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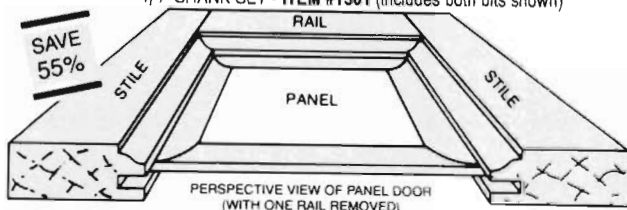
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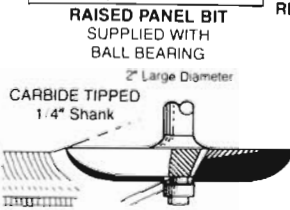
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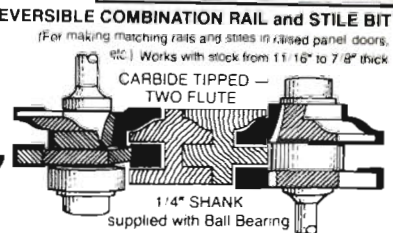
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The Woodworker's Journal

JULY/AUGUST 1994 VOLUME 18, NUMBER 4

C O N T E N T S

DEPARTMENTS

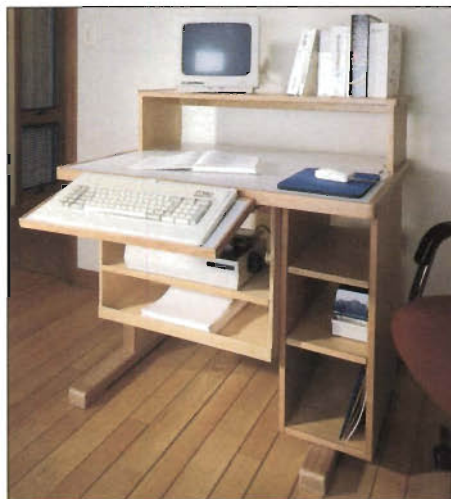
- 4 Shoptalk
- 5 Letters
- 6 Readers' Information Exchange
- 11 Product News
- 12 Shoptest



29 Folding Sun Seat

TECHNIQUES

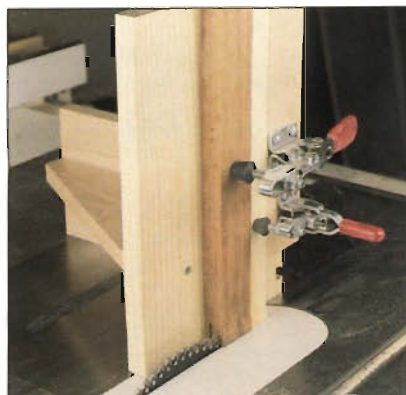
- 8 Shop Tips
- 13 Woodworking Basics
Easy-build First Workbench
- 19 In The Shop
*Old Tools—
Trash or Treasure?*



32 Computer Desk

TOOL REVIEW

- 24 Detail Sanders
*A trio of tools for
tight spaces*



47 Tenon Jig

50 Letter Holder



PROJECTS

- 32 Compact
Computer Desk
- 47 Easy-build Tenon Jig

Weekend Woodshop

- 29 Folding Sun Seat
- 38 Jack-in-the
Beanstalk
Child's Growth Stick
- 42 Carving Project:
*Driftwood Troll
Wood Spirit*

FULL-SIZE
PATTERN

FULL-SIZE
PATTERN



- 50 Letter Holder
*Midnight Ride of
Paul Revere*



19 Old Tools



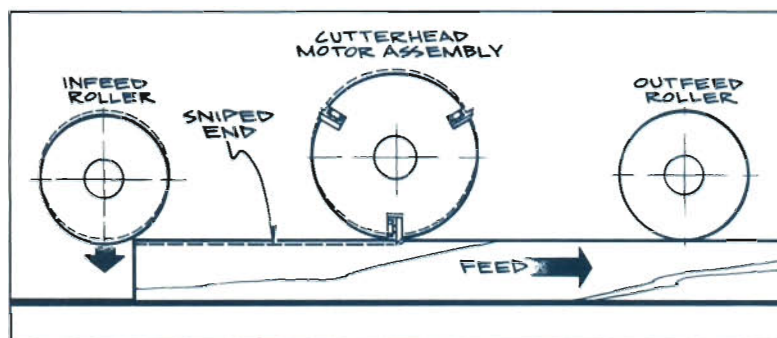
Shoptalk

Planer Snipe Redux

The mail across our desks has been hot and heavy following our feature, "Getting The Most From Your Portable Planer" (March/April 1994). Most of the letter writers were puzzled that even after building the auxiliary infeed/outfeed table, snipe was not entirely eliminated.

For an inside look at just why the small portable planers seem to universally suffer some degree of snipe, we called Delta and chatted with technical guru Lou Brickner. Lou tells us that the problem lies with the construction of the planers. Simply put, there's a little flex in most of the small machines between the head/motor assembly and frame. In other words, as you insert the board on the infeed side, the board contacts the infeed roller, causing the head/motor assembly to flex up a little. On the outfeed side, as the end of the board comes off the infeed roller, the head/motor assembly flexes down a little, and snipes the board end (see below).

Brickner said that some of the planers have adjustments that can reduce this



flex, but it is virtually impossible to eliminate. According to Brickner, the only certain way to eliminate snipe entirely on the small machines would be to cut four like-sized blocks, mount one at each corner between the head/motor assembly and planer bed, and then clamp all four corners to completely immobilize the head/motor. Of course, this isn't practical since you'd need a different set of blocks for each stock thickness setting.

But, if you're the patient type, Brickner tells us that Delta is working on a snipe-less portable planer, to be available sometime in 1995 . . .

Issue Highlights

Scroll saws continue to be just about the hottest thing in woodworking, and while purists may bemoan the trend, our readers can't seem to get enough of those full-size patterns. Heading up this issue's project list are a pair of great scroll saw designs—the Child's Growth Stick and the Paul Revere Letter Holder—from scroll saw artisan Bill Zaun.

Of course, there's nothing like a sturdy workbench to serve as the center of activity in your shop, and Roger Holmes' practical bench design is the perfect answer to those who need a good bench in a hurry and can't afford to spend a bundle. Also included with Roger's article are a quintet of favorite shop-built workbench accessories.

—The Editors

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Letters

We welcome opinions and comments (both pro and con) from our readers. Address correspondence to: Letters Department, **The Woodworker's Journal**, P.O. Box 1790, Peoria, IL 61656.

In the tool review article, Benchtop Band Saws (March/April 1994), the author states on page 25 that Dremel's 4-pole induction motor will have a speed of 3,450 rpm and that all other saws in the review have 2-pole induction motors with speeds of 1,725 rpm. Unfortunately, the rpm numbers are backwards. A 4-pole motor runs at 1,725 rpm, while a 2-pole motor runs at 3,450 rpm.

Gregory Grubelich
Englewood Cliffs, N.J.

I'd like to try doing some wood bending, but it's hard to come by information on the subject. Can you help?

C. L. Williams, Atlanta, Ga.

The book **Wood Bending Handbook** by W. C. Stevens and N. Turner is a good

one. It's available from Woodcraft Supply, 210 Wood County Industrial Park, Parkersburg, WV 26102-1686; tel. 1-800-225-1153.

As the author of the Band Saw Handbook and Band Saw Basics, and also the inventor and patent holder of Cool Blocks, I read the band saw tuning article in your May/June 1994 issue with great interest. There is, however, an error in the Sources that are listed on page 18. Trendlines, listed as a supplier for Cool Blocks, no longer carries them. Instead, they now carry non-metallic, laminated non-friction blocks.

Cool Blocks contain graphite, the key ingredient upon which my patent is based. The graphite coats the blade and greatly decreases the friction between the blocks and the blade, increasing performance and blade life.

Mark Duginske, Wausau, Wis.

Mark's two books, **Band Saw Handbook** and **Band Saw Basics**, can be ordered

from your local bookstore or Sterling Publishing Co., 387 Park Avenue South, New York, NY 10016-8810.

Your safety is important to us . . . We strive to present our plans and techniques as accurately and safely as possible, and we try to point out specific areas and procedures where extra caution is required. But because of the variability of local conditions, construction materials and personal skills, we can't warn you against all potential hazards. Remember to exercise common sense and use safety measures when operating woodworking power equipment. Don't attempt any procedures you're not comfortable with or properly equipped for. Sometimes, for the sake of clarity, it's necessary for a photo or illustration to show power tools without the blade guard in place. In actual operation, though, you should always use blade guards and other safety devices on power tools that are equipped with them. Remember . . . an ounce of prevention really is worth a pound of cure.

—The Editors

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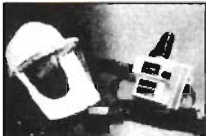
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Readers' Information Exchange

Looking for an owner's manual for an old band saw? Need a bearing for a hand-me-down table saw? Can't find a source of supply for an odd piece of hardware? Maybe our readers can help. Send along your request and we'll try to list it here—and perhaps one of our readers will have an answer for you. We'll include as many requests as space permits.

I'm in need of an owner's manual and parts list for a Montgomery Ward 10 in. table saw (model no. THS 2726).

Donald F. Huston
10 Manor Drive
Cambridge, OH 43725

Can you help me find an owner's manual, parts list, and parts source for a Power King 12 in. band saw, model no. 912, serial no. 6879?

Phil Tralongo
119 Watchogue Road
Staten Island, NY 10314

Can anyone help me find an owner's manual for an older Sears radial-arm saw, model no. 113.29441, mfg. no. 3-72?

Joseph H. Gagne
23 Pell Meadow Drive,
Fairfield, CT 06430

I am looking for an owner's manual and parts list for an M & M moulder/

planer manufactured by Eagle Sales Company of Keene, New Hampshire. I wrote to Eagle, but never received an answer.

C.H. Bauer, Jr.
4201 Benner Street
Philadelphia, PA 19135

Looking for an owner's manual and parts list for a Sears drill press, model no. 103.23130.

Harland Hall
17300 135th Avenue, N.E. SP. 213
Woodinville, WA 98072

I need to contact Master Woodcraft Machine Co. (formerly of Harbor City, California) for parts for their Wood Master Multi-Tool. They no longer do business at their Harbor City address.

Vern Nieland
910 Cedar Street
Charles City, IA 50616-3526

I need a source for a fence and blade holders for a Sears jointer, model no. 103.23340. It takes 4 1/2 in. blades.

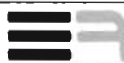
Howard C. Wiedrick
1184 Osband Avenue
Macedon, NY 14502-9304

The manual for my 18 year-old Sears band saw (model no. 113.24200) is missing. Can anyone help?

John Valentine
1813 South Magnolia Drive
Tallahassee, FL 32301

Can someone help me locate blades for my Skilsaw Model 577, Type 3, two-speed Recipro-Saw? Also, I am looking for sanding belts for my belt sander made by Burgess Vibrocrafter, Inc. (model no. PS-2300).

Norman S. Knudsen
1508 4th Street
Jonesville, LA 71343-2128



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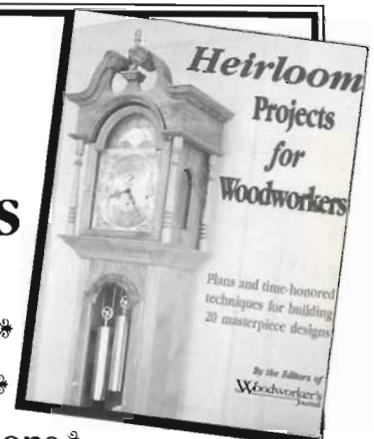
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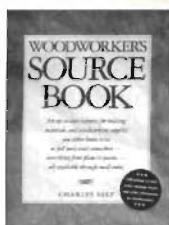
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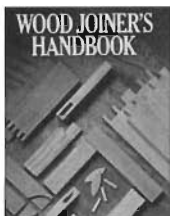
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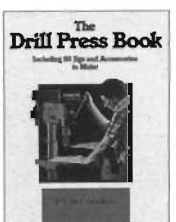
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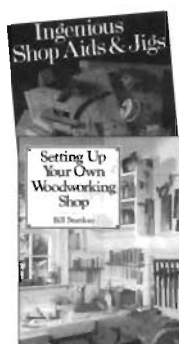
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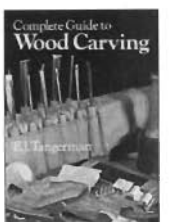
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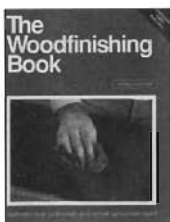
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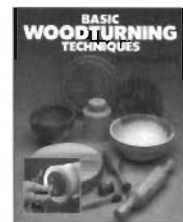
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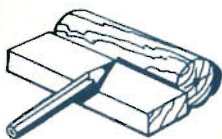
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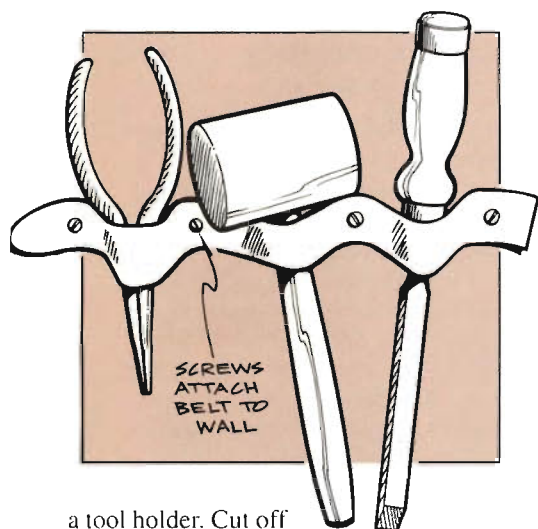
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Shop Tips

Tool Belt

Rather than throw away a worn-out old belt, give it new life in your workshop as



a tool holder. Cut off the buckle and screw the belt to your shop wall. A shallow loop between each pair of screws allows room for the tools.

Howard E. Moody, Upper Jay, N.Y.

Smooth Tool Rest

Lathe turning tools won't slide smoothly on a tool rest that has a rough surface. A few minutes work with a file or sandpaper will quickly smooth the working surface.

E.R. Williams, Philadelphia, Penn.

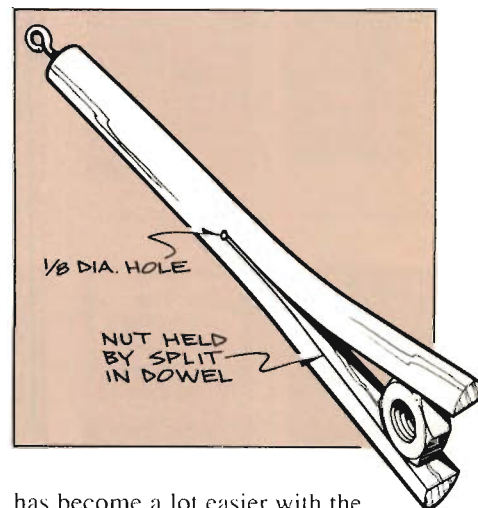
Saw Blade Cleaner

In time, resin will build-up on saw blades and router bits, especially if you cut a lot of softwoods. And when resin builds up, you're less likely to get smooth cuts. I've found that carburetor cleaner works great for removing resin. Just spray it on, let it soak for a few seconds, and wipe it off. An old toothbrush helps in crevices and stubborn areas. Be sure to use it in a well ventilated area and away from any open flame.

Stanley Dreczko, Westerly, R.I.

Gripper Dowel

When building projects in my woodshop, I sometimes find it necessary to start a nut in a hard-to-reach location. What was an often difficult procedure



has become a lot easier with the aid of a wood dowel. Using the band saw, I simply make a lengthwise

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cut down the middle of the dowel. The two halves of the dowel act as pinchers to securely hold the nut. Once the nut has started to thread on its mating bolt, the dowel can be removed. A screw eye added to the end will enable you to hang it in a handy location. A 1/8 in. diameter hole, bored as shown, will prevent the dowel from splitting too far.

Howard E. Moody, Upper Jay, N.Y.

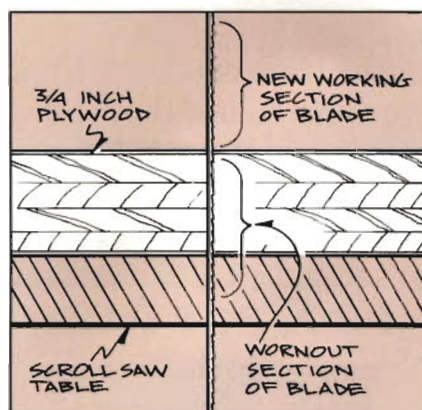
Paper Towel Storage Tube

When the last paper towel is gone, I save the cardboard tube and use it to store my shop drawings. The drawings are rolled up tight enough to fit inside the tube, then I label the tube with a felt-tipped pen to identify what's inside. The tube eliminates any need to fold the drawings. It also makes the drawings easy to store, while providing them some protection.

David K. McCallister, Penhook, Va.

Scroll Saw Board

I cut mostly 1/8 in. to 1/4 in. thick stock with my scroll saw. Because the stock is



always about the same thickness, only a few teeth on the saw blade do the cutting. They soon get dull, while the teeth on the rest of the blade remain like new. It always seemed a shame to throw away a blade that still had most teeth sharp.

Then I discovered a remarkably

simple solution to the problem—a 3/4 in. thick plywood board that's cut to fit the scroll saw table. When the sawblade gets dull, the plywood is clamped to the scroll saw, creating an auxiliary table. Since the auxiliary table is 3/4 in. above the scroll saw table, it exposes the workpiece to a set of new, unused teeth. Thanks to my scroll saw board, I now get twice the use out of each blade.

Frank L. Brown, Arvada, Colo.

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Product News

To keep our readers up-to-date, this column features brief descriptions of new tools and supplies on the market. The product descriptions are provided by the manufacturer and are not the result of tests or reviews by the editors of *The Woodworker's Journal*.



Record Swivel-Head Mini-Lathe

Mini lathes are hot, and this robust little one from Record Tools includes several very desirable features. First, solid cast iron construction lends the Record RPML300C the sure-footed, smooth

running characteristics of much larger full-sized lathes. And, there's a choice of three speeds, enabling you to take best advantage of the 1/3 hp induction capacitor start motor.

It has an overall length of just 26 in., and a capacity of 12 in. between centers. But you can turn up to 8 1/2 in. diameter over the bed, and best of all, with its swivel head, the Record gives you an outboard capacity of up to 14 in. diameter. List price for the tool is \$549. Call (716) 842-1180.



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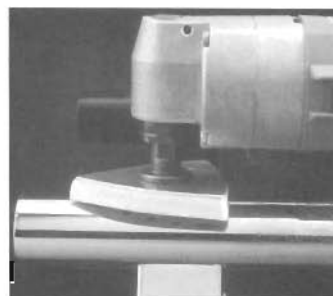
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modate just about any benchtop power tool, from a table saw to a router and jointer. Your benchtop table saw bolts directly to the underside of the Tool Mule's worksurface, as does the router or circular saw. There's an integral rip fence and auxiliary shelves to hold other tools. This is the perfect answer for a garage shop, where on sunny days you can simply wheel your shop out to the driveway. Call 1-800-865-6853. Base price is \$399.



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You can remove the triangle pad and replace it with a special circular saw blade. Now this might sound dangerous - but it's not. In fact, this is the same tool Doctors use to remove casts from broken limbs. You see, soft material (like your skin) will move back and forth with the blade as it oscillates, but hard materials (like your fingernail) get cut. The saw blade is only 1/32" thick, and perfect for detail work.

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THE CRAFTSMAN SIGN MAKING TEMPLATE SYSTEM

by Dennis Preston

Some years back, I recall watching a fellow make router-carved name signs in a local shopping mall. You handed him \$20 and a name written on a slip of paper. In 10 minutes, with elegant economy of motion, he transformed a blank board into a painted and varnished sign. His active business that day was testimony to the appeal of router-carved signs.

Now, with Sears' easy-to-use Craftsman Sign Making Template system, you can make durable, attractive signs in your home workshop.

What You Get

The Craftsman system is basically a frame assembly that holds individual letter and number templates. The frame assembly is clamped to a board so you can rout your sign. The system includes two complete sets of capital letters, in addition to the numbers 0 through 9. The larger set is 2 1/2 in. high, the smaller set 1 1/2 in. high. Each template set includes 29 letters, plus duplicate vowels A, E and I. Also included are a hyphen, comma and several blank spacers.

The frame holds about seven large letters or twelve small letters, with the exact number depending on the composition of wide and narrow letters in the word to be routed. The large and small letters can be mixed. For example, larger letters can be used for the first letters of names, and the smaller size for the remaining letters.

Prior to use, some minor assembly is required. Assembly consists of mounting the clamp rods, template support guides and fasteners to the end frames. The instructions are straightforward and well illustrated, and assembly takes about 15 minutes.

The letter templates and end frames

are plastic, with aluminum channels forming the template rails. Each frame end has a clamp rod assembly to maintain the template position on the board. In cases where the sign size exceeds the clamp rod capacity, nail holes are provided to allow temporary attachment of the template assembly to the board.

You must supply a pair of guide bushings to fit your router. The bushing bears against the template and guides the bit. You'll need a 7/16 in. OD (outside diameter) guide bushing for the small letters and a 5/8 in. OD bushing for the large letters. But don't use a short (5/16 in. long) guide bushing. The bushing length must be at least 1/2 in. to prevent accidentally cutting the template when starting the cut using a straight (non-plunge type) router.

How It Worked

I made signs using both the large and small templates. The set up is easy: Simply slide the required letters into the rails and attach the right end frame. Then position the assembly on the blank sign, clamp and route. I used both a straight router and a plunge router for my sign making. Not surprisingly, the plunge router was much easier to use, since you can have the router resting on the frame when starting the cut. The depth of cut is also easier to set.

I was pleased with the look of the

signs I routed using a straight cutter, but a V-groove, veiner, or some other decorative profile bit would yield an even better look. Almost any bit shape can be used to rout your sign, as long as it fits within the guide bushing.

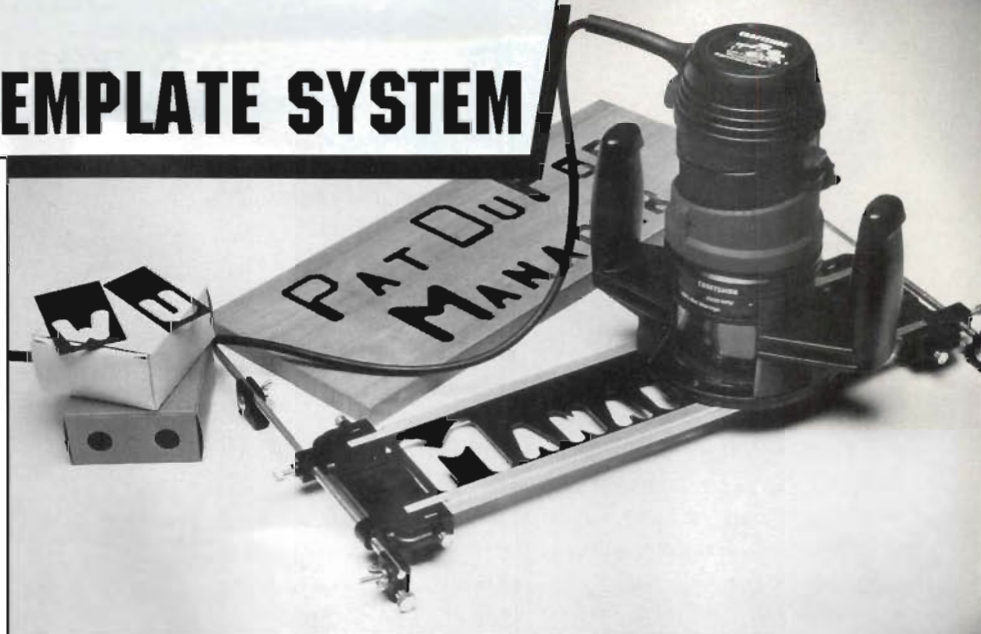
In a perfect world, every sign you rout will require only the letters or numbers provided with the set. But that's, of course, not the case. Due to the limited number of letters and numbers, several setup, cut, and reset procedures may be needed to complete a given word. Consider purchasing an extra set or two of letters if you plan on using this system frequently, since this will save you considerable setup time.

Most signs will require repositioning the template frame on the board to complete a given name or word. A reference surface on the frame enables you to move it into the new position while maintaining proper spacing between the letters.

