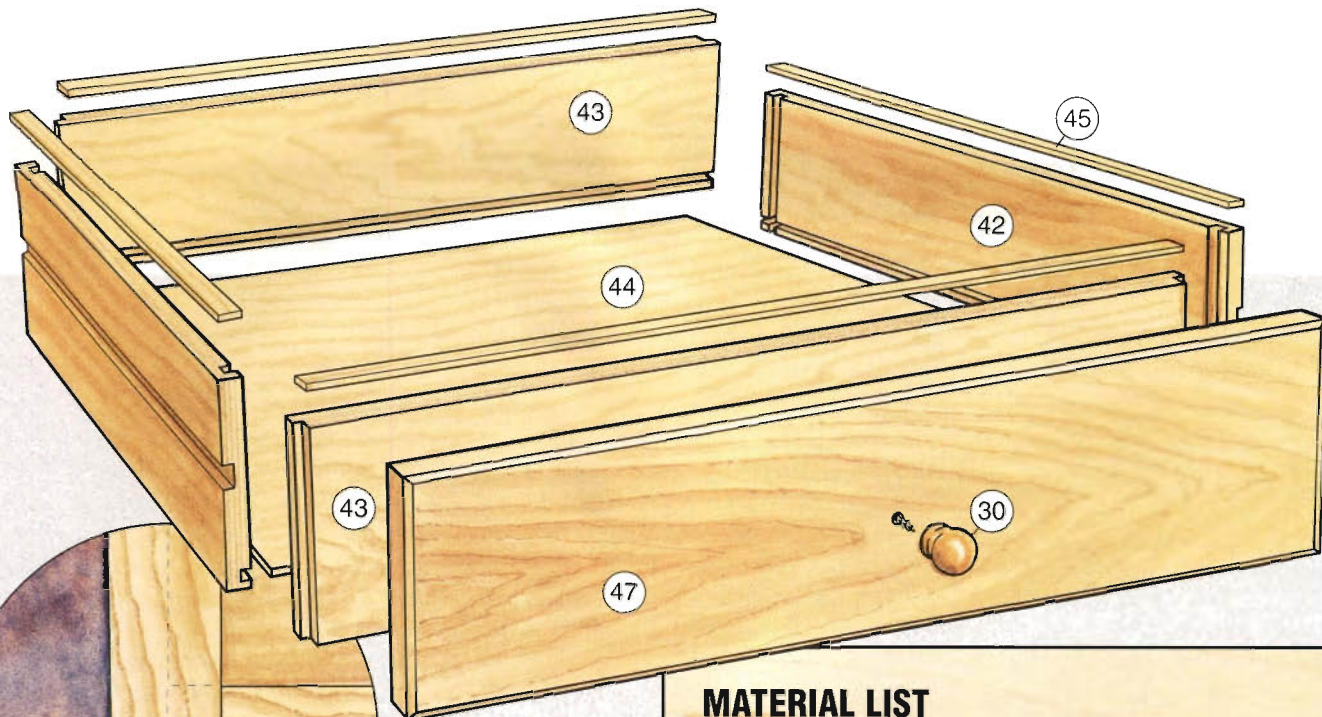
Chamfer the leading edges of the drawer slides (pieces 39), as shown on the elevation drawings on page 25, then glue them in their dadoes.

After cutting the drawer sides, fronts and backs (pieces 40 through 43) to size, use the dimensions shown on the following page to create the locking joints on their corners (see the photo series on page 29). These joints are cut on the table saw. It's a good idea to make a practice joint on scrap wood to establish the saw settings, before milling the actual workpieces.

Workbench Accessories

The January/February issue of the Woodworker's Journal included "Accessories for the Bench", covering some ancient tool designs as well as some recent innovations. See page 61 for details on this back issue.





Drawer Face Location
(Top View)

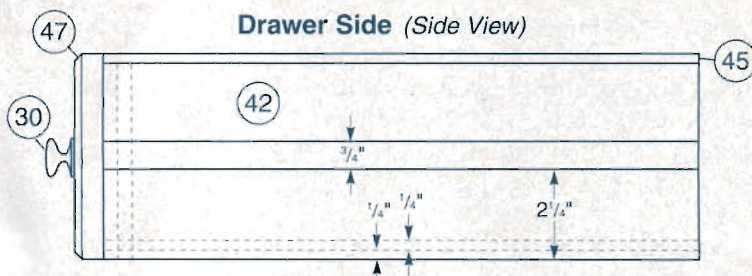
To create the drawer corner joints, use the technique described at right. Only one set up is required to make both the rabbets and dados for each corner.

Drawer Corner Joint
(Top View)

MATERIAL LIST

	T x W x L
39 Drawer Slides (6)	3/4" x 3/4" x 15 1/2"
40 Top Drawer Sides (2)	3/4" x 3" x 15 1/2"
41 Top Drawer Front and Back (2)	3/4" x 3" x 22"
42 Lower Drawer Sides (4)	3/4" x 5 1/8" x 15 1/2"
43 Lower Drawer Fronts & Backs (4)	3/4" x 5 1/8" x 22"
44 Drawer Bottoms (3)	1/4" x 14 7/16" x 21 1/16"
45 Drawer Trim (1)	1/4" x 3/4" x 228"
46 Top Drawer Face (1)	3/4" x 3 3/8" x 23 1/2"
47 Lower Drawer Faces (2)	3/4" x 5 3/8" x 23 1/2"

Drawer Side (Side View)



Stay at the table saw to cut grooves in the inside faces of these pieces for the drawer bottoms (pieces 44), as shown above. Glue and clamp the drawers together, checking that they're square and flat before setting them aside. When the glue is dry, trim the top edges of the plywood drawers with solid hardwood (piece 45), gluing and nailing at 6" intervals. Fill the nail holes and sand the filler flush, then install a dado head in your table saw to mill grooves in the drawer sides for the slides. Test

your setup with scrap, using three pieces to represent the three drawer sizes, and make any minor adjustments needed to ensure that the drawers will slide properly. After milling, test fit the sides in the case to be sure they move easily on the slides.

The Drawer Fronts and the Door

I cut the drawer fronts and the door for my bench from a single wide board, to take advantage of a very attractive grain pattern. You may have to glue up stock for this

process. Cut the faces (pieces 46 and 47) to size, then shape their front edges on the router table with a chamfering bit (see the elevation drawings above for dimensions).

You can now return to the door and finish machining it. The grain pattern on my door (piece 26) ran horizontally. To prevent cupping, I plowed three dados from top to bottom in its back and glued in three stiffeners (pieces 27). After sanding, I chamfered the door's front edges to match the look of the drawer faces.

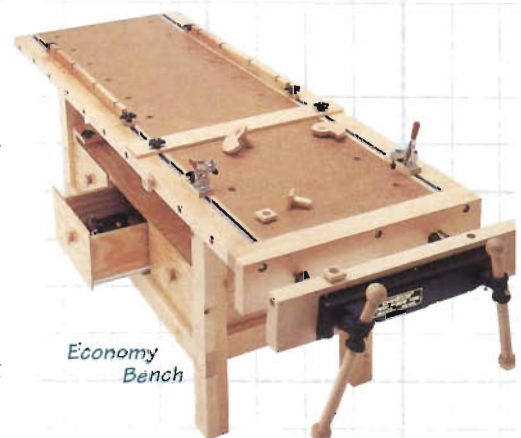
Third in a Series

We've been building workbenches around here for quite a while. In Issue 7 of *Today's Woodworker*, Bruce Kieffer created a full-scale European bench that tipped the scales at almost 400 pounds. It featured keyed tenons and padauk accents.



Of course, not everyone has the time or resources to build an heirloom bench. For those of us who just need a reliable place to work, Rick White came up with his Economy Workbench in Issue 25. Stripped to its aesthetic essentials, this version was still loaded with a great array of useful accessories: T-slots built into the top, a readily replaceable work-top, and built-in storage, to name a few. With a framework of standard 2x4 lumber, budget was obviously an important criteria here.

If either of these plans sound interesting to you, both back issues are still in print and available (see page 64).



European style hinges with a 1/4" overlay (pieces 28) are completely hidden when the door is closed. Follow the included instructions for mounting these hinges.

On your band saw, shape the walnut toolbox trimmers (pieces 29) to

the profile shown on the **Full-size Pattern**, then sand them smooth. Screw one to the legs at each end of the toolbox top, to stop tools from falling off the shelf. Finally, chamfer the top and bottom edges of the feet and screw them to the bottoms of the legs with 2" screws.

Finishing Up

Disassemble the entire bench, then sand all surfaces with 120 grit, 180 grit and finally 220 grit sandpaper. Wipe it down with a tack cloth and apply four coats of natural Danish Oil to the legset and toolbox, and an additional couple of coats to the work-top. Sand each coat except the last, using 400 grit paper, wiping it clean before and after sanding. When the finish is dry, reassemble the bench and mount the knobs on the drawers and door.

Install the pair of round brass bench dogs (pieces 18) by using the elevations on page 22 to locate their holes in the top of the vise jaw. Drill the right hand hole vertically all the way through the jaw (back up the exit area with some scrap, to avoid tear-out). Drill the left hole to a depth of 4 1/2", then use a bit extender or a long twist bit to drill a second hole in the bottom of this boring (again, see the elevation drawings for dimensions). This hole is for a brass pin that's actually a door hinge pin, available at most hardware stores. This pin is used as a button to push the top of the bench dog up above the surface of the jaw when it's needed.

Pop the square dogs into their holes at this time, then fill the top drawer in the toolbox with all those project plans you'll need over the next few decades. After all, once people see the great job you did on building your workbench, they're bound to have all sorts of great ideas that will help you use it!

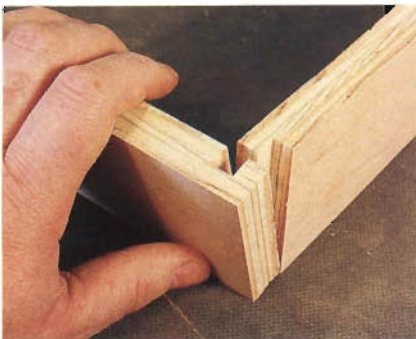
Step-by-step drawer joinery



Step 1: Install a 3/8" dado head and a zero-clearance insert in the saw and cut a rabbet at the end of each drawer front and back.



Step 2: Without moving the rip fence, switch to the miter fence to form matching dados in the drawer sides.



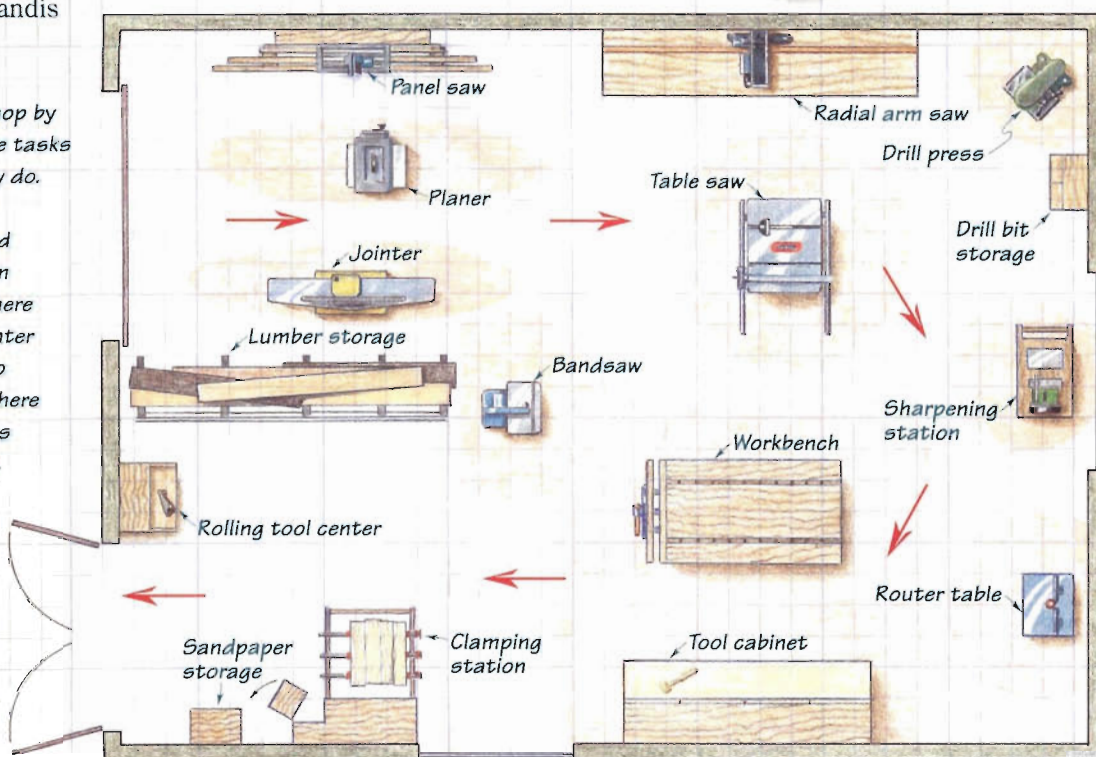
Step 3: Dry fit the joints and then switch to a 1/4" dado head to cut the grooves for the bottoms.

Planning Your Workshop

*A place for everything and everything in its place.
Do you have a vision of a perfect shop?*

By Scott Landis

Plan your shop by reviewing the tasks you regularly do. Design the workflow (red arrows) from the point where materials enter your shop to the space where your projects are finished.



I've had five or six workshops over the last two decades and visited perhaps a hundred more. So, as I approach the design of yet another shop, you'd think I had it figured out. Truth is, every time I revisit the subject I find that my needs have changed, my tool collection has mysteriously doubled in bulk and the building I've got to work with has its doors and windows and electrical outlets in the wrong places. If I didn't relish the challenge of making an inviting workspace arise out of such chaos, I'd probably be overcome with the despair many writers feel as they face the blank page.

Fortunately, there are a few core principles - ways of thinking, really - that can help make the planning process less intimidating. Almost every woodworker I know yearns for more elbow room and harbors a

secret wish list of tools. But an airplane hangar stocked with expensive hardware is no guarantee of an effective workspace. Indeed, a well-designed, pint-sized shop - whether it's stuffed in a basement, a garage or a VW van - can be a lot more pleasant and functional than a large,

disorganized shop, especially if the extra area only provides room to spread out your mess.

Personalize the Layout

Begin the layout process by reviewing carefully (and critically) the work you plan to do in the shop, the machinery you have or think you need and, of course, your budget. Consider the way you work: What kinds of operations do you perform repeatedly or only occasionally? How much wood do you use and is it primarily lumber or plywood? How can materials flow through the space most efficiently, from their arrival and storage to the completed project? Are there particular tasks, like finishing, that have special requirements and are best performed in a separate, dedicated area of your shop?



To help create his workshop, musical instrument maker John Monteleone built a scale model of his future shop space.



I'm a strong believer in lists and drawings. The more mistakes you can address on paper, the fewer you will have to wrestle with on the shop floor. Make a list of every machine you own or plan to buy and include a scaled diagram of its footprint and what you might call its "sphere of influence". That's the zone around each machine you'll need to accommodate not just the infeed and outflow, but the comfortable manipulation of any material that will normally occupy the area. You can take this step even further by constructing a three-dimensional scale model of the entire planned shop, as luthier John Monteleone did before he built his new shop. This planning exercise can be extremely useful and may have implications well beyond the particular machine under consideration.

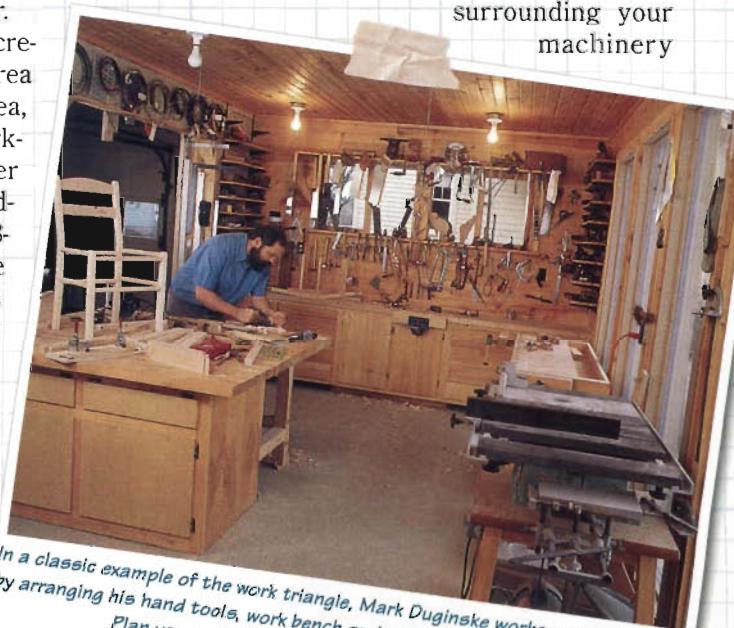
For example, as you review the path required to move a 4' x 8' sheet of plywood or a 10-ft. plank to the tablesaw, you may discover that your allotted space is simply too tight. You could move the machine or install removable doors in an obstructing wall to provide a pass-through for long boards. Or you might decide to create an

intermediate "breakdown" lane, in which materials can be ripped or crosscut to their approximate dimensions before they leave the storage area. That way, you'll be moving smaller pieces around the shop, more safely and with a lot less effort and clutter.

