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SIMPLE SOLUTIONS FOR CLAMPING **CHALLENGES**

PERFECT PARTS ON THE **TABLE SAW**

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Vol. 31 / No. 186

5 Ways to Get More Out of Your ROUTER

+

FASTER SANDING WITH A DISK SANDER

Woodsmith 30 YEARS 1979 - 2009

CLASSIC CHERRY SIDEBOARD

- SECTIONED COLUMNS
- STURDY CONSTRUCTION
- HIDDEN STORAGE

A Publication of August Home Publishing

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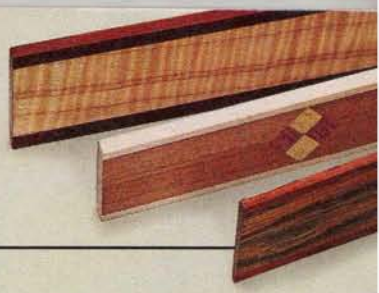
Sawdust



One morning a few months ago, Dennis Perkins, our associate editor here at *Woodsmith*, stopped by my desk with a handful of narrow strips of intricate, wood inlay banding that he made in his shop over the weekend.

As I was admiring the colorful, patterned strips of exotic woods, I asked Dennis to explain how he made them. I must have had a confused look on my face because halfway through his explanation, Dennis stopped and said, "Let me *show* you how I did it." He then left and came back with several blanks and pieces that were left over from the process.

Once I could actually see the steps involved, the procedure for making these bandings didn't seem all that difficult. In fact, we decided it would make a great article. (You'll find the article on page 14.) And after you've tried your hand at making the banding, take a look at the companion picture frame project on page 18 that we've included to go along with it.

Terry

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Tips & Techniques

Tabletop Workbench Vise

I spend a lot of time on the road each year, which means I don't get to work in my shop as much as I'd like. So I built this portable workbench to take my projects with me.

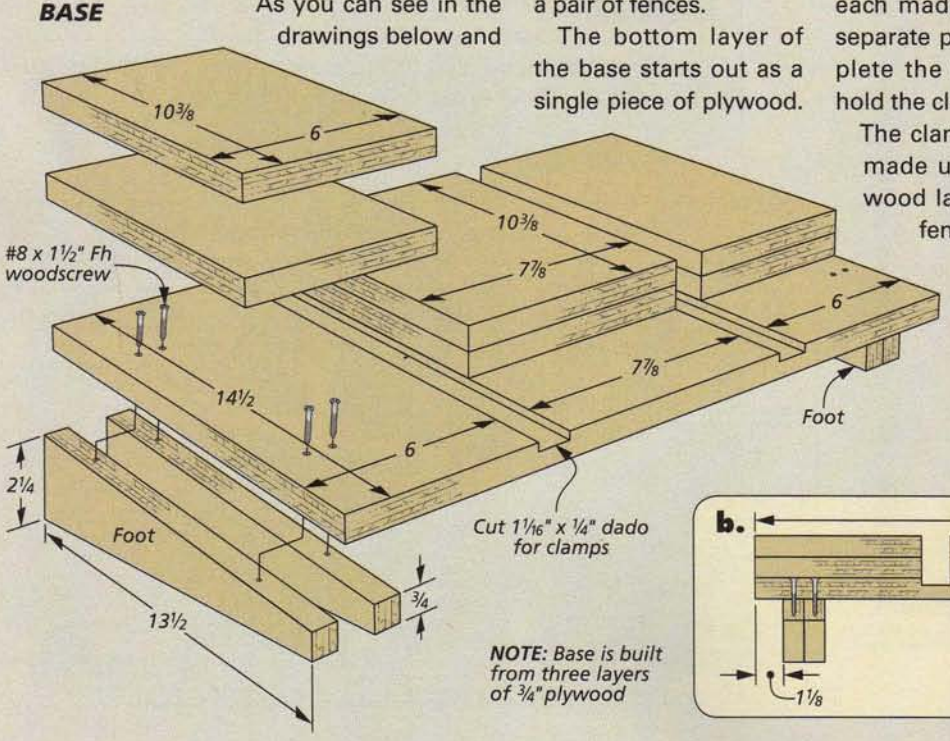
As you can see in the drawings below and on the opposite page, the bench is built in two sections. The base is built up from three layers of plywood. Then a couple of clamps are added, along with a clamp carriage and a pair of fences.

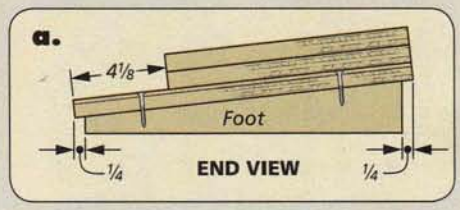
The bottom layer of the base starts out as a single piece of plywood. After cutting grooves for the clamps, you can make a pair of feet and screw them to the bottom layer. Then you can glue the upper layers to the base.

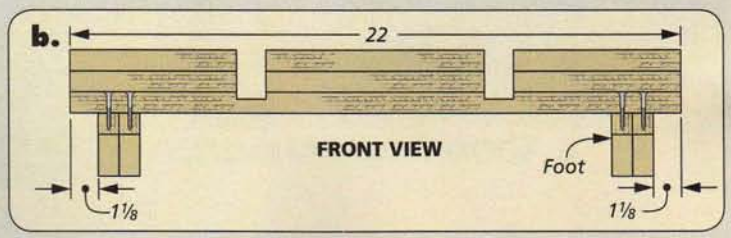
The upper layers are each made up of three separate pieces to complete the grooves that hold the clamps.

The clamp carriage is made up of two plywood layers and two fences, as shown in the drawing on the opposite page. Both layers are notched at the top to hold the clamp head.

The two fences are the same size, but the fixed fence has a dado that holds the clamps' jaws. The adjustable fence has a counterbore to hold the screw end of the clamp. The fixed fence is screwed to the upper carriage and the carriage pieces are glued in place.

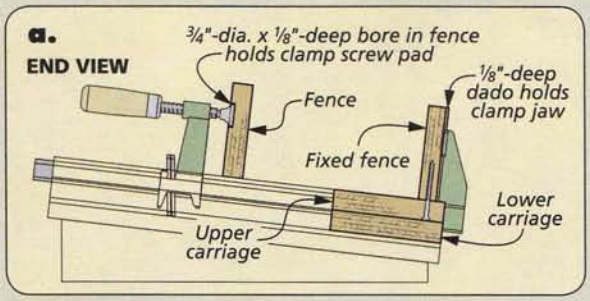


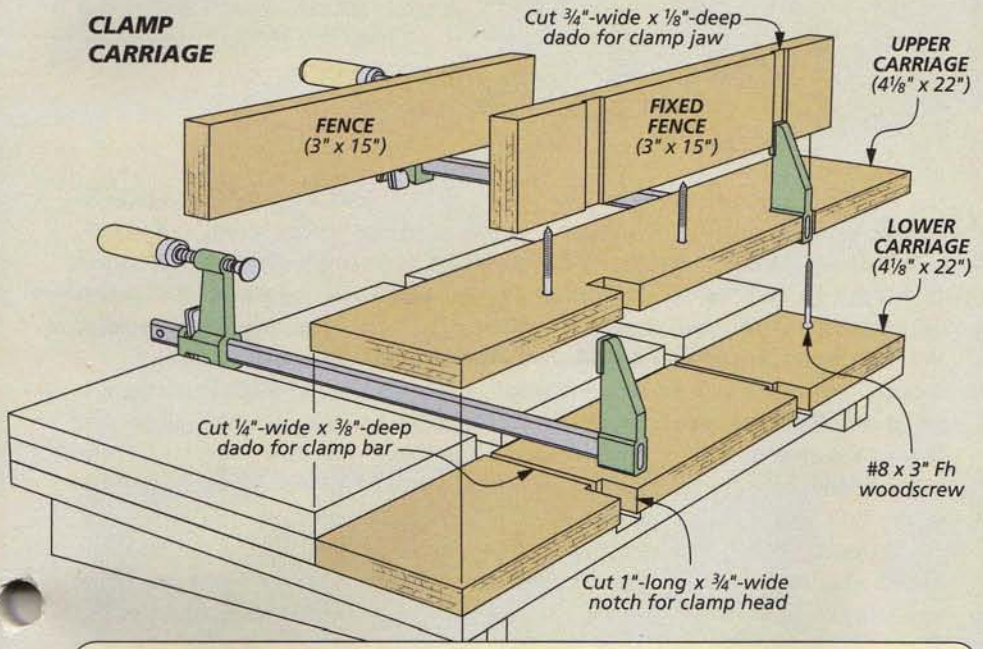


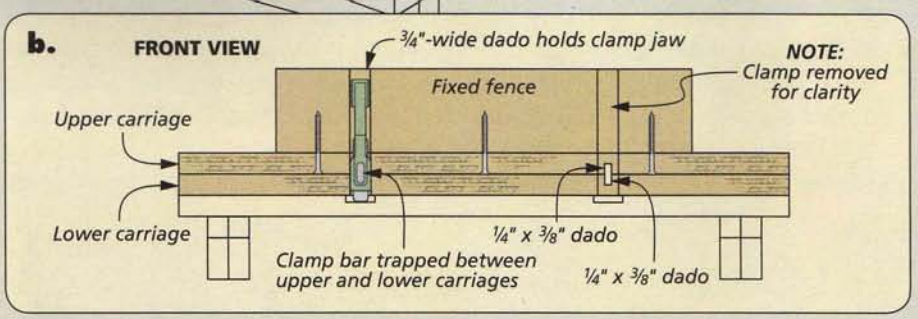


Lastly, I cut some spacers to fit between the fences. The spacers raise up flat workpieces for better access to the work surface, as shown in the photo on the opposite page.

John Shawgo
Grove City, PA







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If you have an original shop tip, we would like to hear from you and consider publishing your tip in one or more of our publications. Go to:

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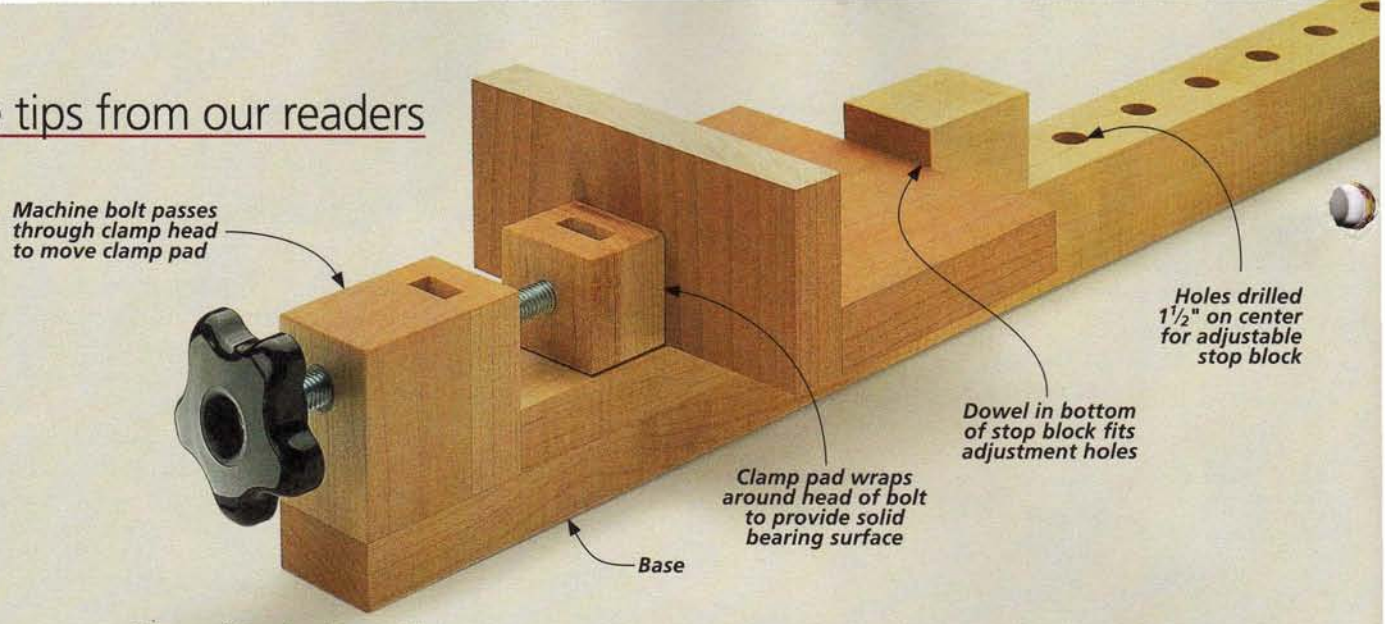


Shop-Made Bar Clamp

No matter what type of project I'm working on, I never seem to have enough clamps that are the right length. That's why I decided to make my own clamps.