Summary

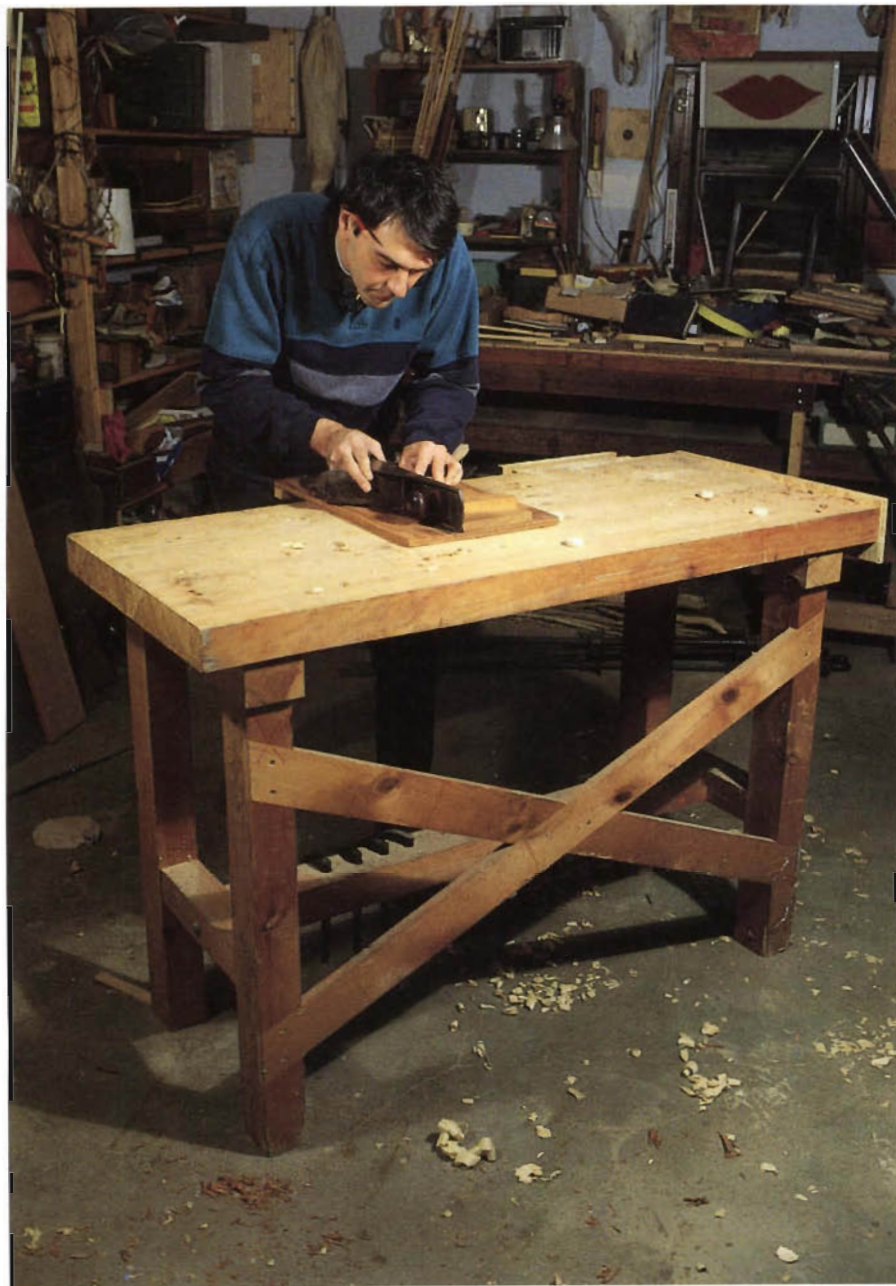
The Craftsman Sign Making Template System is an inexpensive guide that will help you rout neat uniform letters in any flat wooden surface. The set up is quick and predictable. And at less than \$20, it's also a good value.

Craftsman Model No. 9-25017, sold by Sears, Chicago, IL 60684.





Woodworking Basics



EASY-BUILD

FIRST WORKBENCH

Plus 5 favorite accessories

by Roger Holmes

Ask a dozen woodworkers what their favorite tool is and you'll likely get a dozen answers—dovetail saw, jointer plane, router, and so on. Ask them what their most essential

tool is and you may see a lot of head scratching. If they're in the shop when you ask, chances are that they'll be leaning on the answer as they ponder the question.

For many of us, the workbench is both indispensable and taken completely for granted. It is the stage upon which dozens of other tools play their roles in woodworking's little dramas of transformation—rough planks to finished projects. So central is the workbench to so many workshop tasks that we may cease to notice it much, to stop even considering it as a tool.

In my experience, nothing brings home the value of a good workbench more than being without one. Several times I've had to move house and leave my bench behind. The hours spent in the new location making do with sawhorses, crates and old utility tables before I could build another bench have always been excruciating. So I'd like to talk a bit in this article about workbenches, and to offer a design for a simple but effective one. (For much more on benches, take a look at *The Workbench Book*, by Scott Landis, The Taunton Press; it is stuffed full of useful bench information as well as plans for a number of benches and accessories.)

Like many tools, a workbench can be enhanced by accessories. As woodworking has grown once again in popularity, all sorts of bench-mounted bells and whistles have appeared on the market, from router tables to dozens of specialty vises. Some of these are very useful, but here I'd like to focus instead on a few traditional bench accessories that I've found I can't do without: all but one of them can be easily made in the shop. First, however, let's talk about the bench itself.

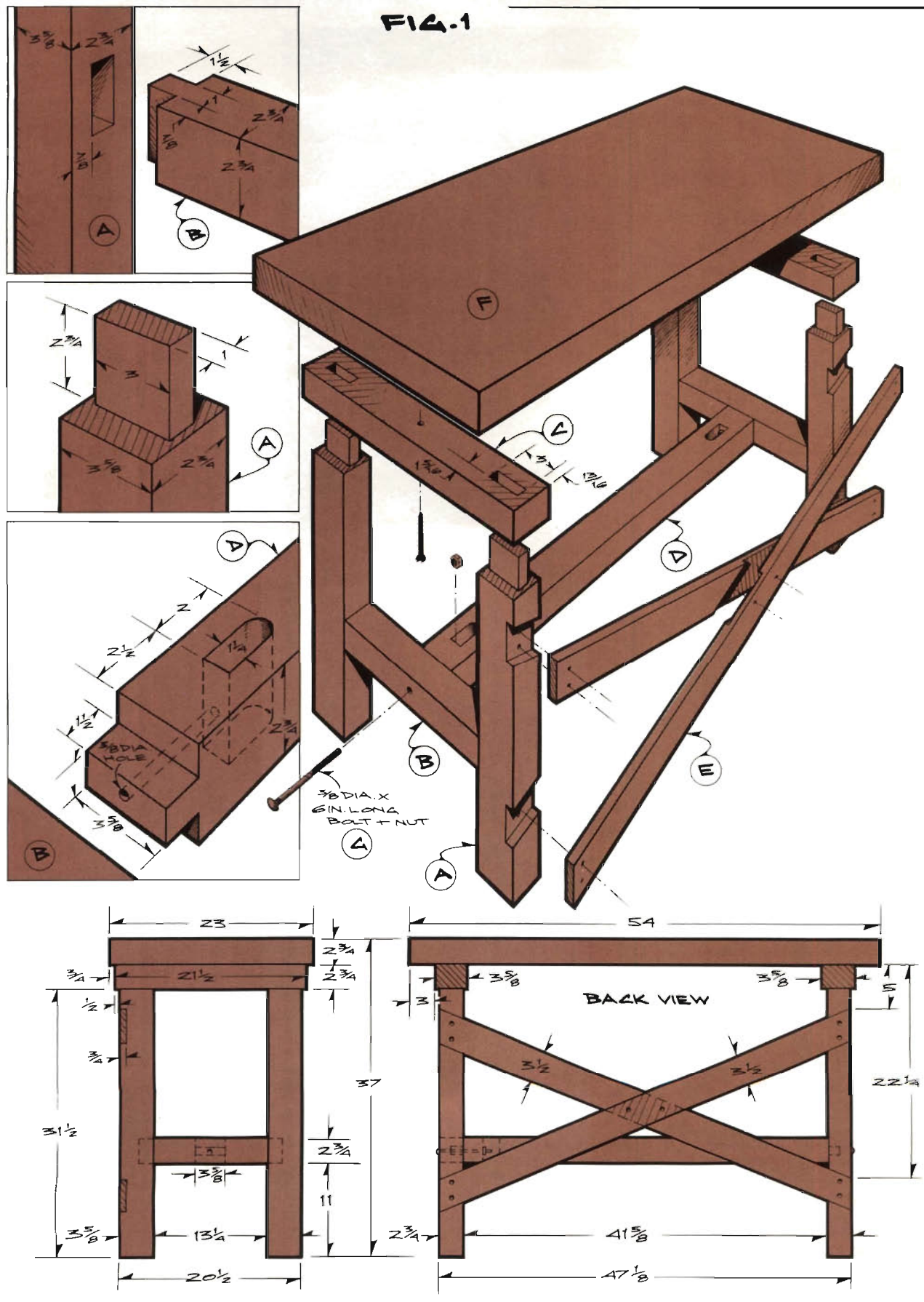
Bench Basics

Over the years, I've worked on a variety of cabinetmaker's benches. While they varied in size, materials, and types and placement of vises, the good ones all had at least three features in common.

It's no surprise that a good bench should be sturdy, given the daily stress of pounding and sawing to which they're subjected, as well as their frequent burial beneath heavy piles of wood waiting to be machined. Given the lateral pressure of planing, resistance to racking, in addition to other strengths, is essential.

Weight is equally important. It is frus-

F14.1



Bill of Materials (all dimensions actual)

Part Description	Size	No. Req'd
A Leg	23/4 x 35/8 x 34 1/4*	4
B Rail	23/4 x 23/4 x 16 1/4*	2
C Cleat	23/4 x 35/8 x 21 1/2	2
D Stretcher	23/4 x 35/8 x 44 5/8*	1
E Cross Brace	3/4 x 3 1/2 x 54**	2
F Top	23/4 x 23 x 54	1
G Carriage Bolt	3/8 in. by 6 in. long	2

* Length includes tenon(s).

** Allows extra length.

trating, to say the least, to find yourself pushing your bench around the shop like a trolley as you attempt to plane a board. Even when I've bolted benches to the floor to keep them in place, weight is still necessary, particularly in the top, to absorb shock and dampen vibration.

The least obvious of the three essentials, but no less critical, is a comfortable working height. A single day spent bending over a benchtop that is 3 in. too low will provide ample evidence. The correct height, of course, is personal, depending upon how tall you are and the kind of work that you do most often at the bench. One of the best reasons for building your own bench (aside from saving a lot of money) is to build one at the right height for you.

I've made about a dozen workbenches in the past 20 years, most of them traditional cabinetmaker's benches. Made of maple, with tops at least 6 feet long and 18 in. wide (exclusive of a tool tray at the back), they had trestle bases with sled feet and two vises—a "face" vise at the left end, opening perpendicular to the length of the bench; and a "tail" vise at the right end, opening parallel to the length of the bench.

When I made my present bench, however, I was in a hurry. I didn't have time to locate prime wood or to fiddle around making the complicated tail vise. The result, shown in Fig. 1, has served me remarkably well, and I recommend it to anyone, but particularly to those who are starting out and need a decent bench that is simple to construct. (The dimensions shown for the bench, and for all the

drawings in this article, can be changed to suit your materials and needs.)

The top and underframe are pine. While not as dense or hard as traditional bench woods such as beech and maple, pine has proved serviceable for me—when the top gets too beat up, it's easy to plane it down. The top is about as small a surface as I care to work on; if you have material and space, consider making it at least a foot longer (a worktop needn't be as wide as this, particularly if you add a tool tray along the back edge). After using the bench for some time, I added the cross braces to the legs to counter racking stresses, and suggest you do the same.



Photo A: An end stop holds the work in place for face planing and similar tasks. The pressure of planing pushes the work into the stop.

As for height, I'm 6 ft. 4 in. tall and prefer my bench about 37 in. high—comfortable for cutting dovetails, but probably an inch or so above optimum height (for me) for planing boards. Someone once told me that a good way to determine benchtop height was to stand holding the palm of your hand parallel to the floor and measure the distance from the floor to your palm. For me, that's about 36 in., so it's not far off what I prefer.

Traditional cabinetmaker's benches have two vises, a face vise (or sometimes

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Photo B: When planing across grain, turned wooden pegs counter the board's tendency to slide sideways. A series of holes bored in the benchtop accommodate a wide variety of board sizes.

an L-shaped shoulder vise) and tail vise, as I described earlier. Wooden-jaw face vises look great, and I've made a couple of them; but I have to say that I think a good steel vise is a better choice for most work. I've used Record vises for years and recommend them highly. The one on my bench now is a "quick-action" vise, which has a release on the screw mechanism that allows you to slide the jaw on its guides rather than wind it out, which is a handy feature.

For a long time I thought a tail vise was an essential bench feature for anyone doing serious cabinetmaking. How else, for instance, could you hold boards when hand planing their faces? My hurry-up workbench design pre-

sented me with a challenge—how to eliminate the tail vise and still accomplish tail-vise tasks. The solution brings us to a discussion of the first workbench "accessory."

End Stop

When I determined that most of my tail-vise work was planing, I realized that instead of a tail vise, all I needed was a stop at one end of the board. The force of planing would push the board against the stop, thereby immobilizing the board.

The stop is held in place on the end of the bench by three hanger bolts, as shown in Fig. 2. The wood threads on one end secure the bolt in the end grain of the benchtop, while machine threads at the other end accommodate a wing nut. My first stop was a piece of solid maple, 1/2 in. thick, which worked fine until a little extra pressure fractured it along the grain. I now use plywood. The bolts and the slots in the stop are positioned to allow the stop to be lowered beneath the surface of the benchtop when not in use.

Working with the stop is easy. Position it slightly lower than the board you're planing and off you go (Photo A). I've planed large tabletops as well as small box sides as thin as 1/8 in. against the stop. Because the stop contacts only the end of the board, I used to have trouble when planing at an angle across the work. Finally, after trying a variety of clamping strategies to hold the work in place, I bored a series of holes in the benchtop and turned wooden peg-stops to fit them (Photo B). They handle the sideways pressure nicely.

Even if your bench has a tail vise, I recommend setting up some sort of end stop. For many planing tasks, it is quicker than using the tail vise.

While we're discussing planing, I'll mention a simple method for supporting long boards for edge planing. I secure one end of the board in the face vise then tighten a quick-action clamp to the leg at the other end of the bench at a height that positions the handle to support the rest of the board (Photo C). A pipe clamp and short length of pipe would work as well. I've seen benches that accomplish the same thing with a peg and a series of



Photo C: A quick-action clamp secured to the bench leg helps support long boards for edge planing.

holes bored in the leg, but this method works just fine.

Holdfasts

Between them, vises and benchstops will handle most things that need to be immobilized on the workbench. Sometimes, however, they just don't do the trick. A few years back I started making Windsor chairs; one of the most challenging tasks is shaping the comfortable curves of the seats. The work, which involves a sort of bent drawknife called a scorp and other odd tools, is great fun—if you can hold the seat firmly in place while doing it.

Quick-action clamps were the first choice, but their throats had to be exceedingly deep to hold the work where I wanted it, and each shift of position required a lot of unclamping and clamping.

The solution to my dilemma proved, as is often the case in woodworking, to

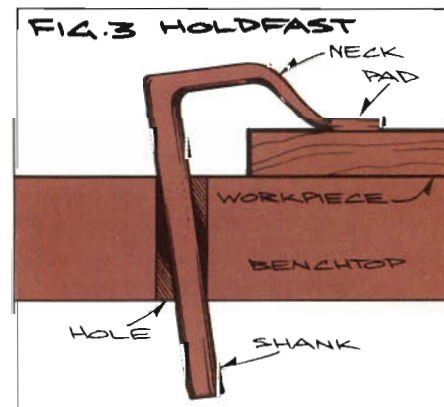
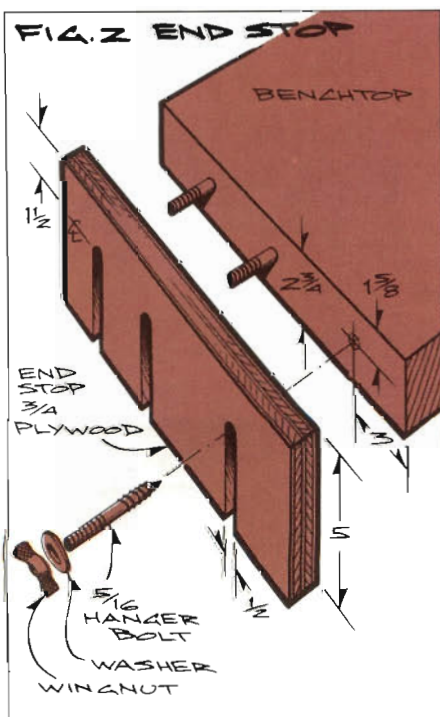




Photo D: Holdfasts are perfect for securing work, like this little Windsor chair seat, in the middle of the bench, beyond the reach of most clamps. A quick rap on the end of the shank sets the holdfast; a rap parallel to the benchtop releases it.

be an old one. Bench holdfasts appear in one of the most famous of the 18th century encyclopedias, Jacques-Andre Roubo's *L'art du Menuisier*. They are simplicity itself, just forged steel bars with a straight shank and swan neck (Photo D and Fig. 3). Slip the shank into a hole bored through the benchtop and position the pad at the end of the neck on the work. A sharp rap with a hammer on the end of the shank creates leverage between the shank and pad by springing the neck, holding the work firmly in place.

I bought my holdfasts from Woodcraft Supply (tel. 1-800-225-1153); Garrett Wade (tel. 1-800-221-2942) sells a larger (and more expensive) version. You may need to experiment to find the hole diameter that works best for the thickness of your benchtop and the size of your holdfast shank. I found that 7/8 in. diameter holes worked best for my 2 3/4 in. thick benchtop and 5/8 in. diameter holdfast shanks. They're good for a variety of tasks in addition to securing chair seats.

Bench Hook

One of the problems beginners often have with workbenches is crosscutting. Sure, you can clamp a board in the face vise for sawing, but for right-handers this puts the work in an awkward, out-board position. (Cutting dovetails, tenons, and similar joints is another matter, because the sawing is done above the level of the tabletop.)

The solution is to avoid the vise for

crosscutting. Support large pieces on saw horses for crosscutting with a panel saw. More delicate work—such as sawing tenon shoulders—is easily and accurately done at the bench with another simple accessory, the bench hook.

A bench hook is just a board fitted with two stops, one top, one bottom (Fig. 4). As you push the work against the top stop, the bottom stop bears against the front edge of the bench, as shown in Photo E. In essence, your hand and the top stop comprise a primitive but effective vise. (Long pieces require a shim equal to the thickness of the bench hook to support their weight at the far end.)



Photo E: Cutting shoulders on a tenon and other accurate crosscutting tasks are easily done with a bench hook.

My bench hook is another spur-of-the-moment affair, cobbled together of pine scraps. The only improvement I've made in three years was to add a few screws to hold the stops in place after the original nails began to work loose. You can, of course, alter the size, materials and construction to suit your needs and preferences. I don't recommend making the hook much smaller; let a comfortable sawing distance from the front edge of the bench govern its length.

Shooting Board

Although I use this accessory less frequently than the end stop or bench hook, it is no less indispensable. With the shooting board, I can square up the ends of drawer sides, box sides and other parts whose ends must be at exact right angles to their edges and faces, as shown in

Photos F and G. And with the 45-degree stop in place, the shooting board allows me to trim frame miters for a gap-free fit.

Unlike the bench hook, the shooting board is a fairly precise tool, and should be carefully constructed (Fig. 5). I made the baseboard of mine from plywood and the platform of solid cherry. Because of its dimensional stability, I think Baltic Birch or similar plywood would have been a better choice, though my board has worked fine for years. Hardwood serves well for the wedge-shaped stops, which need truing every now and then.

I made my board large enough to support my favorite hand plane, an old Stanley-Bailey jointer, which is about 22 in. long. I find the weight of the plane and its long sole are a good combination for this use. Whatever plane you use, make sure that its sides (at least the one that will run on the platform) are at right angles to the sole. Because of the board's length, I have added a block in front of the bottom stop to position the top stops at a more convenient distance from the edge of the bench.

It takes some practice to get the hang of using the shooting board, particularly in the positioning of the workpiece so the right amount overhangs the platform. Over time, I've learned to vary the pressure of the hand pushing the workpiece against the stop to allow me to remove more material from one spot or another, depending on where the try square

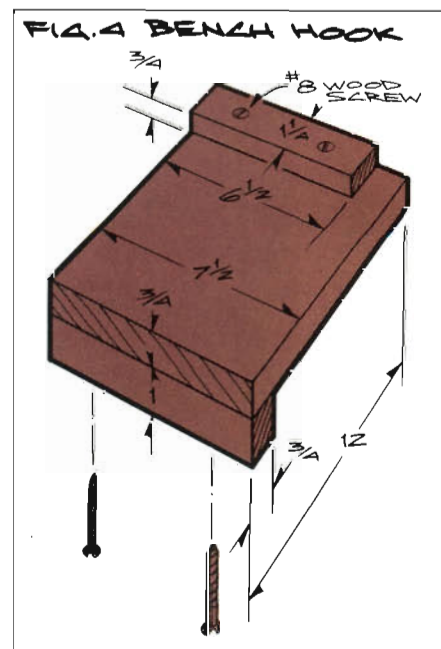




FIG. 5 SHOOTING BOARD

The diagram illustrates the construction of a shooting board, showing a perspective view and a detailed platform layout.

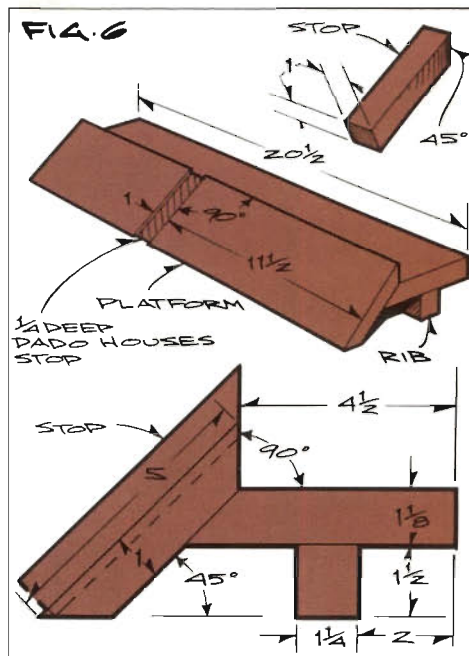
Labels and Dimensions:

- STOP:** A rectangular block used to support the workpiece.
- DUST GROOVE:** A groove cut into the base of the shooting board.
- PLATFORM:** The main flat surface of the shooting board.
- BASE:** The bottom support of the shooting board.
- Platform Layout Detail:**
 - 20 1/2:** Length of the platform.
 - 12:** Width of the platform.
 - 5 3/4:** Distance from the left edge to the first groove.
 - 5 3/8:** Distance from the first groove to the second groove.
 - 3 1/8:** Distance from the second groove to the right edge.
 - 1 1/2:** Thickness of the platform.
 - 1 3/4:** Thickness of the base.
 - 90°:** Angle of the platform surface.
 - 45°:** Angle of the base surface.
 - MAKE 1 IN. THICK STOPS TO FIT GROOVES:** Instruction for the stops used to support the workpiece.

Some people make a longer version of this board for planing the edges of boards, but I prefer to “shoot” edges with the stock clamped in the face vise, trusting my hands to plane the edge at right angles to the face.

Miter Donkey

Recently I made some small mitered boxes. Lacking a table saw sufficiently accurate to produce ready-to-assemble miters, I had to true them by hand. The miter-stop on my shooting board works only for miters cut across the width of a board; these miters were also too thin to clamp in the face vise and plane free-hand. So I decided to build another old-fashioned bench accessory, one I knew by the wonderful name, "miter donkey." (The full name, according to R.A. Salaman's excellent *Dictionary of Woodworking Tools*, is even better: "donkey's ear shooting board." Salaman's book, which is available from a variety of mail-order sources or direct from The Taunton Press, is a terrific source of woodworking history and gadgetry.)



The donkey also requires careful construction, mostly in getting the angles right (Fig. 6). I made mine of pine, but recommend Baltic Birch ply for its superior stability, or a hardwood for greater durability. Because of its drooping “donkey’s ear” platform (I assume that’s where the name comes from), the donkey can’t hook over the front of the bench for use. Instead, it is equipped



Photo H: Clamped in the face vise, the miter donkey eases the tricky task of fitting corner miters for small boxes.

with a “rib” (to continue with anatomical references) for clamping in the face vise, as shown in Photo H. The technique of using the donkey is very similar to that for the shooting board and requires the same sort of learning curve. A sharp plane iron makes a world of difference when using either one.