Kelly Mehler created such an area in his Berea, Kentucky, workshop. Lumber enters the building through an 8-ft.-wide garage door, where it's immediately loaded to a pair of floor-to-ceiling storage racks. The racks flank a radial arm saw, which is used to chop the wood roughly to length before other operations are performed. Directly across the corridor are a bandsaw and a jointer, where stock can be further reduced to workable dimensions before it enters the primary production area of the shop. When Mehler is ready to cut tight joints at the tablesaw or run a routed bead, he doesn't have to horse around a lot of excess lumber that would choke his workspace and have to be removed. Off-cuts remain in the breakdown lane, where they are sorted, stored or carted off through the same door the wood entered.

Workshop Triangles

Mehler's breakdown lane embodies one of the cardinal planning tools of any workspace designer: the work triangle. (The kitchen triangle—representing the relationship between sink, stove and refrigerator—is the most common example.) The traffic flow between his bandsaw, radial arm saw and jointer defines a functional triangle, and it makes good sense to think about all of your work areas - not just those surrounding your machinery



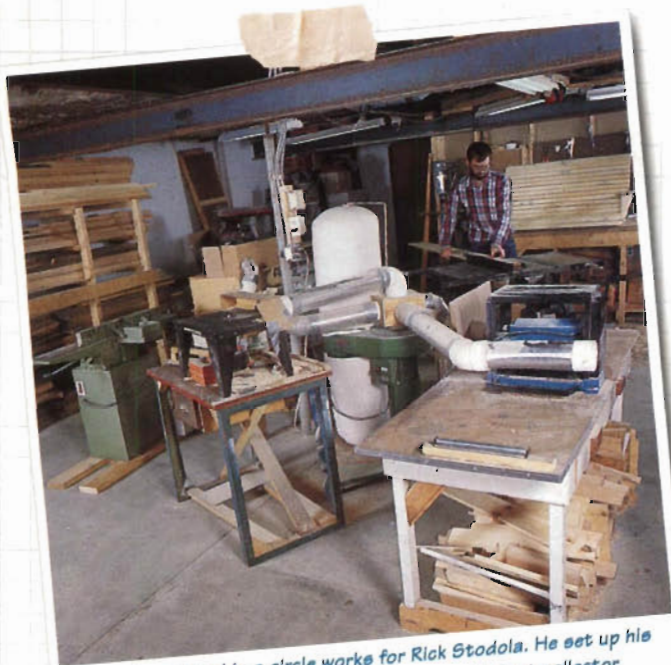
In a classic example of the work triangle, Mark Duginske works more efficiently by arranging his hand tools, work bench and assembly table in close proximity. Plan your shop space around your repetitive tasks.



A breakdown area in Kelly Mehler's shop allows him to start the machining process on materials as they enter the building.

- in the same way.

The most basic work triangle in the shop is defined by the relationship between the workbench, tool storage and assembly areas. Their relative positions will vary widely, depending on the space available and the nature of your tools and work. Where the work is small and refined, as in some guitar shops, the tools may be placed on the bench. Assembly stations are usually within easy reach, sometimes bolted right to the bench.



Running around in a circle works for Rick Stodola. He set up his power tools in a ring surrounding a small dust collector.

In a larger, multi-purpose shop, like the one Mark Duginske installed in his converted Wisconsin garage, hand tools line the walls behind one bench and a lower setup table is only a few feet away. For a wide variety of projects, this provides an ideal triangulation between hand-tool storage, work-bench (and vises) and an ample assembly area.

Work triangles are conceptual, so their geometry should not be taken literally. In one contractor's workshop, I came across two chop saws and a radial arm saw placed in tandem on a long bench. The radial arm was permanently set to make 90-degree cuts, and the two chop saws were fixed at opposite 45-degree angles for slicing miters. With blades stored above and rolling scrap bins beneath the table, this work station was ideally suited for the repeated tasks performed in making frame-and-panel cabinets.

Sometimes the best work "triangle" is defined by a circle.

Rick Stodola arranged all the machinery in his Vermont basement in

a compact ring around a central dust collector, which he outfitted with a plywood plenum and an octopus of pick-up pipes. It's an effective, economical arrangement for a tight space, servicing

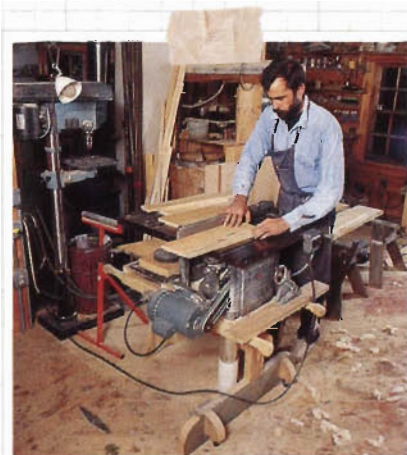
a tablesaw, planer, jointer, belt sander and two router tables, all within a 10-ft.-diameter circle. Tools are oriented so that incoming and outgoing stock is fed at a tangent to the circle, and table heights are staggered to allow work to pass unobstructed above or below the tables on adjacent machinery. Alternatively, you could arrange all machine tables at the same height to provide extended infeed and outfeed support for large stock.

Flexibility

From time to time, you can expect to encounter an exceptional project, calling for unusually long or bulky materials. It's often impossible to plan for such occasions in advance, but you can build flexibility into your layout to minimize disruption. This is especially important in small, part-time workshops, where the available space is usually more limited and the range of projects may be much greater than in a full-time professional studio. As one woodworker told me, "As much as I'd like to bolt things to the floor, I don't because I never know when I'll have to push something over a few inches to allow for some other operation."

One of the best ways to incorpo-

rate flexibility in your shop is to arrange most of your large power tools around the outside perimeter of the workspace. Jointers and planers require only infeed and outfeed space, plus enough room on one side for the operator and a normal flow of material. The same holds true for the radial arm saw, chop saw and bandsaw. The table saw is the one



The clever wheelbarrow-like base Peter Murkett attached to his tablesaw greatly enhances the flexibility of his workshop.

major exception to this rule, because it requires ample space on all four sides - in front of and behind the saw, as well as on both sides of the blade. Its sphere of influence is by far the largest of any stationary tool in the modern workshop, but the table-saw's all-around capabilities also make it the most popular machine in most shops. For maximum flexibility, mount the tablesaw on casters in the center of the shop floor, so that it can be easily transported as the need arises. You can buy a ready-made mobile base to suit most saws, or fashion a wheelbarrow-style base like Peter Murkett's shown above.



Tool and Wood Storage

Shop machines, like appliances in the kitchen, are the major components of a workspace. But if your hand tools and off-cuts spill over the workbench and saw table like dishes after the dinner guests have gone, it will be hard to do your best work. There is an endless array of clever devices you can build to store tools and materials.

If flexibility is what you have in mind, take a close look at Mac Campbell's tool cart. It amounts to a large box on heavy-duty casters, which can be rolled anywhere in the shop to create a functional work triangle. Wood storage needs vary widely from shop to shop and sometimes even within the same workshop, following the irregular ebb and flow of projects. As a result, some of the most successful lumber and plywood racks I've seen were designed to be dirt simple and fully adjustable.

*Scott Landis is the author of **The Workbench Book** and **The Workshop Book**, both published by The Taunton Press. (Available in a traditional hardcover version or in a new softcover edition expected out this month.) Scott also founded the Good Wood Alliance and is currently the editor of the quarterly journal Understory.*



Mac Campbell's mobile tool cart rolls to where he is working, saving steps and providing a home for tools that are not being used at the moment.

Last Look

There are several unwritten rules that apply to buildings, in general, and to workshops in particular. The first is that you will quickly fill whatever space you have. The second is that almost as soon as you move in, you will think of ways to improve it. If you decide you can't afford to build the workshop of your dreams all at once, don't give up. Dreams change, and you may be happier in the end with an incremental approach. In any case, when it comes time to design a new workshop, I like to recall the advice offered more than 150 years ago by a Shaker brother, Thomas Damon, concerning the construction of a desk. "You will please suit yourself as to size and formation," Damon said. "For where there is no law there is no transgression."

Let There be Light!



Light was the first act of creation. After that, the good Lord left us to sort out ambient and task lighting and the relative merits of daylight versus artificial fixtures. Heaven knows, the subject is complex.

Natural light can be a mixed blessing in the workshop. Strong highlights and shadows are hard on the eyes, and ultraviolet rays can bleach almost any wood species. A wet board may warp like a potato chip if left too long in direct sunlight. Soft, indirect illumination can be achieved by placing windows high on a south wall or where they will receive a northern exposure. Indirect northern light is especially desirable at the bench or in a finishing area.

When it comes to artificial light, fluorescent fixtures are cheap to install and operate and they provide the best overall illumination. Full-spectrum fluorescent lamps offer accurate color rendition, but they can cost as much as \$11.00 a tube. There are less expensive options, but for true colors and good working comfort, look for lamps with a color rendering index (CRI) above 80.

Many woodworkers prefer incandescent bulbs, especially for task lighting. Clip-on lamps with large reflectors or student desk lamps with articulated shafts are highly adaptable. Halogen bulbs cost more than standard incandescents, but are an excellent choice wherever stronger light and truer color rendition is desired (and where their extra heat won't create a problem). If you can afford the investment, compact fluorescent bulbs offer as much light as some incandescents at a fraction of the wattage. Whatever you choose, a comprehensive lighting plan will help you locate fixtures for the best unobstructed illumination at each tool or work station.

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WL-1043	1/4"	\$9.
WL-1044	5/16"	\$10.
WL-1045	3/8"	\$11.
WL-1046	1/2"	\$13.
1/2" Shank		
WL-1049	1/8"	\$9.
WL-1042-5	3/16"	\$9.
WL-1050	1/4"	\$9.
WL-1044-5	5/16"	\$10.
WL-1051	3/8"	\$12.
WL-1052	1/2"	\$13.
WL-1053	5/8"	\$16.
WL-1054	3/4"	\$18.
WL-1055	7/8"	\$25.
WL-1056	1"	\$27.
WL-1057	1-1/8"	\$30.
WL-1058	1-1/4"	\$30.

Cove Bits (continued)

1/2" Shank		
WL-1169	1/8"	\$10.
WL-1170	1/4"	\$11.
WL-1171	3/8"	\$13.
WL-1172	1/2"	\$14.
WL-1173	5/8"	\$18.
WL-1174	3/4"	\$20.

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WL-1180	15°	\$10.
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WL-1182	45°	\$12.
WL-1183	45°	\$14.
(for up to 3/4" material)		
1/2" Shank		
WL-1184	45°	\$10.
WL-1185	11-1/2°	\$12.
WL-1186	15°	\$12.
WL-1187	22-1/2°	\$12.
WL-1188	30°	\$14.
WL-1189	45°	\$15.
WL-1190	45°	\$22.
(for up to 1-1/4" material)		

Classical Ogee Bits

1/4" Shank • Radius		
WL-1250	5/32"	\$18.
WL-1251	1/4"	\$20.
1/2" Shank		
WL-1252	5/32"	\$18.
WL-1253	1/4"	\$20.

Core Box Bits

1/4" Shank • Diameter		
WL-1370	1/8"	\$10.
WL-1371	1/4"	\$8.
WL-1371-1	3/8"	\$9.
WL-1372	1/2"	\$10.
WL-1373	3/4"	\$12.

Roundnose/Core Box

1/2" Shank • Diameter		
WL-1375	1/4"	\$8.
WL-1375-1	3/8"	\$11.
WL-1376	1/2"	\$12.
WL-1377	3/4"	\$14.
WL-1378	1"	\$16.

Bullnose Bits

1/4" Shank • Bead		
WL-1100	1/4"	\$12.
WL-1101	3/8"	\$14.
WL-1102	1/2"	\$16.
WL-1103	5/8"	\$18.
WL-1104	3/4"	\$19.
1/2" Shank		
WL-1110	1/4"	\$12.
WL-1111	3/8"	\$14.
WL-1112	1/2"	\$16.
WL-1113	5/8"	\$18.
WL-1114	3/4"	\$19.
WL-1115	1"	\$22.
WL-1116	1-1/8"	\$25.
WL-1117	1-1/4"	\$28.
WL-1118	1-1/2"	\$32.

Rabbeting Bits

1/4" Shank • Kerf		
WL-1220	1/2"	\$11.
WL-1220-2	1/16"	\$10.
WL-1220-3	1/8"	\$10.
WL-1220-4	1/4"	\$10.
WL-1220-5	3/8"	\$10.
1/2" Shank		
WL-1225	1/2"	\$11.
WL-1225-2	1/16"	\$10.
WL-1225-3	1/8"	\$10.
WL-1225-4	1/4"	\$10.
WL-1225-5	3/8"	\$10.
WL-1225-6	3/4"	\$12.

Roman Ogee Bits

1/4" Shank • Radius		
WL-1230	5/32"	\$13.
WL-1231	1/4"	\$15.
1/2" Shank		
WL-1235	5/32"	\$13.
WL-1236	1/4"	\$15.

Double Roman Ogee

1/4" Shank • Radius		
WL-1240	5/32"	\$18.
WL-1241	1/4"	\$20.
1/2" Shank		
WL-1245	5/32"	\$18.
WL-1246	1/4"	\$20.

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WL-1402	3/4"	\$12.
1/2" Shank		
WL-1405	3/4"	\$15.
WL-1406	1-1/8"	\$16.

Straight Bits

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WL-1001	1/8"	\$10.
WL-1002	3/16"	\$5.
WL-1002-5.5	5.5mm	\$5.
(for undersized 1/4" plywood)		
WL-1003	1/4"	\$5.
WL-1004	5/16"	\$5.
WL-1005	3/8"	\$5.
WL-1006	15/32"	\$5.
(for undersized 1/2" plywood)		
WL-1007	1/2"	\$6.
WL-1008	9/16"	\$6.
WL-1009	5/8"	\$7.
WL-1010	23/32"	\$8.
(for undersized 3/4" plywood)		
WL-1011	3/4"	\$9.
WL-1012	1"	\$10.
1/2" Shank		
WL-1020	15/64"	\$5.
(for undersized 1/4" plywood)		
WL-1021	1/4"	\$5.
WL-1019	5/16"	\$5.
WL-1022	3/8"	\$5.
WL-1023	7/16"	\$5.
WL-1024	15/32"	\$5.
(for undersized 1/2" plywood)		
WL-1025	1/2"	\$6.
WL-1027	5/8"	\$8.
WL-1028	23/32"	\$8.
(for undersized 3/4" plywood)		
WL-1029	3/4"	\$9.

Bowl & Tray Cutter

1/4" Shank • Diameter		
WL-1380	7/16"	\$13.
WL-1381	3/4"	\$15.
1/2" Shank		
WL-1385	3/4"	\$15.
WL-1386	1-1/4"	\$18.

Dado & Planer Bit

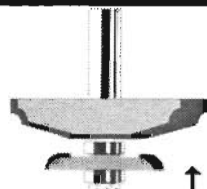
1/4" Shank • Diameter		
WL-1390	3/4"	\$12.
1/2" Shank		
WL-1391	3/4"	\$12.
WL-1392	1"	\$14.
WL-1393	1-1/4"	\$15.
WL-1394	1-1/2"	\$16.
WL-1395	2"	\$28.

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For up to 5/8" material	
WL-1420-2 1/4" shank	\$25.
For 1/2" to 3/4" material	
WL-1420-1 1/2" shank	\$30.
For material 3/4" to 1-1/4"	
WL-1420 1/2" shank	\$38.

For the Shaper

Lock Mitre WL-1581	\$40.
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Horizontal Panel Raiser with Undercutter • 1/2" Shank

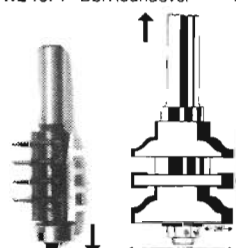
WL-1346 Ogee	\$49.
WL-1347 Traditional	\$49.
WL-1348 Convex (Cove)	\$49.
WL-1359 12" Facecut with Quarter Round	\$49.
WL-1363 Wave	\$49.

2-piece Rail & Stile Cutter Sets

1/2" Shank	Set	
WL-1360 Ogee Profile		\$59.
WL-1361 Roundover		\$59.
WL-1362 Cove & Bead		\$59.

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Just raise the cutter to make the matching cut. No changing or reversing.		
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WL-1365 Ogee Profile		\$49.
WL-1366 Roundover		\$49.
WL-1367 Cove & Bead		\$49.
WL-1368 Wedge		\$49.
WL-1374 Dbl Roundover		\$49.