As you can see in the photo above, the fully adjustable clamp consists of a two-piece base with holes that holds an adjustable stop block. The clamp head is made up of a machine bolt, hidden nut, and a star knob that move the clamp pad to tighten the clamp.

BASE. The clamp base is built from two pieces of ¾"-thick hardwood. After the two pieces are glued together you can drill a series of holes in the base to hold the stop block.

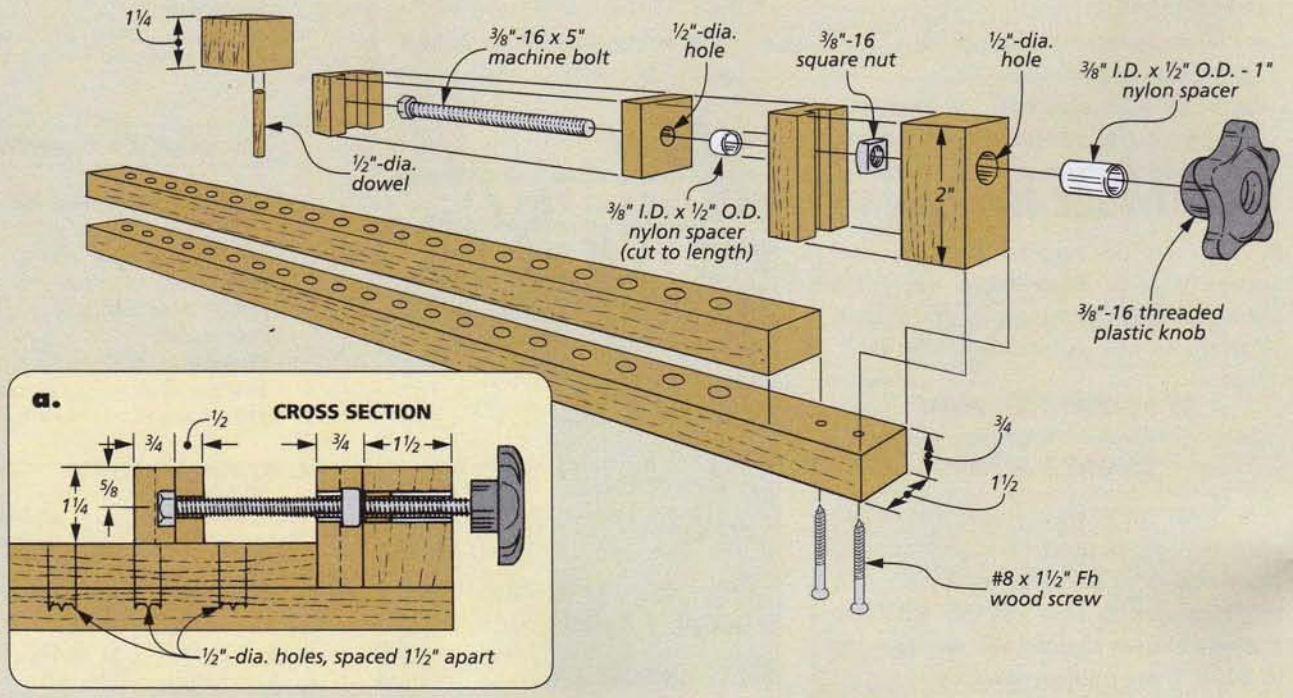
PAD. Fitted over the head of the bolt is a wooden clamp pad. The clamp pad is also a two-piece assembly. One piece has a slot wide enough to allow the bolt head to turn freely. The other piece is drilled out to allow the bolt to pass through it. To assemble the pad, slip the bolt through the hole and glue the two pad pieces together.

HEAD. The clamp head is made up of two pieces as well. A slot is cut in a thinner workpiece that's just wide enough to hold a nut. The bolt is threaded through the nut and passes through a larger block, where a star knob is attached to the end. As you turn the knob, the clamp pad advances.

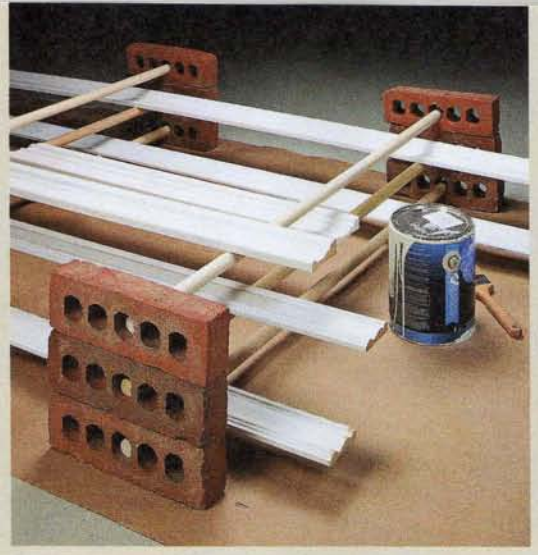
STOP BLOCK. The stop block is nothing more than a block of hardwood with a hole drilled in the center. A short section of dowel is glued in the hole to hold it in place.

ASSEMBLY. To assemble the clamp, slide the nut into the slot in the clamp head, thread the bolt through the nut, and epoxy the knob on the end of the bolt. Then attach the clamp head to the base with glue and screws. A few coats of wax will keep the clamp free from glue buildup.

Calvin Ewald
Summit, New Jersey



Simple Drying Rack



There isn't room in my shop for a dedicated drying rack. So I came up with one that's easy to set up and take down when I'm not using it.

Some extra bricks from a construction project and a few 1" dowels gave me what I needed, as you can see in the photo at right. The bricks and dowels can be stacked in a corner when not in use.

Willis Coker
Pearl, Mississippi

Planer Dust Skirt

The dust pickup on my benchtop planer worked okay, but not great. So I improved the suction considerably by fashioning a skirt across the outfeed table.

The skirt is cut from a length of rubber router mat or a similar rubber mat. With the matting attached to the planer with double-sided tape, the open area is reduced and the suction of the vacuum increased. The skirt is "fringed" to allow the workpiece to move through the planer while still controlling the air flow.

Lenny Brown
Falmouth, Kentucky

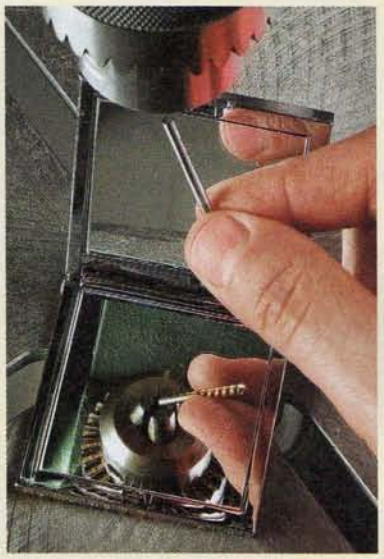
Win This Bosch *Impactor* Driver

That's right, send us your favorite shop tips. If your tip or technique is selected as the featured reader's tip, you'll win a *Bosch* impact driver just like the one shown here. To submit your tip or technique, just go online to *woodsmith.com* and click on the link, "SUBMIT A TIP." You can submit your tip and upload your photos for consideration.

The Winner!

Congratulations to John Shawgo, winner of the *Bosch Impactor* driver. To find out how you could win a *Bosch* driver, check out the information on the left.

Quick Tips



INSTALLING SMALL BITS

It can be a challenge to place a small drill bit properly in the chuck of your drill press. But I solve this problem by placing a small mirror on the drill press table.

With the mirror under the chuck, I can see all three jaws. This way it's easy to align the bit the first time.

Charles Mak
Calgary, Alberta

RUBBER TUBING PROTECTS SHANK

When I need to change the bearing in a router bit, I clamp the shank of the bit in a vise. But the metal jaws of the vise can damage it.

To protect the shank, I cut a piece of rubber tubing and slip it over the shank. Now I can clamp the bit securely and the rubber helps hold it in place, without damage.

J. M. Gaffney
Fletcher, North Carolina

UPGRADE SHOP-MADE PUSH BLOCK

I like to make my own push blocks for shop use. But a plain wood block doesn't always grab the workpiece well enough to be safe.

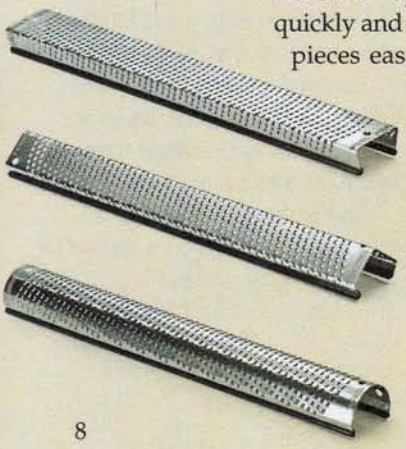
To make my shop-made push blocks safer, I add a piece of rubber to the contact edge of the block. You can cut a piece from a router mat or shelf lining material.

Jack Slason
Bristol, Connecticut

high-tech, smooth-cutting

Microplane Rasps

When it comes to shaping curved parts for your projects, it's tough to beat the performance of this inexpensive tool.



Coarse or fine *Microplane* blades are available in flat, angled, or round profiles. ▼

Most of our shop tools are built to ensure we keep things flat and square. So shaping and smoothing curved or irregularly shaped workpieces can be a challenge. The traditional tool of choice for these tasks is a rasp. Rasps remove stock quickly and make shaping curved pieces easy. But the aggressive cut of a rasp comes at a price.

An inexpensive rasp leaves furrows in the workpiece that require a lot of work to clean up. A high-quality, hand-cut rasp does a better job, but will set you back nearly $100. And you'll need at least a couple different rasps with coarse and fine tooth patterns (or different profiles) to properly shape your parts.

Fortunately, there's a far less expensive and equally effective alternative — a *Microplane* rasp. *Microplanes* are available in square and round profiles, with either coarse or fine teeth. Best of all, the low price (around $15) won't break the bank.

LIGHTWEIGHT BUT TOUGH. When you first pick up a *Microplane*, you might not believe it's a serious woodworking tool. The plastic handle and light weight of the blade just don't seem well-suited to shaping hard wood. But with your first few strokes on a workpiece, you'll soon become a believer. The tool cuts quickly and its light weight makes it easy to control.

HOW THEY WORK. As the name implies, a *Microplane* rasp planes rather than gouges the wood. The stainless steel blade incorporates hundreds of razor-sharp teeth that act like miniature, low-angle planes to slice cleanly through wood fibers. The result is a smooth surface that doesn't need a lot of work to refine and finish.

The cutting power begins in the steel itself. A *Microplane* blade starts as a high-grade stainless steel blank. The advantage of stainless steel is

that in a very thin blade it holds a razor-sharp edge better than most tool steels. The teeth are photo etched into the blank and then bent to form the shallow profile. The finished blade resembles a cheese grater. In fact, *Microplane* also produces a line of kitchen tools.

NO CLOGGING. In addition to the smooth cut, the thin blades offer another advantage over traditional rasps. Since the back of the tool is open, the shavings simply flow through the blade without clogging the cutting surface. If you've ever had to stop and clean out the teeth of a conventional rasp after every few strokes, this is one benefit you'll really appreciate.

▲ To remove the blade, just pop it out of the handle with the eraser end of a pencil.

HANDLE. The blade clips into a pair of narrow channels in the plastic handle. The nice thing about this arrangement is that the blades are easy to replace as they wear out. The photo below shows a quick and safe way to remove the blade without the danger of cutting your fingers in the process. You can then pop a new blade into the channel without missing a beat.

Another thing I like about the plastic handle is the rounded thumb grip on the end. As you can see in the main photo on the opposite page, this grip provides a convenient place to grasp the end and guide the rasp through a cut.

DURABILITY. The low-angle blades hold a sharp edge for a long time. But you'll need to be careful how you store them. Because the blades are so thin, it's easy to damage the cutting edges by bumping into other steel tools. But on the upside, you don't need to worry about the stainless steel blades rusting.

TECHNIQUES. There's no steep learning curve for using *Microplanes*. Although the blades will cut with or against the grain, you'll get the best results by cutting at an angle. Cutting directly with the grain can tear the wood and cause it to splinter and clog the teeth.

▲ Sharp teeth on the stainless steel blade allow the *Microplane* to slice the wood fibers cleanly.

I usually rough shape a workpiece with long, strokes angled about 45° to the grain direction. When uniform cut marks are visible on the surface, change direction to 45° from the opposite side and continue. If you get any tearout, turn the tool around and make a few pull cuts to smooth over the rough spots. Finally, skew the blade and draw it along the grain for a final smoothing cut.