Old Tools Trash or Treasure?

by David F. Peters

I am, unabashedly, a lover of old tools. Decades back, when I first fell in love with wood and the working of it, along with that fascination came a passion for old tools. I'd scour tag sales, pour through boxes of rusty implements at the local flea market, and pounce on old tools neglected and unwanted by friends, relatives, neighbors and anyone else I came in contact with.

I'd polish my finds, mount them on plaques, and display them prominently in the living room, much to the dismay of my wife. Compounding the problem, acquaintances who knew of my passion regularly brought various "finds," augmenting my own efforts.

But, not long into this "second" hobby, I came to a realization. Once I had cleaned and mounted a tool for all the world to see, my interest waned. An-

tique braces, embellished with fancy brass trim and ornamentation, looked rather lonely upon my wall. Rows of molding planes, fashioned so carefully by men at the height of their craft in old London, gathered dust. And brass-bound mahogany levels, polished to a shine, intrigued me not. The "magic" of these tools was lost to me.

The problem, of course, was the tool's use, or more precisely, their lack of utility. Those old braces had long ago succumbed to the electric drill, the molding planes to a router with a box of bits, and that old wood level to a lighter, more accurate aluminum descendant. I'm a lover of history, not a masochist. If civilizations had provided more efficient devices and modern methods for working wood, I would use the new technologies (see The Great Debate).

But this realization had not dimmed my passion for old tools. Rather, it was now channeled toward the care, restoration and mastery of those tools that really meant the most to me—the ones I regularly used. And surprisingly, there were many, from chisels to planes, carving tools, scrapers, marking gauges, etc.

Here then, is my guide for the uninitiated on how to find some pearls amongst the flotsam and jetsam, and perhaps in the bargain gain a measure of respect for those who have gone before.

Be Discriminating

The already-noted sources for old tools can be augmented with a hundred other odd ways to obtain good old woodworking tools. But be a discriminating buyer. The catch-all tool box at the local flea market is fine for scrounging parts, but don't expect a "find" or even a salvageable gem-in-the-rough. Antique tool dealers probably gleaned the best stuff long ago, and what remains is usually so badly rusted, rotted or broken as to be unusable. But keep a sharp eye open. The box of clamps (Photo 1) was a \$1 item at a tag sale.

In truth, the best source of good old tools is your own network of friends and relatives, plus some old-fashioned imagination. Once the relatives know of your



Photo 1: To free the threads of these badly rusted clamps, the author first bathes them in oil. Once the screws are working smoothly, the next step is to clean the oil. The author uses automotive spray-type carburetor cleaner and a stiff wire brush. Once cleaned and fitted with new bars, these old clamps will be a valuable addition to the workshop.

The Great Debate

Woodworkers have different opinions as to what constitutes a "useful" tool today. Purists prefer a well-tuned set of coves and rounds, or a Stanley 45, to the ubiquitous router, and there are some who completely eschew power tools in their shops. The subject is naturally a source of endless debate.

I've found a happy medium somewhere between the extremes. For example, although I use a power drill for most all drill work, my sturdy hand drill (see photo) is a useful tool for any job where control is important. Ultimately, it's a very personal decision as to which old tools you choose to use.

Interestingly, the popularity of old-style, high-quality hand tools is as strong as ever. At least one catalog, Garrett Wade (see Sources), offers a wide range of chisels, planes, marking gauges, squares, etc. that are every bit as good—and in some cases better—than the originals they are modeled after.

In the end, though, your level of hand tool use will likely be a function of experience. Let's not forget that one of the primary reasons behind the recent popularity of hobby woodworking is the fact that modern power equipment obviates the need for the long years of apprenticeship that in earlier times were needed to master a craft.

After 20 years of woodworking, I know that much of what I "get" from woodworking is not in the end product, but in the path traveled to that end. Somehow, a piece on which I have hand-cut the dovetails (as opposed to machined them with a router), or hand-planed the boards (as opposed to firing them through my imminently efficient Ryobi thickness planer), holds for me a greater satisfaction.



Old planes, chisels, and gouges are as useful now as then. Even the drill shown can come in handy. This particular drill sports some fairly advanced features, including two gear ratios, an adjustable handle, and a built-in level.

passion for woodworking, some strange things can happen. Aunt Gerty may casually invite you to visit her basement, where long dead Uncle Joe's tools are still sitting in "that old tool chest." Indeed, the fabulous patternmaker's chest shown in the photo on page 22 was acquired in precisely this manner. I won't suggest that you'll be that lucky, but there are ways to improve your luck.

For example, one way to add to your collection is to place an add in the local paper stating that you are interested in purchasing old woodworking tools. This really works . . . just making one or two acquaintances can be a source of old tools for years to come.

But enough on acquiring them. The real challenge is restoring those old tools to working order. Let's start with planes.

Planes

I suppose a woodworker today could get by without ever touching a hand plane. But to my way of thinking, there's nothing quite so satisfying as watching a

paper-thin whisper of pine curl in a perfectly symmetrical spiral from my Stanley/Bailey 21 in. jointing plane. And forget any comparison to modern knock-offs of this venerable icon. With its sheer mass—and the mechanics of inertia—once started on its forward path, that old Bailey's literally powers its way through even the toughest wood with ease.

As fine as the plane looks today, this was hardly its condition when I first acquired it. In typical fashion, it had lain for many years in a basement, unused and unprotected. And, as with most metal planes, rust was the enemy, with heavy scale on the sole, and lighter pitting on the blade and other surfaces.

Don't purchase a metal plane that's severely pitted or caked and frozen with rust. Yes, almost anything can be fixed with enough effort and elbow grease, but it's important to measure the required effort against the value of the tool (see Rust Removal sidebar).

Flattening the Blade: Many edge tools require that one or more surfaces or

sides be perfectly flat. It's not enough to simply clean the rust and polish these surfaces—they must be truly flat.

The easiest way to obtain flat surfaces is with a lapping table (see Lapping Table sidebar). Whether you use a lapping table with emery paper or with valve grinding or lapping compound, get to work on the required surfaces. On a plane, the most important surfaces are the sole and the back of the plane iron.

When flattening the sole, use firm, even pressure. Be sure to use a bench dog or some other stop, or the lapping table will go sliding along the bench.

Missing Parts: Often, you'll find a plane in otherwise fine condition but missing some crucial part, or perhaps with a key part cracked or broken. It's a simple matter to craft a replacement wooden handle or knob, but what about a missing or broken metal part? One solution is to scour the flea markets until you find a like plane, and then purchase it as a "parts" plane, much as one buys a "parts" car. But there's a funny thing

A Simple Lapping Table



In theory, any flat, hard surface can be a lapping table. But the best lapping table I've used is just a section of plate glass, preferably at least 1/4 in. thick. If you have access to any kind of dump or salvage, try removing one of the panes from a jalousie window (those multiple-paned windows that crank open and closed). The lapping table shown is a pane from just such a window gleaned from the local recycling center.

Using spray adhesive, attach a series of emery paper sheets to your lapping table. Hopefully "fine" grit is all you'll need, but in cases of extreme wear or pitting, start with medium and use progressively finer sheets.

To use the lapping table, apply firm, steady pressure on both the front and back of the plane as you move it back and forth. Continue until the entire sole is equally polished.

The same lapping table can be used to flat the backs of plane irons, chisels, and any other tool that requires a flat surface.

this. You could also seek out replacement parts through the original manufacturer, if the company is still in business. Stanley, for example, still carries parts for many of their more popular planes (see Sources).

Wooden Plane Problems: For sheer utility, I prefer the all-metal planes. However, good wooden planes, and "transitional" planes (those with a wooden stock or base, with the remaining parts being metal) are also common. Wooden planes are a subject unto themselves, and there are specific procedures to be followed for making repairs, flattening and truing the sole, etc.

Should you have a wooden plane that needs repair, a book with excellent instruction on the subject is *Restoring, Tuning & Using Classic Woodworking Tools*, by Michael Dunbar (see Sources). Dunbar guides you through every step of the most common repairs to wooden planes, from flattening and truing the sole, to inletting blocks in order to repair a mouth that's worn or broken.

Chisels & Edge Tools

One can almost always find good, cheap chisels, in all shapes and sizes. The typical problems, abuse and missing handles, are both easily corrected.

Handles: I've used just about everything for chisel and gouge handles. Once, having several old wooden hand-screws with the threads broken, I simply cut away the threaded parts and used the screw handles as handles on the chisels (Photo 2).

If you'd rather buy ready-made handles, several mail order sources sell replacement handles for the more popular styles of chisels. Woodcraft (see Sources) has a fairly broad selection.

Squaring Ends: With most chisels, and many other edged tools, an important preliminary step in sharpening is to square the end of the cutter. This is especially true of older tools. Everyone has seen a fine old chisel that some poor soul tried to use as a screwdriver.

When it comes to squaring up tools, most of us head straight for the grinder and, showers of sparks later, the offending mangled area has been ground away. The danger in this approach is the



Photo 2: Most any handle can be used for a chisel, from broken broom handles to the handles of stripped old wooden clamps.

unseen damage that you'll do to the steel, unless you quench the blade frequently as you work at the grinder. The keys when grinding are to dress the abrasive wheel regularly, both to square it and to remove the "glaze," thereby exposing a fresh surface. This enables the wheel to cut quickly, and with minimal heat buildup on the tool. An excellent book on tools, steel and metallurgy is *Custom Tools for Woodworkers*, by J. Petrovich (see Sources).

Whether you're grinding a square edge, as is often the case, or grinding to a specific profile, such as for a carving gouge, it's important to mark a reference line as a guide to grind up to. Applying layout fluid (the blue liquid machinists use, available from machine shop suppliers) and then scribing a line is usually the clearest way to mark the profile. A fine-point marker that writes on steel is another way.

Scrapers

Scrapers are perhaps the simplest and the least appreciated of all the woodworking tools. To a cabinetmaker of old, a set of scrapers was indispensable. Today, scrapers in the tool bin at your local flea market are often less than \$1, and worth every penny, since tuning them up is so easy. Before applying the burr, clamp the scraper between a pair of blocks and use your lapping table to apply a fresh, square edge, or clamp it in the vise and use a mill file held in a saw jointer for the same end result. If the faces are rusty, you'll need to clean them.

Once prepped, clamp the scraper in the bench vise and use the back of a chisel to roll the burr.

about tools; what's broken on one is also likely to be broken on another.

If you're into metalworking, you could fabricate missing metal parts yourself. But not many of us share this skill, or have the required tools. A solution I've heard works like a charm is to ask the metalworking shop at your local high school to craft the missing part for you. There may be a minimum charge, but metal shops often love a challenge like

Measuring & Marking Tools

There's nothing quite so pretty (to a woodworker) as an old rosewood try square or marking gauge. The richly patinaed brass, the deep luster of the wood, polished from years of use, all invite one to pick up and touch the tool.

Sadly, these old tools are also often the most neglected. The rosewood square shown in Photo 3 (50¢ at a tag sale) was so badly pitted as to be nearly useless. However, I was able to apply a fresh edge to it by first using a new square (one I knew was dead accurate) to mark a reference line on the long leg, and then using the lapping table to "joint" to the line. With its sheer mass, this square is handy for many setup and layout tasks.

Marking gauges are tempting to buy, but inspect them closely first. The double-pin ebony mortising gauge shown was stashed in the large chest (see below), but had been frozen solid from moisture and corrosion. Resist the temptation to force the gauge loose, as this

may well ruin it. With the gauge shown, after a simple cleaning, I placed the tool in a dry, warm environment. After about four weeks, the wood had lost enough moisture so the parts could be moved. Following a complete cleaning and polishing, the tool was as good as new. Some folks advocate drying such tools in an oven at low heat, but a less risky route is to simply let nature take her course. A little penetrating oil or WD-40 can help free frozen or corroded metal parts.

Final Thoughts

I haven't mentioned a number of tools, among them old hand saws. I can't justify using an old tool when better choices are available at reasonable cost. These days, from cutting tenons to dovetails, my Japanese *dozuki* and *ryoba noko giri* saws are the only hand saws I use. Besides, most old saws are badly rusted (ever try to force a rusted blade through a saw kerf?). When it comes to using old tools, sentiment takes a back seat to practicality.



Photo 3: Though badly pitted, the rosewood square (second from top) is still useful.

As for other old tools, what you acquire will depend on the type of work you do. If you're into chairmaking, for example, spoon bits, scorps, draw-knives and spokeshaves may catch your fancy.

If you are new to this wonderful world of woodworking, keep in mind that the tools you acquire need not always be

Rust, Moisture and Tool Storage

Rust Removal: The technique I use for most tools is to first disassemble the tool, then use one of the many rust removal chemicals (follow label directions to a "T", including all the safety precautions), to clean away the rust. Steel wool, lots of elbow grease and time are the things to keep foremost in your mind. Don't run to the grinder and try to hasten the removal process. And avoid the chemical route if you've any hope of preserving an original finish or patina.

For all-metal items, such as clamps (see Photo 1), an oil bath followed by a degreaser and then a good cleaning with a stiff wire brush is your best choice.

Storage: Much of the damage to the tools in the chest was the result of the chest being placed on a concrete basement floor. Even if the

basement seems dry, moisture will slowly be wicking up through the bottom of the chest, and condensing on the metal surfaces of the tools inside. In this chest, 30 years of this moisture exposure had rusted the plane irons so badly that they were frozen in place. Gouges, chisels and most every tool with exposed metal suffered the same effects.

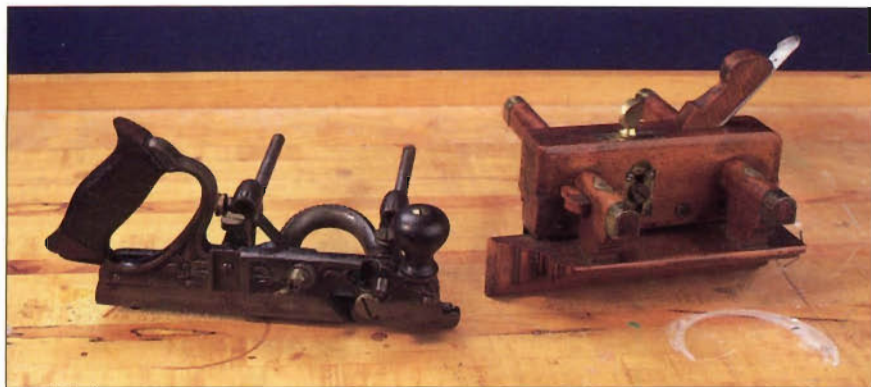
If you must store tools in a basement, keep them well off the floor, and preferably in a closed, tight cabinet. Add a desiccant to absorb any free moisture inside the chest or cabinet. A harmless protective spray, such as Boeshield T9 or Top Cote is a great way to protect tools that will be in storage for a while. Both products are easily removed with a cloth when you are ready to use the tools again.

Boeshield T9 and Top Cote are good protective sprays for metal tools in storage.



Tools in this chest were badly rusted.

Is It Collectible?



The Stanley 45 (left) was so popular, Stanley continued to manufacture versions of it all the way from 1884 through 1962. The wooden plow plane (right), by Ames of London, though considerably older, usually sells for less than \$100.

A distinction worth noting, is the definition of that word "collectible." The old treasures that are referred to here are valued old hand tools useful today, but not priceless museum pieces. Should you happen upon something truly rare and valuable, a whole different set of parameters applies to the tool's care and maintenance, and you should check with an expert before attempting even the most rudimentary cleaning. Suffice to say that on such tools, applying emery cloth to a surface would be akin to blasphemy, since altering in any way a tool's "look" or "patina" usually decreases that tool's value to a true collector.

Occasionally, there may not be a clear line dividing something collectible from something you use daily. The Stanley 45 (see photo), first manufactured in 1884, is considered by many to be a collectible tool. Yet I know of several woodworkers who continue to use these versatile planes today. At about \$300 for a good used Stanley 45 (complete with cutters), I treat the tool with great care.

But interestingly, many of the old-style tools are still available, either in revised versions or in reproductions. For example, Garrett Wade (see Sources), has commissioned an English company to make the Paragon Multiplane, a direct descendant of the venerable Stanley 45. The multiplane sells for about \$650 complete with 40 cutters, but with a price tag of more than twice the current cost of a used original, you might want to check the local tool auctions first.

If you wish to check the value of a certain tool, and its standing as a collectible, the "bible" in such matters is *The Antique Tool Collector's Guide To Value*, by Ronald S. Barlow (see Sources for ordering information).

new, and that when it comes to both value and utility, there are some wonderful bargains to be had in old tools.

Much of what I have come to love of this craft can be measured by my love of things done by hand. And nothing is quite so satisfying as using a tool that bears not only the maker's mark, but also the stamp of several owners, spanning continents and generations (Photo 4).

Photo 4: Whether you use it or not, there's a bit of mystery with most every old tool. The end of this toothy plane, so called for the serrated blade (which was used to rough the surface of stock in preparation for applying veneer), lists several owners marks, in addition to the maker's mark "Holtzapffel 64 Charring +."

Sources

The Antique Tool Collector's Guide To Value

by Ronald S. Barlow
(\$12.95 + \$1.50 postage)
Windmill Publishing Co.
2147 Windmill View Road
El Cajon, CA 92020

Custom Tools for Woodworkers

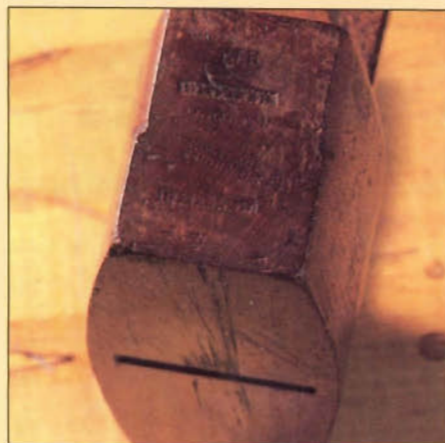
by J. Petrovich (\$19.95)
Stackpole Books
Cameron & Kelker Streets
P.O. Box 1831
Harrisburg, PA 17105

Restoring, Tuning & Using Classic Woodworking Tools
by Michael Dunbar (\$14.95)
Sterling Publishing Co., Inc.
387 Park Ave. South
New York, NY 10016

Garrett Wade Tool Catalog
Garrett Wade Company
161 Avenue of the Americas
New York, NY 10013
(catalog \$4)

Woodcraft
210 Wood County Industrial Park
P.O. Box 1686
Parkersburg, WV 26102

Stanley Tools
attn: Repair Parts Department
600 Myrtle Street
New Britain, CT 06050
Ask for catalog and parts price list (free).





Tool Review

Even if you think you already have every type of power sander you could possibly use in the wood shop, your collection wouldn't be complete without a detail sander. Why? Because these nifty power tools can fit into many places other power sanders can't reach, such as right into corners and up to edges in drawer and box constructions. Often called corner sanders or triangular pad sanders, they come in handy for sanding curved surfaces, moldings, between chair rungs, wood carvings, and various other intricate surfaces. The photos on these pages show a few applications. While no power sander can completely eliminate hand sanding, detail sanders can cut it to a minimum, saving you time in your projects.

Aside from a good selection of various sandpaper grits, these tools accept a variety of accessories, such as non-woven abrasive pads for polishing, paint stripping and rust removal. Outside of the wood shop, you can use detail sanders for many household and automotive detailing chores, such as removing paint from window panes, polishing tarnished metal, rust removal, and more. Accessories for each tool are discussed below.

At the time of this writing, only three such tools exist—the Fein (model MSx 636-1), Ryobi (model DS-1000), and the recently introduced Bosch (model B7000). The Bosch unit I tested is a pre-production model; by the time you read this, Bosch will offer a greater variety of accessories than those shown in the photos.

How They Work

The secret to fitting into small spaces lies in the triangular-shaped pad at the front of the tool. The pad has a slight bevel that enables you to sand all the way into a corner or crevice without damaging adjacent surfaces.

Sanding Action—A set of gears and an eccentric cam convert rotary motor motion into an oscillating pad motion (Fein, Ryobi) or orbital pad motion (Bosch). While all three sanders are designed to do the same work, the actual pad motion is a bit different on each one,

Detail Sanders

A Trio of Tools for Tight Spaces *by Jim Barrett*



as shown in Fig. 1. On the Ryobi, the pad moves in a back-and-forth oscillating (or arcing) motion, much like the windshield wipers on a car, but the movement is minuscule: the front tip describes an arc of about 2.6 degrees. The Fein has a similar motion, but the pad oscillates or "twists" back and forth around a point near the center of the pad, as shown. Each tip describes an equal arc of about 3.2 degrees. The Bosch pad moves in an orbital motion, much like a palm sander, where each sandpaper grain moves in a 360 degree circle, or "orbit", much like an orbital palm sander.

Although the pad movement on each of these sanders is barely perceptible, I noticed that the greatest sanding action

on the Ryobi was at the front tip, with virtually no sanding action near the bottom of the pad. On the Fein, the greatest sanding action is at all three tips of the triangular pad, with decreasing action toward the center of the pad where there is virtually no sanding motion. The Bosch, with its orbital action, is equally effective over the entire surface of the pad.

How do these different actions affect sanding speed and smoothness? Not much, as far as I could tell. As long as you keep the sanding pad moving across the work surface, all three tools remove stock evenly over the surface being sanded. Rarely would you hold the pad in one place on the workpiece. Bear in

mind that on many detail applications, you'll do most of the sanding with the front portion of the pad, anyway.

Overall, the Fein and Bosch removed material a bit more quickly than the Ryobi. This, I felt, was due to the higher speed (oscillations per minute), larger pad size, and heavier weight of the two larger tools, not the difference in oscillating motion or sanding patterns. I found that all of these sanders work best with only slight operator pressure applied to them, and all are efficient in the work they're designed to do (corner and detail sanding).

Apples and Oranges

With only three detail sanders on the

market, you'd think they'd all be roughly equivalent in power, performance, versatility, and price. I was surprised that this isn't the case. The Fein, which sells for about \$200, is a heavy-duty, continuous-use tool targeted for production cabinet shops and other industrial applications. At the other end of the scale, the Ryobi (about \$40) is your basic consumer tool designed for occasional home shop use. In my tests, both tools performed well in removing stock and left a smooth scratch-free surface when equipped with fine-grit sanding pads. However, the Fein has several features and performance characteristics that the Ryobi lacks, which I'll discuss presently.

The newly introduced Bosch (around

\$90) falls about in the middle in terms of price, performance and overall quality. The Bosch also has several nifty features not found in the other two sanders. Obviously, a \$200 tool is going to outperform and outlast a \$90 tool, and a \$90 tool will do the same over a \$40 tool. So, please keep this in mind as I make my comparisons. The Specifications Chart on page 27 gives further clues as to the differences between the three.

Sanding Speed and Power

Because the pad surface on all of these sanders measures less than about 6 square inches, not much power is needed to operate them. All have motors under 1.5 amps. However, I found that the larger motors on the Fein (1.35 amps) and Bosch (1.1 amps) had plenty of power to keep the pad moving, even when I applied heavy pressure to the tools. The Ryobi (0.24 amps) tended to bog down slightly when I applied pressure to the sanding pad, although I didn't see this as a major drawback. As I mentioned, these tools sand most efficiently when only slight pressure is applied to them—in effect, you let the weight of the tool do the work. And, since they're designed for detail work, you don't want a tool that's too aggressive in stock removal. Overall, the Fein and Bosch remove stock a bit more quickly than the Ryobi, for the reasons explained previously.

Ergonomics

The term ergonomics translates simply into user ease and comfort in operation. Ergonomic considerations include switch location, how the tool fits the hand, the balance and weight of the tool, and most importantly, the amount of vibration transmitted to the hand through the tool body. Excessive vibration can lead to hand fatigue when sanding for long periods of time. The Ryobi literally left my hand tingling after about 5 minutes of continuous sanding. The Fein, on the other hand was virtually vibration-free. The Bosch transmitted a bit more vibration than the Fein, but was still within acceptable limits of user comfort during extended use.

The Bosch has the most convenient ON/OFF switch location—a large slide switch mounted on the top side of the tool body toward the front end of the tool. The location allows easy thumb op-



**Photo 1: Fein
Model MSx 636-1**



**Photo 2: Bosch
Model B7000**



**Photo 3: Ryobi
Model DS-1000**



Photo 4: Quick release (orange) button on Bosch enables you to rotate sanding pad for even pad and paper wear. Triangular pad on all of these sanders enable you to squeak into tight spaces, such as between chair rungs, as shown.

eration for both left- and right-handed users. The thumb-operated slide switch on the Fein is mounted on the left-hand side of the tool, which makes it a bit tougher for lefties like myself to operate the switch. The Ryobi has the least convenient switch type and location, a small rocker switch on the underside of the body near the cord. To operate the switch, you need to remove the tool from the work and flip it upside down. On the plus side, the light weight and slim body profile of the Ryobi makes it a bit easier to maneuver than the other two when working in tight spots.

Changing Paper— How Often? How Easy?