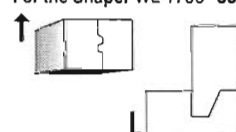


Finger Joiner

Router Bit WL-1429	\$39.
For the Shaper WL-1580	\$89.

Reversible Glue Joint

WL-1430 1-3/4" Diam	\$35.
For the Shaper WL-1706	\$35.



Drawer Corner Lock

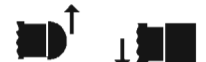
Makes drawer side separation virtually impossible	
1/2" Shank	
WL-1435 For 1/2" material	\$30.

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Corner Round		
WL-1509 1/8"		\$22.
WL-1510 1/4"		\$24.
WL-1511 3/8"		\$26.
WL-1512 1/2"		\$26.
WL-1513 3/4"		\$30.
WL-1514 1"		\$32.
WL-1515 1-1/4"		\$38.

Bead		
WL-1520 1/4"		\$24.
WL-1521 3/8"		\$26.
WL-1522 1/2"		\$26.
WL-1523 3/4"		\$28.
WL-1524 1"		\$30.
Flute		
WL-1530 1/4"		\$24.
WL-1531 3/8"		\$26.
WL-1532 1/2"		\$26.
WL-1533 3/4"		\$28.
WL-1534 1"		\$30.



Rabbeting/Straight

WL-1540 1/4"	\$24.
WL-1541 3/8"	\$26.
WL-1542 1/2"	\$26.
WL-1543 3/4"	\$28.
WL-1544 1"	\$30.
WL-1545 1-1/2"	\$32.
WL-1546 2"	\$48.



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WL-1600	
WL-1601	
WL-1602	
WL-1603	
WL-1604	
WL-1605	

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WL-1601 15° Facecut		\$59.
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By Michael McGlynn



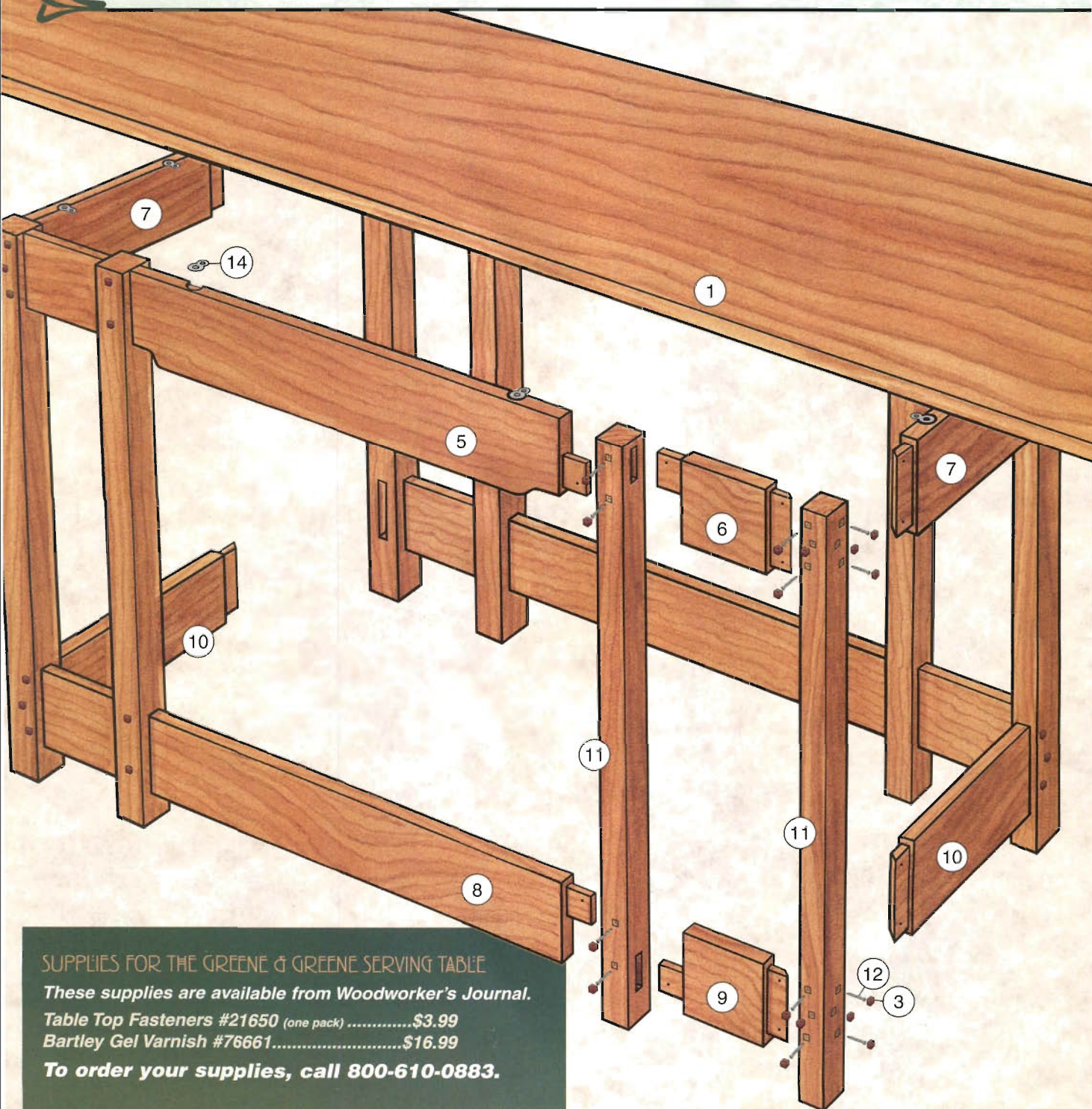
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MATERIAL LIST

	T x W x L		T x W x L
1 Top (1)	1" x 15 ⁷ / ₁₆ " x 73"	8 Bottom Center Aprons (2)	3/4" x 4 ¹ / ₂ " x 24 ⁵ / ₈ "
2 Breadboard Endcaps (2)	1 ¹ / ₄ " x 1 ⁷ / ₈ " x 15 ³ / ₄ "	9 Bottom Side Aprons (4)	3/4" x 4 ¹ / ₂ " x 4 ³ / ₄ "
3 Ebonized Plugs (70)	3/8" x 3/8" x 3/16"	10 Bottom End Aprons (2)	3/4" x 4 ¹ / ₂ " x 9 ¹ / ₁₆ "
4 Endcap Screws (6)	#8 x 1 ³ / ₄ "	11 Legs (8)	1 ¹³ / ₁₆ " x 1 ¹³ / ₁₆ " x 26 ⁷ / ₈ "
5 Top Center Aprons (2)	3/4" x 5" x 24 ⁵ / ₈ "	12 Screws (48)	#6 x 1"
6 Top Side Aprons (4)	3/4" x 4 ¹ / ₂ " x 4 ³ / ₄ "	13 Ebonized Splines (4)	3/8" x 1 ¹ / ₂ " x 4"
7 Top End Aprons (2)	3/4" x 4 ¹ / ₂ " x 9 ¹ / ₁₆ "	14 Tabletop Fasteners (10)	Metal



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MOVING FROM THE VERDANT EAST TO A DRY SOUTHERN CALIFORNIA LANDSCAPE ALSO HAD A FORMATIVE EFFECT ON THE BOYS. CHARLES AND HENRY MOVED TO PASADENA IN 1895 AND SHORTLY THEREAFTER CREATED THEIR OWN DISTINCT ARCHITECTURAL STYLE.

Espousing a similar philosophy to the celebrated Frank Lloyd Wright, the Greenes believed an architect's duty lay beyond floor plans: they designed the furniture, lighting, and accents in many homes they

built. Charles, who had been affected by a Japanese furniture exhibit at the World's Columbian Exposition in 1893, was primarily responsible for creating those classic interiors. This reproduction features many of the facets that set Charles' designs apart. Bold horizontal lines, wide aprons and a cantilevered top suggest strength, functionality and honest craftsmanship. A broad expanse of Honduras mahogany is deftly balanced by small, ebonized accents: square plugs hide the screw heads, and splines hold the tabletop's breadboard endcaps in place.

Buying Materials

Whenever I work in mahogany, I like to buy my stock several weeks in advance of the time I begin con-

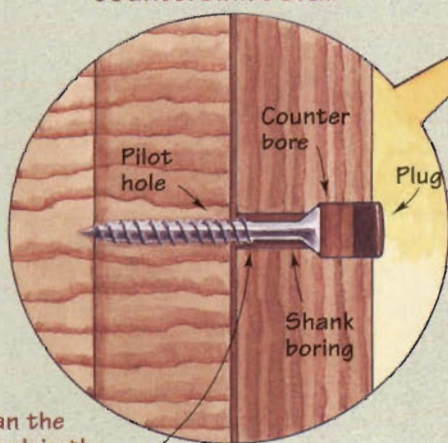
struction. Doing so allows the wood to acclimate to the temperature and humidity of my shop. This is especially true of the board used to make the top (piece 1) of this server: because of the large cantilever on either end, this must be a stable, properly cured piece of stock. Another important note before you start: If you will be using the water based aniline dye I recommend for this project, it is important to use a brown polyurethane glue. This will prevent dark lines from appearing, as a water based glue absorbs the dye at a different rate than the mahogany.

After cutting the top to size (see the material list at left), use a bearing guided straight bit in your portable router to create the tenon on each end. (Refer to the exploded



MAKING BREADBOARD ENDS

Countersink Detail



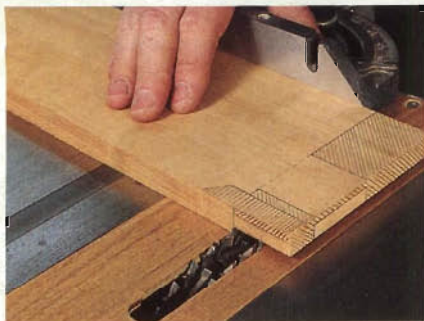
Shank boring is larger than the screw shank in the breadboard ends.

Glue spline to top only

Wood, whether a glued-up lamination or a single wide board, likes to wiggle with the weather. Old-time cabinetmakers dealt with this movement in breadboards by capping each end with strips of solid hardwood. This treatment worked, but had its problems. My cabinetry apprenticeship included tales of folks awakened in the middle of the night by the loud report of maple and oak parting company under the tremendous pressures of moisture related wood movement.

To prevent such a calamity on this project, I not only created a tongue and groove joint on the breadboard ends, but avoided glue altogether. I used screws to secure the ends. The counterbores are followed by oversized shank holes. The space provided by these extra large holes allows for the expansion and contraction of the top. I squared out the counterbores to accept the plugs found on the server.

MAKING THE MORTISE AND TENON JOINTS



Before cutting the shaped profile on the top center aprons, reveal the tenons on their ends using a dado head in your table saw.



After laying out the matching mortises in the legs, score them with a sharp utility knife to avoid tearout as you drill.



A Forstner bit chucked in your drill press will remove most of the waste, and the bit's design leaves a nice, flat-bottomed cavity.



Clean up with a sharp chisel, cutting across the grain on the top and bottom first, then with the grain along the sides.

view at left and the project elevations shown on pages 40 and 41 for machining and assembly details.) It's a good idea to cut these tenons before jointing the long edges of the top, as any blowout will be cleaned up by the jointer. If the piece is too large to handle comfortably on your jointer, another option is clamping a long straightedge to the workpiece and jointing the edges with a straight bit chucked in your router.

Milling the Tabletop

The procedure for creating the breadboard endcaps (pieces 2) is described in detail in the sidebar on page 37. These caps serve two functions: they dress up the ends of the tabletop, and they also help prevent this wide piece from warping.

Refer to the plug and spline sidebar below before chopping the square mortises in the endcaps for the ebonized plugs (pieces 3) that hide the screws (pieces 4). A good technique here is to drill out most of the mortise waste with a Forstner bit, then use a sharp knife to score the squared-up edges before trimming to their final dimensions with a sharp chisel. This will reduce tearout and create sharp, crisp edges on the mortises. The same technique can be used to create the spline mortises on both the top and the endcaps. Note that these are matching mortises that accept a single piece between them. Use the elevation drawings to lay these out.

Screw (don't glue) the breadboard endcaps to the top through the equally spaced mortises and pre-drilled screw holes. These holes are drilled slightly oversized through

the endcaps. Space created by the enlarged holes allows the top to expand or contract across its grain and will help to prevent cracking. Cover the holes with the ebonized plugs, secure with just a drop of glue. Gently break the long edges of the top with sandpaper, then sand the entire top and set it aside while you build the leg assembly.

Tenoned Aprons

Harmony and simplicity were guiding principles of the Arts & Crafts movement, so it's a good idea to keep both concepts in mind when selecting stock for the top and bottom aprons (pieces 5 through 10). Above all, the wood should be consistent in color. If its grain patterns also match, so much the better.

Cut all sixteen of the apron parts to size, then lay out the asymmetri-

MAKING THE

Early in the new century, Charles Greene had the luxury of being able to specify ebony for the plug and spline accents in his most accomplished furniture pieces. While ebony is no longer as widely available or as inexpensive as it once was, there are some viable modern alternatives. Exotic Birch™ in its Charcole Ruby shade is a sound choice, as is the idea of ebonizing your own stock. Perhaps the most appealing option is Ebon-X™, an

"THIS REPRODUCTION FEATURES MANY OF THE FACETS THAT SET CHARLES' DESIGNS APART. BOLD HORIZONTAL LINES, WIDE APRONS AND A CANTILEVERED TOP SUGGEST STRENGTH, FUNCTIONALITY AND HONEST CRAFTSMANSHIP."

—Michael McGlynn

cal and mitered tenons on the ends of the aprons. Use the elevation drawings on pages 40 and 41 to create the proper offset for the aprons joining the central legs. You can cut all of these tenons on the table saw using a dado head and the saw's miter gauge, as shown at left. Note that some of the tenons are notched and some are mitered. Cut the notches on the band saw and the miters on the full width tenons with your table saw. After the tenons are cut, use the **Full-size Patterns** on the center pullout to lay out, then band saw the stepped profile on the bottom edge of both of the top center aprons. Clean up the saw marks with a drum sander mounted in your drill press.

Mortised Legs

If you own a mortising machine or an attachment for your drill press, chopping mortises in the legs (pieces 11) should be a quick and easy task, as all of them are the same width (see the elevation drawings on pages 40 and 41 for details). Even doing it the old-fashioned way (described at left) is a relatively simple task. Carefully lay out the mortises for each individual leg. (The four inner legs are similar and the four corner legs match each other in the same fashion.) The apron tenons are asymmetrical and the mortises must match them exactly. Clamp a fence to your drill press and, as the Forstner bit removes most of the waste, slide each leg



Figure 1: The author recommends tiny v channels around the perimeter of the joint area to help prevent glue squeeze out.

across the table against the fence. Clean up each pocket with a sharp chisel, then stay at the drill press to make all the small, square mortises in the legs for the plugs (these are similar to the plug mortises you already cut in the breadboard end-caps). When you're done, switch bits again and drill pilot holes for all the screws.

Using the exploded view on page 36 as a guide, dry fit the aprons to the legs. Make any necessary adjustments, then use the screw

EBONIZED PLUGS AND SPLINES

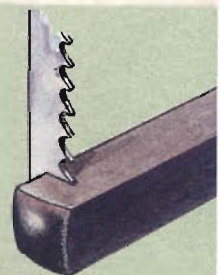
ebony substitute made by impregnating domestic hardwoods with non-toxic chemicals. Making plugs (pieces 3) with this material is relatively simple. Rip a length of material to 3/8" x 3/8", then create a gentle crown to both of its ends with a sander. Buff the ends of the stick on a grinder equipped with a polishing wheel to create an ultra smooth finish.