Microplanes are so easy to use that you'll be up and running in no time. Once you get used to the cutting action, you'll find even more uses. The box below shows a couple of popular tools that use *Microplane* technology for other common applications. You can find out where to buy any of the *Microplane* tools on page 51.

Beyond Rasps: Fast Cutting Tools

The same cutting action used in *Microplane's* rasps has been applied to a couple of other innovative tools. The first is a finer-cutting replacement blade for the popular *Surform* tool shown in the photo below.

My favorite, shown in the photos at right, is the rotary shaper. Like a sanding drum, it's powered by a drill press. But the *Microplane* blades remove stock in a hurry and still leave a smooth surface.

◀ You can replace the regular *Surform* blade with a faster cutting *Microplane* blade.

▲ A *Microplane* drill press rotary shaper cuts faster than a sanding drum and won't clog or burn the workpiece.

5 favorite Router Accessories

You might be surprised to find out how a few inexpensive items can make your routing tasks easier, safer, and more accurate.

1 Router Mat

When it comes to hand-held routing, securing the workpiece can be a challenge. You can clamp it to the workbench, but then you need to remove the clamps and reclamp it to access all the edges. Fortunately, there's an easier way.

A rubber router mat on the benchtop grips the workpiece, holding it securely in position. All you need to do is maintain even downward pressure as you rout and the workpiece won't move. It's quick and easy to use — a perfect solution.

A favorite use for the mat is when adding an edge profile to a workpiece, as in the photo above. Another nice thing is, router mats are easy to store. You can keep one rolled up in a drawer, ready to use at a moment's notice.

▲ A guide bushing attached to the baseplate follows the fingers of the template in a dovetail jig for perfect dovetails every time.

2 Guide Bushings

Whether it's routing dovetails, a groove for a decorative inlay, or hinge mortises, using a template and a guide bushing makes short work of the task. Guide bushings are simply rub collars that attach to the baseplate of your router with a knurled locking ring. The bushing follows the template. A set of bushings includes several sizes to accommodate different bits and templates. There's a bushing for just about any application.

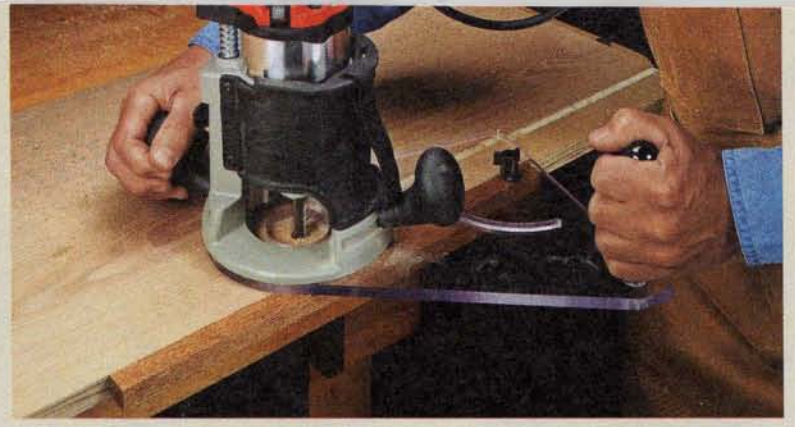
Perhaps the most popular use for guide bushings is when using a dovetail jig, like the one shown in the photo at left. The jig is simply a shaped template that defines the location of the pins and tails. The bushing follows the contours to cut perfectly matched parts, guaranteeing uniform dovetail joints.

◀ A set of brass guide bushings includes several different sizes and an adaptor.

3 Edge Guide

Sometimes a project calls for a groove or dado parallel to the edge of the workpiece. In that case, an edge guide makes routing the groove a breeze. The guide is usually a simple fence that attaches to the base of the router. The fence follows the edge of the workpiece and ensures the groove remains parallel to the edge.

While many routers come with an edge guide included, there are also a few after-market options. The photo at right shows an attachment made by *Rockler*. The *Rockler* edge guide fits virtually any router base simply by removing the baseplate and replacing it with the clear acrylic plate of the guide. Then, all you need to do is set the fence for the location of the groove or dado by loosening the knobs ands swiveling the router into position. Now you're ready to go.



▲ This after-market edge guide from *Rockler* will fit just about any router and make routing a dado or a groove a breeze. The clear plastic base makes it easy to keep an eye on the workpiece.

▲ A collet extension is an easy and safe way to make the deep cuts when routing a bowl.

4 Collet Extension

Occasionally, you need to extend the depth of cut of one of your bits. A good example is when routing a bowl, as shown in the photo at left. The required depth of the cut can't be achieved by the bowl-cutting bit alone. In this case, I turn to a collet extension so the bit can cut deep into the blank.

Using an extension is pretty straightforward. Just install the extension in the router and tighten the collet nut. Then secure the bit into the extension.

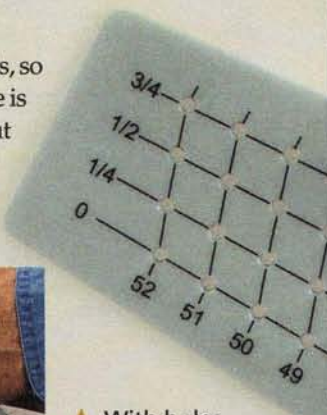
▲ A collet extension holds a router bit for deep cuts.

A word of caution, however, before you get started. When you use an extension, you increase the stress on your router's shaft when moving into a cut. If you push too hard, you can damage the bearings. But if you take it easy (let the bit do the work) you shouldn't have any problems.

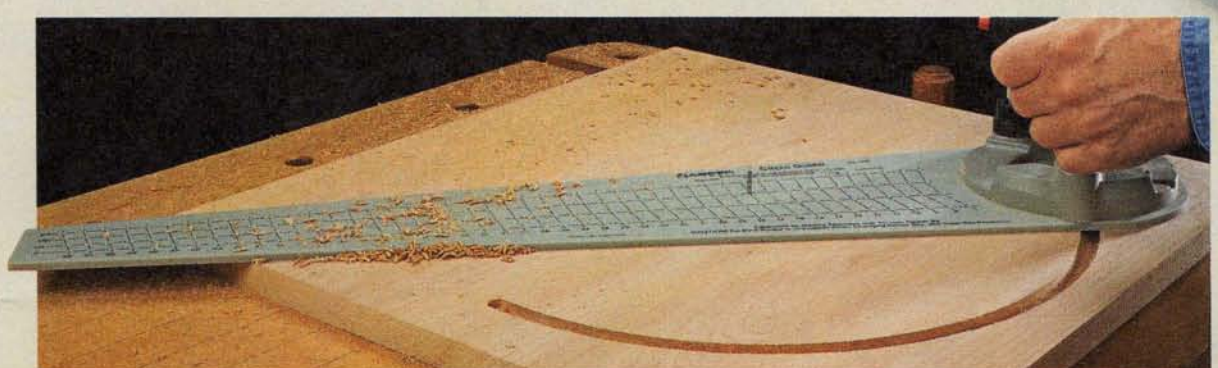
5 Trammel

There's no better way to cut a circle, for a tabletop for instance, than with a router and a trammel. A trammel is simply an auxiliary base with a long extension arm. The extension is drilled with holes that fit over a pin set for the diameter of the circle you need.

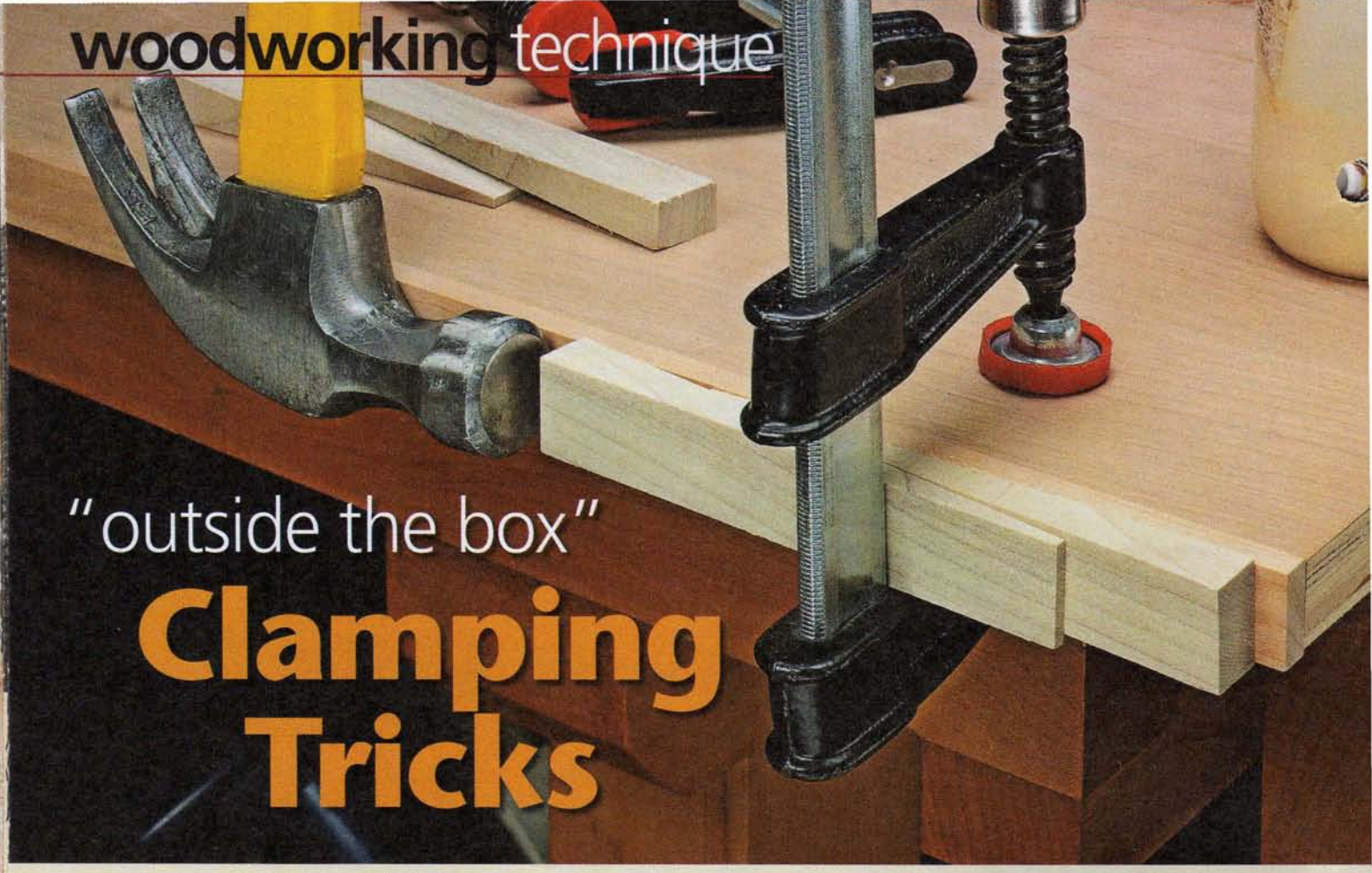
While you can make your own trammel, the commercial versions aren't expensive and have a few advantages. First, most are marked with easy to read measurements, so setting the diameter of the circle is made easy. But best of all, the cut leaves the edge of the workpiece smooth, with very little sanding needed. W



▲ With holes marked in ¼" increments, setting the trammel couldn't be easier.



▲ Using a trammel with your router results in perfectly cut circles and arcs. Just drill a small-diameter hole for a pivot pin at the centerpoint and place the correct hole in the jig over the pivot pin.



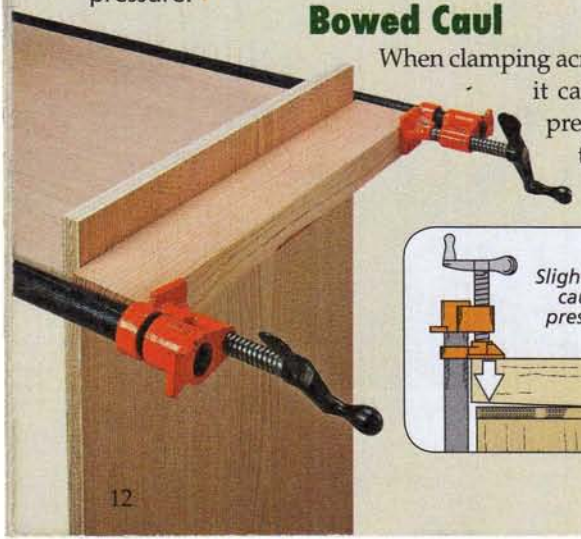
"outside the box"

Clamping Tricks

Sometimes, clamping up an assembly requires a little bit of creative thinking. But there's always a way to get the job done.