As mentioned, most detail sanding is done with the front portion of the triangular pad, so this portion will wear out more quickly. To get maximum use of the entire sanding pad, you'll have to rotate the pad or the paper to provide a "fresh" surface. The Bosch has a hook-and-loop (Velcro) paper attachment system, which allows you to quickly remove and reorient the paper on the backing pad, or to switch between different grits without wasting paper. The Ryobi, on the other hand, has a pressure-



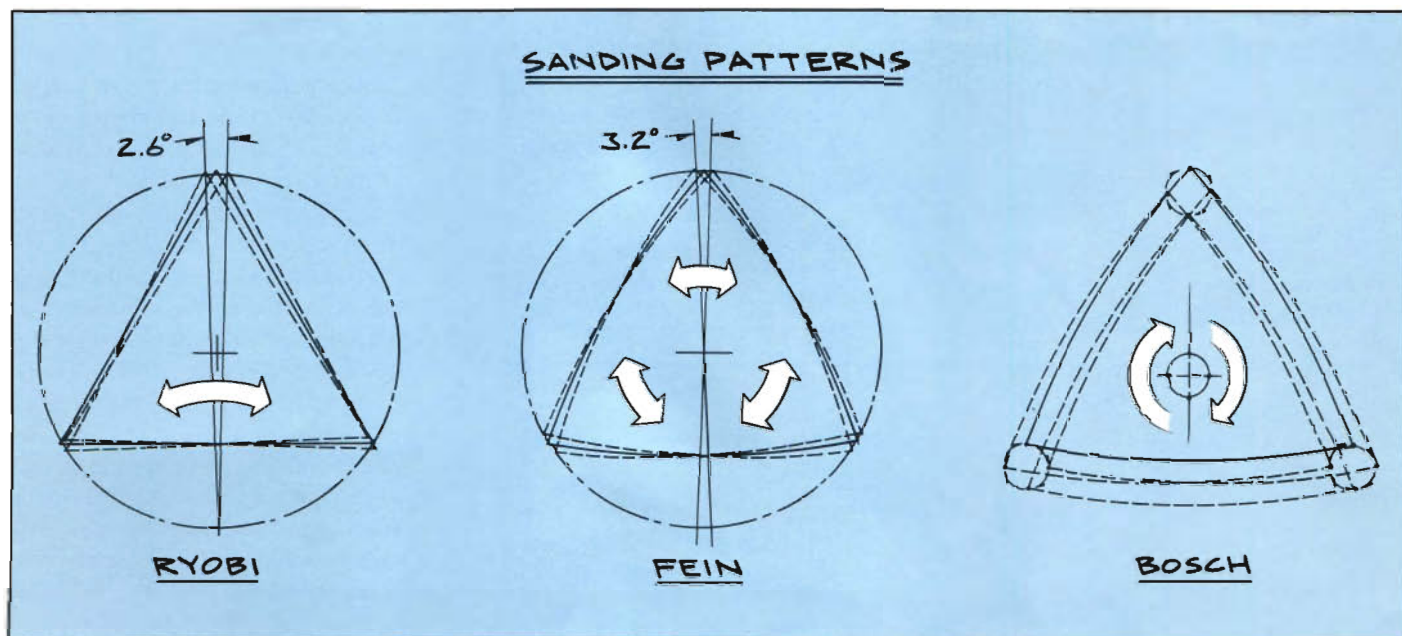
Photo 5: Fein offers an add-on dust evacuation system as an optional accessory.



Photo 6: Bosch sander has dust port at back of tool that fits optional Bosch suction hose and adaptors.

sensitive adhesive (PSA) attachment system. This consists of a rubber sanding pad and sticky-back sandpaper. The Fein offers a choice of hook-and-loop or PSA pads and paper.

In my experience, PSA attachment systems (also used on some palm sanders and random-orbit sanders) aren't



Sanding Patterns: Ryobi oscillates in back-and-forth "windshield wiper" motion, with little movement near bottom of pad; Fein oscillates in twisting motion with little or no movement near center of pad; Bosch pad moves in orbital motion, much like 1/2-sheet or 1/4-sheet orbital sanders.

SPECIFICATIONS CHART

Make	Model	Amps @ 120V	OPM ¹	Pad ² Type	Dust Pickup	Net Wt. (lbs.)	List Price	Street ³ Price
Bosch	B7000	1.1	11,000	H & L	Yes	2	\$122	\$90
Fein	MSx 636-1	1.35	20,000	both	Yes	2.9	275	199
Ryobi	DS-1000	0.24	7,600	PSA	No	1.6	—	39

¹ Bosch = orbits per minute; Fein and Ryobi = oscillations (strokes) per minute
² H & L = hook and loop; PSA = pressure-sensitive adhesive
³ Actual or average selling price



Photo 7: Foam pads (Ryobi, left), and felt pads (Fein, right) are used for a variety of wood polishing and buffing chores; here to buff out wax.



Photo 8: Mini saw blade attachment for Fein makes exceptionally smooth cuts in wood, metal, and plastics up to 5/8 in. thick. Although the blade is circular, it does not spin, but cuts in very short oscillating strokes. The adjustable disk in front of the blade serves as a stop to limit depth of cut.



Photo 9: All three sanders have optional non-woven abrasive pads. The coarse pad shown on Ryobi can be used for stripping paint.

nearly as convenient as the hook-and-loop type. Once you remove the PSA paper, you often can't re-stick it on the pad more than two or three times, even if the grit still has some life left in it. This is often because the adhesive backing on the paper, or the pad itself, becomes contaminated with dirt or sawdust, or the adhesive backing simply loses its "stick" when exposed to the air after a period of time. On the plus side, PSA paper is less expensive than hook-and-loop paper. Hook-and-loop systems also have a drawback specific to detail sanders: sanding friction at each triangular point generates heat that melts the small plastic hooks on the backing pad. This is more common when sanding metal than wood, but it still means that you'll have to replace the pads periodically.

As an added feature, the Bosch has a quick release button which enables you to quickly remove or reposition the entire sanding pad on the head, eliminating the need to remove and replace the paper itself. Thus, you could buy several extra pads and equip them with different pa-

pers for quick "grit switching." Pad rotation not only facilitates even sandpaper wear, but also even wear on each of the three corners of the backing pad. The backing pad on the Fein can also be removed and rotated, but requires an Allen wrench (supplied with tool). The pad on the Ryobi can't be rotated—it's firmly adhered to the sanding head. When the pad wears out, the entire head must be replaced (extra heads are available, and attach easily to the front end of the tool body).

Dust Control

While these little sanders don't raise mountains of sawdust, they did create enough fine dust during my tests to foul up the computer in my tiny woodshop office.

The Fein has a two-piece accessory dust pickup, which consists of a hood that fits between the backing pad and

tool body, and an extension piece that attaches to the bottom of the tool body by means of double-faced tape. The pickup comes with adaptors to fit 1-3/32 in. and 1-1/4 in. suction hoses. On the Bosch, the dust pickup is built into the tool body. An integral dust extraction port at the back of the tool can be fitted with an optional 1 in. hose and adaptors (available from Bosch) to fit most shop vacuums. On both tools, perforated backing pads and sanding sheets are available for "through-the-pad" dust extraction. The Ryobi has no provision for dust extraction. (Ryobi tells us that a new detail sander—the DS-2000—will have both

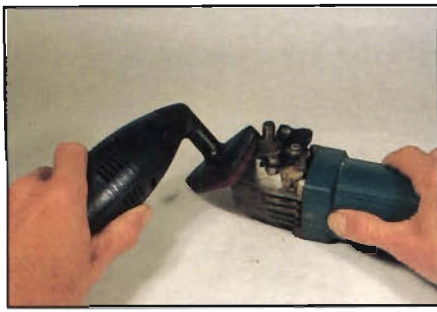


Photo 10: Here I'm using a non-woven metal polishing pad on the Ryobi to clean up my Makita angle grinder for the photo on this page.

dust collection capability and two speeds, 6,000 and 17,000 rpm. The size and weight of this new tool (available in August 1994) will be about the same as the DS-1000.)

Accessories

As mentioned earlier, all three of these tools offer a variety of sandpaper pads in various grits, as well as non-woven abrasive pads used for rust removal, polishing, paint stripping, and other cleaning chores. The Fein has the largest array of accessory pads, including a scraper blade and a felt polishing/buffing pad. Accessory cloth-backed pads are available to facilitate the replacement of PSA papers. This tool can also be equipped with an intriguing little circular saw blade set that enables you to make extremely smooth cuts in wood, metal and plastics up to 5/8 in. thick. The caption on the photo explains how it works.

Ryobi offers a good selection of sandpaper grits, fine and coarse non-woven abrasive pads, a scraper blade, and a foam polishing/buffing pad. The Bosch also offers a full range of sandpaper grits, two different nonabrasive pads, and a felt polishing pad. The company plans on adding more accessories later



Photo 11: Pad extension accessory on Bosch enables you to squeak into narrow crevices, such as between louvers.

this year. Bosch also offers a unique accessory extension plate, which enables you to sand in extremely narrow spots, such as between louvers (Photo 11).

Editor's Choice

Because there isn't a lot to choose from at this point, I'd be loath to pick a favorite. But even with only three on the market, there's a detail sander to fit every pocketbook. As impressed as I was with the versatility and clearly superior mechanics of the Fein, I don't think I could justify forking over \$200 for the amount of use I would get out of the tool in my particular projects. But, if you must have the best, this is the tool to buy. The \$50 Ryobi is a nice little touch-up tool with a variety of applications, but I wouldn't recommend it for heavy, continuous shop use (mainly from an ergonomic standpoint). The Bosch is a good compromise in quality and price, and would be the one I'd go with. 

Sources

S/B Power Tool Corp.
4300 W. Peterson Ave.
Chicago, IL 60646
tel. (312) 286-7330

Fein Power Tools Inc.
3019 Carson Street
Pittsburgh, PA 15204
tel. 1-800-441-9878

Ryobi America Corp.
1424 Pearman Dairy Road
Anderson, SC 29625
tel. 1-800-323-4615

Woodworker's Supply
1108 North Glenn Road
Casper, WY 82601
tel. 1-800-645-9292
Wolcraft Corner Sander Attachment

Angle Grinder Add-On

If you already own an angle grinder, you can transform it into a detail sander with this corner sanding attachment from Wolcraft. The attachment fits most 4 in., 4 1/2 in. and 5 in. grinders with 3/8 in., 5/8 in., and M-10 arbors (spindles). The pad describes an orbital motion, much like the Bosch—the orbits per minute (OPM) match the spindle speed (RPM) of the grinder you're using. The pad has a hook-and-loop fastening system. Extra sanding pads are available in 60, 80, 120, and 220 grits.

For my tests, I fitted the attachment to my 4 in. Makita 9501B angle grinder. When I first got the attachment, I soon found that my particular grinder was one of the few that it didn't fit, right out of the box. This was because the support bracket on the attachment wouldn't align with the hole in the side-handle mounting bracket on the grinder. However, the folks at Wolcraft already have a line on this problem, and will send Makita owners an adaptor fitting free of charge to make the unit work. (Call Wolcraft at (708) 773-4777 to get this item).

Compared to the three detail sanders in this article, the Wolcraft attachment had an aggressive sanding action, due to the large orbit diameter described by the pad, combined with the high speed of my grinder (10,000 rpm). Even so, it sanded about as smoothly as any of the others. You can pick up this dandy attachment for \$28.95 through Woodworker's Supply (see Sources).



Wolcraft Corner Sander Attachment fits most angle grinders, has hook and loop paper attachment. Sold through Woodworker's Supply and other woodworking catalogs for about \$29.



designed and built by Richard Perry

Portable Comfort for the Beach, Boat or Backyard

This practical project is modeled after the seats often found in 19th century Adirondack guideboats and canoes. Lightweight, yet sturdy, it's perfect for just about any occasion when you need portable seating. You'll find it especially useful if you have kids who play soccer, baseball or softball. And, should a crowded family room relegate you to the rug, this project will give your back instant relief.

The seat sides and back stiles are made from oak, the slats are ash, and the rods are cherry. However, just about any hardwoods can be used. Since this piece could be exposed to wet weather, it's

best to use brass screws and a water resistant glue.

The Sides: Begin work on the sides (A) by cutting two pieces of stock to size, each one measuring 1 in. thick by 9 in. wide by 21 1/2 in. long. Once cut, use double-stick tape to secure the two boards together, making sure the edges are flush.

Referring to the grid pattern, transfer the curved profile to the side stock. At the same time, mark the centerline locations of the pivot and stop rods.

Next, cut the curves with a band saw (Fig. 1). Stay just outside the marked line. Then, with the two boards still held

together with double-stick tape, sand the edges smooth.

To complete work on the sides, bore the holes for the pivot and stop rods. Be sure to use a back-up board to prevent splintering. Once the holes are bored, separate the two sides and remove the double-stick tape.

The Slats: You'll need 3/8 in. thick stock for the nine seat slats (B) and the five back slats (D). Rip stock to 1 1/4 in. wide, then round over the front and back edges using the router table and a 1/4 in. radius roundover bit (Fig. 2). Once the radius is added, cut the slats to length—14 1/4 in. for the seat and 12 in. for the back,

The Back Stiles: The two back stiles (C) are made from 3/4 in. thick stock cut to 1 1/2 in. wide by 18 in. long. Mark the centerline location of the holes for the pivot rod and bore them out. Also, use the band saw to round the top end of each one.

The Rods: Cut the 3/4 in. diameter pivot rod (E) and the 1/2 in. diameter stop rod (F) to length. Birch dowels, available at any hardware store, will work fine, but cherry adds an interesting contrast. You can stain the birch a cherry color, or you can purchase cherry dowel

stock (see Sources).

Once the dowels are cut to length, drill a 1/8 in. diameter through hole at a point 7/8 in. from the ends, then use a back saw or dovetail saw to cut a tapered slot in each end (Fig. 3). Make sure the slots are in line with each other. By the way, the 1/8 in. hole helps distribute the stresses that are created when the wedge is driven, thereby preventing the dowels from splitting too far.

Assemble the Parts: Give all the parts a thorough sanding, finishing with 220-grit. When everything is sanded to your

satisfaction, mark the location of each seat slat on the two sides.

The seat slats are attached with 3/4 in. long by no. 6 flathead brass wood screws. Start with the front slat, boring a pilot hole, shank hole and countersink hole for the screw on each end. If you have one, a countersinking drill bit will make things much easier. These one-

Bill of Materials (all dimensions actual)

Part	Description	Size	No. Req'd
A	Seat Side	1 x 9 x 21 1/2*	2
B	Seat Slat	3/8 x 1 1/4 x 14 1/4	9
C	Back Stile	3/4 x 1 1/2 x 18	2
D	Back Slat	3/8 x 1 1/4 x 12	5
E	Pivot Rod	3/4 dia. by 14 1/4 long	1
F	Stop Rod	1/2 dia. by 14 1/4 long	1

* Width and length dimensions allow extra stock.

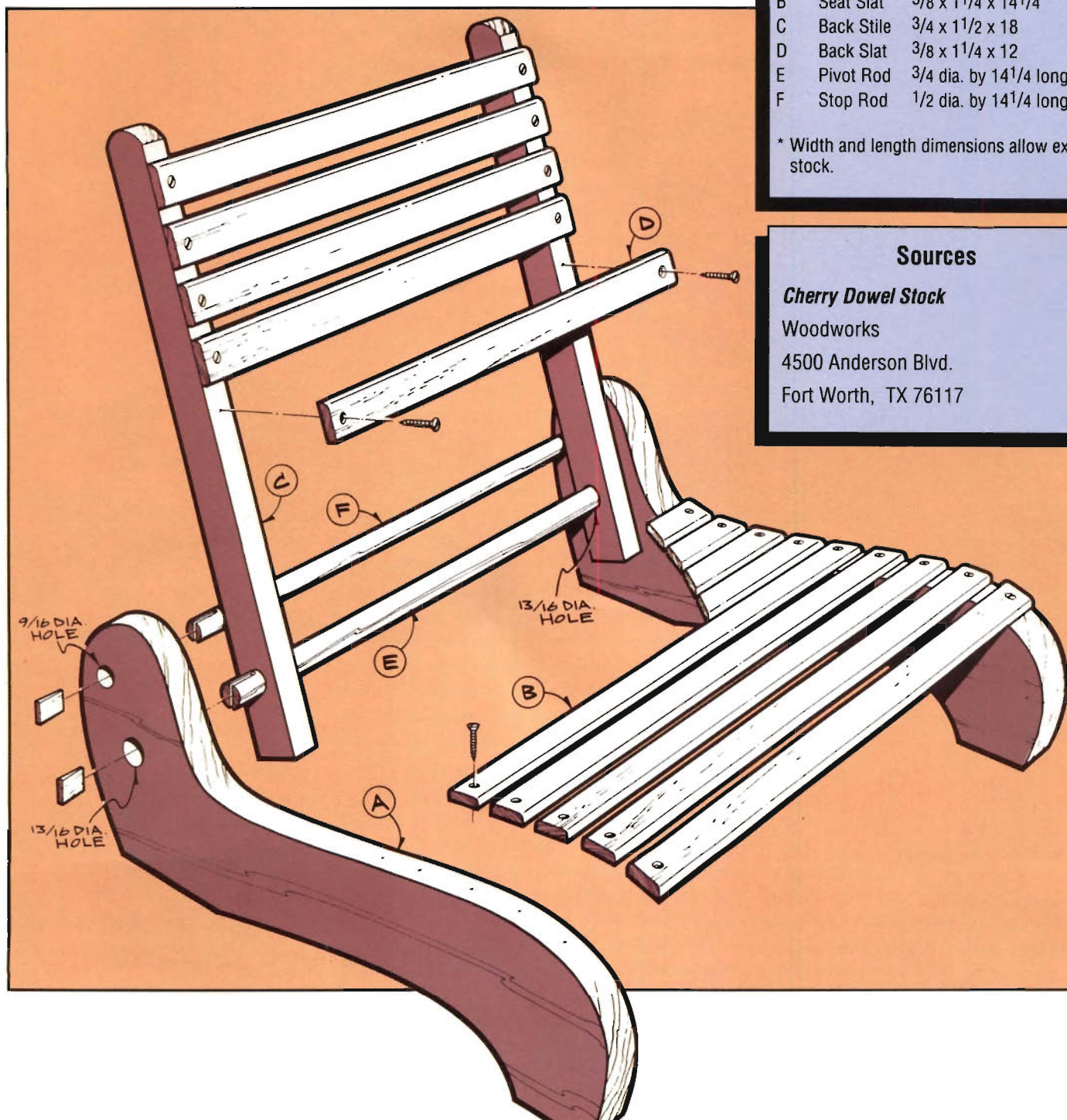
Sources

Cherry Dowel Stock

Woodworks

4500 Anderson Blvd.

Fort Worth, TX 76117



A well-designed computer desk was on my project list ever since I bought my first desktop computer several years ago. However, I kept putting off building it because computer hardware was changing faster than the weather, and I didn't want to build a desk that would quickly be obsolete.

This design addresses some of those concerns. It has plenty of built-in versatility, so it's likely to be adaptable to a wide range of present and future needs. Also, I made it modular, so the desk can be knocked-down when you need to move it upstairs, or perhaps even to a far-away college dorm.

The Design: A computer has some unique design requirements that set it apart from a typical desk or table. The keyboard must be located to allow for maximum user comfort. The desk must also permit ample ventilation around the computer hard-

ware. And the top surface must be large enough to fit not only the computer, but also books, notes, drawings and a mouse pad.

The right-side pedestal is sized to accommodate tower style computer processing units (CPU's), from the mini-towers up to the full-height units. However, if you have a desktop style CPU, the pedestal space is perfect for adding a couple of adjustable shelves to store computer manuals or disk storage boxes.

You'll find that the sliding printer drawer provides enough room for a small printer. And, the printer drawer shelf adds even more storage space.

The upper shelf, which is removable, is handy if you like to elevate your monitor. It also provides an alternate location for the printer and paper supply.

The keyboard slide allows several important adjustments, en-



designed and built by Dennis Preston

COMPACT COMPUTER DESK



abling you to put the keyboard exactly where needed for comfortable typing. It adjusts 5 $\frac{3}{4}$ in. in height, tilts up to 15 degrees and swivels a full 360 degrees. When your work is finished, this hardware also permits you to slide the keyboard out of the way under the desktop.

I used $\frac{3}{4}$ in. oak plywood for the desk sides, desk ends, desk top/bottom, desk adjustable shelf, upper shelf side, and upper shelf top. Because they will be covered with plastic laminate, the desktop and the keyboard shelf can be made from $\frac{3}{4}$ in. thick birch plywood.

The long fillers, short fillers and the printer drawer adjustable shelf are made from $\frac{1}{2}$ in. thick birch plywood, while the printer drawer ends and bottom use $\frac{1}{2}$ in. thick Baltic Birch or Appleply plywood. Baltic Birch and Appleply have void-free edges, so they present a cleaner appearance than regular birch plywood.

Make the Left Pedestal: The left pedestal is made up of the two sides (A), two long fillers (B) and five short fillers (C). The sides are glued-up with the fillers sandwiched in-between (Fig. 1). Because extra-wide edging (EE) will also be added to the front and back of the glued-up pedestal, it's important that the edges be perfectly flush all around. However, when gluing up several parts like this, it's unlikely all edges will be as flush as you'd like. For this reason, you'll want to cut the two sides (A) about $\frac{1}{4}$ in. wider and longer than the dimensions shown in the Bill of Materials. The extra material will allow all the pedestal edges to be trimmed flush before the extra-wide edging is added.

Cut the two long fillers and the five short fillers from $\frac{1}{2}$ in. thick plywood. Use glue and finishing nails to attach the long fillers to one of the sides. Attach the short fillers in the same manner.

Next, add a thin coat of glue to the face surfaces of the fillers and apply the remaining side. Clamp with C-clamps.

The pedestal can now be trimmed to final size. First, use the jointer to flush trim one of the long edges. Then, with the table saw blade set to 2 $\frac{1}{8}$ in. high, rip the opposite edge, establishing the final pedestal width of 11 $\frac{3}{4}$ in. Finally, use the table saw and miter gauge to trim each end of the pedestal. You'll want the final length to be 25 $\frac{1}{2}$ in.

When ripping the extra-wide edging (EE) from $\frac{1}{4}$ in. thick stock, cut it slightly wider (about 2 $\frac{1}{8}$ in.) than necessary. Use glue and countersunk finishing nails to secure it to the front and back of the pedestal. Allow the edging to overhang slightly on both length and width. Use the router and a flush-trim bit to trim it perfectly flush. Fill the countersunk holes and sand smooth.

Make the Right Pedestal: Cut the two desk ends (D) and the top/bottom (E) to size. Use the router table and a $\frac{3}{8}$ in. diameter straight bit to cut the grooves in the ends and also the rabbets in the top and bottom (Fig. 2).