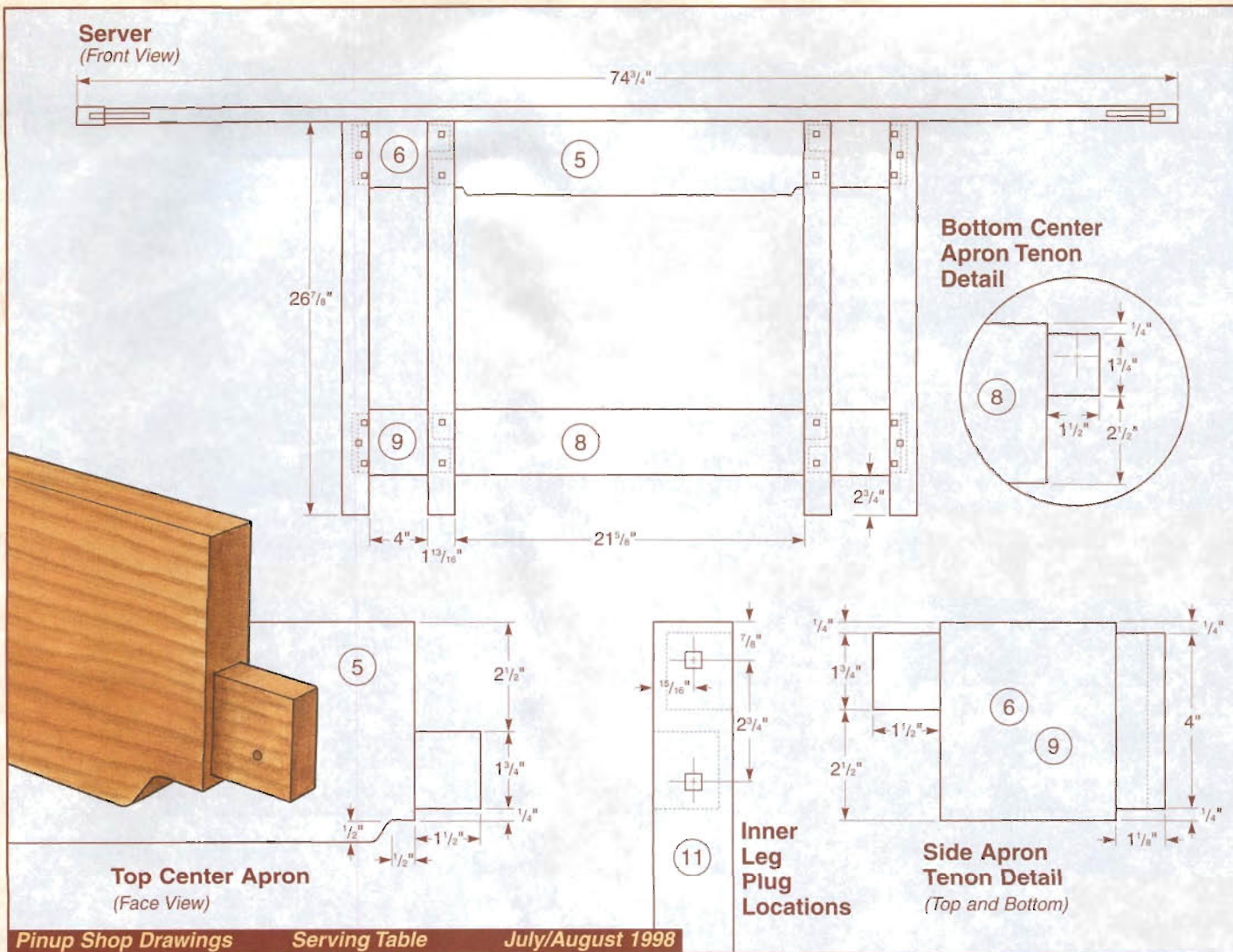


Polish the Ebon-X plugs and splines to their final luster with a polishing wheel mounted in a bench top grinder.

Cut off 3/16" long plugs using your band saw, then repeat the entire plug making process.

Cut the splines (pieces 13) to the shape found on Full-Size Pattern. Again, use a sander to help create the gently rounded profiles of the splines. Move to the buffing wheel and repeat the buffing technique you used on the plugs. Polish the Ebon-X smooth as silk, bringing it to a high rich luster.





holes in the legs as guides to extend pilot holes into the apron tenons. Disassemble the legset and give all the pieces their final 120 grit sanding before raising the grain with a damp sponge. When this dries, sand with 220 grit paper before applying a stain or other colorant to bring out the richness of the wood. Before you go on, mask off the areas where the aprons and the legs meet. This will keep those areas free of dye as you proceed with the finishing process.

Aniline Dye Finish

In keeping with the habits of the Greene brothers, I like to apply a water-based aniline dye to all of the legset and tabletop mahogany parts. If you haven't used aniline dyes before, here are some tips to help you get top-notch results: use a drop

of dish soap in water-based dye to break the surface adhesion, and apply the product with a foam brush. Wipe it off immediately with paper towels, then let it dry. It is important to dye the wood before you assemble the piece. It is virtually impossible to achieve uniformity of color if you try to dye the assembled server.

From this stage on, you should wear utility gloves (latex medical versions or standard household rubber gloves will both work fine) whenever you handle any of the dyed parts: otherwise you may leave oil residue on the dye or dissolve the dye with ambient moisture from your hands. Both will show up as smudges on the finished piece. A little caution here will save you heartache later.

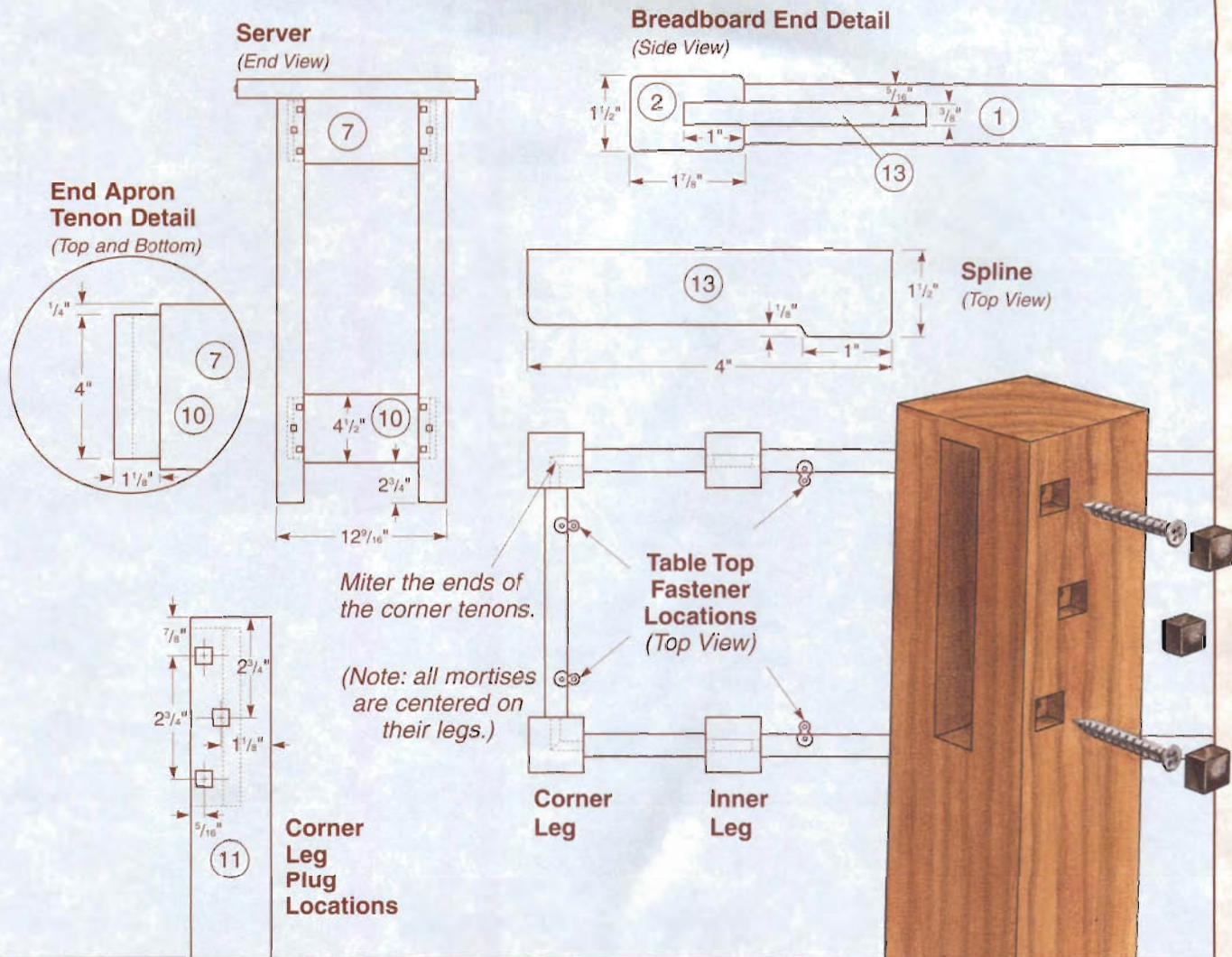
After the dye dries, remove the masking tape and use a utility knife to

create small, V-shaped channels in the hidden surfaces, wherever glue might squeeze out of a joint. These little glue traps (see **Figure 1**) have saved me countless hours of frustration: they're an excellent alternative to refinishing all the parts that might be affected by squeeze-out.

You can now reassemble the legset using glue sparingly. Make sure everything is square and plumb as you tighten the clamps, then set this subassembly aside to dry. After the glue has cured, remove the clamps and drive home the screws (pieces 12) to complete the joint.

Final Thoughts

After all the plugs (pieces 3) and splines (pieces 13) are made, there are a couple of items that need your attention before these accents can be



installed. First on the list is attaching the tabletop to the legset. Refer to the exploded view or elevations to locate and drill simple round mortises in the top of the legset for the tabletop fasteners (pieces 14), then screw the fasteners to the legset. Lay the top face-down on a soft surface (towels laid across cardboard works well), and drill pilot holes in its underside (be careful!) for the fastener screws. Then, screw the top to the legset.

Apply three coats of a satin or semi-gloss finish to all surfaces to

achieve the soft yet durable finish the Greenes preferred. One of the best options out there is a gel varnish such as Bartley's - it's tough, durable and has great visual depth. As mentioned earlier, a brown polyurethane glue is a good choice for securing the plugs and splines in their mortises. However, only glue the splines to the tabletop, and not to the endcaps. This will allow your top to stretch with the seasons during a lifetime of useful service.

Charles and Henry Greene became known for their fine architecture and furniture design, developing a style of their own from a world of influences. Now you can serve your food from atop a stylish piece of true Americana.

Contributing editor Mike McGlynn is a professional woodworker who specializes in Arts & Crafts furniture. His reproduction work has been selected to grace houses in the national registry of historic houses.

This Greene and Greene inspired coffee table by Mike McGlynn was featured in the May/June 1997 issue of *Today's Woodworker* (issue 51).





GREENE & GREENE: A BRIEF HISTORY

BY MICHAEL MCQUEEN

Architects who truly excel at both architectural and furniture design are rare talents. Such were Charles and Henry Greene. Both boys attended the manual training high school in St. Louis, Missouri; graduating with honors. Next, they graduated from the Architecture School at the Massachusetts Institute of Technology. This technical education greatly influenced their architectural and furniture designs. One of the major influences on their architectural style was a visit to the "World Columbian Exposition" in Chicago in 1893. The Japanese exhibit at the expo featured a timber-framed temple built so the structure of the building was key to its aesthetics. Thus the seed of the design concepts evident in the Greenes' signature houses and furniture was planted.

In 1893 the boys joined their parents in Pasadena, California, where they set up their own practice. Early in the partnership, the brothers designed in many different styles, doing whatever it took to get the business off the ground. Around the turn of the century they began to show traces of the style that was yet to come, particularly in the Culbertson house, with its exposed rafter tails and large amounts of stonewash.

From 1903 though 1907, there was a rapid transformation in the Greenes' style. Structural elements were visually softened and the level of detail in their projects became much finer. These changes lead to the Tichenor house, their first "total design", including much of the furniture. During this time the Greenes formed one of their most valuable business relationships;

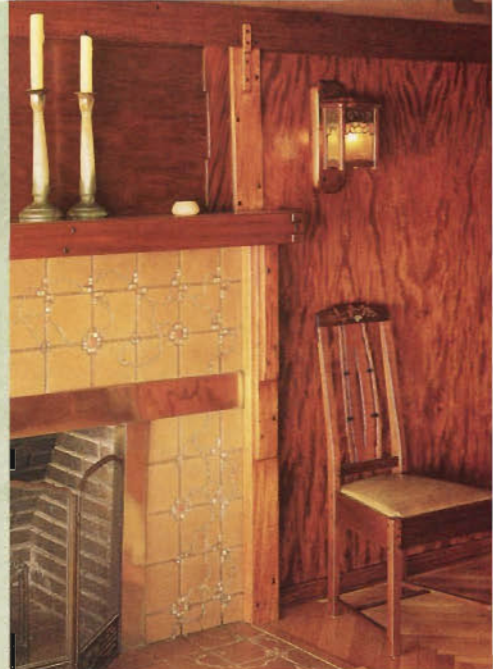
with carpenters John and Peter Hall. There was an almost instant recognition that the Halls' skills and abilities were a perfect match for the Greenes' designs. For the next seven years or so, the Halls built nearly all of the furniture and houses the Greenes designed.

Between 1907 and 1909 the Greenes designed a series of five houses which became known as the "Ultimate Bungalows," and today are considered to be the brothers' masterpieces. The owners of these houses were quite wealthy and generally allowed the Greenes total control over the design. The results, in both level of detail and finish, are astounding. Every item, from the structural timbers to the kitchen cabinets - even the outlet plates - are designed and finished like the finest furniture. Photographs don't do the houses justice. A visit to one of the preserved Greene & Greene houses is a real pleasure.



Blacker Entry Chair

Photo by Toshi Yoshimi



Thorsen House

Photo by Erica Marrin

The furniture produced for those houses is amazing in its own right. I had the privilege to make a measured drawing of a dining chair from the Blacker House. This chair, one of several made for this house, has many beautiful, subtle touches - all perfectly executed. In addition, the chair was engineered in such a way that it is as strong today as when it was new.

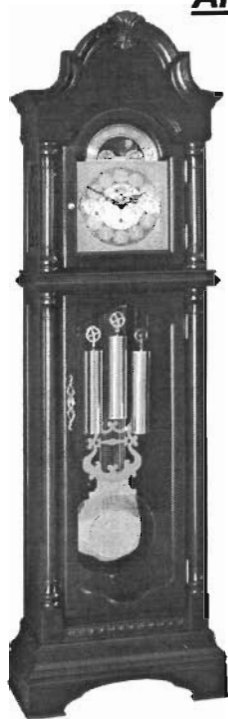
Ironically, the Greenes' success at the "Ultimate Bungalows" may have contributed to the eventual fall of their business. Their taste of building "with cost-as-no-object" led them to be demanding and uncompromising with regard to their vision. This, coupled with the fall from grace of the Arts & Crafts style in general, led to the rapid decline of their architectural practice. There is one striking exception to this decline, the James House in Carmel, California.

With the resurgent popularity of the Arts & Crafts style and the Bungalow movement, the Greenes' work is once again receiving the recognition it deserves.

Thanks to Randell L. Makinson for providing us the two photos shown here. Randell's new book, *Greene & Greene: The Passion and the Legacy* (Gibbs Smith Publishing), will be out soon. You can order it from the Gamble House Bookstore: 626-449-4178.

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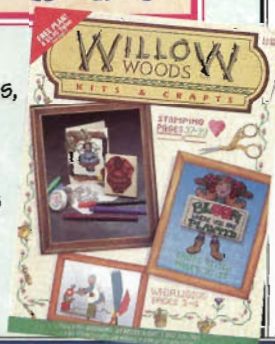
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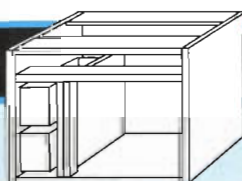
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A Desk Set frame-Up

By Larry Stoiaken



Back in the last issue of Today's Woodworker, we presented a new product called Environ™, and recommended it as a design option for a variety of projects. As designer Dan Jacobson closed in on the final look for this set of picture frames, he decided that we should take our own advice and make use of the material, both as an inlay and accent piece.

Environ, produced by Minnesota based Phenix™ Biocomposites, is a blend of farm grown resins and recycled newsprint. Available in 16 colors (both marbled and pastel), it costs about the same per square foot as a fine hardwood. The bio resin base means the material won't release formaldehyde as it is milled, a comforting thought for woodworkers. For a supply of this material, try Phenix at (800) 324-8187.

Start With a Molding

Almost all frames start out as a single strip of molding that is mitered to form sides, a top and a bottom (pieces 1 and 2). This might be an ideal scrap project, but be sure the stock you select from your scrap bin provides enough material to make at least one pair of frames. Just because you're saving on material doesn't mean that you should ignore the rules of stock selection.

The Material List below shows the finished dimensions of each part, but don't trim any of them to length just yet - it's easier and safer to mill and assemble the moldings and inlays before mitering them to length. So, begin by just ripping and jointing your hardwood stock to final width and thickness.