Sooner or later, every woodworker confronts a tricky assembly and asks the question, "How in the world am I going to clamp this up?" Unfortunately, not all assemblies lend themselves to routine clamping techniques. When building the cherry sideboard on page 32, I faced a couple of these awkward clamping situations.

But there's always a way to work around the obstacle. With a little clamping ingenuity, you can avoid spending a lot of money on expensive specialty clamps or building time-consuming jigs. Here are a few clamping tricks that I use to help put the pressure on.

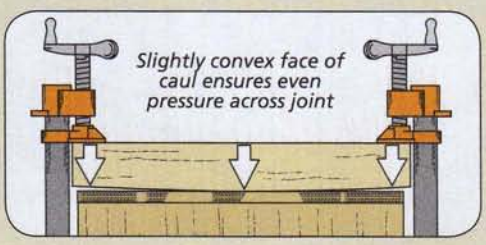


When a clamp won't reach, a bowed caul can be used to apply considerable pressure. ▼

Bowed Caul

When clamping across the sides of a large case, it can be difficult to apply the pressure needed to flatten out the panel and snug up the joint. A clamp tightened at either edge usually won't do the trick. The side panel simply bows through the middle and you're left with a joint that won't close up.

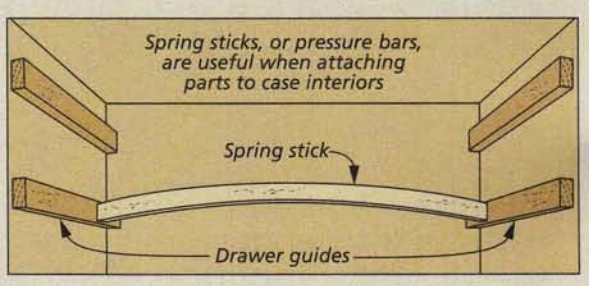
The photo and drawing at left illustrate a reliable and easy solution to the problem. I employ a stiff caul with a slight, convex bow planed into it to put pressure through the center of the panel. A clamp tightened at either end of the caul forces it to flatten out, pushing the side snug to the mating piece. It works great.



Spring Stick

Sometimes a mechanical clamp isn't the only answer. I've found that this can be the case when gluing spacers or other parts into the interior of a case.

Here, the pressure needs to be applied from the inside out. There's no way to do this with a clamp. In this instance, I borrow a technique that's been around



for ages (right drawing on opposite page). Flexible strips of wood make very serviceable "clamps." Cut about ½" longer than the span, these spring sticks can be flexed and then wedged from side to side to handle light to moderate duty tasks. It's an easy solution.

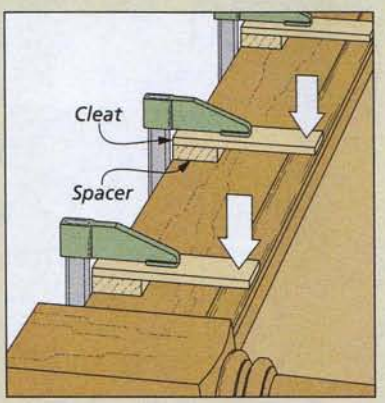
Clamp & Wedges

Using a clamp to put pressure directly on a piece is ideal, but clamps can also be employed indirectly to help with glueups. Take a look at the main photo on the opposite page and you'll get the picture. A bar clamp tightened across the faces of a panel serves as the backup for a couple of opposing wedges. When you drive the wedges behind the bar, force is exerted on the edging. It's a handy way to apply edging to plywood panels or glue a face frame to the front of a wide case.

Clamp to Clamp

Regardless of what you're clamping, you need two solid surfaces to hold the jaws of the clamp and allow you to exert pressure. And during a complicated case glueup, it's all too common to find yourself lacking a second anchor point for the far end of the clamp.

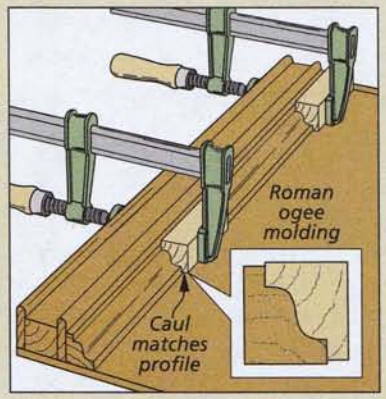
What I do in this instance is create the absent clamping surface with another clamp. The photo below shows how this can work. First, I tighten a handscrew over the edge of the intersecting panel. Then a small pad placed behind the handscrew bridges the throat and supports one end of the clamp.

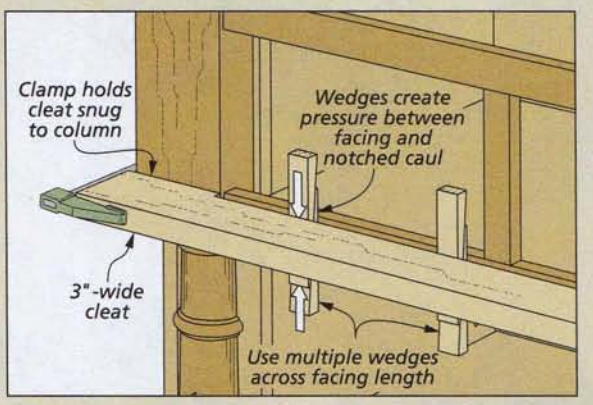


A Longer Reach

Having a few deep-throat clamps on hand can get you out of some tough spots. But there's always going to come a time when even deep-throat clamps won't work. This was the case when installing the lower bullnose molding on the cherry sideboard. The wide bottom rail of the face frame and the bottom panel prevented me from clamping directly over the molding.

The simple solution is to extend the reach of your clamps with a cleat and a spacer, as shown in the drawing above. When a clamp is tightened over the cleat, most of the force is transferred to the workpiece where it's needed.





Cleat & Wedges

Gluing the face frame to a case is always a bit of a test. But when the back of the case is already in place, the challenge increases. The back prevents you from installing clamps to pull the face frame tight against the case. This is the dilemma I faced when adding the face frames to the cherry sideboard.

Here, I got the job done by applying the clamping pressure using a notched cleat and pairs of wedges, as shown in the drawing above. First I clamped the cleat across the front of the case in line with the facing. Then I inserted wedges behind the cleat to push the facing snugly against the edge of the plywood.

Profiled Caul

Clamping profiled parts usually calls for a "Plan B." Often there isn't a flat surface large enough to solidly support the head of the clamp. What you can do in this situation is square off the profiled part with a mirror-image caul, as shown in the drawing at left. The caul provides the necessary clamping surface as well as prevents possible damage to the workpiece.

▲ A handscrew clamp tightened over the edge of a panel creates a very solid clamping anchor. A pad placed behind the handscrew bridges the throat allowing you to apply the clamp "squarely."

ShopTip: Tape It

Light Pressure. *When all you need to do is hold a piece in place until the glue grabs, use a few pieces of masking tape.*

shop-made
Inlay Banding

Even very small scraps of exotic hardwoods can be put to good use in a decorative pattern of inlay banding.

Adding a decorative band of inlay to a simple project is a great way to transform it from ho-hum to spectacular. Of course, you can buy commercially made banding, but I prefer to make my own using scraps of exotic or figured woods. It's a great way to use up those small cutoffs from other projects. Although it may seem complicated, making this banding is just a matter of following a simple, step-by-step process.

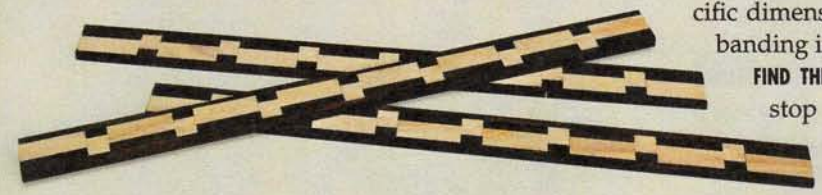
OVERVIEW. In a nutshell, making banding starts by gluing up thin layers of contrasting wood to create a sandwiched blank. Then, you cut the blank into short blocks, rearrange them, and glue them back together to create a pattern. Finally, you rip thin strips from the edge of this patterned blank to create the decorative banding.

START WITH THE DESIGN. As with any project, you need to begin with a plan. I created the banding shown below (and throughout this article) to use on the picture frame on page 18. (You can find the specific dimensions for creating this banding in that article.)

FIND THE RIGHT STOCK. The first stop is your cutoff bin to find some interesting pieces of stock. You'll get the best results by combining contrasting woods.(For example, I started by combining holly and Macassar ebony.) But you'll also need to be mindful of how the finished product will look with the project. Once you've found the right combination, you're ready to get busy. No matter what wood you choose, the first step is to plane your stock to the correct thickness.

THICKNESSING. I designed this banding to fit into a shallow, ½"-wide routed channel. To make sure you end up with a perfect fitting band, you'll need to pay close attention to the thicknesses of the individual layers in the sandwich. Since the combined thickness of those

When cut into thin strips, the banding makes the perfect decorative inlay. ▼



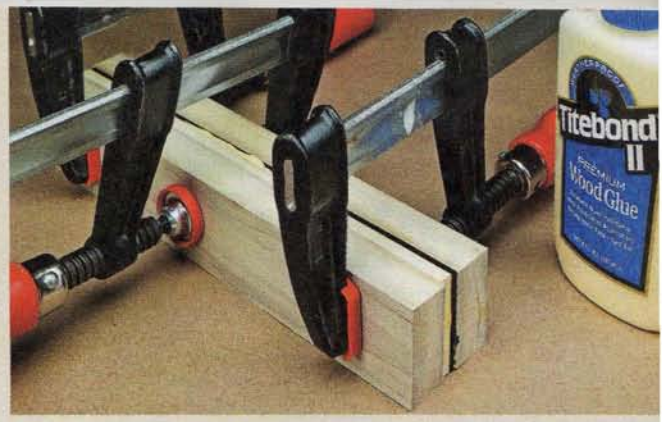
layers determines the width of the band, I use a caliper to make frequent measurements as I plane them (photo at right). I planed the ebony to ⅛" and the holly to ¼". Later, you'll add two 1/16"-thick layers of ebony to bring the total width of the band to ½".

I use a drum sander to sand stock for these very thin strips. But Shop Notebook on page 31 shows how you can do it by hand as well.

Another important consideration is the grain orientation of the blanks. You'll want the finished band to display face or edge grain, not end grain. The drawing at right shows the correct grain direction.

▲ A block plane is the perfect tool for cleaning up one edge of the glued-up blank.

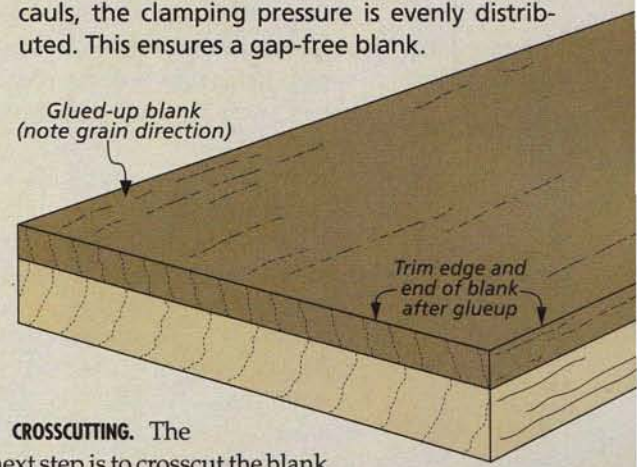
▲ A caliper makes measuring the thickness of the pieces easy and accurate.



▲ By placing the blank between two hardwood cauls, the clamping pressure is evenly distributed. This ensures a gap-free blank.

GLUEUP. After planing or sanding the blanks to the final thickness, it's time to glue up the initial sandwich. As you can see in the right photo above, I used hardwood cauls to make sure the clamping pressure was evenly distributed. Any gaps in the joint will be visible in the assembled banding, so it's worth taking precautions to ensure a tight joint.

CLEANUP. After the glue dries, you can use a block plane or scraper to clean up the squeezeout from one edge, as shown in the photo at left. Then rip the opposite edge parallel on the table saw and square up both ends. Now you have the basic component of the banding — a clean, square blank.