FIG. 1

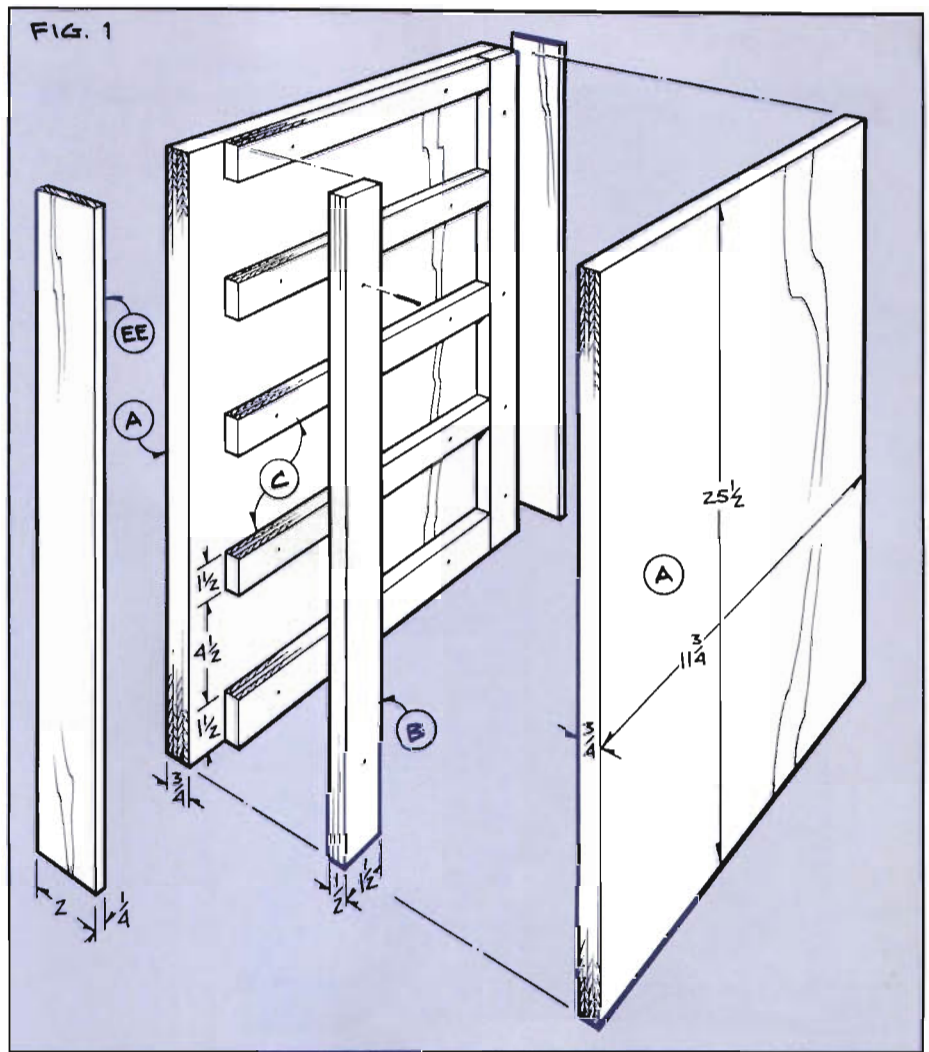


FIG. 2

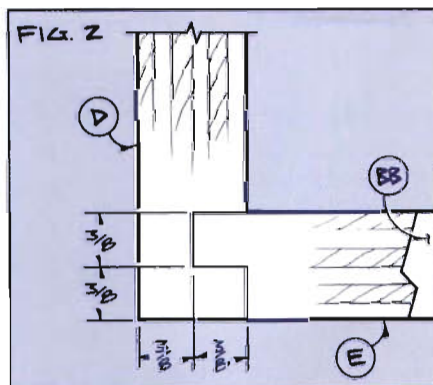


FIG. 3

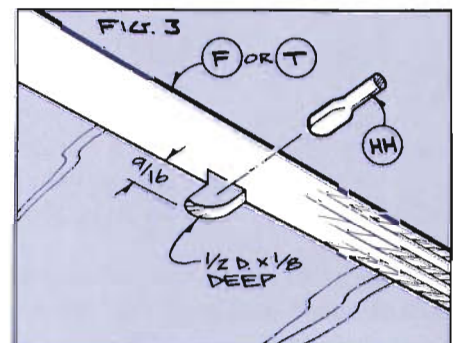
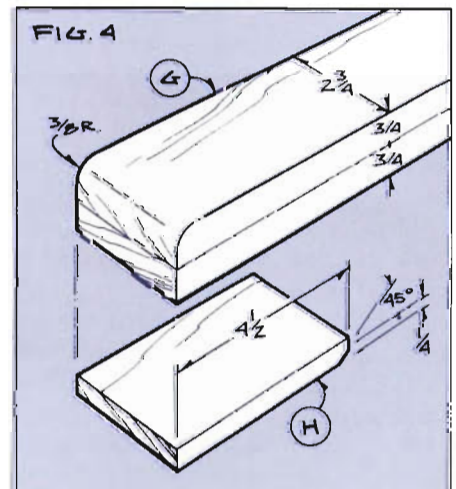


FIG. 4



Bill of Materials
(all dimensions actual)

Part	Description	Size	No. Req'd
Desk			
A	Side	3/4 x 11 3/4 x 25 1/2	2
B	Long Filler	1/2 x 1 1/2 x 25 1/2	2
C	Short Filler	1/2 x 1 1/2 x 8 3/4	5
D	End	3/4 x 19 x 27	2
E	Top/Bottom	3/4 x 19 x 9 1/4*	2
F	Adjustable Shelf	3/4 x 19 x 8 3/8	2
G	Foot	1 1/2 x 2 3/4 x 27	2
H	Foot Pad	1/2 x 2 3/4 x 4 1/2	4
I	Cleat	1 1/2 x 2 3/4 x 19 1/2	1
J	Stretcher	1/2 x 3 x 25 1/8	1
K	Desktop	3/4 x 29 1/2 x 36	2
L	Desktop Laminate	29 1/2 x 36	1
M	Desktop End	3/4 x 15 8/8 x 30	2
Printer Drawer			
N	End	1/2 x 11 3/4 x 18	2
O	Bottom	1/2 x 11 3/4 x 22 1/4*	1
P	Front	1/4 x 1 1/2 x 22 3/4	1
Q	Back	1/4 x 4 x 22 3/4	1
R	Cleat	1/2 x 1 1/2 x 11 3/4	2
S	Knob	See Fig. 7	2
T	Adjustable Shelf	1/2 x 11 1/4 x 21 5/8	1
U	Guide	1 x 1 x 25 1/2	2
Keyboard Shelf			
V	Keyboard Shelf	3/4 x 9 1/4 x 20 3/4	1
W	Keyboard Shelf Laminate	9 1/4 x 20 3/4	1
Upper Shelf			
X	Side	3/4 x 11 3/4 x 8 1/2*	2
Y	Top	3/4 x 11 3/4 x 36	1
Z	End	1/2 x 7/8 x 12 1/4	2
AA	Back	3/4 x 13 3/4 x 34 1/2	1
Edging			
BB	Narrow Edging	1/4 x 3/4	As Req'd
CC	Medium Edging	1/4 x 1	As Req'd
DD	Wide Edging	1/4 x 1 1/2	As Req'd
EE	Extra Wide Edging	1/4 x 2	As Req'd
Hardware **			
FF	Keyboard Slide	as shown	1
GG	Friction-Free Tape	1/2 in. wide	As Req'd
HH	Shelf Support	1/4 in.	12

* Length includes rabbets

** The Keyboard Slide, Friction-Free Tape, and Shelf Supports are available from The Woodworker's Store, 21801 Industrial Blvd., Rogers, MN 55374-9514; tel. 1-800-279-4441. The slide is part no. 91447 (\$69.95 each), a ten ft. roll of friction-free tape is part no. 70615 (\$5.95 each) and the brass shelf supports are part no. 30437 (\$3.25 for a package of 20).

rabbet joint (Fig. 6). Assemble with glue and clamp firmly. Attach the front (P) and the back (Q) with glue and countersunk finishing nails. Check to make sure the drawer is square.

Cut the cleats (R) to size and secure them to the inside of the drawer with 3/4 in. long by no. 6 flathead wood screws as shown in the Exploded View. Make sure the top edge of each cleat is flush with the top edge of the drawer ends.

The two knobs (S) can now be turned to the dimensions shown (Fig. 7). No need to despair if you don't have a lathe, as most any hardware store will have a similar pair of knobs. Attach each one with a screw through the printer drawer end.

Next, the adjustable shelf (T) is cut to fit just inside the printer drawer ends. You'll want to allow about 1/16 in. clearance on each end. Once again, use the router to cut the notches for the shelf supports (Fig. 3).

Attach the narrow edging (BB) with glue and countersunk finishing nails. Note that this edging will stand proud of the edge, creating a 1/4 in. lip. The lip is useful as it helps keep things from sliding off the shelf.

Mount the Printer Drawer: The printer drawer slides on a pair of guides (U), shown in Fig. 8. To make them, cut a piece of 1 in. thick stock to 3 in. wide and 25 1/2 in. long. Set up the table saw along with the rip fence, an auxiliary wood fence and the dado head (Fig. 9A). Cut a 9/16 in. by 5/8 in. rabbet along each edge as shown.

Once the rabbets are cut, use your regular saw blade to rip the stock to 1 in. widths (Fig. 9B). For safety's sake, place the wide face down against the table when making the ripping cuts.

Add a strip of friction-free tape (GG) to the guides and the top of the printer drawer cleats (see Exploded View and Fig. 8).

Next, turn the desk upside down, and mount each cleat with five 1 3/4 in. long by no. 8 flathead woodscrews. Locate the front end of the cleats 1/2 in. from the front edge of the desktop. Allow enough clearance for the drawer to have a smooth sliding fit.

The Keyboard Shelf: The keyboard shelf (V) can now be cut to size. Before cutting it to length, measure the distance between the printer drawer ends. When the edging is added to the shelf, you'll want to have 1/4 in. clearance on each end.

Next, cut the keyboard shelf laminate (W) slightly oversized and apply it to the top surface of the keyboard shelf with contact cement. Trim the laminate flush with the edges before adding the medium edging (CC). Note that this edging creates a 1/4 in. lip all around the shelf. Use glue and countersunk finishing nails to secure the edging in place.

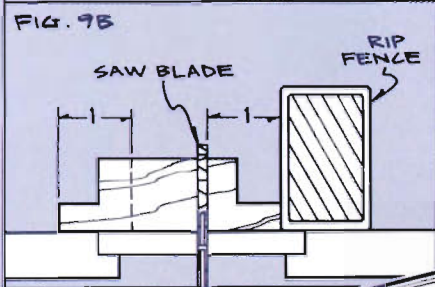
Make The Upper Shelf: The upper shelf consists of the two sides (X), the top (Y), the two ends (Z) and the back (AA). Cut the parts to size, keeping in mind that when the top shelf is assembled, it should fit just inside the desktop ends.

Cut the rabbet in the sides and the grooves in the top, then assemble with glue and clamps. Next, add the narrow edging to the front and back edges. Finally, cut the ends and the back to size and attach them with glue and countersunk finishing nails. The shelf is not attached to the desktop.

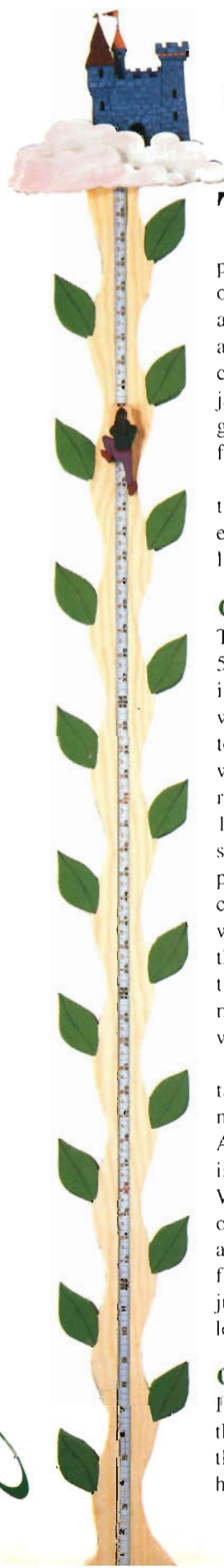
Finish Up: Final sand all the surfaces through 220-grit. Two coats of a clear water-based polyurethane will provide an attractive and durable finish.

Mount the keyboard shelf to the keyboard slide (FF), then mount the slide to the underside of the desktop. The addition of the shelf supports (HH) and the adjustable shelves completes the project.





Jack-In-The-Beanstalk



Child's GROWTH Stick

Think back to your childhood, and you'll likely recall a door jamb or some other spot where a chart of pencil lines and dates marked the pattern of your growth. When noted scroll saw artist Bill Zaun, of Des Moines, Iowa, answered our call for a growth stick that captured all the utility of that old door jamb, with a little fantasy thrown in for good measure, we couldn't have hoped for a better result.

The scroll sawing and painting won't take more than a weekend, and you'll end up with the perfect way to chart the little ones' growth.

Gather Materials

To make the growth stick you'll need a 5½ in. wide by 59 in. long piece of ½ in. thick stock for the stalk (A), a 5 in. wide by 9 in. long piece of ¼ in. stock to yield the two clouds (B, C), a 4¼ in. wide by 11 in. long piece of ¼ in. material for the two castle parts (D, E) and a 1½ in. wide by 4 in. long piece of ¼ in. stock for "Jack" (F). Our project uses pine for these parts, but any clear, light-colored wood, such as birch or maple, will be fine. If you don't have access to thin stock, or would rather not thickness the material yourself, we've listed a mail-order kit source that includes all the wood you'll need.

You'll also need a self-adhesive steel tape (H) and a 1 in. length of flexible magnet (G) to hold Jack to the steel tape. A 6 ft. length of self-adhesive steel tape is available from a mail-order source, Woodcraft Supply (1-800-225-1153, order Part No. 08Y41 for 6 ft. steel self-adhesive tape, reading left-to-right). The flags at the tops of the castle turrets are just painted paper wrapped around short lengths of wire.

Getting Started

If you have a thickness planer, getting the required thicknesses won't take more than a few minutes. But if you don't have a planer, the quickest way to obtain

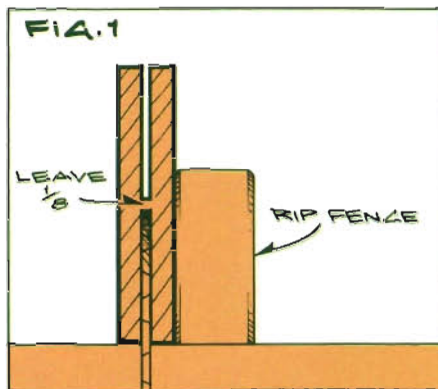
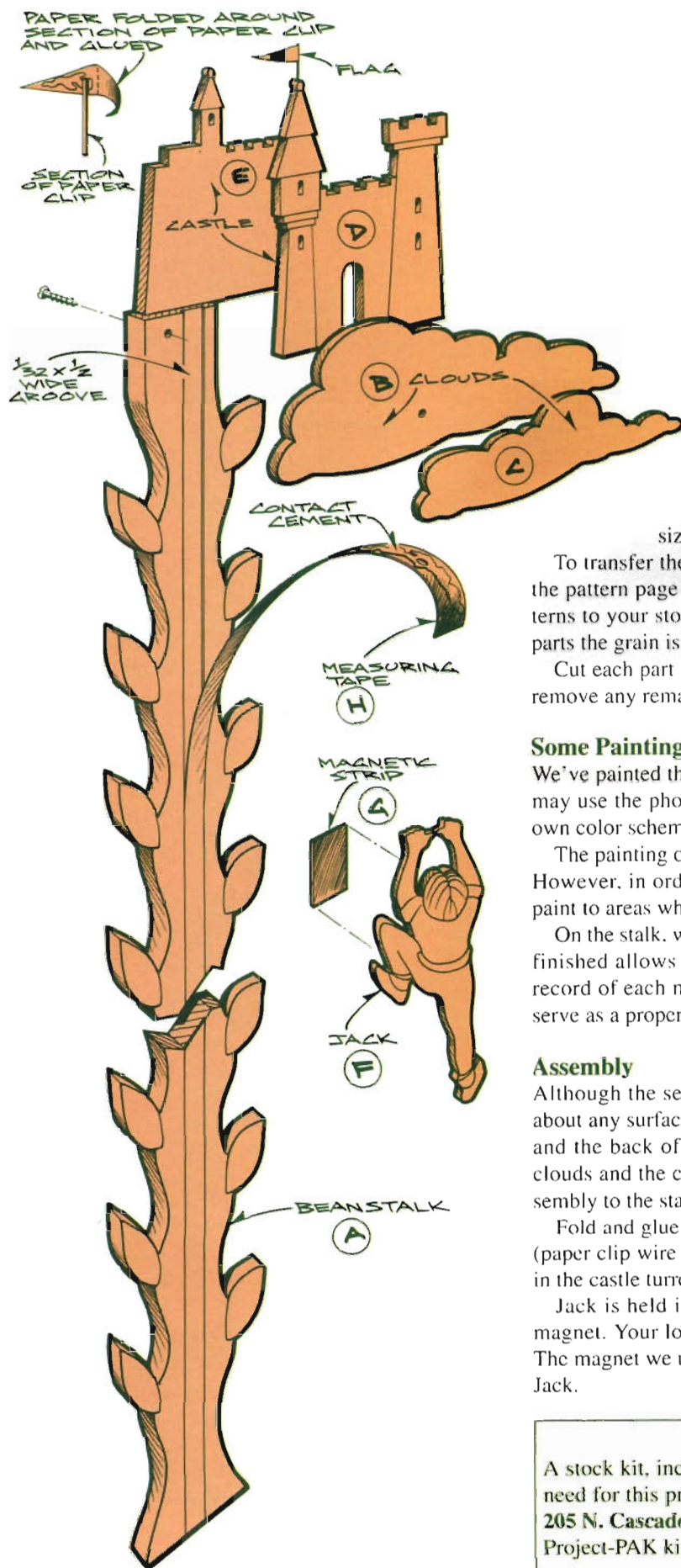


the needed thicknesses is to resaw them from thicker stock. You can resaw stock up to about 6 in. wide by making a pair of passes on the table saw, each pass set to just slightly less than half the total board width (Fig. 1). Once both cuts have been made, use a panel saw to finish the work of splitting the two halves apart. Finally, use a few strokes with a hand plane to remove the remaining spine.

Transfer Patterns

Once your stock is prepared, transfer the patterns. To transfer the pattern to the stalk, simply keep repeating the same pattern, one after another. Use a pencil to draw the base of the stalk a little wider, as the photo at left shows.

On our stalk, we've used the table saw and dado head to cut a shallow, 1/32 in.



deep groove for the steel tape. This indexes the tape, making it easy to locate when applying. However, you can also just apply the tape to the stalk, using a straight line as a guide. Note that our stalk is sized to use about 58 in. of the 6 ft. long tape. You can size your stalk to accept the full 6 ft. length, if you like.

To transfer the castle and cloud patterns, make enough photocopies of the pattern page to allow a separate pattern for each part. Fasten the patterns to your stock with spray adhesive. Note that on Jack and the castle parts the grain is running vertically, on the clouds it is horizontal.

Cut each part out very carefully with the scroll saw, then sand or file to remove any remaining fuzz. Also cut the profile of the stalk.

Some Painting Fun

We've painted the leaves on the stalk, Jack, the castle and the clouds. You may use the photos as a guide to the colors we used, or simply use your own color scheme.

The painting on all the parts is done before the project is glued together. However, in order to allow good glue adhesion, be careful not to apply paint to areas where glue will be applied.

On the stalk, we only painted the leaves. Leaving the remaining area unfinished allows you to write names and dates directly on the stalk as a record of each measure-in. Initials and a date next to each mark should serve as a proper record.

Assembly

Although the self-adhesive tape is supposed to stick fairly well to just about any surface, we found it helped to add contact cement to the groove and the back of the tape, before assembling these parts. We glued the clouds and the castle parts together, and then screwed the completed assembly to the stalk.

Fold and glue the paper for the flags around some short lengths of wire (paper clip wire is about the right gauge), then paint the flags. Drill holes in the castle turrets and insert the wire to mount the flags.

Jack is held in place on the steel tape with a 1 in. length of flexible magnet. Your local hardware store should sell this, or a similar magnet. The magnet we used had adhesive on one side, making it easy to mount to Jack.



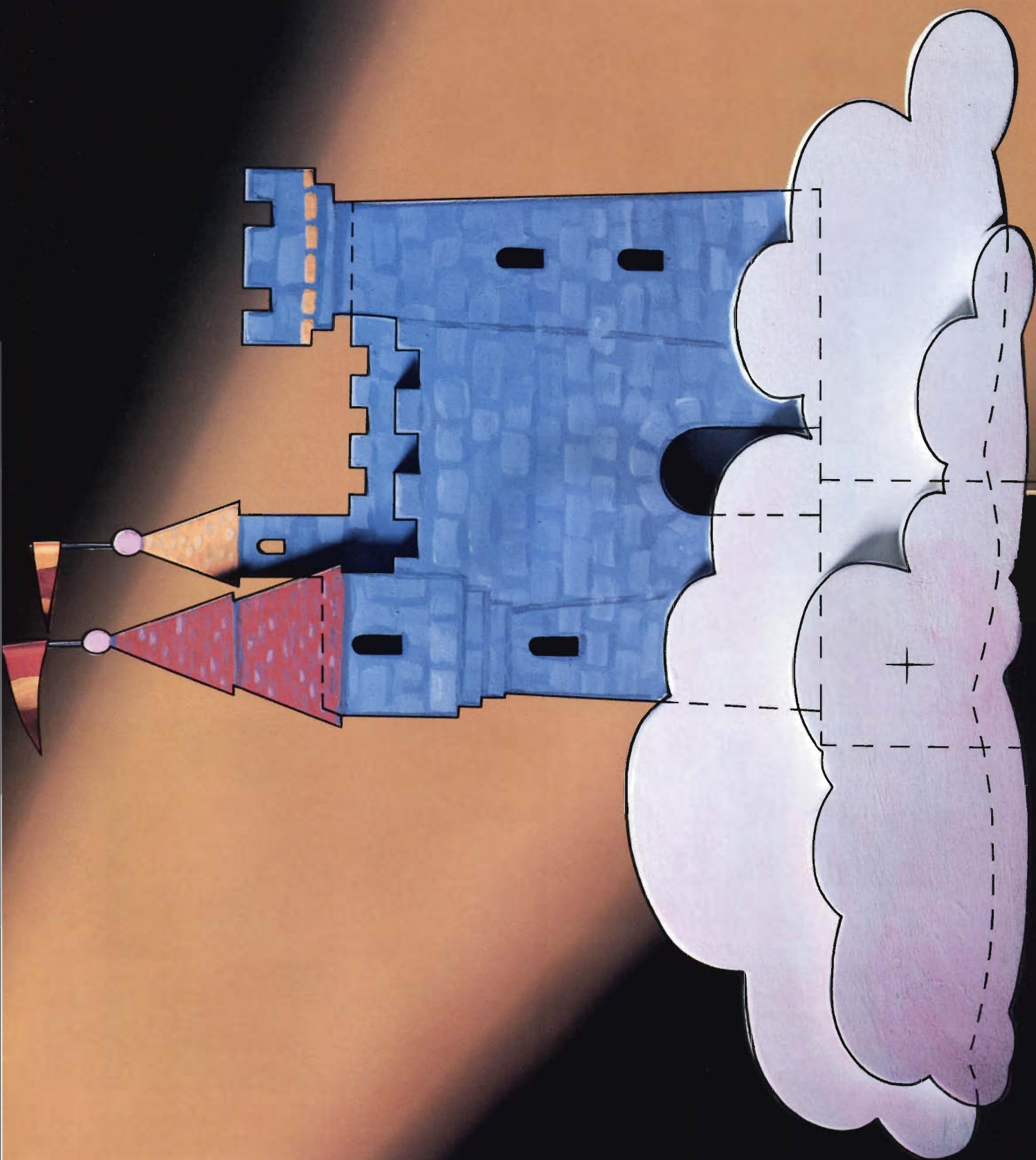
Kit Source

A stock kit, including all the pre-thickened wood (clear birch) you'll need for this project, is available from **Heritage Building Specialties**, 205 N. Cascade, Fergus Falls, MN 56537; tel. 1-800-524-4184. Ask for Project-PAK kit no. WJ49401. Cost is \$10.95 postpaid per kit.

FULL-SIZE PATTERN



FULL-SIZE PATTERN



Carving photo step-by-step



DRIFTWOOD TROLL

by Rick & Ellen Bütz

This carving is of a wood spirit or troll. Those who lived in the mountainous regions of Europe traditionally believed that the forest—even the trees themselves—were inhabited by supernatural beings. They considered these spirits the protectors of the forest, trees and animals. This belief was so strong that when a tree was cut down, rituals were observed to appease the spirits within. Some customs were so persistent that even today people “knock-on-wood,” an ancient superstition intended to prevent wood spirits from causing mischief.

This carving represents one of these spirits as an old man whose form has become part of the tree he inhabits. This style of carving has been popular for centuries in the rural mountain regions of Northern Europe, where people still feel a close kinship to nature.

It seems natural to carve a figure like this in a log or piece of driftwood rather than a smooth finished plank. The rough textures of the wood and bark become part of the carving itself. This troll is made from a piece of red cedar driftwood, 4 in. wide and 14 in. long, found on the shore of an Adirondack lake. In working with wood like this, you need to be flexible and adapt the design to the shape of each individual piece of wood.

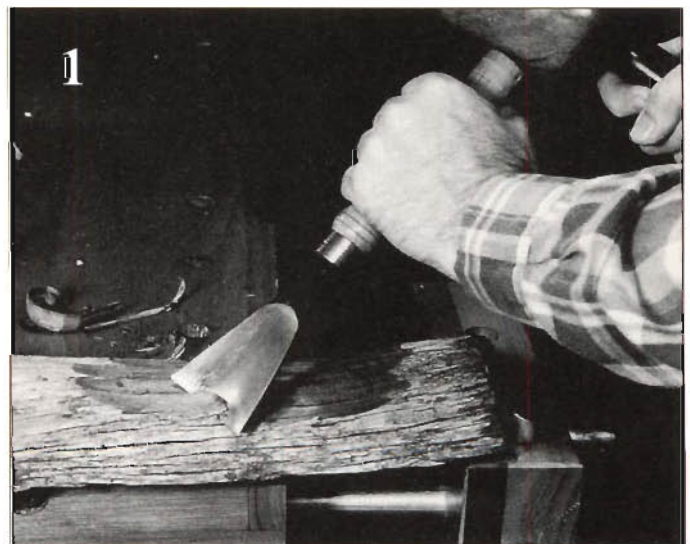
Driftwood can be difficult to carve. The most interesting wood often comes from trees like cedar, with tough and stringy grain. Soaking in water, often for many years, the wood's natural oils and resins leach out, leaving it brittle and porous. So, you may find it splits and chips when you try to carve it.