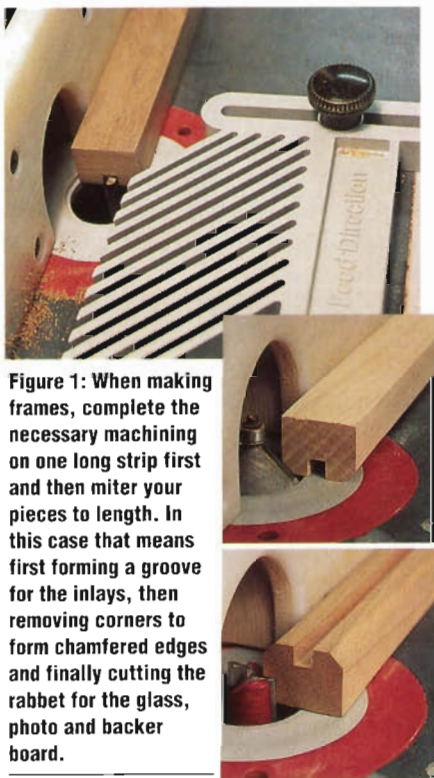
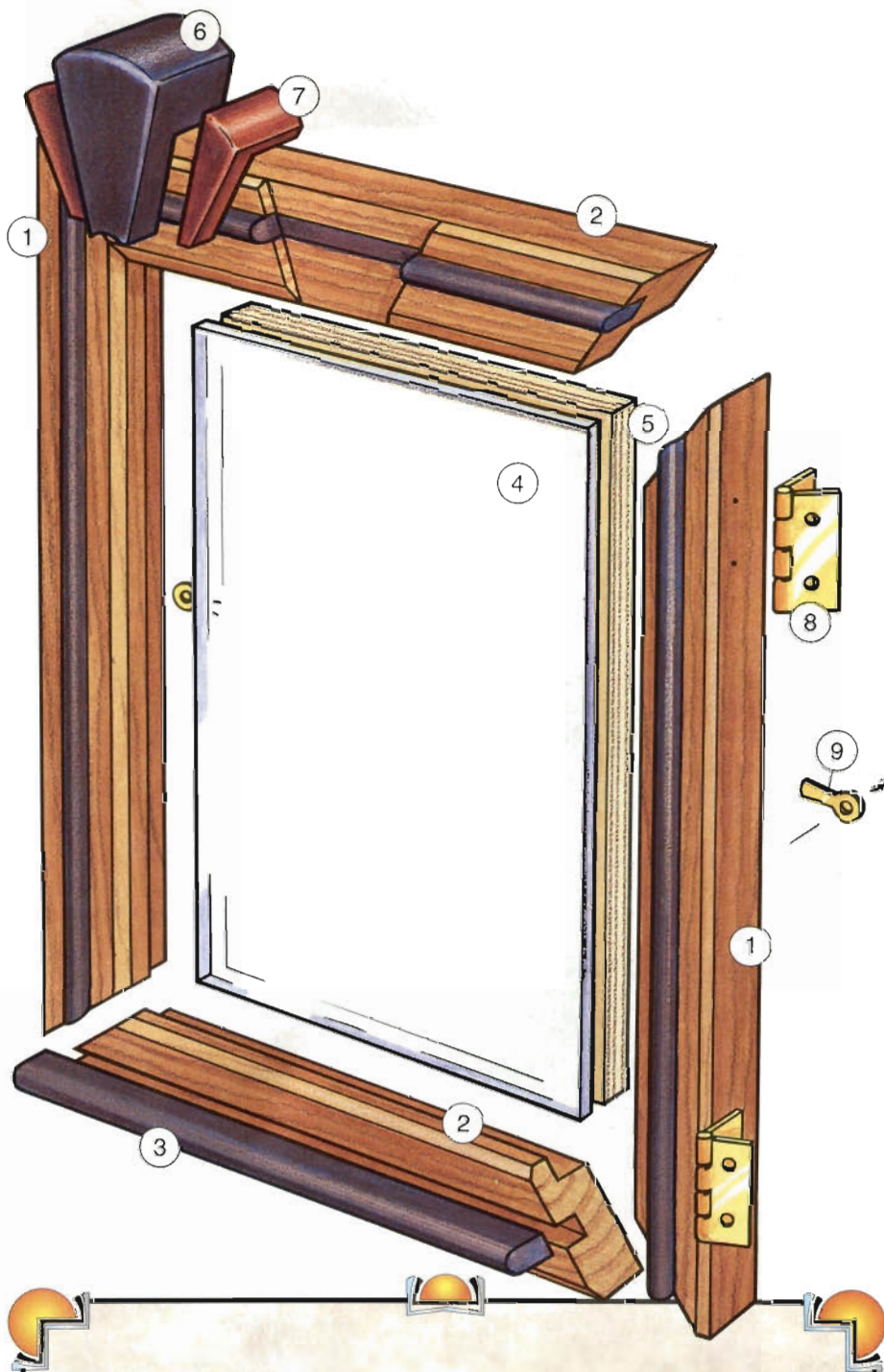


Figure 1: When making frames, complete the necessary machining on one long strip first and then miter your pieces to length. In this case that means first forming a groove for the inlays, then removing corners to form chamfered edges and finally cutting the rabbet for the glass, photo and backer board.

The first milling process is to create a groove in the front face of each piece for the Environ inlay (piece 3). This is done on the router table with a straight bit, as shown in **Figure 1**. Follow the dimensions provided in this issue's pullout pattern between pages 34 and 35. Stay at the router table to chamfer the front edges and to cut the rabbet for the glass (pieces 4) and the back (pieces 5), as shown in the two photo insets above.



MATERIAL LIST

	T x W x L
1 Side Moldings (4)	1" x 3/4" x 7 3/8"
2 Top & Bottom Moldings (4)	1" x 3/4" x 5 3/8"
3 Environ Inlay (2)	1/4" x 3/8" x 30"
4 Nonreflective Glass (2)	1/8" x 4" x 6"
5 Backs (2)	1/4" x 4" x 6"
6 Large Crown Accents (2)	1 1/2" x 1" x 1 1/2"
7 Small Crown Accents (4)	1" x 7/16" x 1 1/8"
8 Hinges (2)	1/2" x 1"
9 Retainer Tabs (4)	brass

Note: This list provides enough material for one pair of photo frames.

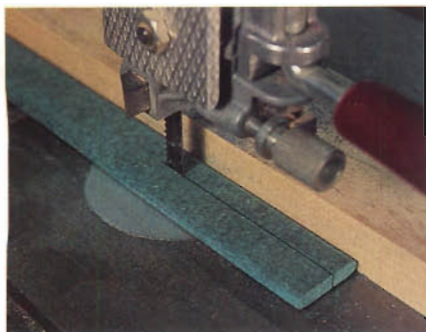


Figure 2: Think safety first. For the frame inlays, this means forming bullnoses on wider pieces, buffing them up and then cutting to final width on the bandsaw.

The Environ Inlay

Despite its resemblance to Corian® and other solid surface materials, Environ mills very easily - in fact its structure and density remind me of particleboard. It has another advantage too: it will pinpoint every problem area in your dust collection system! The dust from this product is heavy and settles quickly, but it's also very pervasive, so be sure to wear your dust mask and turn on the shop vac or open the collector ports.

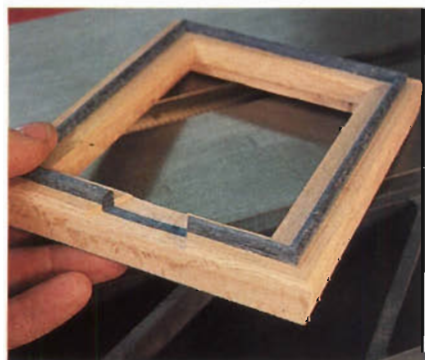


Figure 3: To add a little drama, a dovetail shape is formed at the top of each frame to accept the accents. These cuts can be made on the table saw with your miter gauge set first at 22½° to the left and then to the right.

Rip strips of Environ to the correct thickness (1/4"), and use a roundover bit in the router table to create a bullnose on each edge (see the **Full-size Pattern**). After buffing, rip each molding to thickness on the band saw (**Figure 2**).

After sanding the molding and inlay, glue the inlay into its groove. (Standard wood glue works fine.) Apply light pressure with spring clamps and set aside to dry.

After your coffee break is over, miter the completed molding to length, dry fit them with the glass, then glue and clamp each frame together. If you're doing a production run, select some more stock and repeat all the previous steps.

Crowning Glory

You may be satisfied with the frames as they now appear, but a little extra work will transform them into desktop treasures. The first step in building the crown accents is to create a dovetail-shaped dado in the top of each frame, as shown in **Figure 3**. Start by setting the blade height and then locking the miter gauge at 22½° to define one edge. Reset to 22½° in the other direction to define the other edge, then pass the workpiece over the blade to remove material between the edges.

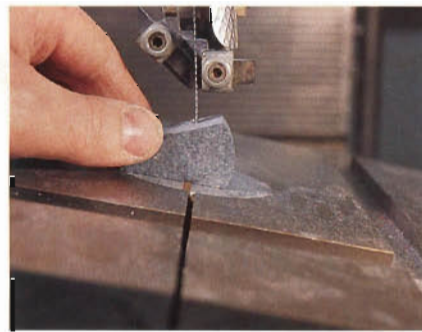


Figure 4: To form the crown accents shown below, make a few copies of the full size pattern. Try some test cuts on scraps before band sawing the Environ.



Glue a photocopy of the Full-size Pattern to a piece of scrap to test the fit of the crown accents (pieces 6 and 7). When you're sure you'll get a good fit, cut the Environ accents to shape (enough for all your frames) on the band saw, as shown in **Figure 4**. Break the leading edges with sandpaper, then glue them in place before applying three coats of finish to each frame.

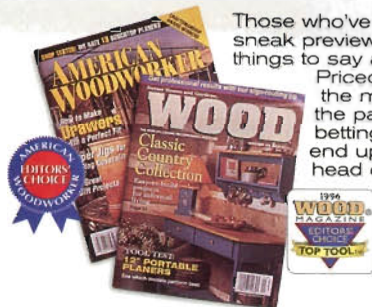
I found that lacquer works particularly well with Environ. After finishing, use brass hinges (pieces 8) to attach pairs of frames together, then install the retainer tabs which hold the picture, plywood and glass secure in the frame.



If you are setting up a production run, you may opt to make the frames without the crowns. In any case, five frames are about as easy to make as one ... and you end up with four hand-made gifts!



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The Old and the New



2 Plus 2 = Smooth

Freud has recently introduced its new 2 PLUS 2 series of raised panel bits. According to the manufacturer, woodworkers will spend a lot less time sanding



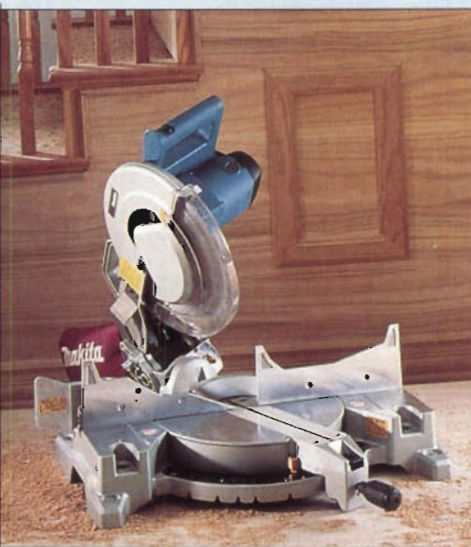
once they convert to these smooth cutting bits. (Note: Our own shop test confirmed that claim.) Freud uses two large wings to do the main profile cutting and an additional pair of smaller wings to cut the top part of the profile. The smaller wings are designed with a negative shear angle, allowing them to cut the vertical profile with a down slicing action. This eliminates the fuzz associated with standard raised panel bits. Available in several different styles and diameters, these bits are a solid panel raising option. For more info, see the **HOTLINE** on page 51.



Sharp Deal on Diamonds

Diamonds are a sharpener's best friend, and diamond stones are finally in the price range of most home shops, thanks to Massachusetts-based DMT. Their stones stay flat for years and only require water as a lubricant. For more information, check the **HOTLINE** on page 51.

A Lightweight Saw with Plenty of Muscle



Makita's new 12" compound miter box saw has an aluminum body and a large motor - the perfect combination for woodworkers whose tools sometimes have to follow them around the home.

Makita USA's new 12" compound miter saw solves two common woodworking challenges: it offers plenty of power to get the job done, but is still light enough to move to the garage or backyard - when your projects can't be brought to the shop. The LS1220's high torque 15 AMP motor is equipped with electronic speed control that delivers constant RPMs and smooth cuts. The machined aluminum base (which accounts for the light weight - just 37.5 lbs.), has built-in positive stops at 0°, 15°, 22.5°, 31.6°, and 45°. Other features include a pivoting fence that flips out of the way during bevel cuts, a quiet sound rating (84.4 db), soft starts and a dust control system. The unit comes with a 12" carbide-tipped thin kerf blade. For more information, see the **HOTLINE** on page 51.



Take a Pull on a Bear Saw

According to a representative of the company, Vaughan & Bushnell went to Japan and found "the finest saw manufacturer in the world" to produce their line of oriental pull saws with thin, spring-steel blades. Their Bear Saws®, ranging from coarse to extra fine, feature rust resistant blades that fit either of two handle styles - a standard pistol grip, or a traditional straight handle. For more info, see the **HOTLINE** on page 51.

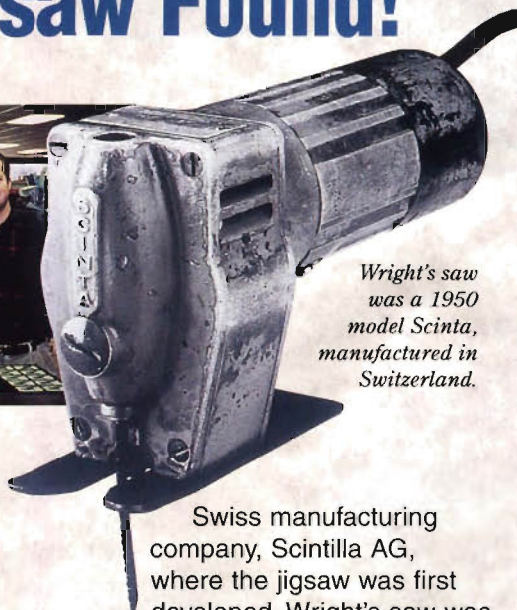
Oldest Jigsaw Found!



Lee Wright of Grand Rapids, Michigan, provided the winning entry in Bosch Power Tools' search for America's oldest jigsaw.

Bosch Power Tools has been hard on the search for an old tool. As part of their 50th anniversary celebration, the company sponsored a contest to uncover America's oldest jigsaw. Now, after pouring over countless photos and descriptions, a winner has been selected.

Michigan carpenter Lee Wright still uses his 48-year-old Scinta model jigsaw. The tool was named after a Bosch-owned



Wright's saw was a 1950 model Scinta, manufactured in Switzerland.

Swiss manufacturing company, Scintilla AG, where the jigsaw was first developed. Wright's saw was chosen from a large field of entrants, and his prizes included a Swiss watch, a one-year supply of Swiss chocolate, and the latest, state-of-the-art Bosch jigsaw. He'll need the new saw: his old one is going on permanent display at Bosch headquarters in Chicago. For more information on Bosch tools, see the **HOTLINE** on page 51.



Quick-dry Stain and Finish

The Sherwin-Williams Co. has introduced a new finishing system that combines their fast drying (under 2 hours) Wood Classics stains with a sanding sealer. The finish can be worked on just an hour after application. When the dust settles, a new fast-dry varnish can be used as a topcoat - and it dries to the touch in just 15 minutes. (Second coats can be applied in four hours.) For more info, see the **HOTLINE** on page 51.

Industrial Grade Sandpaper

The aptly named Mr. Sandpaper, a New York based importer, now offers American woodworkers a line of industrial grade abrasives from Europe. The company sells belts, sheets, disks, rolls and sanding sponges, shipped within ten days and backed by experienced telephone tech support. For more info, see the **HOTLINE** on page 51.



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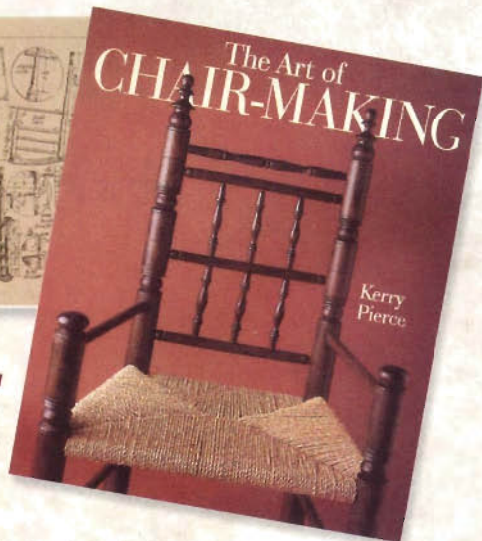
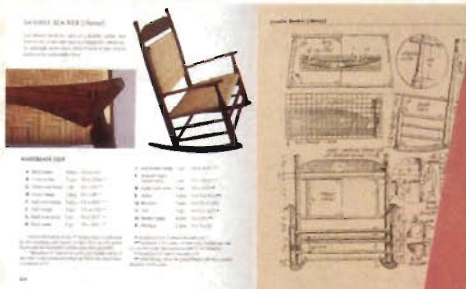


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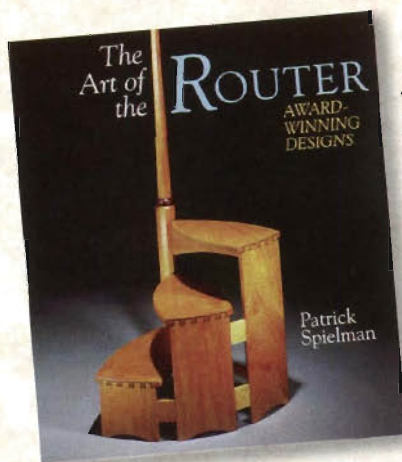


The art of ...