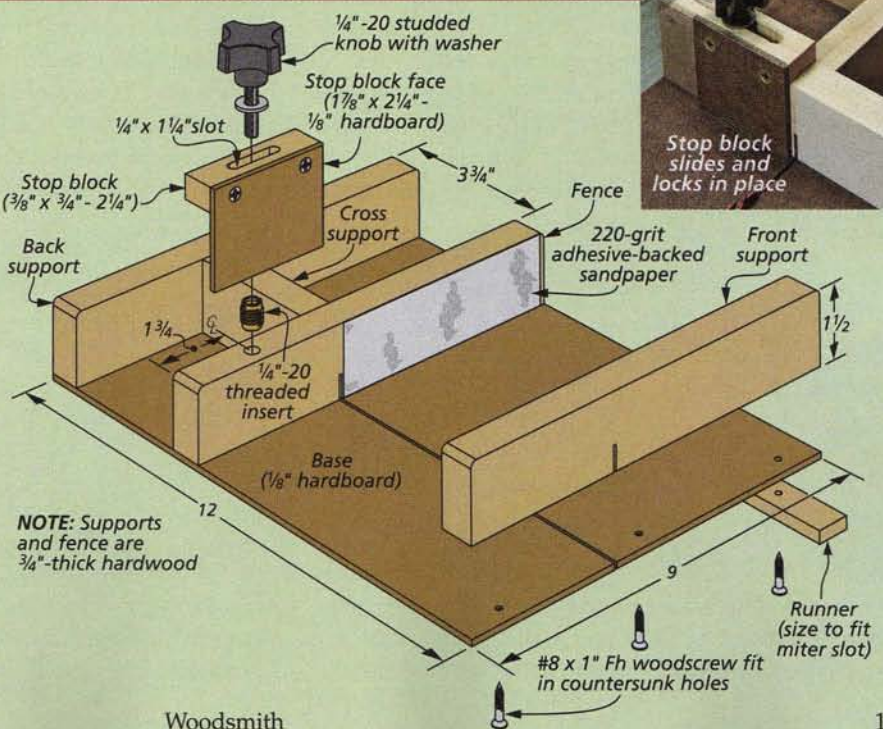
CROSSCUTTING. The next step is to crosscut the blank into small blocks. For this, I used the sled shown in the main photo. The sled has an adjustable stop to ensure accuracy (see the box below for a plan). I also installed a 7¼"-dia. circular saw blade in my table saw. It has a thinner (1/16") kerf, so there's less waste.

How-To: Make a Precision Crosscut Sled

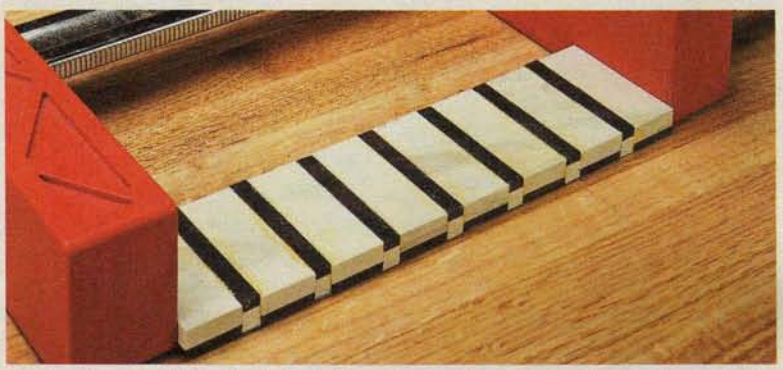
A crosscut sled is a must for making this style of banding. Fortunately, it doesn't have to be anything too complicated. The sled shown at right is simply an ⅛" hardboard base with hardwood front and back supports and a runner to fit in the miter gauge slot. The supports hold the sled together as you cut through the base.

In the center, a hardwood fence with an adjustable stop block allows you to make very accurate crosscuts. Behind the fence, I added a cross support which doubles as a blade guard to keep your fingers safe.

The stop block slides on the fence and is locked in place with a studded knob that screws into a threaded insert in the fence. I also added adhesive-backed 220-grit sandpaper to the fence to help prevent the block from shifting. It all works together to guarantee a square cut.



assembling the BANDING BLOCK



▲ First, assemble the blank by alternating the orientation of the blocks on tape (top). After applying glue between the blanks (middle), gently clamp until the glue sets (bottom).

With the blocks cut to length, you're ready to move on to assembling them to form the pattern. To do this, I used a flat piece of melamine with a strip of hardwood edging attached (top photo, above right). The melamine is reliably flat and glue won't stick to it very well, so it's a good choice for this task. The hardwood edging provides a straight reference edge when putting together the blocks to form the pattern.

PATTERN. You'll also notice in the photos that I started and ended the banding pattern with a wide block on each end. This will give you greater flexibility when it comes to trimming or mitering the finished banding to fit your project. You'll want a symmetrical fit where two pieces meet in the corners.

I use a strip of masking tape (sticky side up) on the assembly board to hold the stack together. This way, all you need to do is alternate the wide and narrow strips, flipping them and sticking them to the tape to form the staggered design, as shown in the top photo.

GLUEUP. Gluing up the pattern of blocks can be a bit of a challenge because of their small size and scant available glue surface. It's important to spread the glue evenly across the surface to make sure you don't end up with gaps in the finished banding. I find that a thin scrap of plastic makes the perfect tool for spreading glue into the crevices (middle photo).

When you've covered all the blocks, lay the blank on a flat surface and gently press down to squeeze out the excess glue (the tape will hold everything together). After wiping away the squeezeout, loosely clamp the blank as shown in the lower photo above. Add light pressure (until a little more glue squeezes out) and leave it clamped for about 30 minutes. This is plenty of time for the glue to set up before moving on to the next step.

▲ After taping the edges of the pieces together, use a liberal amount of glue and a plastic spreader to coat the surfaces evenly as you attach the borders.

▲ I used two hardwood cauls to help distribute the clamping pressure evenly through the glued-up blank. This guarantees you won't have noticeable gaps in the completed banding.

ADD THE BORDERS. After removing any glue squeezeout, you're ready to add the top and bottom borders to the assembly. The 1/16"-thick borders help define the banding when you install the strips in your project. Once again, I started by taping the edges of the pieces together and applying an even coat of glue (lower left photo, opposite page).

Using the hardwood cauls as before, you can clamp the blank and add plenty of pressure. This time, I let the blank cure for a full 24 hours before moving on to the final two steps.

CLEAN UP THE BLANK. When the glue dries, you'll need to clean up the blank again, just as you did earlier, by jointing one edge and ripping the other parallel. Once you've squared the blank, you're ready to cut it into strips of banding.

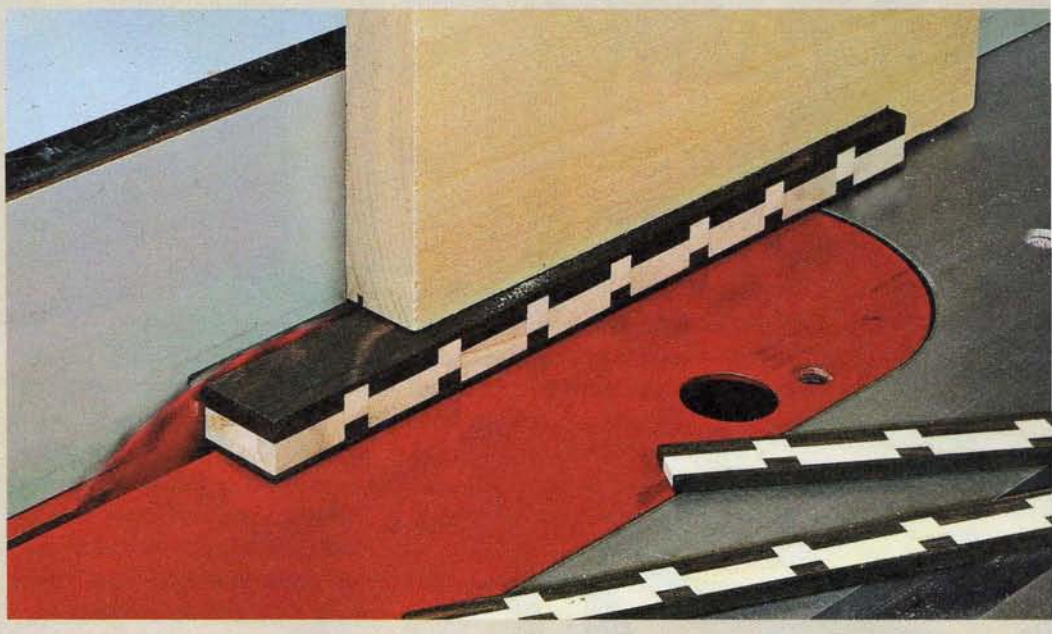
CUTTING THE BANDING. As before, I prefer to use the thin-kerf circular saw blade to minimize the waste when ripping the banding strips. And for these cuts, you'll also need to make a zero-clearance insert for your table saw. If there is a gap between the blade and the opening of the insert, the thin strip can be pulled under as it passes through the blade.

The thickness of the bands can vary, depending on your project. For the picture frame, I wanted the banding to sit slightly proud of the surface. So I cut the strips 3/16" thick. This way, I could rout a 1/8"-deep channel and still have the banding sit above the edge.

I positioned the fence 3/16" from the blade and cut all the strips between the blade and the rip fence to ensure they were all the same thickness. As you can see in the photo below, I also made a sacrificial push block which not only controlled the workpiece, but kept my fingers safely away from the blade.

Now it's just a matter of ripping the blank into strips. After that, sand them lightly to remove any saw marks. Then, you're ready to add them to your project.

This technique can be applied to many different designs. The box below shows just a few possibilities. Once you get the hang of the process, you'll find lots of applications for inlay banding.



Use a push block and a zero-clearance insert when ripping the banding.

Options: Other Banding Styles

The banding shown in this article is just one of many styles you can make. The photos here show several other options. The good news is, they all rely on the same techniques for cutting, gluing, and assembling.

Of course, the easiest changes to make are the species of wood you use and the sizes of the blocks. In the photos here I used purpleheart, padauk, yellowheart, wenge, maple, mahogany, ebony, and holly. But whatever you find in your scrap box will work.

You can also get drastically different results simply by changing the thickness and width of the individual components.

For even greater variety, you might want to try cutting the blocks or the glued-up blank at an angle. This makes assembling the pieces a little more challenging. The glue will make them prone to shifting under clamping pressure. But the results can provide an amazing addition to your projects.

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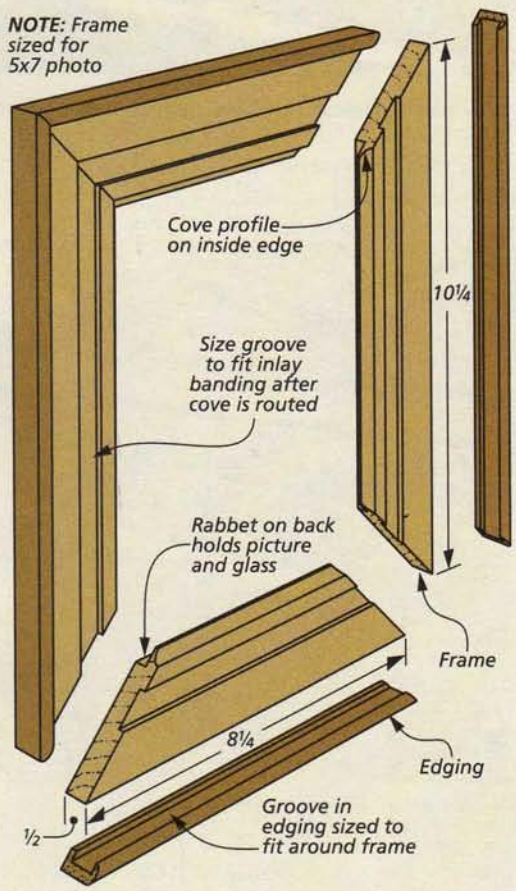
To find out how to make more banding patterns, visit our website at Woodsmith.com.

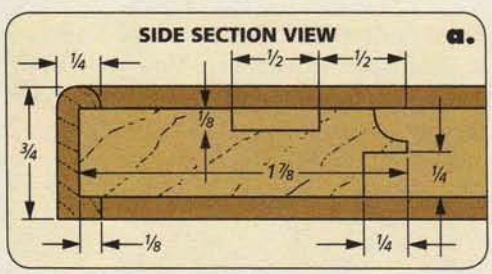
inlaid Picture Frame

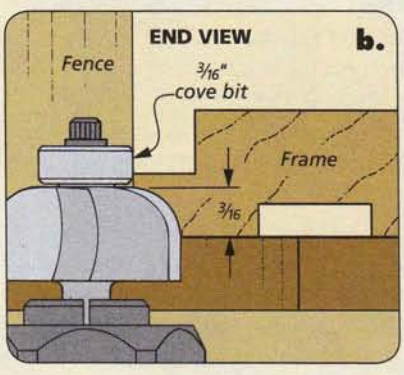
Adding a band of decorative inlay really spices up a simple frame.