However, don't worry about small pieces that break off unexpectedly. Just change your design a bit to accommodate the new shape of the wood. These small slips will give your troll a unique character.

You can lessen the danger of splitting by working slowly. Don't try to take out too much wood with any one cut. It also helps if your tools are extra sharp before you start. Check your tools periodically as you carve, and strop them as needed to maintain a keen edge. Grit from a sandy shore often becomes embedded in the wood fibers and can dull your tools quickly.

Before you begin carving, flatten the back side of the driftwood by cutting a section off on the band saw. Then plane it smooth.

Driftwood that has soaked a long time may have a surface that's too rough and crumbly to carve well. Pare it down to a firm working surface with a large gouge like this 60 mm no. 6 (Photo 1). You shouldn't have to go down very deep, perhaps about 1/4 in. Just clean off the weathered fibers until you get to solid wood.



Screw a hardwood holding block to the back of the driftwood, then, clamp the block in the vise to hold the driftwood while you work on it.

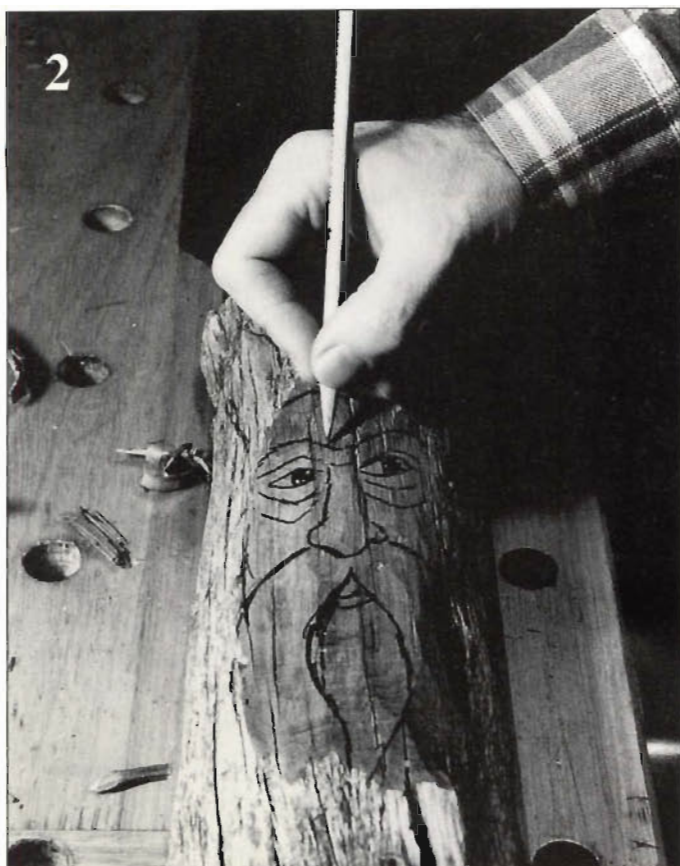
Next, draw your pattern on the wood. Don't worry about following my design exactly. Feel free to change the lines with some freehand drawing of your own to take advantage of the

*Editor's Note: The Driftwood Troll is excerpted from our book, **Woodcarving With Rick Bütz**. Ordering information for this and other books can be found in the center of this issue.*

↑
GRAIN
↓

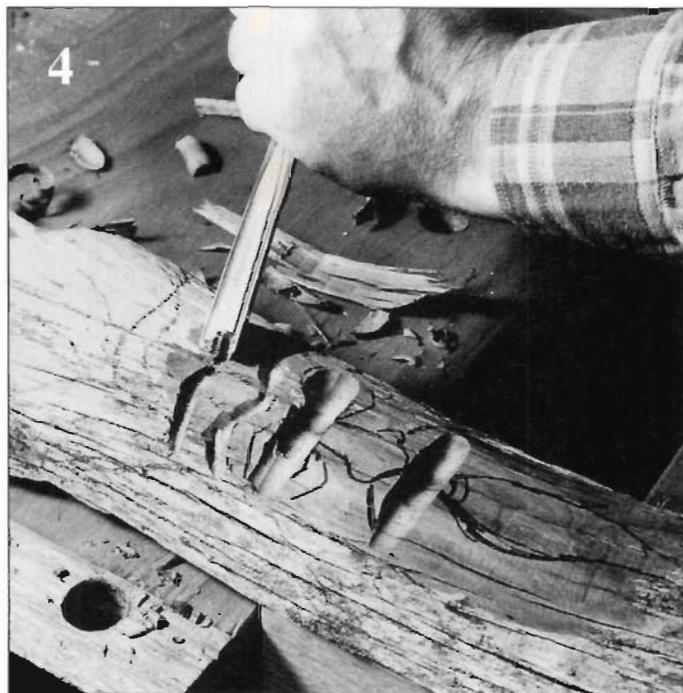
FULL-SIZE
PATTERN





natural contours of your particular piece (Photo 2).

First establish the profile by carving a notch $\frac{3}{8}$ in. deep underneath the nose with a 12 mm no. 10 gouge, and another across the eye line (Photo 3). You will probably want to use a mallet to help tap the gouge through the wood.



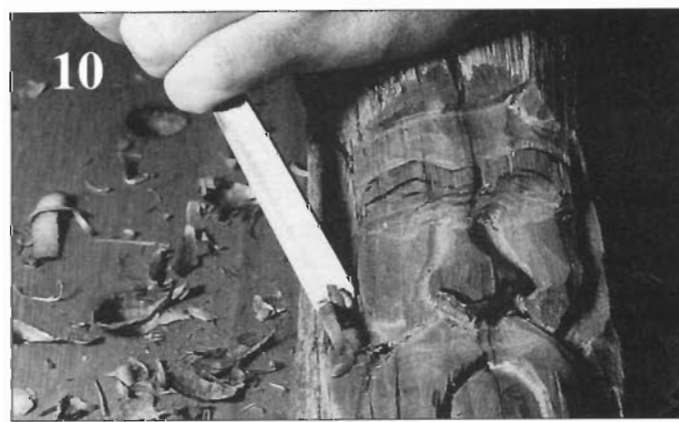
Outline the eyebrows with a 12 mm V-gouge. Use the same gouge to define the hairline (Photo 4). Then smooth the forehead down to the hairline with a 12 mm no. 5 gouge, leaving the eyebrows raised. With the same gouge, bevel the mustache area



down to the nose notch (Photo 5). Now begin shaping the nose by outlining it with the 12 mm no. 10 gouge. Make this cut about $\frac{1}{4}$ in. deep (Photo 6).

Pare the cheeks with the 12 mm no. 5 gouge (Photo 7). Don't





make the cheeks perfectly flat; round them slightly so they follow the curved shape of the log. Now, while you have the 12 mm no. 5 gouge in hand, carve away some wood from the top of the nose, sloping it down to the eye notch (Photo 8). Round



the sides of the nose slightly with the same tool.

Next, redraw the mustache and outline it with the 12 mm V-gouge (Photo 9). Make the ends of the mustache flow out into the rough portions of the wood with curved lines. This will help give your troll a wild, woodsy look.

Bevel the top ends of the mustache down to the nose and remove the wood between the two halves of the mustache with the 12 mm no. 5 gouge. Then take the 12 mm no. 10 gouge and shape the outline of the sides of the head down to the mustache (Photo 10). This cut defines the face and gives a more rounded look to the cheeks. It makes the troll look as though he is peering out from the tree.



Now the major shapes of the face are roughed out, and you can begin the detailing. Start with the eyes, the feature that gives your troll a feeling of life and expression. Draw in the basic shape before you start. Then shape above and below the eyeball with a 6 mm no. 11 veiner to create a rounded surface (Photo 11). Next, use a 6 mm V-gouge to shape the upper and lower eyelids (Photo 12).

To shape the pupil of the eye use a 7 mm no. 8 gouge (Photo 13). Clean the chips out of the corner of the eye with the 12 mm no. 5 fishtail gouge (Photo 14). Hold it vertically and use the angled corner to make the cuts.

Carve the mouth by using the same techniques you just used for the eye pupil. I made his mouth open to suggest wind blowing through the tree branches. Shape the lower lip by cutting a groove $\frac{1}{4}$ in. below the open mouth with the 7 mm no. 8 gouge (Photo 15).

To give the hair a fluffy, dense appearance, first shape the major hair masses with the 12 mm V-gouge (Photo 16). Then texture the hair, beard, mustache, and eyebrows by carving long flowing cuts with a 6 mm V-gouge (Photo 17). Trail these out over the natural surface of the wood so your troll looks as though he is part of the tree.

For the final details, carve shallow wrinkles under his eyes and across his forehead with the 6 mm no. 8 gouge (Photo 18). The rounded cutting edge of the gouge will create a softer line than the sharply angled V-gouge.

Next use a small piece of 220-grit garnet paper to clean out any tiny wood splinters that might remain in the corners. But



don't smooth away any of the tool marks. They give the troll's face a craggy texture that enhances his mysterious woodland character.

To show off the tool marks even further, finish the carved portion of the wood with paste wax. I used a no. 8 bristle paintbrush to spread a thin, even layer of wax over all of the carved details. Then I buffed it out with a clean shoe brush. This will bring out the rich colors found in driftwood, and give it a soft, mellow sheen that accentuates the carved features. Leave the rest of the wood unfinished. The contrast between the polished troll face and the remaining weathered driftwood creates an unusually striking effect.

To display your carving, drill a 1/8 in. diameter hole in the back, angled slightly upward. Then hang it on a small finishing nail.

This project is really fun because you have so much freedom in carving it. Don't be concerned with making any of the features exact. Just pick up an interesting piece of wood and use your imagination.



MITER SLOT TENON JIG

designed by Bob Colpetzer

A sturdy, accurate table saw tenon jig is an accessory that belongs in the shop of every serious woodworker. Properly used, a tenon jig increases safety and accuracy when making cuts on the ends of a narrow board. As the name suggests, it's most often used to cut tenons, but this jig will also cut bevels, grooves, half-laps and open mortises.

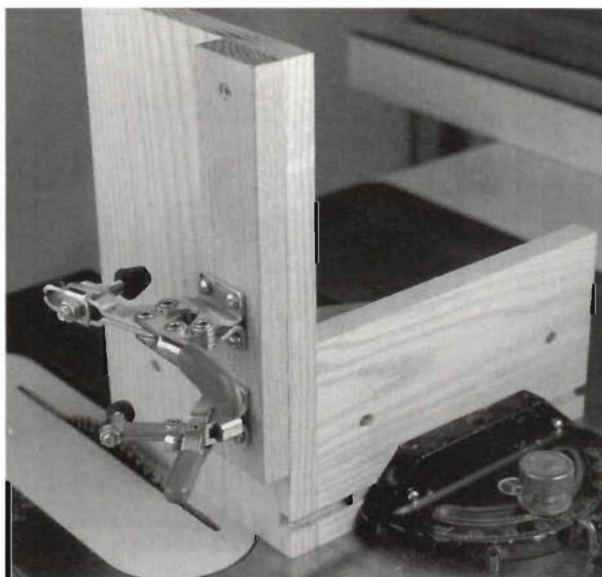
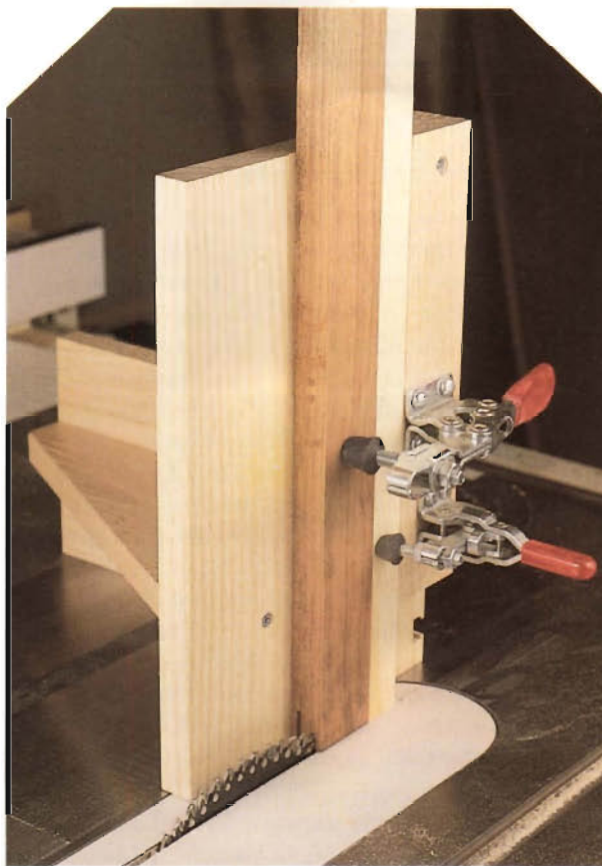
Stock is quickly and easily secured in the jig thanks to the large toggle clamp. The small toggle clamp is used to clamp a narrow back-up board, made from scrap stock, against the workpiece. The back-up board serves to support the edge of the stock, minimizing tear-out as the saw blade exits the cut. You'll need to replace the back-up board when it gets cut to the extent that it no longer supports the stock.

This tenon jig is designed to be attached to the table saw miter gauge. The slide bar allows for easy and accurate left-to-right adjustment. Keep in mind that the spacing of the slide bar screws and the elevation of the slot will vary depending upon your particular miter gauge.

Your tenon jig is likely to get a lot of use, so you'll want to make it from a good hardwood to keep wear and tear to a minimum. The one shown is made from solid oak, but maple or birch are a couple of other good choices. Select stock that's straight-grained and flat.

For the jig to have maximum accuracy, it's important that the cuts be square, so check your miter gauge before starting. A test cut on a piece of scrap stock will quickly let you know if an adjustment is in order.

Make the Face: Begin by making the face (A). Cut $\frac{3}{4}$ in. thick stock to $7\frac{1}{2}$ in. wide by 12 in. long. Once the face is cut to size, use the router table and a $\frac{3}{8}$ in. diameter straight bit to cut a $\frac{3}{8}$ in. wide by $\frac{3}{8}$ in. deep by $5\frac{1}{2}$ in. long stopped groove in the back of the face (Fig. 1).



Because of the location of the slot on the face, you'll need to feed the stock into the router bit from left-to-right (as you face the router fence). When feeding in this direction, the router bit tends to push the stock away from the fence, so normally such a cut is not suggested. However, if you limit your depth of cut to no more than $\frac{1}{8}$ in. for each pass, and if you take care to firmly hold the stock against the fence, you should be able to make this cut with little difficulty. As always, keep your hands well away from the cutter. When the cut is complete, the router will leave rounded corners at the end of the groove, so you'll need to square them up with a sharp chisel.

Make the Bracket and Support:

Next, cut the bracket (B) to length and width from $\frac{3}{4}$ in. thick stock. Use the router table to cut the $\frac{3}{8}$ in. wide by $\frac{3}{8}$ in. long tenon on one end.

Now, cut the support (C) to size. As shown in the top view, the edges that mate against the face and bracket must be square.

After cutting the support to size, scribe a line to indicate the tapered back edge. Use a band saw to cut the taper, then sand or plane the sawn edge smooth.

Check the bracket tenon for a good fit in the face mortise. If all looks okay, add glue to the mating surfaces of the joints, then clamp the two parts together.

The support can now be attached to the face and bracket with $1\frac{1}{2}$ in. long by no. 8 flathead wood screws. A pair of screws into each edge will

do the job nicely. The support will serve to square up the bracket/face assembly.

Cut the Slot: You'll need to cut a $\frac{5}{16}$ in. by $\frac{9}{16}$ in. slot to accept the slide bar (see Slide Detail). As shown in the exploded view, the slot is cut in the edge of the face and along the entire length of the bracket.

To determine the elevation of the slot (Dimension "A" in the

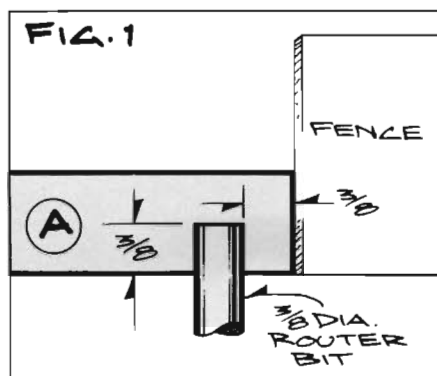
Front View), you'll first need to measure your miter gauge. With your miter gauge in the table saw slot, measure the distance from the saw table to the centerline of the miter gauge mounting screw holes. That measured distance represents dimension "A" in the Front View.

Now, set up the router table with a $\frac{3}{8}$ in. diameter straight bit and locate the fence as shown in Fig. 2. Note that dimension "A" is measured from the centerline of the router bit to the fence. Make three light cuts to establish the $\frac{7}{16}$ in. depth.

The remainder of the slot is cut using the router table and a keyhole bit. Most keyhole bits create a $\frac{1}{16}$ in. lip, but that's not enough material to support the slide bar. For this project you'll need a bit that cuts a $\frac{3}{32}$ in. wide lip (see Sources).

It will take four cuts to complete the slot. Make the first cut with the keyhole bit set to make a $\frac{3}{32}$ in. deep cut at a point $\frac{1}{8}$ in. from bottom edge (Fig. 3A). Then, raise the bit to make a cut flush with the top edge of the slot (Fig. 3B). Now, relocate the fence to make a $\frac{3}{32}$ in. deep cut on the opposite side of the slot (Fig. 3C). Finally, lower the cutter and make the final cut $\frac{1}{8}$ in. from the bottom edge (Fig. 3D).

Make the Slide Bar: Cut the slide bar (D) for a smooth sliding fit in the slot.



Once cut, measure the screw spacing on your miter gauge and transfer the centerpoints to the bar. This is shown as dimension "B" in the Side View.

At the marked centerpoints, drill $\frac{1}{4}$ in. diameter through-holes to accept 8-32 brass threaded inserts (E). Use a screwdriver to drive the inserts flush to the back edge of the slide bar. (A coat of paste wax applied to the threads will make it a lot easier to drive the inserts.) When the slide bar is added to the slot, the front end of the insert must not protrude beyond the slot's front face. If it does, you won't be able to securely tighten the jig to your miter gauge. A few passes with a file will quickly shorten the inserts enough to avoid any problem.

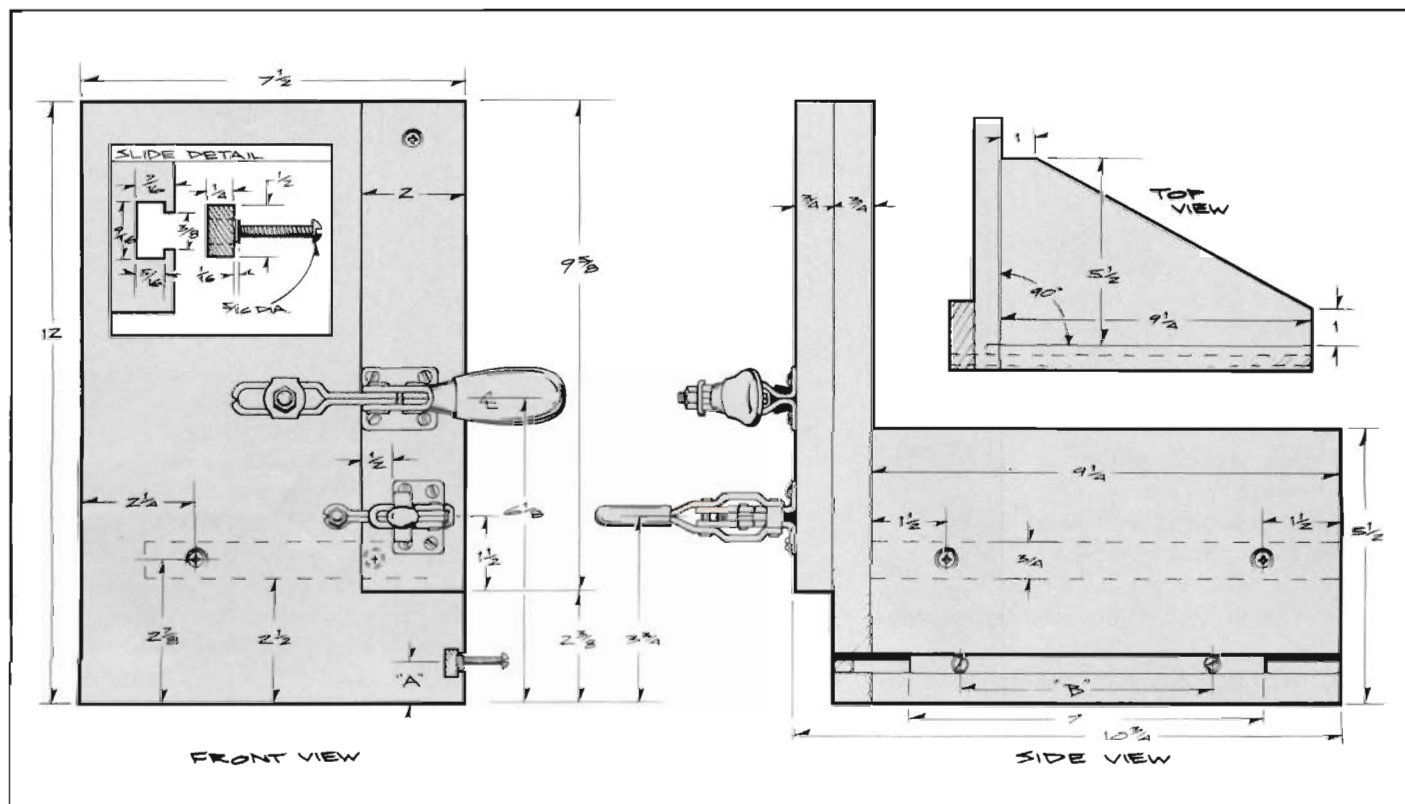
Test Fit the Jig And Miter Gauge: Now, attach the jig to your miter gauge

with a pair of 8-32 machine screws. The screw length that's needed will depend upon your miter gauge.

Check that the jig slides smoothly on the miter gauge. A coat of paste wax added to the slide bar should relieve any stickiness. Also, make sure the jig fits tightly against the miter gauge when the screws are tightened.

Add the Cleat: Cut the cleat (F) to size and temporarily position it on the face with a couple of clamps. Now, place the jig in the miter slot and use a square to check that the cleat is exactly 90 degrees to the saw table. Make adjustments as necessary. Once satisfied everything is square, and with the cleat still secured by the clamps, attach the cleat to the face with a pair of $1\frac{1}{4}$ in. long by no. 8 flat-head wood screws. As shown in the Exploded View, the screws are located $\frac{3}{4}$ in. from the top end and $1\frac{1}{2}$ in. from the bottom end.

Assemble the Toggle Clamps: Mount the small toggle clamp (G) and large toggle clamp (H) with screws as shown. Note that the large toggle clamp, which serves to hold the workpiece, is located flush with the front edge of the cleat. Both toggle clamps can be adjusted to allow for some variation in stock thickness. And, since stock widths will also vary, the large toggle clamp provides for some front-to-back adjustment. 