Two new additions to "The Art of" series from Sterling will be hitting bookstores soon.

... Chair-making

Ask any woodworker; making chairs is intimidating. How many of us avoid the topic altogether because we perceive chairs to be beyond our abilities? Kerry Pierce, through explicit instructions and detailed patterns, is trying to change that attitude with his book "The Art of Chair-Making". Thirty-two projects are featured, from simple benches and stools to 18th century Windsor and Queen Anne reproductions. All are presented with color photography and clear instructions designed to lead the woodworker through each step. Wood selection and purchasing factory made parts are discussed, as are techniques and tool choices. Find yourself a comfortable chair and give this one a read.



... The Router

The prolific Patrick Spielman serves up a visually rich volume of both techniques and projects with *The Art of the Router: Award-Winning Designs*. Featuring the talents of many builders, Patrick's latest offering focuses first on the router itself; its history and versatility. Several kinds of boxes by builders such as Patrick Leonard and Carol Reed are included. Mark Kepler has a mirror plan and Jeff

Greenup's "Library Step" (shown on the cover) is a joy to the eye. Each technique presented receives special attention as it relates to the projects covered. Jigs and templates, techniques and plans ... this is a complete treatment of a very versatile tool. *For more information on both of these books, see the HOTLINE below.*

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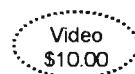


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(Circle NO. 83 on PRODUCT INFORMATION form)

DeWalt's New Look Workstation

By Rob Johnstone

When I see a new gadget designed to expedite an old process, I tend to become perplexed. Too often, it seems the new super-time-saver ends up adding a level of complexity and effort not found in the original process. Don't get me wrong ... I love new toys as much as the next guy, but there should be an advantage beyond impressing my woodworking friends. DeWalt's new Miter Saw Workstation delivers. This new product saves time and offers a number of advantages over the old fashioned fixed bench approach. It's also an improvement on the portable systems I've used.

Built-in Versatility

The Workstation is essentially a high tech sawhorse made of aircraft grade aluminum. It will support 300 lbs, while the tool itself weighs in at a mere 35 lbs. The legs fold out in just a few seconds and once you slide the saw mounting board in place (with your saw pre-attached) you're ready to cut. The central beam of the unit is an extruded U shaped piece that accepts a variety of accessories, as well as extensions to the central beam itself. I was particularly

impressed with the fact that the Workstation is designed to be compatible with any manufacturer's miter saw. Whether you have a sliding or fixed saw, a compound or standard chop saw, it will easily adapt to this tool's sturdy mounting system.

The chief advantage to the Workstation is the ease of operation with all of its various accessories and components. DeWalt has devised a unique precision measuring system which, like many innovations, will seem familiar on first glance. In fact, it's a completely new approach.

A work support and movable stop come with the basic package. Additional work supports and special tilt-in intermediate stops are also available as accessories.



The work supports can be reconfigured as tilt-in stops.



One of the keys to the precision measuring system is the screw clamp attached to the tool mounting board. This allows you to move either the stop or the saw ... without affecting accuracy.

The model shown features an additional 30" extension to the central beam.

The fold up legs provide strong support and easy storage.



With your own 16' tape clipped into the stop, the precision measuring system allows you to change cutting lengths quickly and accurately.

Tools by the Numbers

Height	34" at the work-surface
Length	7' to unlimited additions
Width	33"
Weight	35 lbs.
Weight Supported	300 lbs.
Saw Requirements	Any model miter saw
Assembly Time	Approximately one hour
Set-Up Time	10 minutes
Price Range	Under \$300.00
Accessories	Extensions & Support/Stops

The system uses your own 16' tape measure clipped into a sliding-stop mounted to the central beam. Once it is correctly registered to the blade (a simple operation that takes just a few seconds), it will remain accurate no matter where you move either the saw or the stop. The familiar part of the process is that you view the tape clearly as you set the stop with a simple twist knob.

Adjustable height work-supports are secured to the central beam in the same slide-in fashion and move smoothly up and down (or along the length of the beam) to accommodate various saws and working situations.

The Basic Package

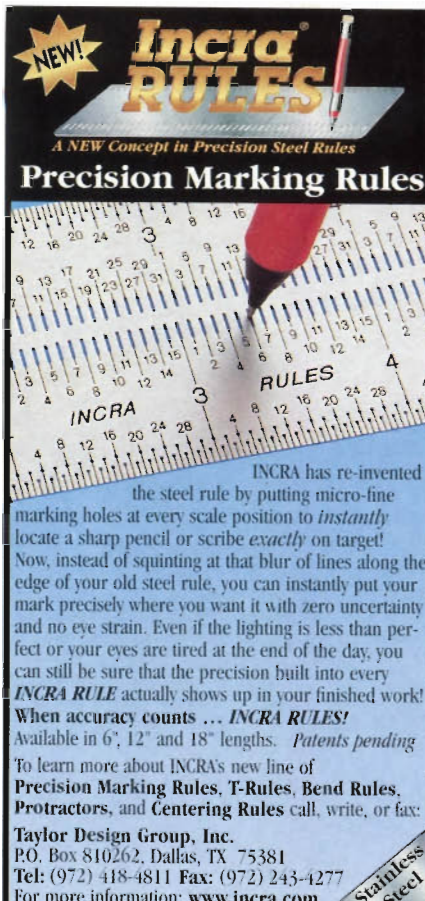
One support and the measuring stop system are supplied with the standard seven foot central beam and leg assembly. The basic package also includes the melamine covered tool mounting system and instructions to put the whole thing together. Assembly required just a couple of wrenches and a little over an hour. (Of course, reading the instructions probably would have sped this process up a bit.) After the initial set-up, you'll find that everything slides together in less than ten minutes ... including zeroing out the measuring system. Be sure to take care when first attaching your saw to the tool mounting system. Keep the tape screw clamp pointed toward the adjustable stop (as shown in the

photo on page 52). Once your saw is attached to the tool mount, you can keep it there. The mount is equipped with rubber feet that allow you to use it without the stand if you wish. Putting your saw on the floor or bench top for a quick cut is no problem, another sound design feature.

Elegant Add-Ons

Two other accessories available for the Workstation are like the product itself, elegant and simple. Beam extensions are available in 30" and 7' lengths. In theory, with the additional leg sets available, you could make the Workstation as long as you like. I can easily envision a sixteen foot configuration at my end-less summer cabin project.

The other accessory is a combination work support and tilt-in stop. In its work support configuration, this unit is operated in exactly the same manner as the supports that come with the basic package. But the same component assembled differently and without the composite support tube, gives you a tilt-in intermediate stop. These stops fold back out of the way to allow you access to the main stop (which contains your tape ... remember?) and then tilts back in place to create a secondary cutting distance. This intermediate stop, when tilted in, has its leading edge positioned just over the measuring tape. Simply twist a knob, move the stop and register it by means of the tape that you have already zeroed in. Again,



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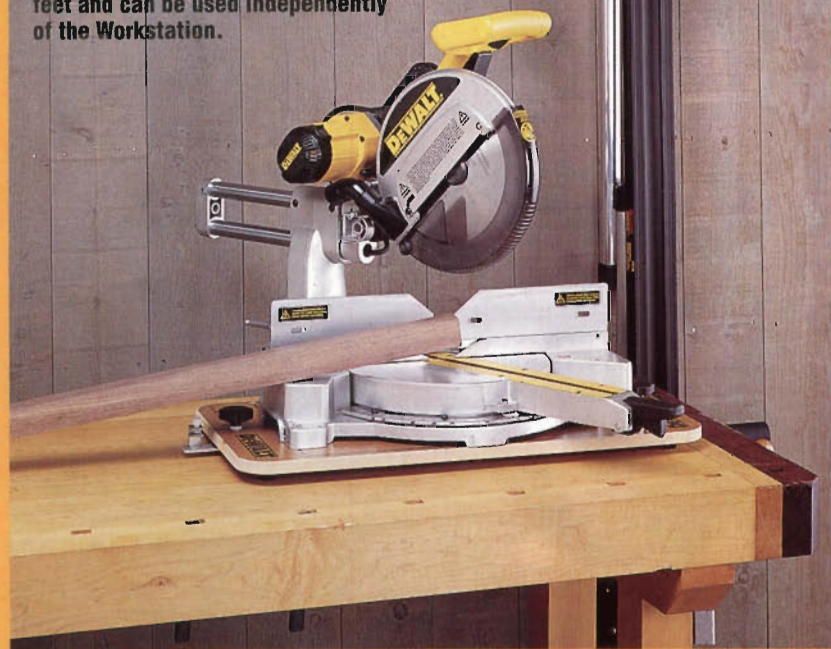
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Shown here with their own sliding miter saw, the DeWalt Workstation works equally well with other brands. The unit folds up to store or transport easily. Keep your saw attached to the mounting board, which has rubber feet and can be used independently of the Workstation.



this is similar to a feature I have built into my permanent cut-off saw tables, but a little more flexible and a lot easier to use. An honest to goodness innovation.

The Workstation folds up easily and quickly when a day's work is completed and doesn't take up much room in your shop. Hang the beam on your wall and put the saw under your bench to create a little extra elbow room. If you're like me, and have more toys than room to store them, you'll like this feature. It's also what makes it so portable and easy to set up on a job site, or at your cabin ... or maybe your friend's house when you feel like showing off a little.

The basic outfit is available at home centers and retailers for under \$300.00. The accessories are available separately. To find out more details, check out DeWalt on the world wide web: www.dewalt.com, or call toll free at 800-433-9258.

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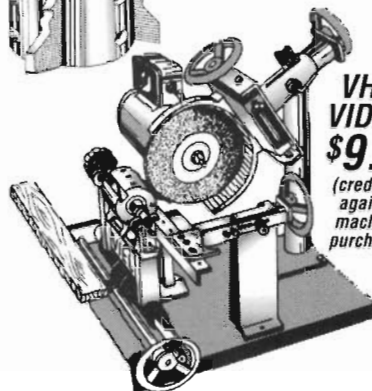
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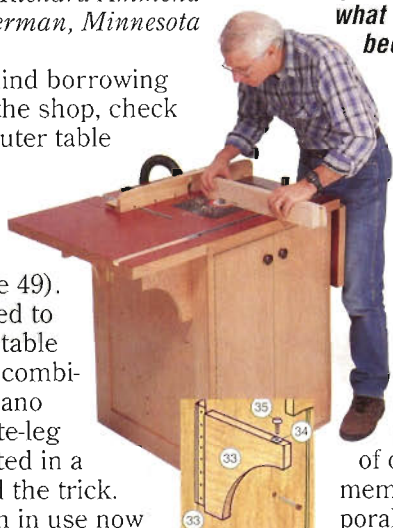


Double Stumper Trouble

Q I have a tricky situation that I thought would be a good “stumper” for your magazine. My wife is looking for extra counter space in the kitchen and I, (of course), told her “no problem.” I came up with a hinged extension to the counter that flips up to create more counter area and back down when not in use. My stumper: What sort of support system is available that will hold the counter in place and handle a little pressure?

Richard Ammend
Zimmerman, Minnesota

A If you don't mind borrowing an idea from the shop, check out the portable router table that ran in the January/February 1997 issue of Today's Woodworker (Issue 49). We were determined to have a jiggle-proof table and found that the combination of a short piano hinge, a folding gate-leg and a leveler inserted in a threaded insert did the trick. That table has been in use now for over a year with no problems. As soon as the extension shows signs of wiggle, we just give the leveler an extra twist.



Q I found this interesting “tool” at an auction. It was sticking out from under a pile of unrelated tools and it caught my eye. I was instantly sure that it had a use in the construction field of some sort. The recessed carving is coated with a fine powder. The piece itself is three different layers of wood, with the center layer's grain turned ninety degrees from the other two. Do you have any idea what this might have been used for?

Jim Carroll
Milwaukee,
Wisconsin

A This a real stumper! The relief carving does seem to have been designed to mold something. Do any readers have the answer? Write us and let us know. One of our staff has a vague memory of suffering corporal punishment at his parochial school with a similar instrument, but we think this is a coincidence.



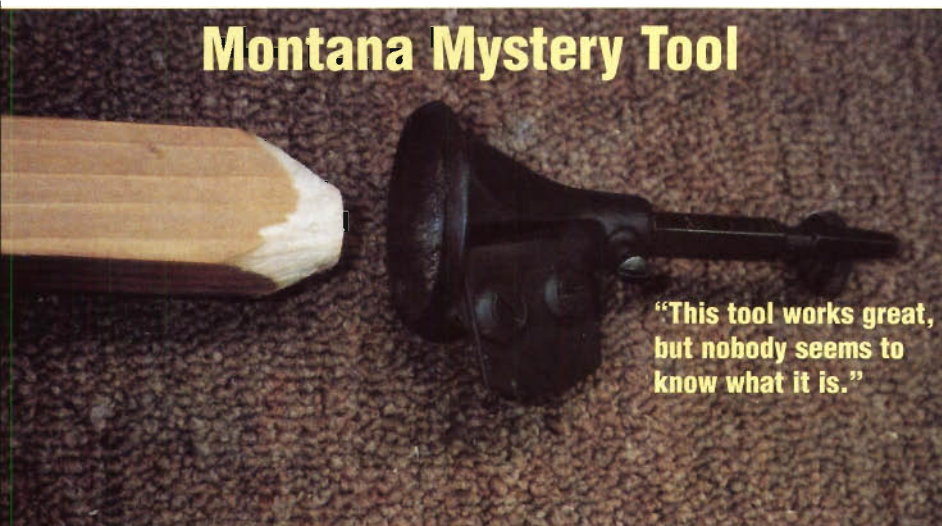
Q Enclosed find a picture of an old tool I picked up hoping I could use it in rebuilding old country antiques. It works good, but nobody seems to know what it is!

The cutting angle is approximately 65 degrees. The cone mouth is 2½" wide by 5½" long. The shank is graduated in inches for depth control. It is apparently bit braced powered and it has no name or model numbers.

Roger Hutchinson
Three Forks, Montana

A We are stumped again, and enjoying it. There is something very familiar about your tool, but it remains an intriguing mystery. Any reader who can shed light on these mystery tools, write and let your light shine.

Montana Mystery Tool



“This tool works great, but nobody seems to know what it is.”

If you have a question or mystery tool, send it to Woodworker's Journal, Dept. Stumpers, P.O. Box 261, Medina MN 55340. Or reach us electronically at editor@woodworkersjournal.com. If we can't find an answer, maybe one of your fellow readers can!

ROCKLERTM Woodworking Plans

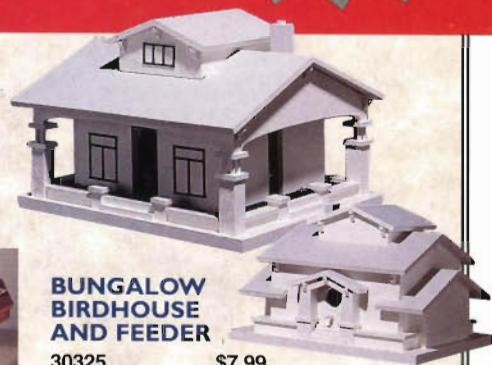
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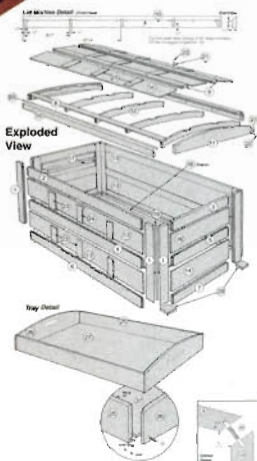
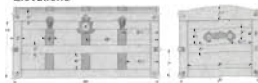
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Instructions

Bill of Materials

Part	Qty	Material
1	1	1/2" x 1/2" x 1/2" (3/4" x 1/2" x 1/2")
2	1	1/2" x 1/2" x 1/2" (3/4" x 1/2" x 1/2")
3	1	1/2" x 1/2" x 1/2" (3/4" x 1/2" x 1/2")
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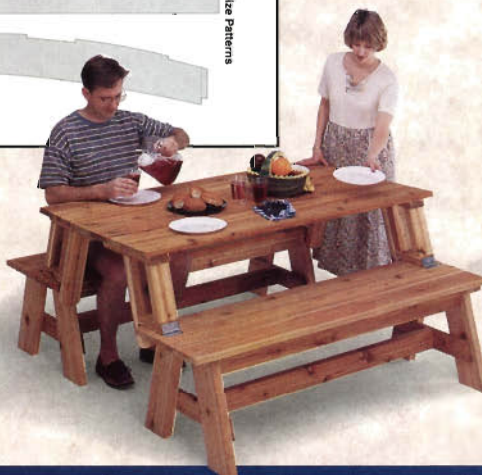


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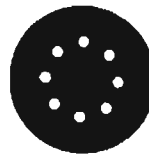
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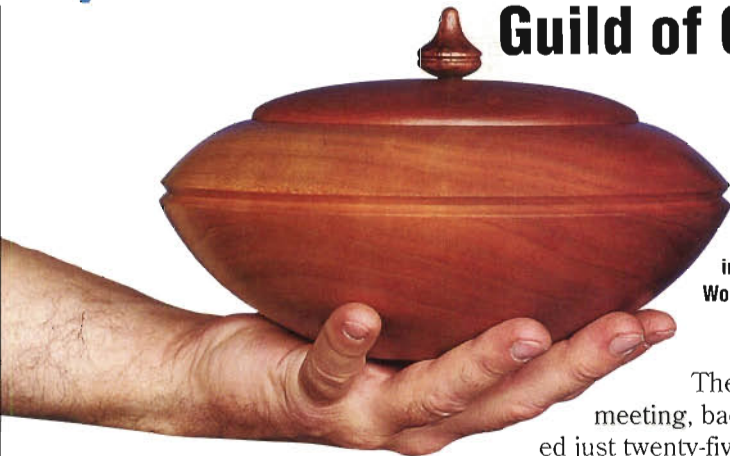
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Guild of Oregon Woodworkers



High School student Alan Shepard won "Best of Show" with this hand turned vessel in the Guild's Student Woodworking Show.