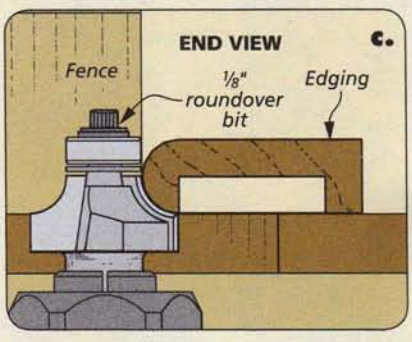
After making the inlay banding in the previous article, you'll need a good project to put it to use. And a picture frame is the perfect application. The design shown here is a basic mitered frame shaped with common router bits and wrapped with contrasting edging. But it's the inlay banding that really sets it apart from more conventional frame designs.

THE BASIC FRAME. Like any frame, this one starts with flat, square stock. Once you've planed a blank to the correct thickness, just rip it to width. Now, head over to the router table to shape the frame profile.









ROUT THE PROFILES. I started by installing a straight bit and routing the rabbet on the back of the blank. This forms the recess for the picture, glass, and backer. Then flip the blank over and rout the shallow groove for the inlay on the opposite face.

The next step is routing the cove profile on the inside edge of the front face. Detail 'b' shows the setup. At this point, you can cut the frame pieces to rough length and give them all a good sanding. It's a lot easier to sand the pieces now (especially the cove profile), than after assembly.

CUT THE MITERS. Now you're ready to move to the table saw and miter the frame pieces. I used a stop

block on the miter gauge to make sure each piece was cut to exactly the correct length. Then I dry fit the pieces together to check that there were no gaps in the miters.

CUT THE BANDING. Before assembling the frame, miter the banding strips about ⅛" longer than final length. It's important that the banding is centered in the frame to end up symmetrical in the corners. This extra length will allow you to adjust the position and trim the banding for a perfect fit.

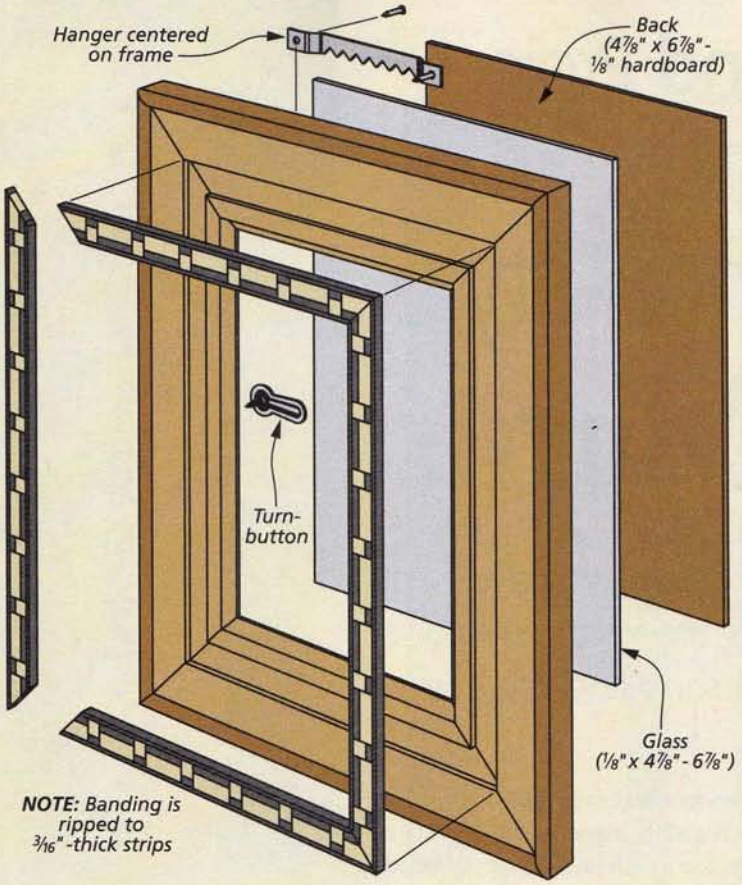
Now, lay out the inlay strips on the frame and adjust the placement of each strip in the grooves. Once you have the position, glue the banding in place. All it takes is a little glue in the channel, a couple of cauls to hold the banding down, and a few clamps. The banding should sit slightly proud of the surface (detail 'b'). After the glue dries, sand or plane the ends flush with the mitered frame pieces.

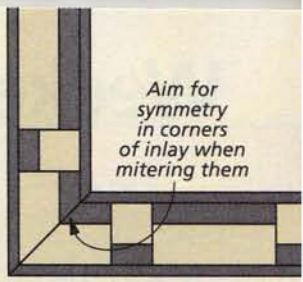
ASSEMBLY. Assembling the frame is pretty straightforward. After gluing the miters together, I just taped the corners to hold them in position. Then I added a couple of clamps on each side of the frame and applied light pressure.

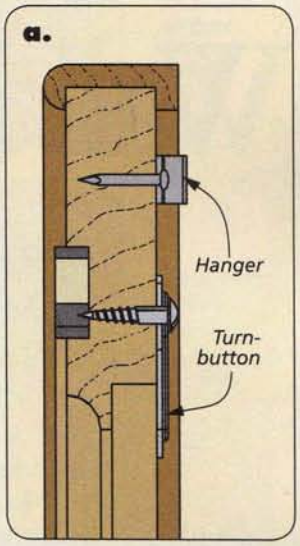
LIPPED EDGING. The lipped edging goes on next. To make the edging, start by routing a groove on the edge of a wide blank. I centered the groove by making two passes using a straight bit, flipping the workpiece after the first pass. Now at the table saw, you can rip the thin strip of edging free. Then it's back to the router table. I used a small roundover bit and rounded over both corners of the edging (detail 'c' on opposite page).

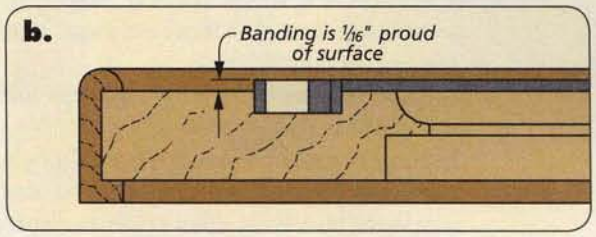
To ensure a good fit on the frame, I mitered each piece to length and fit them one at a time. Once again, a little glue and clamps are all you need to attach the edging.

FINISHING UP. After applying a finish, you can add the turnbuttons that hold the picture, backer, and glass in the frame (see drawing above). Finally, you'll need to add a sawtooth hanger, centered on the width of the frame as shown in detail 'a'.

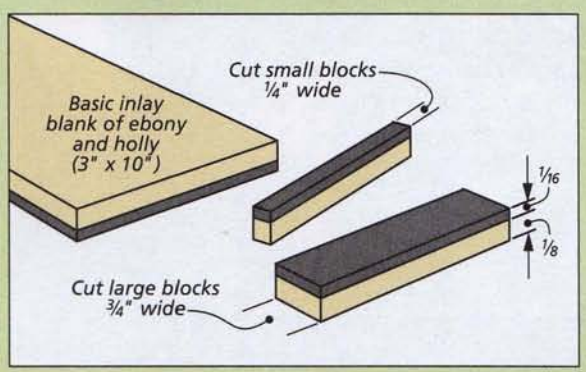




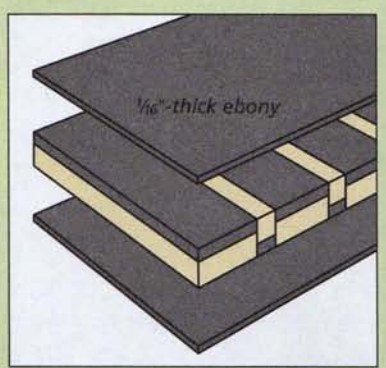




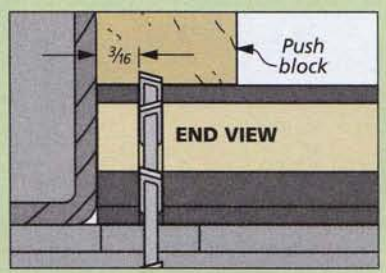
How-To: Making the Banding



Sizing the Blocks. *Starting with a basic blank of contrasting woods, cut the narrow and wide blocks using a crosscut sled and a thin-kerf blade to minimize waste.*



The Glueup. *Assemble the banding blank by alternating the pieces and adding thin outer layers.*



Rip the Strips. *After the glue dries on the blank, rip it into thin strips on the table saw.*

craftsman-style Wall Mirror

A stylish design with plenty of woodworking makes this mirror a hit in the shop and the home.

A wall mirror is a welcome addition to just about any room. It helps add depth in a small space, like a hallway, or it can provide a nice accent in a larger setting. The design for this mirror makes it not only attractive, but easy to build as well.

As you can see in the photo, the basic mirror frame is pretty straightforward. But a handful of details makes the mirror a more interesting piece. For example, a narrow shelf supported by corbels offers a place to display small items. And the decorative cove moldings between the corbels and on the top really give the mirror a more refined look. All in all, it's a great weekend project.

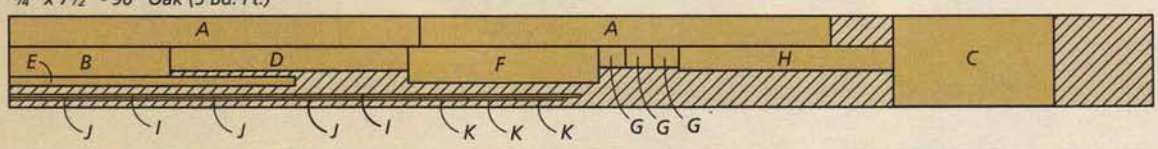
Materials & Supplies

A	Stiles (2)	3/4 x 2 1/2 - 34 1/2
B	Top Rail (1)	3/4 x 2 1/2 - 13 1/2
C	Bottom Rail (1)	3/4 x 7 1/2 - 13 1/2
D	Cap (1)	3/4 x 2 - 20
E	Upper Cove Molding (1)	3/4 x 3/4 - 24 rgh.
F	Shelf (1)	3/4 x 3 -16
G	Corbels (3)	3/4 x 1 3/4 - 2 1/4
H	Lower Cove Molding (1)	3/4 x 2 - 18 rgh.
I	Interior Frame Stiles (2)	1/4 x 1/4 - 24
J	Interior Frame Rails (3)	1/4 x 1/4 - 12
K	Interior Frame Muntins (3)	1/4 x 1/4 - 4
L	Back Panel (1)	1/4 hdbd. - 12 x 24

- (2) #8 x 1 1/4" Fh Woodscrews
- (6) Brass Turnbuttons w/Screws
- (1) 11 7/8" x 23 7/8" Mirror
- (1) 6" Frame Hanger
- (2) 1/2"-dia. Bumpers

Cutting Diagram

3/4" x 7 1/2" - 96" Oak (5 Bd. Ft.)