Sources

Keyhole Bit

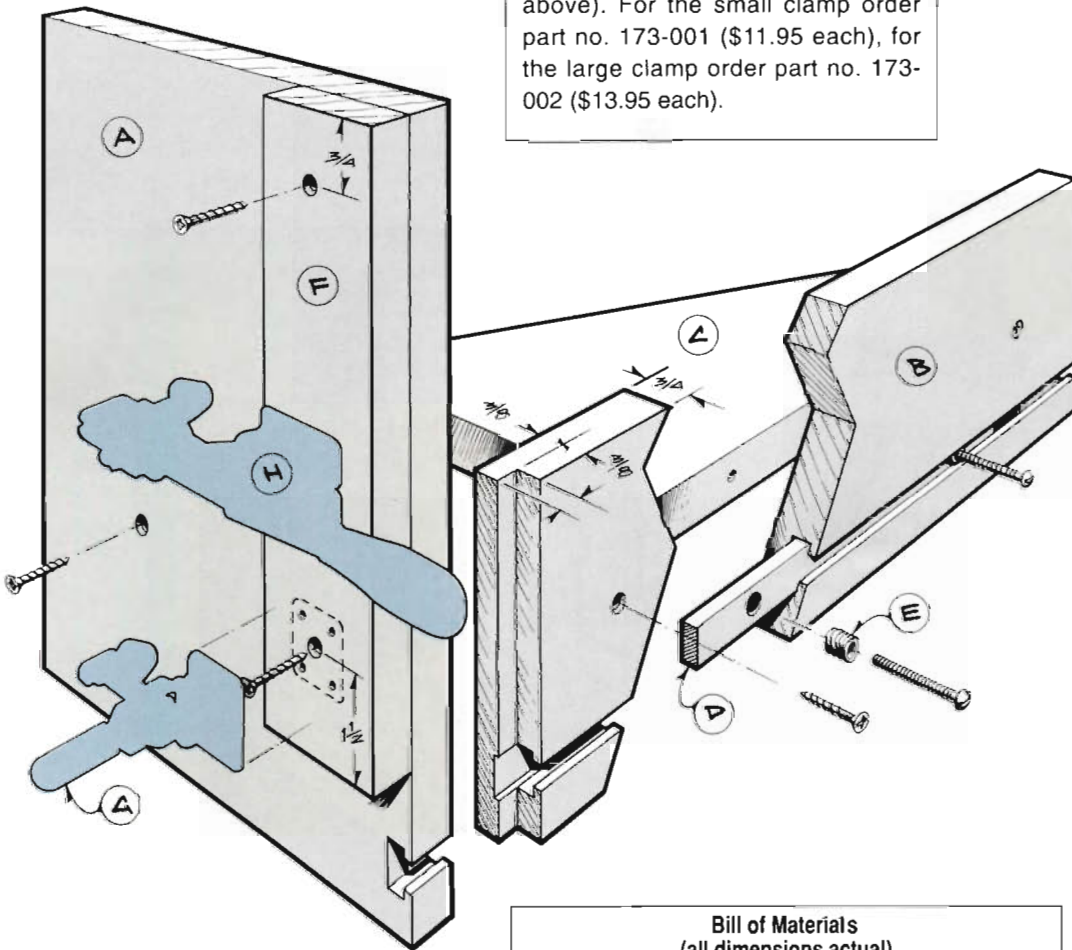
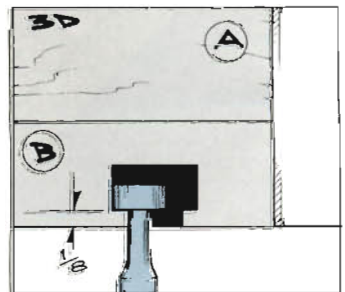
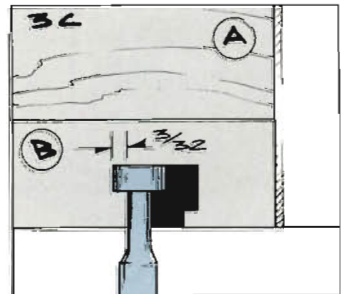
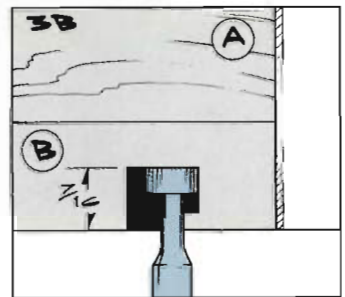
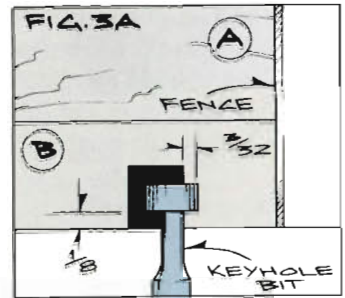
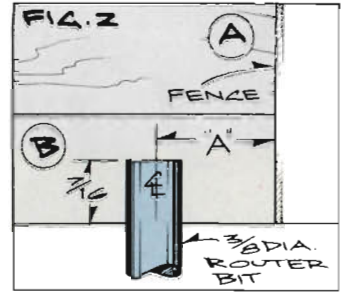
Eagle America, P.O. Box 1099, Chardon, OH 44024; tel. 1-800-872-2511. Order part no. 142-0602 (\$9.99 each).

Threaded Inserts

Woodworker's Supply, 1125 Jay Lane, Graham, NC 27253-2619; tel. 1-800-645-9292. Order part no. 866-973 (\$.23 each).

Toggle Clamps

Woodworker's Supply (see address above). For the small clamp order part no. 173-001 (\$11.95 each), for the large clamp order part no. 173-002 (\$13.95 each).



Bill of Materials
(all dimensions actual)

Part	Description	Size	No. Req'd
A	Face	3/4 x 7 1/2 x 12	1
B	Bracket	3/4 x 5 1/2 x 9 5/8*	1
C	Support	3/4 x 5 1/2 x 9 1/4	1
D	Slide Bar	1/4 x 1/2 x 7	1
E	Threaded Insert**	8-32, 3/8 in. long	2
F	Cleat	3/4 x 2 x 9 5/8	1
G	Small Toggle Clamp**	2 7/16 in. long	1
H	Large Toggle Clamp**	6 1/2 in. long	1

* Length includes tenon

** See sources

Paul Revere
LETTER HOLDER

Fourth of July celebrations today seem to be more pomp and fireworks than memory and honor. And perhaps the passage of time softens our need for fire-in-the-belly patriotism. But, consider the seminal moments in our nation's history, and right up there with the signing of the Declaration of Independence is The Midnight Ride of Paul Revere.

We asked scroll saw artist **Bill Zaun** to design a desktop letter/pencil holder for us that would commemorate this historic moment. Like most of Bill's designs, the scroll-cut parts are easy to make, even if you haven't done much scroll saw work. And, our full-size patterns of the scroll sawed parts mean you can get right to work, without need for enlarging, or grid patterns.

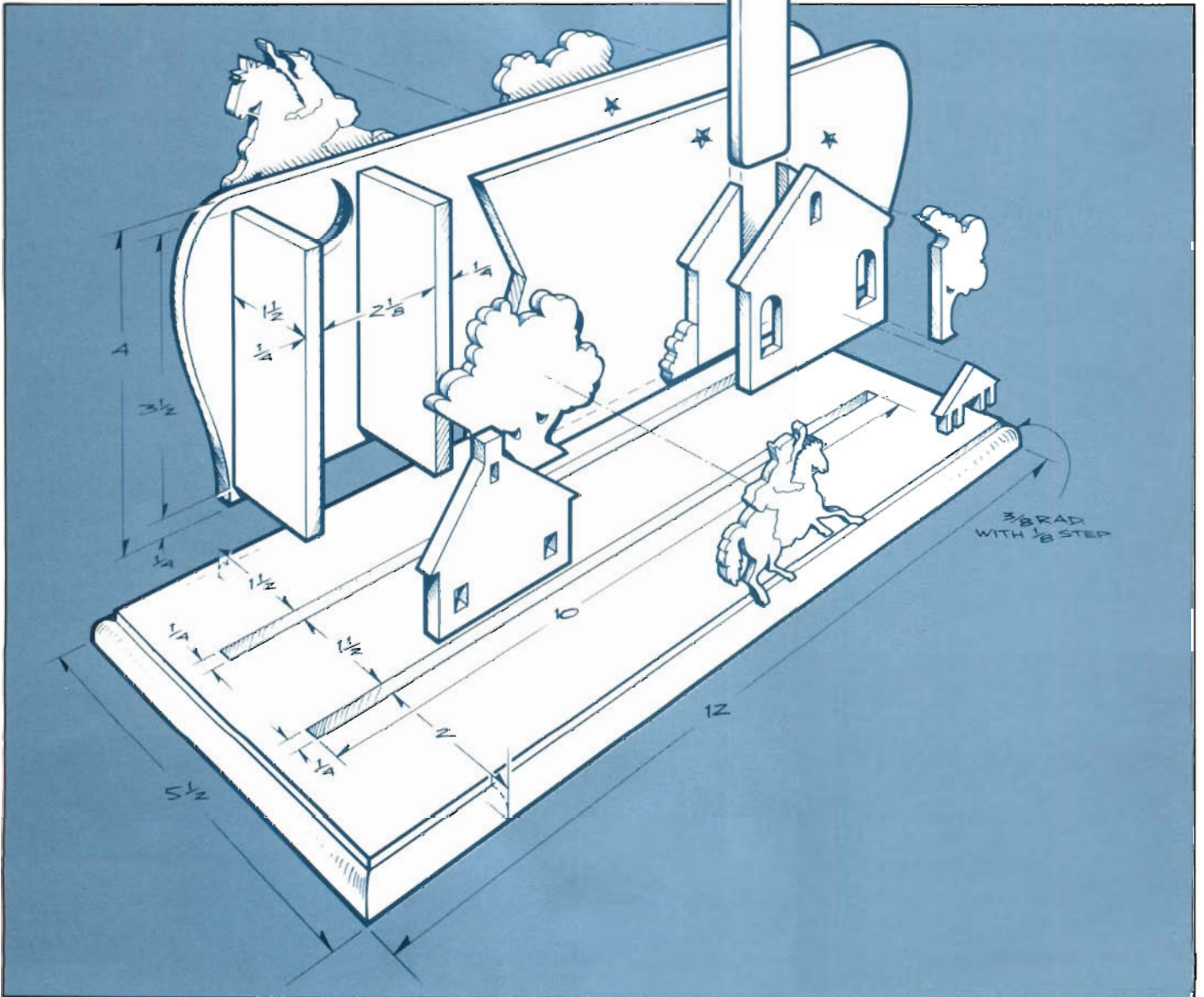
Obtaining the Wood

Except for the base, which is $\frac{3}{4}$ in. thick mahogany, all the remaining parts are $\frac{1}{4}$ in. thick. We used walnut for the letter holder sides and di-

viders, maple for the house, oak for the trees and shrub, cherry for the church parts and the steeple letter opener, and padauk for Paul on his horse. As the back view photo shows, we've added a tree along with Paul on his horse on the back of the letter holder. The tree on the back side is oak, while Paul on his horse is cherry.

Kit Source

If you have an ample scrap box, you can probably get most of the stock for this project by resawing. But for





those woodworker's who may have difficulty finding the specified woods, or obtaining the needed thickness, we've asked a stock kit company, Heritage Building Specialties, to provide a low-cost kit that includes all the wood you'll need to build the Paul Revere Letter Holder exactly as shown (see Stock Kit Source). The stock kit includes all the needed material, final thicknessed and ready for you to start cutting.

Your stock kit will include more than enough stock for all the parts. But lay out the patterns on the wood before you start cutting with the scroll saw, to make sure you don't forget anything.

Transfer Patterns

First up is transferring the patterns to your stock. The quickest way to transfer the patterns is to make photocopies of the Clip-N-Save pattern page, cut apart the separate pieces of the pattern, and use 3M Spray-Mount Artist's Adhesive to affix the patterns directly to the stock. To use the 3M adhesive, spray it onto the back of the paper pattern, wait about a minute, then apply the pattern to the wood.

If you use our stacking technique (see Pro Tip), you'll only need a single pattern of each of those elements that can be

stacked, specifically Paul on his horse, the letter holder sides and the halves of the church on either side of the steeple. You can also stack the large tree on the front and the same tree on the back, but note that after the trees are separated, you'll need to cut the front tree back a bit where it fits against the roof of the house.

Take careful note of the grain direction of the various parts before applying the patterns. Note that the church and steeple grain all runs vertically, as does the grain of the trees and shrub. The grain of Paul on his horse should run diagonally, either from the horse's head to the back feet, or from the tail to the front

feet. It really doesn't matter which diagonal direction you choose (the project in the photos has one horse and rider cut each way).

At the Scroll Saw

Start with the interior cuts on any given piece. For example, for the letter holder sides, start by cutting out the moon and stars. You'll need to drill a starter hole for each of the interior cuts, then thread the saw blade through the hole before mounting it in the saw.

Once the interior cuts are complete, cut the outside profile. If you are careful with your cuts, minimal sanding and cleanup work will be required prior to assembly.

The Base

The base is just a $\frac{3}{4}$ in. mahogany board $5\frac{1}{2}$ in. wide by 12 in. long. Lay out a pair of $\frac{1}{4}$ in. wide by $\frac{1}{4}$ in. deep grooves in the base to accept the letter holder sides. We show the grooves as 10 in. long, but check the length of your sides and cut the grooves to fit. Note that the grooves aren't centered on the base. The front groove is located 2 in. back from the front edge of the base.

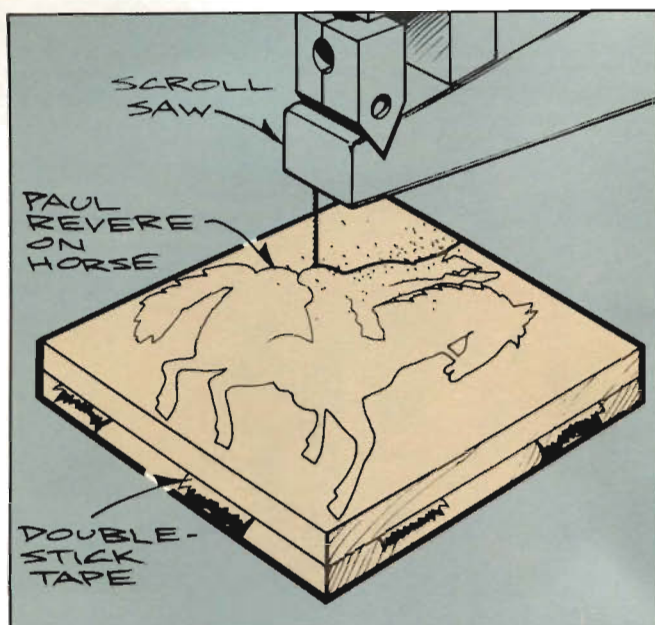
We cut our grooves on the router table with a $\frac{1}{4}$ in. diameter straight cutter, and

Stock Kit Source

A stock kit, with all the pre-thicknessed wood you'll need to build the Paul Revere Letter Holder exactly as shown, is available from:

Heritage Building Specialties
205 N. Cascade
Fergus Falls, MN 56537
Tel. 1-800-524-4184

Ask for Project PAK kit no. WJ49402. Cost is \$14.95 postpaid per kit.



PRO TIP

Once your friends glimpse this handsome letter holder, you'll no doubt be building more than one. But here's a way to make quick work of the scrolling, whether you are making one or many. Simply stack like pieces and cut several at the same time. For example, stack the pieces of padauk and cherry for Paul on his horse, and you can cut both at once. Use the same technique to cut the two sides of the letter holder, and the identical halves of the church on either side of the steeple "opener."

Doublestick tape (Bill Zaun recommends 3M tape, about 1/2 in. wide, sold in most hardware stores for mounting storm windows) can be used to temporarily join the two pieces. Just be careful when separating the scroll-sawed pieces so as to not break any of the delicate parts. An X-acto knife comes in handy to coax the pieces apart.

then used a chisel to square the groove ends. Use stops clamped to the router table fence to limit the length of the grooves. Since both ends of the grooves are blind, you'll need to lower the stock down over the bit to start the cut. Work slowly and carefully, and cut the 1/4 in. groove depth in two passes, each pass removing about 1/8 in. of stock.

Once the grooves are cut, use a 3/8 in. radius round-over bit to apply the stepped radius all around the base.

Assembly

Glue the sides into the base, and the dividers into position between the sides. Then add the various scroll sawed pieces, taking care not to apply too much glue. The idea here is to avoid excess glue squeeze-out, which can make a mess of the finished piece. When gluing the sides of the church in place, take care to leave enough space for the steeple/tower/letter opener to slide in and out.

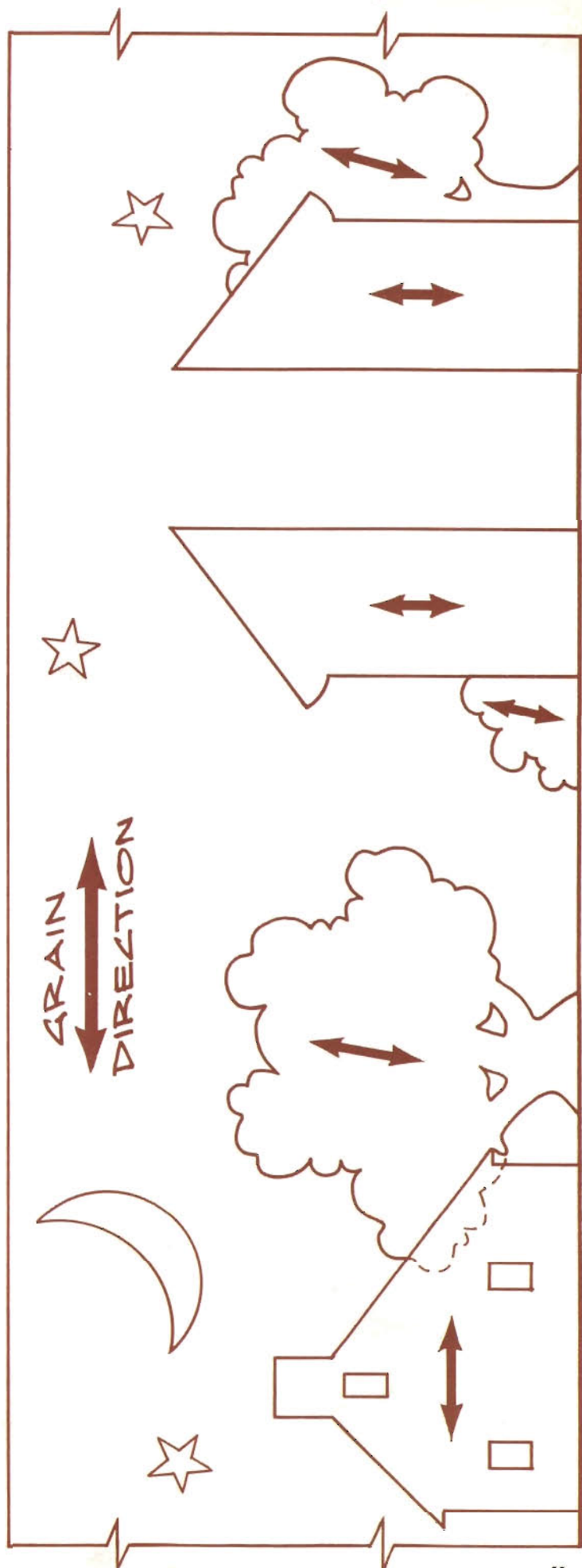
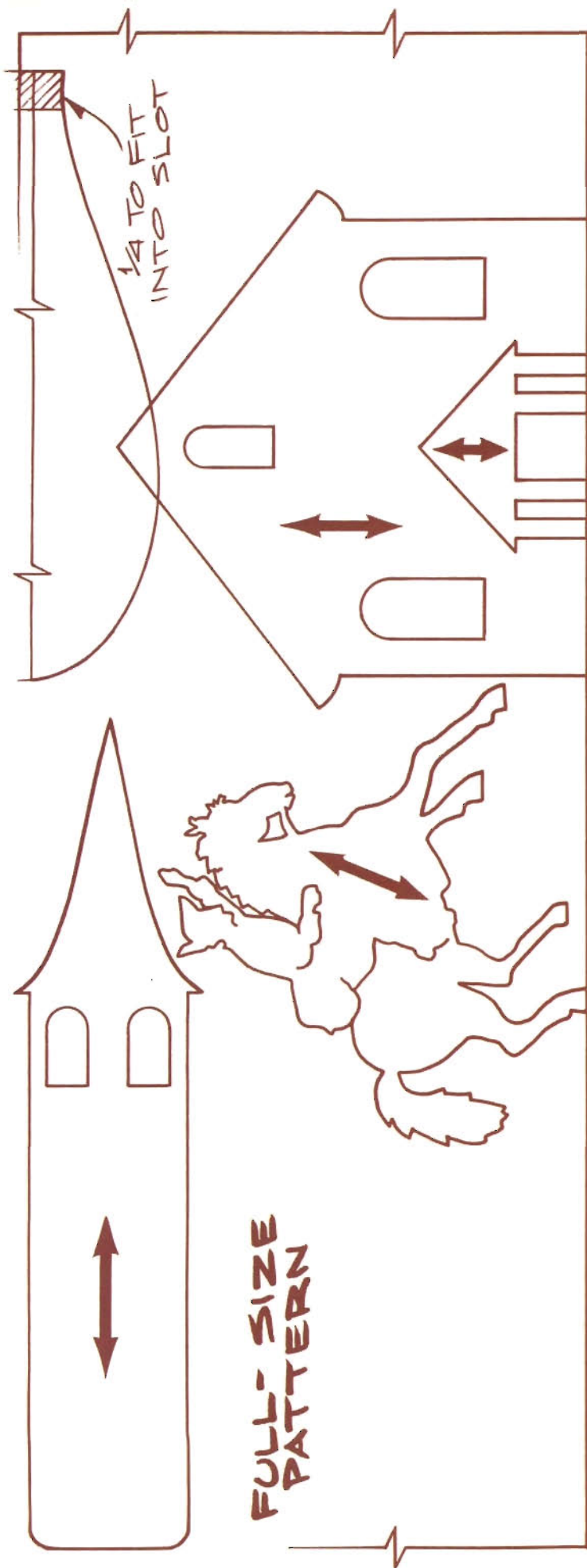
To get the steeple to effectively serve

as a letter opener, you'll need to sharpen the sides to a knife profile. You'll also need to sand to thin the steeple slightly, or it won't slide easily in and out of its "pocket."

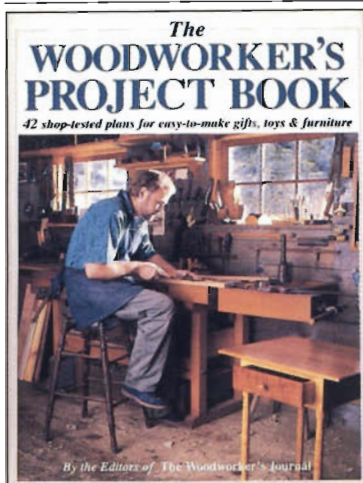
Finish

Our letter holder has a penetrating oil finish. Simply wipe the oil on, let penetrate, then wipe off. Repeat several times to bring out the deep natural color of the various woods used in this project. 



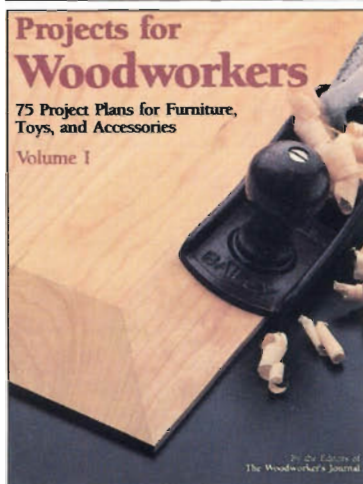


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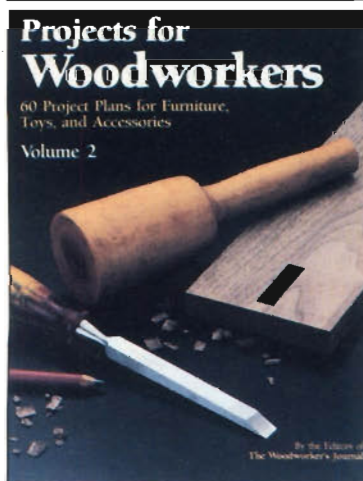
The Woodworker's Project Book

Our first full-color book, these are 42 of our very best, easy projects. Gleaned from the 1988 issues of *The Woodworker's Journal*, projects include folk-art silhouettes, lamps, pierced-tin cabinets, toys, furniture, gifts and accessories. Full-size patterns, step-by-step instructions, 74 photos, and over 265 illustrations.



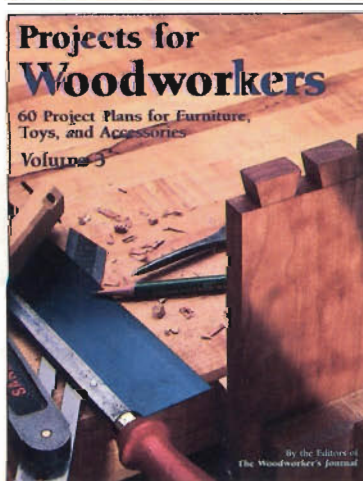
Projects for Woodworkers, Volume 1

Beginning and advanced woodworkers alike will appreciate the full range of styles in furniture, accessories, lamps, clocks, toys and gifts. Of the 75 projects selected from the 1980-81 issues of *The Woodworker's Journal* magazine, plans include a Cabinetmaker's Workbench, Pine Shaker Cupboard, Old-time Icebox, a Cobbler's Bench Coffee Table and a Child's Victorian Sled. Fully detailed instructions, illustrations, and photos.



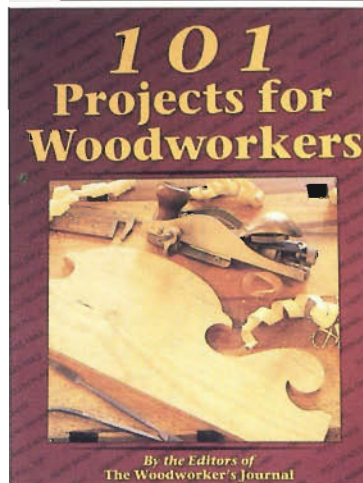
Projects for Woodworkers, Volume 2

Originally published in the 1982 issues of *The Woodworker's Journal* magazine, all 60 projects were chosen with a wide variety of styles and skill levels in mind. Each project is presented with complete instructions and thorough illustrations. You'll find easy to build household accessories like a Desk Caddy, Casserole Holder, and Breakfast Tray. You're sure to enjoy the reward of building more involved projects like the Tambour Desk, Old Danish Chest of Drawers and Swinging Cradle.