Pounding surf, deep-running still waters and huge tracts of fir, cedar and pine are symbolic of the Pacific Northwest. This is tall timber country, with ancient trees whose roots stretch back in time beyond the history of our nation. In Portland, Oregon, there is a group with a shorter history, but they are equally well rooted in the area. United in their passion for woodworking, the Guild of Oregon Woodworkers is well into its second decade of existence in the great northwest. The membership is made up of a combination of hobbyists and professionals active in the pursuit of woodlore, promotion of woodworking and the camaraderie of the craft.

The Guild's first meeting, back in 1982, attracted just twenty-five curious folks but interest has been increasing ever since. Early in its existence, woodworking shows became an important focus for the group. In fact the very first effort, held at the State Capitol Building in Salem, Oregon, was attended by nearly eight thousand people in 1985.



The High School Woodworking Show, sponsored by the Guild of Oregon Woodworkers, is one of the high points of the Oregon State Fair.

ily on its members and volunteers, but the staff position has provided continuity and organizational stability over the ensuing years.

The Guild has a regular newsletter to inform members of the general business of the group as well as the many shows, programs



Guild board member Russell Hall, better known as Piezo, is a furnituremaker by trade. His specialty is contemporary design.

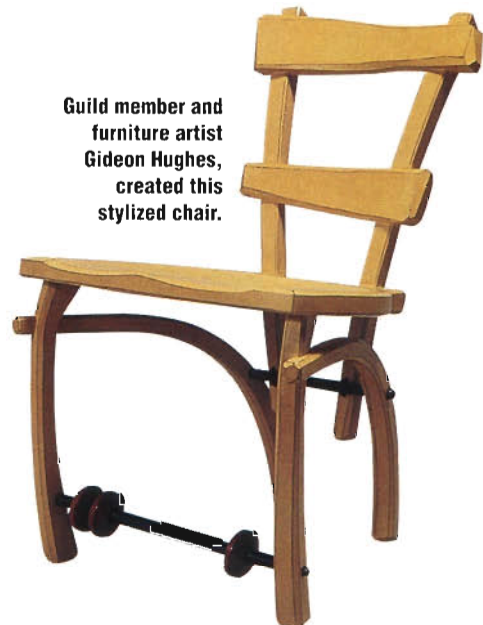
and seminars which are the key benefits of membership. There are plans for a Guild sponsored web page soon, with opportunities for the members to advertise their work on the world-wide web.



Woodworker Michael Ferreira operates a one man shop where he creates both modern masterpieces and antique replicas.

In 1989 the Guild expanded its focus and applied the knowledge it had learned from producing its own shows to sponsor the "Best Student Woodworking Show" at the Oregon State Fair. High school students from all over Oregon are invited to display their work during this annual event, competing for scholarships, tools and materials in a number of categories.

The growth of the Guild led to the decision to hire an executive director, rather than continuing with an all volunteer staff. The organization still depends heav-



Guild member and furniture artist Gideon Hughes, created this stylized chair.



Tom Allen's sculptural marquetry and the turnings of Bob "Friar" Tuck (below) capture the creativity and spirit of the Guild.

All in all, the group is an active and creative outpost of woodworking and good fellowship - which just happens to completely satisfy the goals set forth by those twenty-five curious woodworkers in their very first meeting. If you're traveling in the Portland area between August 27 and September 7, be sure to check out the student contest at the State Fair, or give the Guild a call. Their number is (503) 492-1515.



Winners!

For their help and cooperation, the Guild of Oregon Woodworkers will receive the Jet Planer shown here.



If you'd like to have your club featured in our "Club Spotlight" write Rob Johnstone at the Woodworker's Journal, P.O. Box 261, Medina, MN 55340 or call at (612) 478-8255. Featured clubs will be awarded a prize to raffle off to their members.

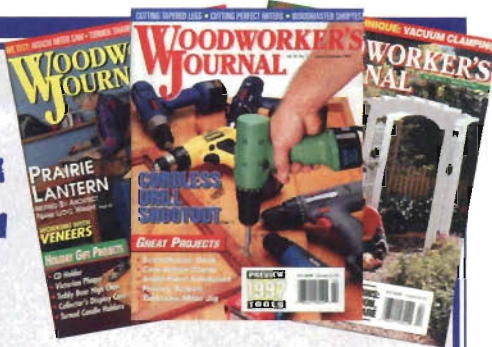
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Vol. 14 No. 1 Jan/Feb '90 (Item #33380)

Tavern table, mortise and tenon mirror, weaver's chest of drawers, tissue box cover, band-sawn napkin holder, grasshopper pull toy, compact disc holder, shop-built spindle sander, wall-hung ironing board, *Articles:* One Shop Tools You Can't Do Without, Marquetry.

Vol. 14 No. 4 July/August '90 (Item #33341)

Sunburst mirrors, slant-back cupboard, folding deck table, two toy dragsters, colonial barbecue tray, workbench helper, harvest table, oak plate rack, *Articles:* Hard-to-Find Woodworking Items, Raps, Safety, Making the Dovetail Wedge.

Vol. 22 No. 2 March/April '98 (Item #32899)

Garden pergola, frame and panel chest, baker's bench, plywood storage cart, Craftsman-Style outdoor lantern, *Articles:* Woodworking Basics - Mortises and Tenon, Specialty Planes (part 1), Decorative Turned Inlays, What's New in Clamps, Woodworker's Travelogue, A Workshop at the College of the Redwoods.

Vol. 14 No. 2 March/April '90 (Item #33067)

Santa Fe bench, Early American mirror, shop-built sanding blocks, cookie jar holder, hourglass, candle holder, toddler cart, folk fiddle, bird's eye maple plant stand, *Articles:* Making Drawers, Using Router Bits in the Drill Press, Finishing Outdoor Projects.

Vol. 15 No. 1 Jan/Feb '91 (Item #33328)

Santa Fe chair, Santa Fe table, clamp rack,

Round Barn May/June '98

Provincial bench, step stool, Marquetry top box, ash wall desk, fork lift toy, Connecticut River Valley highboy, *Articles:* Tempering Steel Tools, Three Easy Finishes for Oak, Making a Cabriole Leg, Hand-Cut Dovetails.

Vol. 15 No. 5 Sept/Oct '91 (Item #33302)

Colonial bench, shop-built mortising/tenoning table, pine wall cabinet, gun/bookcase/curio cabinet, tilt-action dump truck, four easy-to-make kitchen projects: cooling rack, salad tongs, serving board, recipe box, *Articles:* Essential Jigs for the Table Saw.

Vol. 22 No. 1 Jan/Feb '98 (Item #32925)

Top-drawer humidior, pine display cabinet, carved picture frame, prairie-style wall sconce, rolling tool caddy, mahogany corner shelf, *Articles:* Best New Products for '98, Multi-Layer Moldings, Portable 12" Planers, Accessories for the Bench, Wolverine Grinding Jig System.

Vol. 22 No. 3 May/June '98 (Item #32808)

Round barn toy, prairie table lamp, fast-track curio cabinet, shop-built sanding blocks, maple fireplace mantel, *Articles:* Specialty Planes (part 2), 1" Belt/Disc Sanders, Dispoz-A-Blade System, Power Up Your Shop with Air.

Vol. 21 No. 2 March/April '97 (Item #33003)

Contemporary dining table, garden arbor, sunrise door mat, Craftsman-style outdoor lantern, personalized home plaque, garden gate, *Articles:* Japanese Hand Planes, Vacuum Clamping, Inverted-Pin Routing, Hand Saws.

Vol. 21 No. 4 July/August '97 (Item #32977)

Kaleidoscope, Arts and Crafts-style baby crib, mahogany entry door, computer facelift, small workbench, *Articles:* Northwest School of Wooden Boatbuilding, Making Decorative Plugs and Inlays, Tuning and Using Hand Planes: Part 2, Five New Polyurethane Glues.



Garden Pergola (March/April '98)

**WOODWORKER'S
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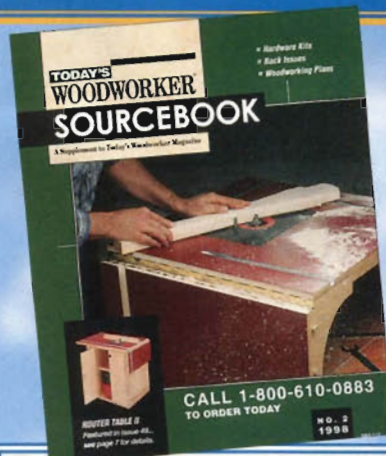
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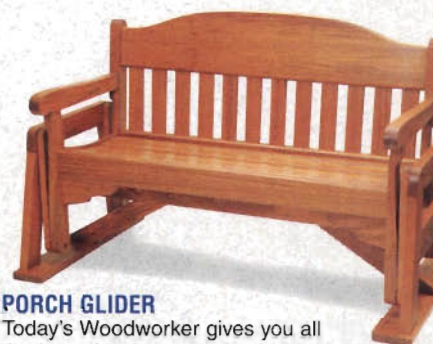
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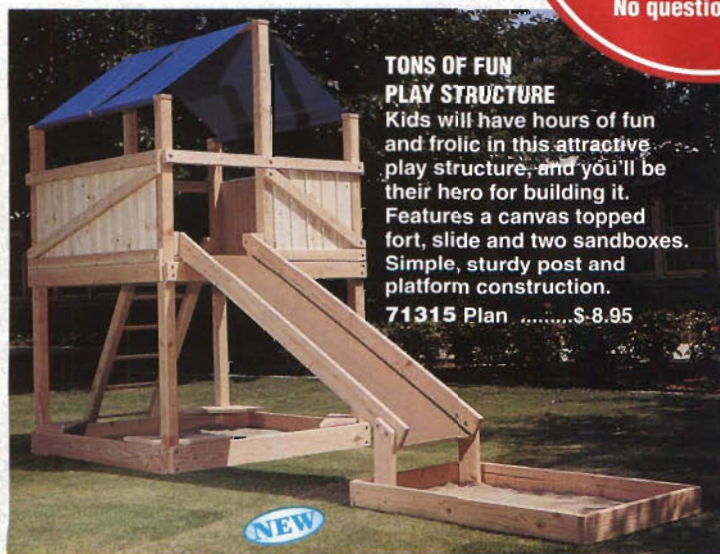


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Today's Woodworker gives you all the know how you need to build this beautiful teak glider!

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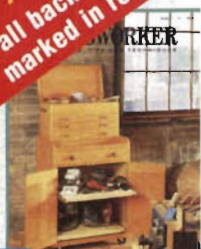
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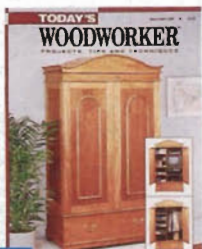
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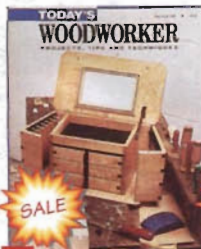
Today's Woodworker Sale!



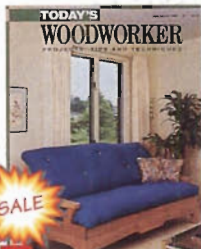
1 Mounted wall shelf, end table, tool cabinet, buying used tools. 38414\$4.95



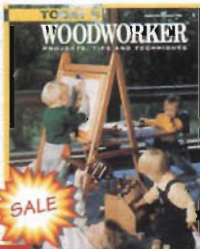
2 Armoire, magazine rack, bentwood curio shelf, European hinges. 38422\$4.95



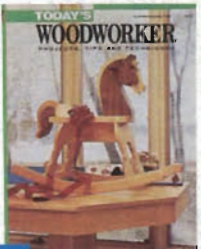
3 Adirondack chair, jewelry box, turning wood, drawer slides. 38430.....~~\$4.95~~...\$2.47



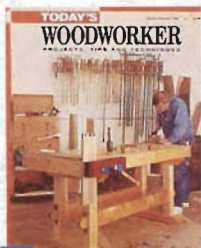
4 Futon sofa bed, KD fittings, blanket chest, antiquing techniques. 38448.....~~\$4.95~~...\$2.47



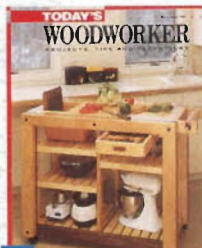
5 Children's activity center, folding footrest, easel, model airplane. 38455.....~~\$4.95~~...\$2.47



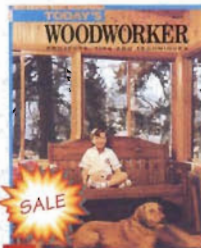
6 Holiday ornaments, pedestal table, rocking horse, mixing finishes. 38463.....\$4.95



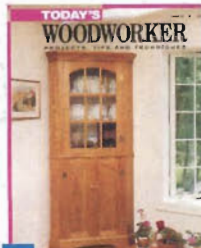
7 Breakfast tray, stamp holders, heart box, European workbench. 38471\$4.95



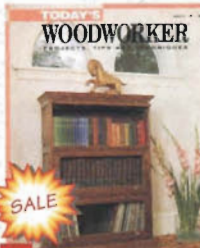
8 Candlestand table, kitchen work station, rolling pin, step stool. 38489\$4.95



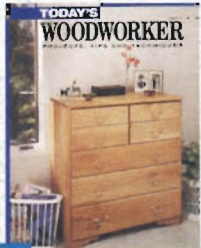
9 Chippendale mirror, continuous grain box, porch glider. 38497.....~~\$4.95~~...\$2.47



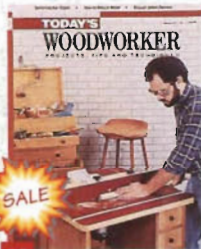
10 Scroll sawn trivet, cherry corner cabinet, fishing net. 38505.....\$4.95



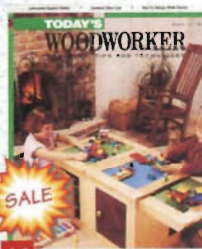
11 Bookcase, spinning string tops, kid's step stool, desk tray. 38513.....~~\$4.95~~...\$2.47



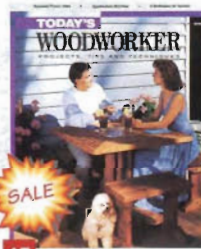
12 Shaker swivel mirror, bureau, deep-reach hand screw clamps. 38521\$4.95



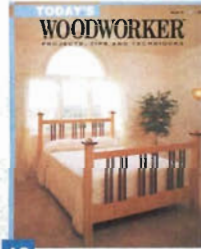
13 Router table, bar stool, tips on buying a new biscuit joiner. 68700.....~~\$4.95~~...\$2.47



14 Toybox, Craftsman style rocking chair, compact disc holder. 66860.....~~\$4.95~~...\$2.47



15 Picnic table, turned birdhouse, dulcimer, joiner's mallet. 66878.....~~\$4.95~~...\$2.47



16 Maple and padauk bed frame, mantel clock, coffee table. 71639.....\$4.95



17 TV cabinet, bureau caddy, angler's mobile, toddler's tractor. 72161\$4.95



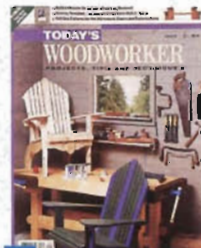
18 Bunk bed, teddy bear rocking chair, Shaker table. 72199.....~~\$4.95~~...\$2.47