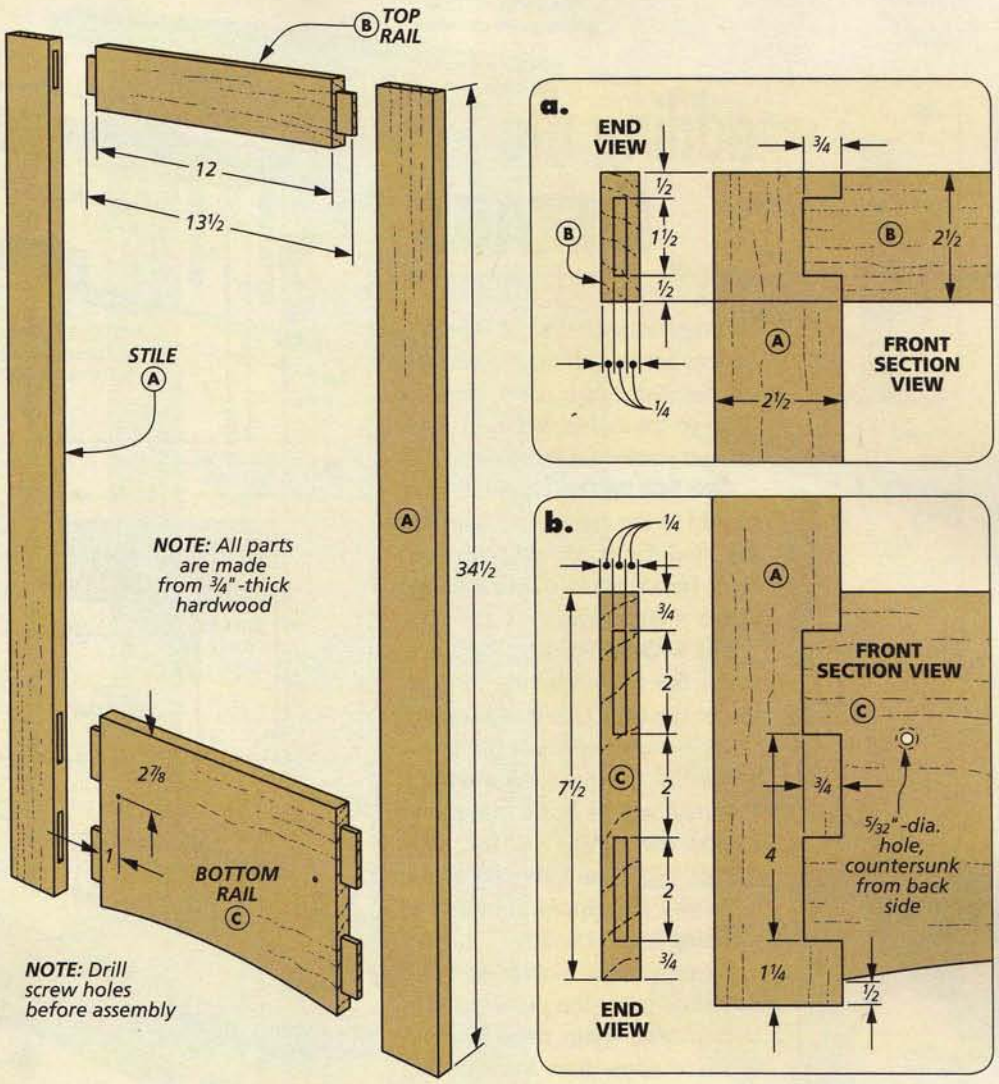


starting the FRAME

The frame needs to provide a solid foundation to carry the weight of the mirror and the shelf. So I chose mortise and tenon joinery to make sure it was up to the task. Because the bottom rail is extra wide, I used a double tenon to join this piece to the stiles.

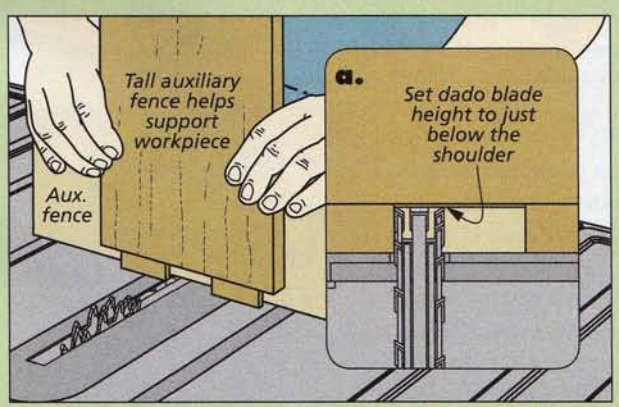
STILES. Since I like to cut the mortises first then match the tenons to them for a snug fit, I started with the stiles. After cutting them to final size, you can lay out the mortise locations and drill out most of the waste at the drill press with a Forstner bit. Then clean up the sides and corners with a sharp chisel.

RAILS. Next, you'll cut the rails to size and get to work on the tenons. As you can see in the drawing at right, the top rail is straight with a single tenon on each end. The bottom rail, however, not only features double tenons, but a gentle curve on the lower edge as well. I cut the tenons first, while the workpiece was still square. The box below shows an easy way to turn one wide tenon into the double tenon you'll need here.

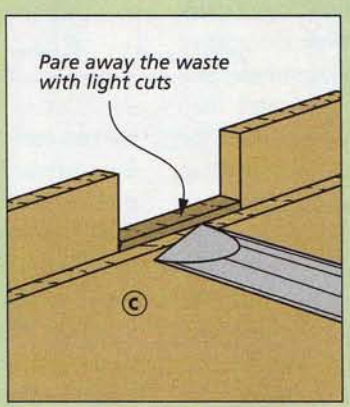


Once you've finished cutting and fitting the tenons, you can turn your attention to the curve on the bottom rail. For this, I laid out the curve using a string and a piece of hardboard. The right drawing below shows how to do it. After cutting the curve on the band saw, clean up the edge with a sanding drum. Then you can drill the countersunk screw holes for the shelf and assemble the frame with glue.

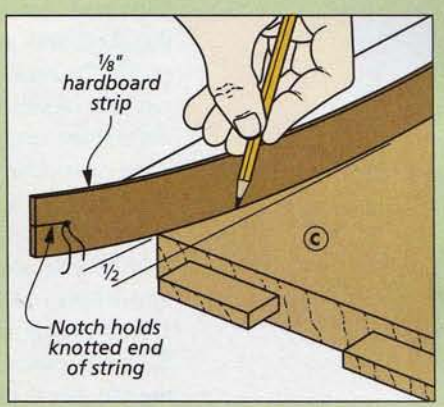
How-To: Construction Details



Double Tenon. *After cutting the cheeks and shoulders, use the miter gauge and an auxiliary fence to nibble away the waste to form the double tenon.*



Cleaning Up. *A sharp chisel is all it takes to clean up the space between the tenons.*



Layout. *Use string to bend a narrow strip of hardboard to the desired curve, then trace the edge with a pencil.*

adding the DETAILS

As I mentioned earlier, it's the decorative details that really make this mirror stand out. After the glue dries on the assembled frame, you can get started on those details.

START WITH THE CAP. The first thing to add is the hardwood cap that sits atop the frame. All you need to do here is cut it to final size and attach it with glue.

COVE MOLDING. The next step is to make the cove molding that fits under the cap. This molding provides a transition from the frame to the cap. To make the molding, I started with a wide blank and routed the profile on the edge (detail 'b'). Then I moved to the table saw and ripped the piece of molding to final width.

When you've completed the molding, miter the pieces to final length. The main drawing and detail 'a' show how the molding fits, including the small returns on each end. Shop Notebook, on page 31, has a few tips for this.

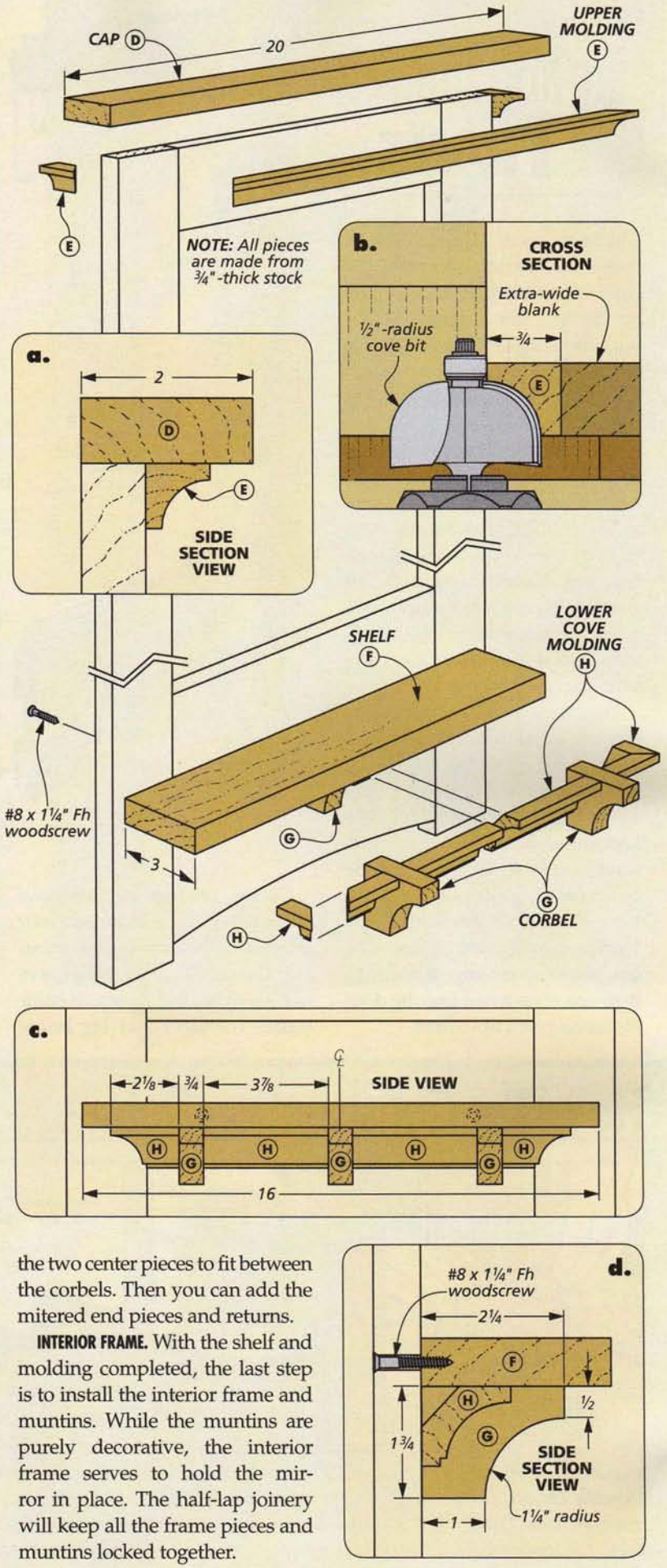
▲ To learn how to make cove molding on the table saw, turn to page 31.

SHELF. At this point, you can move on to adding the shelf. Once again, it's simply a matter of cutting the shelf to final size and attaching it to the bottom rail. In addition to glue, I used screws to ensure a strong joint (detail 'd').

CORBELS & MOLDING. The small corbels and cove molding under the shelf add another decorative touch. To make the corbels, just cut the blocks to size and then cut out the rounded profile at the band saw. After a quick cleanup with a sanding drum, you can attach them with glue.

Now you can turn your attention to the lower cove molding. This molding is a little different than the simpler molding I used on the cap. For details on making the molding on the table saw, turn to Shop Notebook on page 30. After completing the cove molding, cut the two center pieces to fit between the corbels. Then you can add the mitered end pieces and returns.

INTERIOR FRAME. With the shelf and molding completed, the last step is to install the interior frame and muntins. While the muntins are purely decorative, the interior frame serves to hold the mirror in place. The half-lap joinery will keep all the frame pieces and muntins locked together.