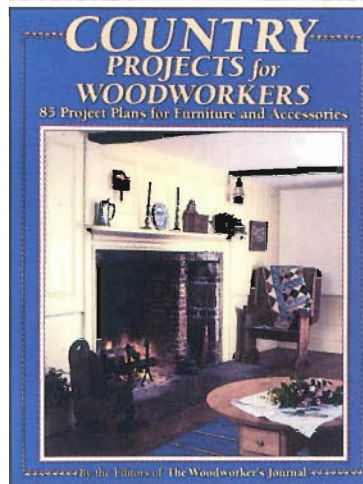
Projects for Woodworkers, Volume 3

The best projects from the 1983 issues of *The Woodworker's Journal* magazine—toys, lamps, cupboards, chests, cabinets, tables, planters, mirrors, and much more. Clear illustrations and thorough written instructions make each project easy-to-understand and fun to build. A book you'll want to keep within easy reach of your workbench.



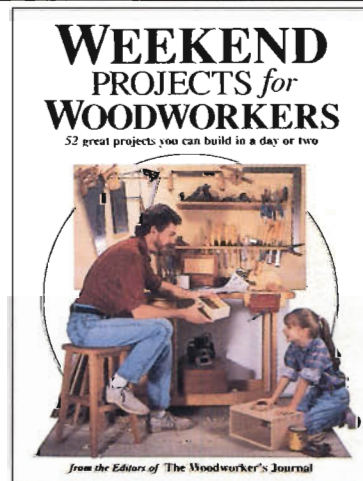
101 Projects for Woodworkers

For the eager amateur just starting out or the craftsman with a shop full of tools, **101 Projects For Woodworkers** features an unparalleled variety of classic projects for everyone. Included in this collection of plans from the 1977-80 issues of *The Woodworker's Journal* magazine are a classic Rolltop Desk, an old-fashioned Porch Swing, traditional and contemporary furniture, clocks, mirrors, home accessories, toys and novelties. Complete instructions and illustrations.



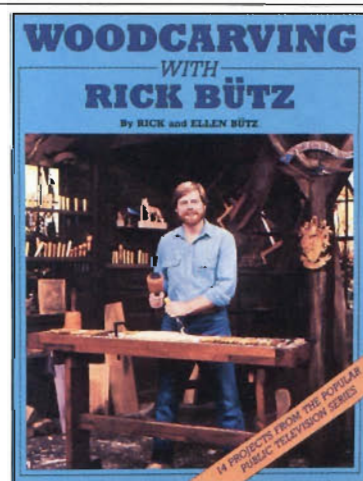
Country Projects for Woodworkers

If building the simple, sturdy furniture of the old cabinet-makers appeals to you, then you'll want this collection of the best country projects from the 1980-84 issues of *The Woodworker's Journal* magazine. 85 complete plans range from weekend projects like Colonial Candlesticks and Fireplace Bellows to more challenging projects such as a Shaker Chest of Drawers, a Stepped-Back Hutch, and an 18th Century Trestle Table. Some plans are also found in *Projects for Woodworkers*, Volumes 1 and 2.



Weekend Projects for Woodworkers

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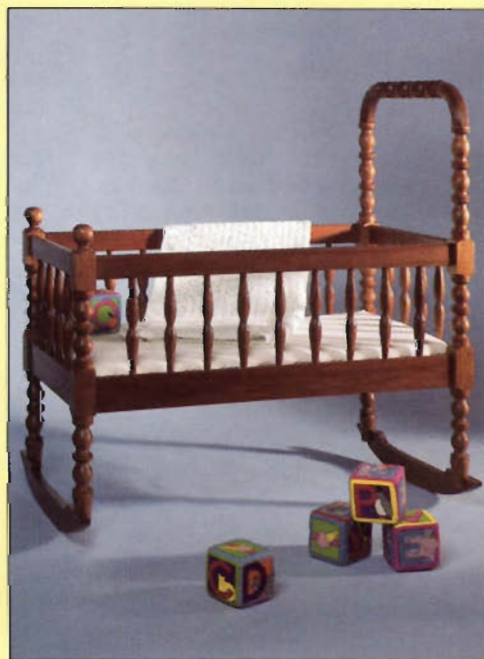
Coming up in our blockbuster September/October issue is a lineup of great projects. You can start early on your Christmas gift list with the elegant **Mitered Boxes**, or use the scroll saw and make a few of our clever **Dinosaur Habitats**. Have a



child or grandchild on the way? Our classic **Jenny Lind Cradle** is just the ticket. Add a fun-to-make intarsia project, a fanciful **Halloween Mobile** and several more projects, and your shop is sure to be one very busy place.



But the *Journal* is much more than projects. Master woodworker Roger Holmes delves into the sticky subject of glues and gluing, and we interview several top scrollers in our revealing feature, *Scroll Saw Secrets Of The Pros*. These plus several more articles—including a peek into what the future holds for woodworking—make this next big issue one you won't want to miss.



BACK ISSUES

The Back Issue pages list the contents of all back issues that are currently available for sale

Vol. 9 No. 3 May-June '85

Wall Cabinet w/Recessed Finger Pulls, Shaker Desk, Kitchen Cart, Contemporary Wall Clock, Colonial Wall Sconce, Card Box, Towel Bar w/ Glass Shelf, Marble Race Toy, Cradle, Vanity Mirror, Miter Clamping Jig, Jacobean Joint Stool; *Articles:* Product Liability: Part I; Restoring an Antique Frame; Coping w/Wood Movement; Making Recessed Finger Pulls.

Vol. 9 No. 6 Nov-Dec '85

Dulcimer, Dining Table, Shaker Washstand, Marking Gauge, Veneered Wall Clock, 4 x 4 Off-Roader, Teddy Bear Puzzle, Duck Pull-Toy, Landscape Cutting Boards, Early Amer. Tall Clock, Desk Organizer, Moravian Chair; *Articles:* Weaving a Rush Seat, Part I; Table Saw Rippling Problems/ Solutions; 4-Piece Book Match Veneering; Running a Profitable Business.

Vol. 10 No. 1 Jan-Feb '86

Chippendale Bachelor's Chest, Oriental Serving Tray, Country Bench, Antique Knife Tray, Tape Dispenser, Valentine Box, Toy Tow Truck & Car, Shaker Drop-leaf Table, Shop-made Bow Saw, Child's Settle Bench, Plate Shelves, Freestanding Shelf System; *Articles:* Getting Paid for Your Work; Weaving a Fiber Rush Seat, Part II; Table Saw Crosscutting; Router-Lathe Fluting.

Vol. 10 No. 3 May-June '86

Contemporary Lamp, Early Amer. Bench, Steam-bent Clock, Pine Hutch, Goose Basket, Toy Crane, Condition Holder, Shop Workstation, Parson's Table, Shaker Lap Desk, Victorian Whatnot Shelf; *Articles:* Toymaker Clare Maginley; Flattening Warped Boards; Choosing a Router; Supported Steam Bending.

Vol. 10 No. 4 July-Aug '86

Wall-Hung Display Cabinet, Latticework Planter, Country Bucket Bench, Adirondack Chair, Coffee Mill, Clamdigger's Basket, Box of Shapes Toy, Disk Clock, Tenon Jig, Dictionary Stand, Shaker Slat-Back Side Chair; *Articles:* Selecting a Production Project; More About Warped Boards; About Router Bits; Sliding Dovetail Joints.

Vol. 10 No. 5 Sept-Oct '86

Vanity Case, Stool, Coffee Table, Blanket Chest, Mortar and Pestle, Whale Folk Art Silhouette, Toy Wagon, Cranberry Rake, Router Bit Box, Shaker Drop-Leaf Table, Desk with Tambour Top; *Articles:* Are Your Prices Competitive?; Restoring a Rosewood Chair; Basic Router Operations; Making Tambour Doors.

Vol. 11 No. 2 Mar-Apr '87

Garden Bench & Table, Mirrored Wall Shelf, Rhombohedron Puzzle, Wood Sawyer Whirligig, Folk Art Doorstop, Kangaroo Pull Toy, Colonial Wall Shelf, Contemp. Hall Table, Shaker Sewing Desk; *Articles:* Direct Mail Promotion; Finishes: The Mortise & Tenon, Part II; Beveled Drawer Bottoms.

Vol. 11 No. 3 May-June '87

Kitchen Canister Set, Riding Biplane, Contemporary Serving Cart, Napkin Holder, Decorative Planter, Country Vegetable Bin, Medicine Cabinet, Drum Sander, Vienna Regulator Clock, Display Pedestal; *Articles:* Penetrating Oils; The Joiner; Veneer, Part I; Dovetail Key Butt-Miter.

Vol. 11 No. 4 July-Aug '87

Early American Bookcase, Trash Container, LowCost Workbench, Country Basket, Desk Calendar with Pen & Pencil, Butterfly Pull Toy, Vanity Mirror with Drawer, Apothecary Chest, TV/VCR Cabinet; *Articles:* Shellac; The Hand Plane; Veneer, Part II; Incised Carving.

Vol. 11 No. 5 Sept-Oct '87

Contemporary Love Seat, Two-Drawer Platform Bed, Snail Pull Toy, Routed Trivets, Spice Rack with Chip Carving, Joiner's Tool Chest, Shaker-style Step Stool, Turned Shop Mallets, Woodbox; *Articles:* French Polishing Made Easy; Plane Iron Sharpening; Making a Splayed Leg Drill Guideblock; Traditional Chip Carving; Shop-Tested: 12 Jigsaws; Making the Knuckle Joint.

Vol. 11 No. 6 Nov-Dec '87

Rocking Horse, 3-Drawer Jewelry Chest, Tapering Jig, Rolling Toy, Folk Art Silhouette, Two Towel Racks, Early American Wall Shelf, Corner Cupboard, Stacking Wine Racks, Curio Cabinet; *Articles:* Glues & Gluing; Band Saw Setup; Making the Continuous Bracket Foot; Step-by-Step to a Flawless Finish.

Vol. 12 No. 1 Jan-Feb '88

Contemporary Coffee Table, Puss 'n Books Bookends, Cookbook Holder, Wooden Jewelry, Child's Duck Puzzle, Shaker Wall Clock, Stereo Cabinet & Speakers, Country Occasional Table, Drill Press Jig, Pierced Tin Cabinet; *Articles:* Edge Gluing; The Drill Press; Pierced Tin; Four Shopmade Finishes.

Vol. 12 No. 2 Mar-Apr '88

Oak & Glass Tier Table, Crystal Regulator Clock, Early American Candlesticks, Arrow Wall Decoration, Three-Drawer Country Wall Box, Key Cabinet, Contemporary Box, Shaker Carrier, Folk Harp; *Articles:* Use and Sharpening of the Hand Scraper; The Lathe: Basic Setup; Quartered Turnings; Lacquer.

Vol. 12 No. 3 May-June '88

Loon Carving, Early American Dry Sink, Contemporary Dresser, Old-Time Pipe Box, Antique Knife & Fork Tray,

Porringer Top Tea Table Jan/Feb '94



Dutch Tulip Folk-Art Silhouette, Colonial Salt Box, Bud Vase, Miter Gauge Stop, Hunt Table; *Articles:* Spindle Turning: Selecting and Sharpening Lathe Tools; Recessed Finger Pull Step-by-Step; Coloring Wood: An Overview.

Vol. 12 No. 4 July-Aug '88

Magazine Rack, Occasional Table, Mitered-Corner Box, Heart Stool, Decorative Cutting Boards, Piggy Bank, Turned Bowl, Country Cupboard, 4-Drawer Lamp; *Articles:* Faceplate Turning; Workshop Layout; Dovetails on the Table Saw; Staining Basics.

Vol. 12 No. 5 Sept-Oct '88

Miter Cutting Jig, Captain's Clock, Country Coffee Table, Rooster Folk-Art Silhouette, Harvest Basket, Bird Push Toy, 18th-Century Pencil Post Bed and Nightstand, Bookcase Desk; *Articles:* Wood Movement; Joining Ring Segments; Drill Bits; Filling Open-Grained Woods.

Vol. 12 No. 6 Nov-Dec '88

Shaker High Chest, Table Saw Crosscut Box, Country Vegetable Bin, Whale Pull Toy, Colonial Wall Sconce, Treetop Christmas Ornament, Classic Pickup Truck, Contemporary Cradle, Child's Carousel Lamp; *Articles:* Flattening Wide Surfaces w/the Hand Plane; Making a Cove-Edged Raised Panel: Core-Box Bit Method; Polyurethane; Sander for Large Surfaces.

Vol. 13 No. 1 Jan-Feb '89

Shop-built Disk Sander, Cherry Table, Wall Clock, Rock & Roll Toy, Contemporary Candlesticks, Merganser Decoy, Child's Table & Chairs, Shaker Wall Cabinet; *Articles:* Buying Hardwood Lumber; The Thickness Planer; Breadboard Ends; Ebonizing.

Vol. 13 No. 2 Mar-Apr '89

Adirondack Settee, Country Village, 18th-Century Tilt-Top Table, Toy Fishing Bird, Two Trivets, Folk-Art Cow, Greek Revival Birdhouse, Pine Armoire, Oriental Mirror; *Articles:* Transferring and Enlarging Patterns; Making Tripod Legs; Three Easy Finishes for Pine; The Portable Circular Saw.

Vol. 13 No. 3 May-June '89

Storage Seats, Table Saw Gauge, Oval Extension Table, Nessie Pull Toy, Back Massager, Decorative Wall Key, Country Wall Shelf, Contemporary Mirror, Jewelry Chest; *Articles:* Panel Retainer Disk System; Circular Saw Blades; Cutting Box Joints; Non-Toxic Finishes; Interview: Paula Garbarino.

Vol. 13 No. 4 July-Aug '89

Shaker Long Bench, Folk-Art Sign, Toy Farm Tractor and Wagon, Miniature Flower Cart, Kitchen Tongs, Wall Cabinet with Tinsel Art, Stacking Bookshelves, Country Pie Safe; *Articles:* Dealing with Uneven Wood; Tinsel Art; Coping with Your Radial-Arm Saw; Brushing Lacquer; A Visit to a Woodworking Show.

Vol. 13 No. 5 Sept-Oct '89

Country BakeRoom Table, Chippendale Small Chest, Stacking Desk Trays, Pencil Box, Apple Doorstop, Space Shuttle Toy, Marquetry Coasters, Ice Chest with Marbleized Top, Globe Stand; *Articles:* Table Saw Basics; Cutting Full-Blind Dovetails; Marquetry: The Pad Method; Marbleizing; Mount Lebanon Shaker Village: A Museum in the Making; Tool Review: Four Portable Planers.

Vol. 13 No. 6 Nov-Dec '89

Mission Style Trestle Table, Jewelry Box, Kids' Bobsled, St. Nicklaus Carving, Carousel Toy, Box Drum, Dancing Man Folk Toy, Towel Rack, Secretary Desk, Bed Tray;

Articles: Mortising Butt Hinges; Dado Heads; Marquetry: The Empty Window Method; Aniline Dyes; Lynes Unlimited: Making Toys in a Kansas Chicken Coop.

Vol. 14 No. 1 Jan-Feb '90

Mortise & 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, Tavern Table; *Articles:* Clamps: One Shop Tool You Can't Do Without; How to Hang Wall Cabinets; Marquetry: The Direct Method; A Guide to Wax and Polish.

Vol. 14 No. 2 Mar-Apr '90

Small Early American Mirror, Shop-Built Sanding Blocks, Cookie Jar Holder, Hourglass, Candle Holder, Toddler Cart, Folk Fiddle, Plant Stand, Santa Fe Bench; *Articles:* Making Drawers; Using Router Bits in the Drill Press; Finishing Outdoor Projects; Making Curved Instrument Sides; A Conversation with the Westovers.

Vol. 14 No. 3 May-June '90

Garden Table & Chair, Planter Box, Stackable Shoe Rack, Victorian Wall Shelf, Child's Stepped-Back Cupboard, Cat Push Toy, Tabletop Armoire, Shaker Tall Clock; *Articles:* Japanese Saws; Gluing Oily Woods; Tung Oil; Make a Tombstone Frame & Panel Door; Woodworking and Rain Forests.

Vol. 14 No. 4 July-Aug '90

Slant-Back Cupboard, Folding Deck Table, Two Toy Dragsters, Colonial Sign, Barbecue Tray, Workbench Helper, Harvest Table, Plate Rack, Sunburst Mirror; *Articles:* Rasps; Safety: Workshop Finishes Pose Risks; Making the Dovetailed Wedge; Knock-Down Hardware.

Vol. 14 No. 5 Sept-Oct '90

TV/VCR Cabinet w/Pocket Doors, Shaker Woodbox, Cabinet with Punched Tin Doors, Sushi Set, Carved Pineapple, English Cutlery Tray, Toy Train Set, Workbench, Portable Tool Chest; *Articles:* Files and How to Use Them; Compound Angle Dovetails; Water-Based Finishes; Making the Slip Joint; Shop Test: 6 Dovetail Jigs.

Vol. 15 No. 1 Jan-Feb '91

Santa Fe Chair & Table, Clamp Rack, Provincial Bench, Step Stool, Box w/Marquetry Top, Ash Wall Desk, Fork Lift Toy, Connecticut River Valley Highboy, Part 1; *Articles:* Tempering Steel Tools; 3 Easy Finishes for Oak; Making a Cabriole Leg; Hand-Cut Dovetails.

Vol. 15 No. 4 July-Aug '91

Mountain Dulcimer, Shaker Drop-Leaf Table, 4 Easy Picture Frames, Shop-Made Lathe Chuck, Napkin Holder, Fisherman Whirligig, Horse & Cart Toy, Gumball Machine; *Articles:* Shaping on a Table Saw; Turning Small Boxes; Low-Tech Picture Frames: Use Hand Tools for a Professional Job; Gel Stains; Tool Review: Thin Kerf Blades.

Vol. 15 No. 5 Sept-Oct '91

Colonial Bench, Shop-Built Mortising/Tenoning Table, Pine Wall Cabinet, Gun/Bookcase/Curio Cabinet, Tilt-Action Dump Truck, Four Easy Kitchen Projects: Cooling Rack, Salad Tongs, Serving Board, Recipe Box; *Articles:* Secret Compartments; Making Dadoes: Simple Joints for Simple Casework; The New Safe Strippers; Tool Review: Scroll Saws for Under \$200.

Vol. 15 No. 6 Nov-Dec '91

Country Pine Writing Desk, Hurricane Lamp, Little Folks' Desk & Bench, Colonial Dollhouse, Jewelry Box, Father Christmas Carving, Heirloom Toy Chest, Plastic Bag Re-

Intarsia Eagle Sept/Oct '93



cycler, Faux-turned Vessels: 4 Full-size Patterns; *Articles:* Noise in the Shop; Faux-turned Vessels (technique); The Frame and Panel; Tool Review: Biscuit Joiners.

Vol. 16 No. 1 Jan-Feb '92

Country Pine Mirror, Drop-leaf Dining Table, Chess Set, Shop Workcenter, Bandsawn Heart Box, Scroll-sawn Door Harp, Classic Firetruck, Intarsia Toucan-on-a-Branch, Window Valance; *Articles:* Safer Router Bit Designs and New Accessories; Dutch Turning; Veneering; Tool Review: Plunge Routers

Vol. 16 No. 3 May-June '92

Cherry Lingerie Chest, Picnic Table, Butternut Breadbox, Tabletop Napkin Holder, Shoot-the-Moon Rollerball Game, Intarsia Project Knot Hole Gang, Drill Press Organizer, Country Curio Clock; *Articles:* Thinking Like a Craftsman; Collet Chuck Turning; Sharpening Guides & Gizmos; Finishing Kits.

Vol. 16 No. 4 Jul-Aug '92

Lawn Glider, Aeolian Harp, Candle Holders, Tractor/Trailer Toy, Audio/Video Remote Rack, Western-style Belt Buckle and Bolo Set, Side-by-side Chest/ Cupboard, 3 Space-saving Projects for the Shop; *Articles:* The Cordless Tool Revolution; Finishes for Maple; Joining Tops to Tables and Case Pieces.

Vol. 16 No. 5 Sept-Oct '92

Early American Pine Hutch, Child's Windsor Chair, Universal Table Saw Jig, Convertible Step Stool/Chair, Finger-saving Plastic Bag Handle, Acrobatic Bear Folk Toy, Kids' Kitchen Playcenter, Easy-build Bookshelves; *Articles:* Amps vs. Horsepower; An Introduction to Chair-building; Vacuum Turning; Tool Review: Benchtop Table Saws.

Vol. 16 No. 6 Nov-Dec '92

Gov. Winthrop Slant-front Desk, Futon Bed/Couch, Low-cost Router Table, Toy Livestock Truck, Heirloom Jew-

elry Box, Scroll-sawn Nativity Scene, Early American Doll Bed, Router-built Wall Cabinet; *Articles:* Stick and Cope Doorbuilding; Linenfold Carving; Tool Review: High-end Scroll Saws.

Vol. 17 No. 1 Jan-Feb '93

Cherry End Table, The \$30 Workbench, CD Carousel, Desk Clock, Kitchen Message Center, Feathered Friends Mobile, Cimarron, Hammered Dulcimer; *Articles:* Sharpening Carving Tools; Green Woodworking with Kids; Make a Torsion Box; Shoptest: \$99 Do-It-All Router Jig; Tool Review: Sliding Compound Miter Saws.

Vol. 17 No. 3 May-June '93

Country Pie Safe, Collapsible Basket, Intarsia: Humpback Whale, Classic Jewelry Chest, Skittles Game, Porch/Yard Swing, Handsaw Caddy, Shaker Wall Cabinet; *Articles:* Doweling Jigs, Taming the Hand Scraper; Shoptest: Porter-Cable's Pocket Hole Cutter.

Vol. 17 No. 4 Jul-Aug '93

Early American Corner Cupboard, Gossip Bench, Band Saw Cutoff Table, Roaring 20's Sports Car, Pussycat Napkin Holder, Aerobic Step, Desktop Bookshelf, Cherry Letterbox w/ Mountain Scene Relief Carving; *Articles:* How To Buy Wood; Incised Lettering; Choosing and Using Sharpening Stones; Shoptest: The Inca Jig System.

Vol. 17 No. 5 Sep-Oct '93

Intarsia: American Eagle, Blockfront Chest, Super Box Joint, Old Fashioned Farm Table, Sunset Rider Desk Set, Scroll-sawn Bunny Puzzle, Quilt Crane, Magazine Slipcases; *Articles:* Pennypincher's Clamp Organizer; How To Flatten Rough Stock; Faux Antique Crackled Finish; Tool Review: Benchtop and Mini Lathes; Shoptest: Safe-T Planer by Wagner

Vol. 17 No. 6 Nov-Dec '93

Old-Time Icebox, Contemporary Jewelry Box, Window-pane Mirrors, Miter Gauge Fence, Toy (Boat, Helicopter, & Truck), Noah's Ark & Scroll-sawn Animals, Victorian Wall Shelf, Kids' Modular Furniture Set, Santa Carving; *Articles:* How to Rip and Crosscut on the Table Saw; Getting Started In Carving; Turning Bricklaid Bowls; Shoptest: Laguna Tools Mortising Table; Tool Review: Random-Orbit Palm Sanders.

Vol. 18 No. 1 Jan-Feb '94

Porringer Top TeaTable, Sanding Center, Kid's Riding Biplane, Pierced Tin Pine Cabinet, Katchina Bookends, Moving Bead Puzzle, Heart-shaped Box, Oak Dentil Molding Picture Frame; *Articles:* Bridle Joint Photo Step-by-step; Sharpening Lathe Tools Without the Fuss; Offset Leg Turning; Shoptest: Penn State's Overhead Air Cleaning System.; Special Section: Back Issue Index.

Vol. 18 No. 2 Mar-April '94

Recycling Island, Seascope Clock, Knock-Down Router Table, Bowed Psaltery, First Baseball Bat, Mystery Maze, Spring Bouquet; *Articles:* Getting the Most from Your Portable Planer; Shopping for Sheet Stock; Shoptest: Ryobi Oscillating Sander.

Vol. 18 No. 3 May-June '94

Through-Dovetail Jig, Woody Wagon Toy, Intarsia: Bad Puppy, Oval Collapsible Basket, Cherry Coffee Table, Salt & Pepper Shaker Set; *Articles:* Fine Tuning Your Band Saw; Tool Review: Benchtop Band Saws.

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