19 Toolbox, swinging cradle, salt and pepper shakers, bookcase. 79582\$4.95



20 Queen Anne desk, carved grizzly bear, and a table lamp. 79665.....~~\$4.95~~...\$2.47



21 Adirondack chair, scroll saw project, deck set, sofa table. 79673\$4.95



22 High chair, tavern mirror, display case, weekend bird feeder. 79681.....\$4.95



23 Trestle table, drill bit cabinet, three weekend gift projects. 79699.....~~\$4.95~~...\$2.47



24 Serving tray, dining chair, entertainment center, tree ornaments. 79707.....~~\$4.95~~...\$2.47



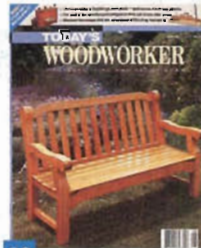
25 Flammable storage cabinet, workbench, toy car, country settle. 88965\$4.95



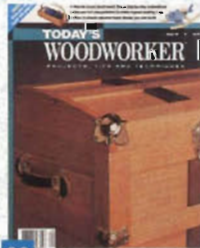
26 Futon sofa bed, crosscut jig, side table, tambour breadbox. 88973.....~~\$4.95~~...\$2.47



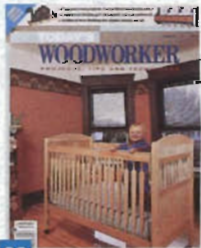
27 Southwestern desk, folding magazine rack, dovetail layout tool. 88981.....~~\$4.95~~...\$2.47



28 Garden bench, fold down bed, whirligig, desk top accessory set. 88999\$4.95



29 Toddler's rocking fish, bentwood carryall, steamer trunk. 89004\$4.95



30 Crib, plate rack, rush covered stool, barnyard animals. 89012\$4.95



31 Mirror, coat rack, dollhouse, sanding supply cabinet. Temporarily Out of Print



32 Computer desk, 18 wheeler, cherry end table, CD holder. 97255.....~~\$4.95~~...\$2.47



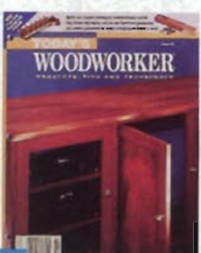
33 Icebox, band saw fence, woodworker's whirligig, deck table. 97263.....\$4.95



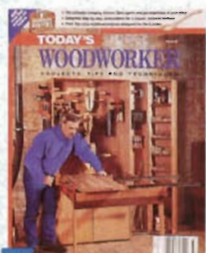
34 Kid's workbench, birdhouse, bookcase, and a jelly cupboard. 97271.....\$4.95



35 Jewelry box, tilt table for drill press, hutch, toy tanker. 97289.....\$4.95



36 Pencil box, logging truck, baker's shelf, entertainment center. 97297.....\$4.95



37 Clamping station, cherry dresser, spice rack, soup spoon. 58784.....\$4.95



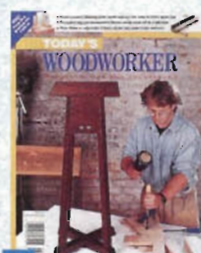
38 Coat rack, phone center, Scandinavian sideboard, tea table. 58792.....\$4.95



39 Toy car and truck set, antique collector's cabinet, steamer chair. 58990.....~~\$4.95~~...\$2.47



40 Filing cabinet, loon whirligig, rocking pony, arts & crafts end table. 59006.....~~\$4.95~~...\$2.47



41 Shaker vanity mirror and bench, Stickley fern table, V-block jig. 59014.....\$4.95



42 Hobby box, salmon card player's coasters, cutting board, race car. 59048.....~~\$4.95~~...\$2.47



43 Outfeed/assembly table, chest, mantel clock, crocodile desk. 17419.....\$4.95



44 Bookcase, toy barn, Greene & Greene hall mirror, golfer's whirligig. 17287.....~~\$4.95~~...\$2.47



45 Dart caddy, Shaker table, router surfacing jig, gardener's bench. 17295.....~~\$4.95~~...\$2.47



46 Mahogany humidor, LEGO® center, oriental redwood arbor. 17302.....~~\$4.95~~...\$2.47



47 Scroll saw blade caddy, steamer trunk, jewelry box, toy jeep. 17310.....~~\$4.95~~...\$2.47



48 Chessboard, toy road grader, kaleidoscope, Chippendale table. 17328.....\$4.95



49 Wooden clamp, CD storage cabinet, router table, entryway bench. 21775.....~~\$4.95~~...\$2.47



50 Arts and crafts wine rack, yard wagon entertainment center. 21783.....~~\$4.95~~...\$2.47



51 Greene & Greene table, barbecue cart, ceramic serving tray. 21791.....~~\$4.95~~...\$2.47



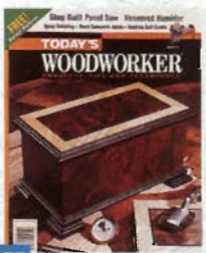
52 Bookshelves, folding bench, Beanie Babies™ bedroom, cupboard. 21858.....\$4.95...\$2.47



53 Compact computer desk/cabinet, rockin' bronco, memory box. 21866.....~~\$4.95~~...\$2.47



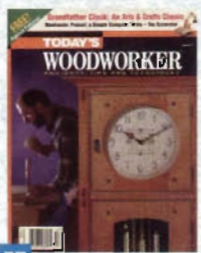
54 Brawny bulldozer, kitchen table, sewing machine cabinet. 21874.....\$4.95



55 Veneered humidor, rocking doll cradle, shop-built panel saw. 22431.....\$4.95



56 Stickley bookcase, Chinese checkerboard, collector's coffee table. 22444.....\$4.95



57 Grandfather Clock, weekend computer table, toy excavator. 22457.....\$4.95

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Beanie Babies and Rockin' Broncos



Retired Bedroom Builder

Now that I have retired, I have a lot of time to spend on my favorite hobby - woodworking. I have made several of the projects from the plans in your magazine and I have learned a lot from all the tips and techniques you regularly present. The "Beanie Babies Bedroom" by Larry Stoiaken in TW issue 52 was a great project and, as you can see from the photograph above, it also made my four grandchildren very happy. Keep up the good work.

George A. Bachner
Pittsburgh, Pennsylvania

WWJ responds: Christmas looked like big Beanie fun for the Bachner Brood. Your grandchildren seem to be as pleased as can be with their Beanie Baby bonanza.

Bonkers Over Beanies

Please! No more Beanie Baby Projects! Grandfathers with nine grandchildren just don't have the time or energy. I'm sending a picture (below). I changed the top to make sanding the edge easier. I made the feet separately and used a biscuit jointer to glue them on later. This not only made them stronger, but drilling the holes in the sides was easier without the feet attached. I also placed a 3/16" flat washer under each door to give them clearance. You did help with the Christmas shopping this year - we thank you for that.

Grandpa Bruce Hoskins
Westport, New York

WWJ responds: You are safe for now, we have no new Beanie Baby projects in the hopper.

Rockin' Bronco Takes Off

The Rockin' Bronco, featured in TW issue 53, was a great challenge for me, but it turned out fine. The biggest problem I had was the spring selection and placement. I spent hours testing new springs and placing them in different locations. The horse doesn't get a lot of use so I don't worry too much about it, but if it did, I would recommend an industrial spring mechanism.

Glen Dunham

Woodbury, Connecticut

P.S. My son, Patrick (age 2), would love to appear in your magazine.



WWJ responds: Here's Patrick (looks like you had to use a very fast shutter speed!) and his trusty companion. The horse and rider look really great; nice work Dad.



Winner!

Send your letters and photos to "End Grain" c/o Woodworker's Journal, P.O. Box 261, Medina, MN 55340. If we publish yours, we'll throw your name in a hat for our free tool drawing. Photos of projects from the Woodworker's Journal and Today's Woodworker are eligible.



Grandpa Hoskins is the lucky winner of Bosch's new 1/2 sheet pad sander, featuring a 3.2 amp motor, ergonomically designed handle and dust collection.

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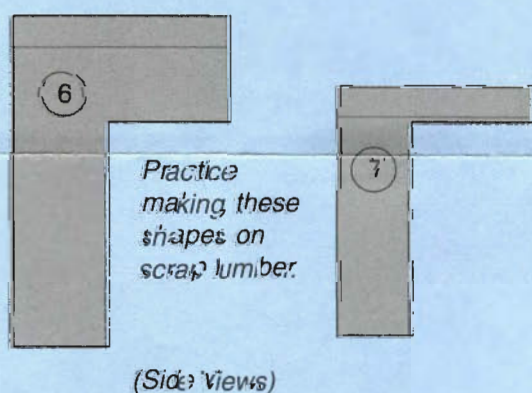
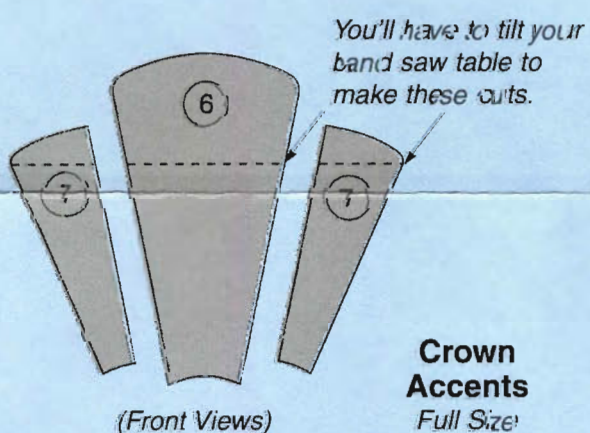
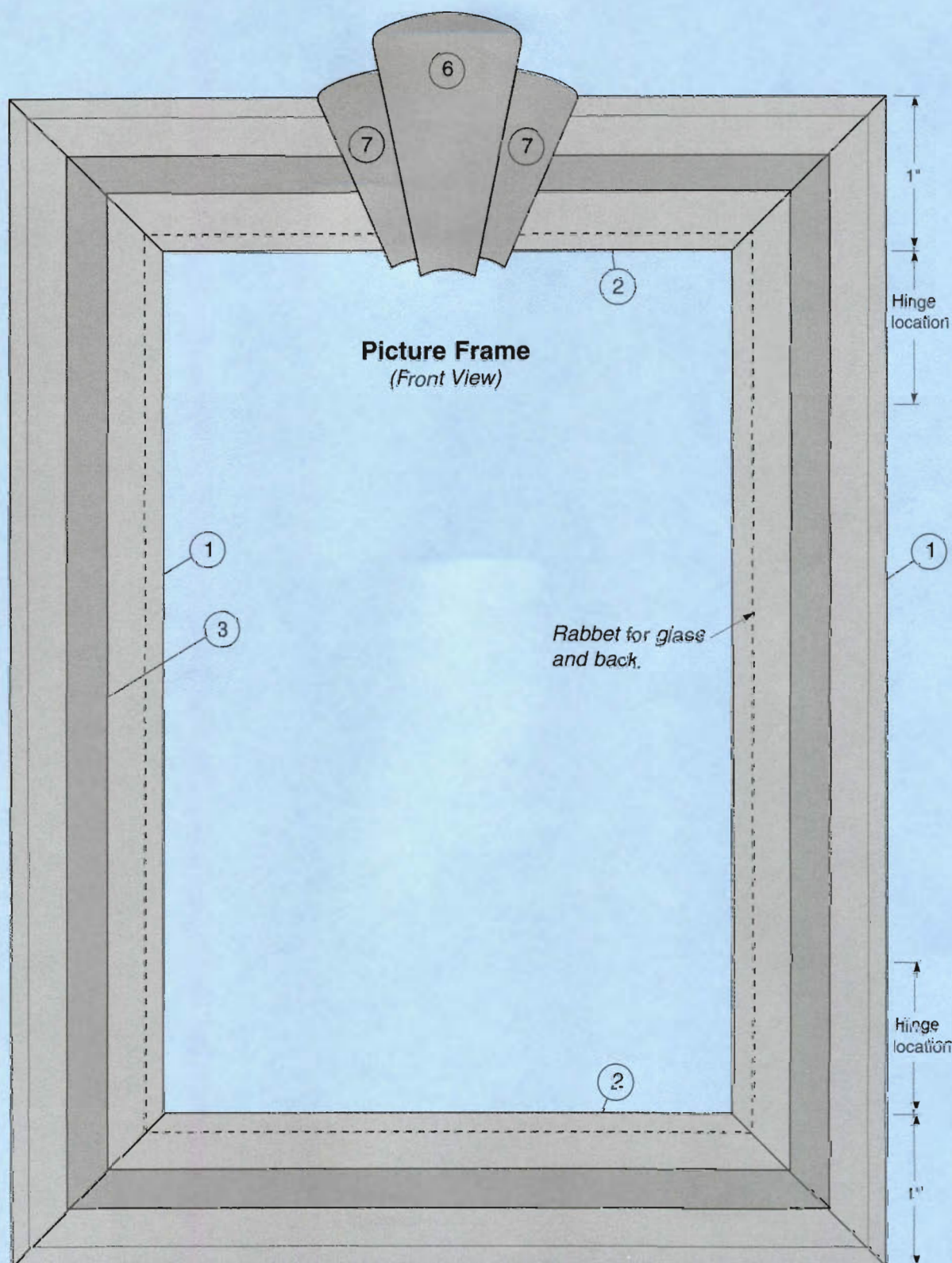
-American Woodworker Magazine

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MAT

- 1 S
- 2 To
- 3 E
- 4 N
- 5 B
- 6 L
- 7 S
- 8 H
- 9 R

Note: mater

If your mortise isn't deep enough, simply trim the back edge of the spline.

Spline
(Top View)

13

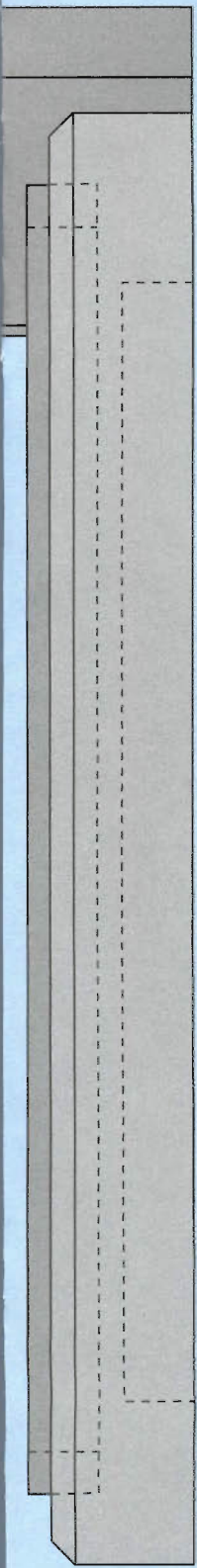
The spline is exposed past this line.

NOTE: The splines and decorative plugs in this project are made from dark contrasting ebony or an ebony substitute.

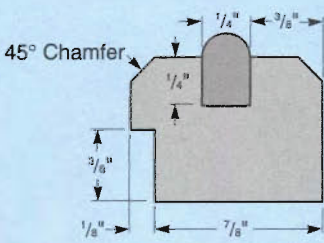
Server

Top Center Apron
(Front View)

5



NOTE: To ensure accuracy, create one long molding strip with the inlay glued in place, prior to mitering the corners.

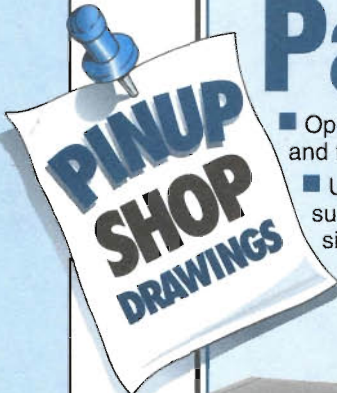


Molding and Inlay
(Section View)

MATERIAL LIST	
	T x W x L
Moldings (4)	1" x 3/4" x 7 5/8"
Top & Bottom Moldings (4)	1" x 3/4" x 5 5/8"
Iron Inlay (2)	1/4" x 3/8" x 30"
Reflective Glass (2)	1/8" x 4" x 6"
Acrylics (2)	1/4" x 4" x 6"
Small Crown Accents (2)	1 1/8" x 1" x 1 1/4"
Full Crown Accents (4)	1" x 7/16" x 1 1/8"
Brass Pins (2)	1/2" x 1"
Drawer Liner Tabs (4)	brass

This list provides enough material for one pair of photo frames.

Full-Size Patterns



- Open staples carefully, remove pattern and fold staples back in place.
- Use graphite paper (available at art supply stores) or cut and trace full-size patterns onto your stock.
- Cut out the elevation drawings and pin them to your shop wall.



Greene & Greene Serving Table

Full-sized pattern of the center apron and spline.

Production Picture Frames

Sizes, shapes, elevations and joinery details. All the information needed to complete these frames.



Classic Workbench

The curved profiles of the laminated jaw and the tool box trimmers.

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Workbench

Laminated Jaw
(Front View)

17

Top Trimmer
(Front View)

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Screw Location

Round Dog Button

19

Use a simple brass hinge pin to make this piece.