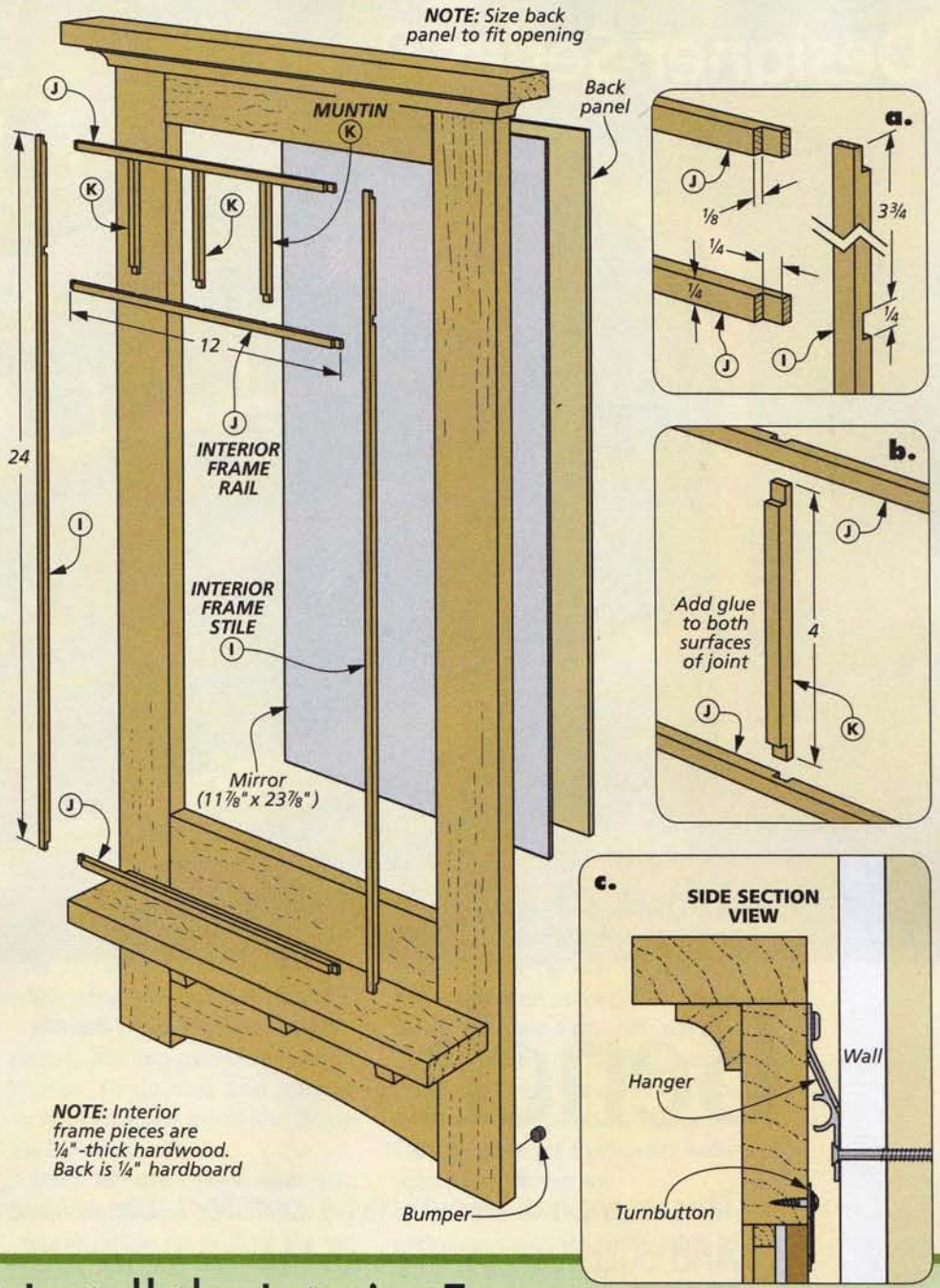


The first step in making the interior frame is to rip your stock into ¼" x ¼" strips. In addition to using a sturdy push block, I also made sure to install a zero-clearance insert on my table saw to safely make the narrow rip cuts. While you're at it, it's also a good idea to cut an extra piece to use for setting up the saw for the half-lap cuts.

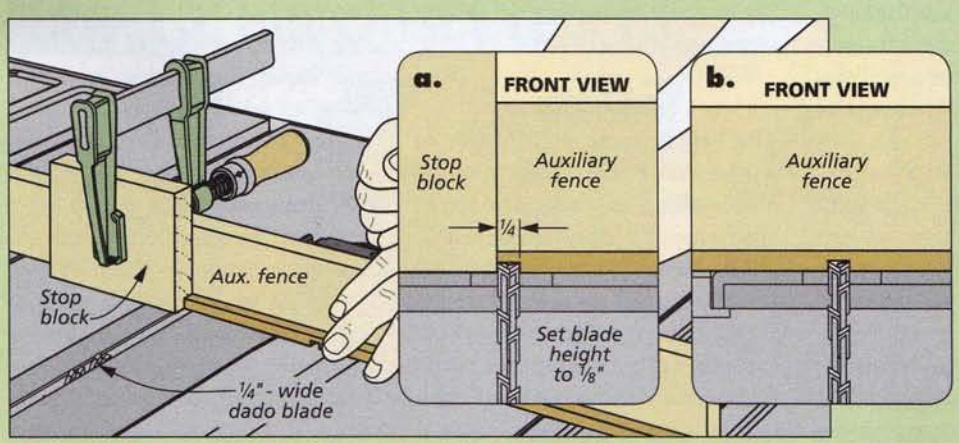
Now you can cut the rails and stiles to length. For this, I took the time to fit each piece carefully. You can make sure of a good fit by starting a little long, then sneaking up on the final length, dry fitting each piece in the frame as you go.

Once you have all the pieces cut to length, install a dado blade in the table saw and cut the half laps. The box below shows you how to get a good fit here, as well. When you're done, dry assemble the pieces to make sure they all fit together well. Now you can glue the pieces in place, starting with the rails and stiles. Then add the muntins.

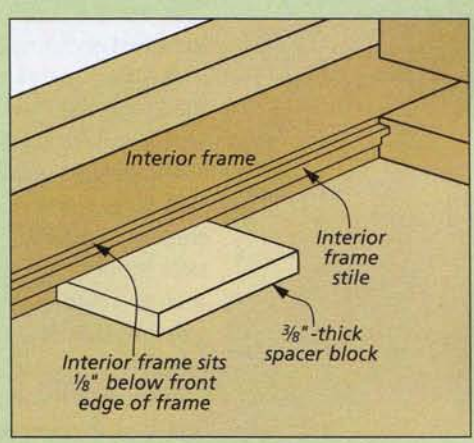
ADD THE MIRROR & HARDWARE. There are just a few things left to complete the mirror. I stained and finished everything first. Then you'll need to cut the hardboard back to final size and fit the mirror in place. I secured the back using turnbuttons and screws. Finally, attach the hanger and bumpers on the back and you're done.



How-To: Make & Install the Interior Frame



Half Laps. *With an auxiliary fence and a dado blade installed, use a test piece to sneak up on the proper blade height (half the thickness of the workpiece). Then add a stop block to make sure the half-lap cuts are in the correct positions.*



Attach the Frame. *After dry fitting the interior frame, use spacer blocks to position the pieces. Then add glue and clamps.*

woven-seat Bench

This compact bench has a comfortable, woven cotton seat. And built with mortise and tenon joinery, it will last for years.

This one-seat bench is small enough to fit just about anywhere in your home. But don't let the small size fool you, there's no shortage of woodworking skills.

The bench is built with mortise and tenon joinery for rock-solid construction. Plus, rounded seat rails, shaped on the table saw, will add to your expertise. And the woven seat will give you a chance to try your hand at another skill.

Even with these challenges, the bench goes together surprisingly fast. Just two end frames, a seat and two stretchers and you'll have a soft, comfortable seat for changing shoes or boots in the hall or any other use you may have.

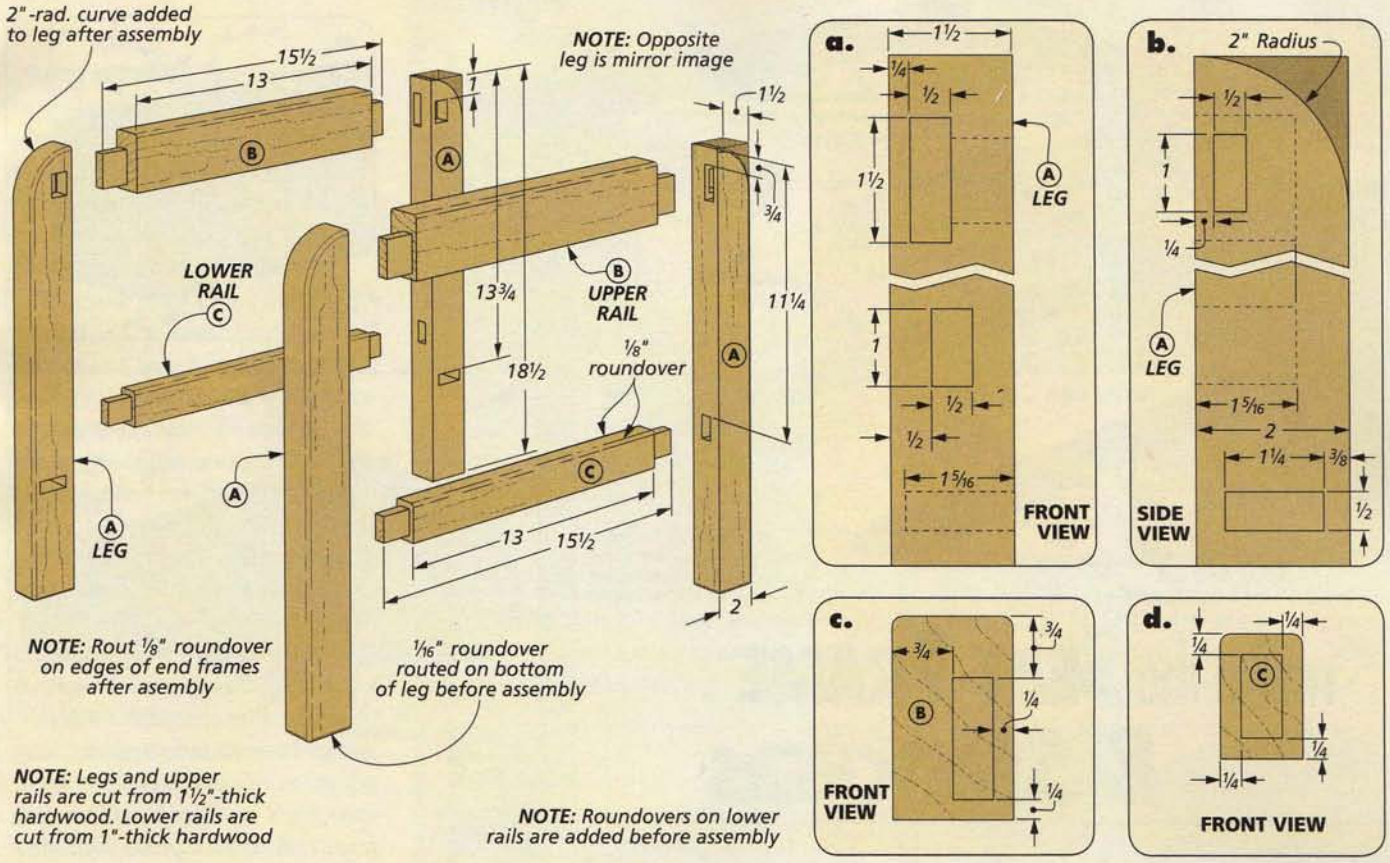
END FRAMES

The bench starts with a pair of square end frames, each made of two legs and two rails. The top of the frames are rounded over in a gentle curve after the joinery is cut and the frames are assembled.

LEGS. To start on the frames, I cut the legs to size and then laid out all the mortises on both sides of each leg, as shown in details 'a' and 'b.' It's much easier to keep track of the mortises if you view both pairs of legs as mirror images. Then you can lay the legs side by side, mark one set of mortises, and finally flip the legs to mark the other set of mortises.

After the mortises are laid out, you can drill out the waste. The two upper mortises in the legs intersect. So I made the longer, deeper mortise in the narrow face of the leg first. When you cut the shorter mortise, you'll break through to the deeper mortise. For a tip on avoiding tearout as you break through the mortise, see Shop Notebook on page 30.

To finish up, cut the remaining mortises on the lower portion of



the legs. The last step on the legs is to rout a roundover around the bottom to prevent the legs from splintering as you move the bench.

RAILS. Once the legs are complete, you can turn your attention to the end rails that connect each pair of legs. First, cut the rails to length. Then cut the tenons on each rail, as shown in details 'c' and 'd.' The tenons on the upper rails are offset, so you'll need to adjust the blade height for each cheek of the tenon (see the box below). After the tenons are cut, you can rout the roundovers on the top edge of the lower rails (detail 'd').

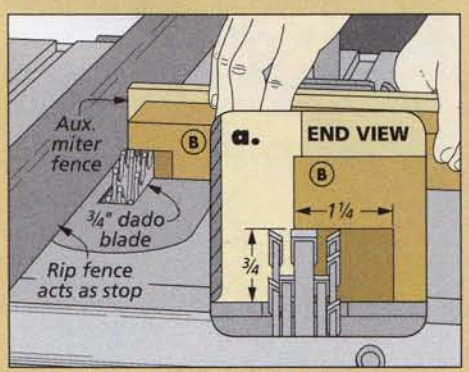
ASSEMBLY. When the rails are completed, you can assemble the end frames. To do this, add glue to each mortise and tenon and clamp the frames together.

SHAPE THE LEGS. Now that you have the frames assembled, lay out the radius on each of the top corners, using a 2"-rad. template to draw the curve (detail 'b'). Then cut the curves with a band saw or jig saw (detail 'b'). You can sand away the blade marks to create a smooth curve.

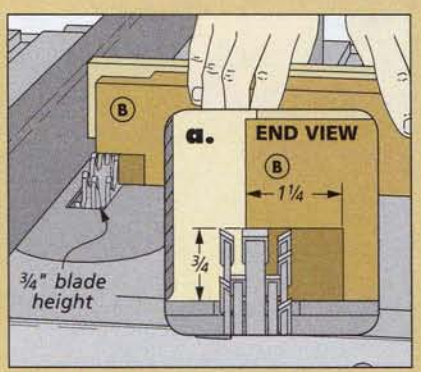
The final step for the end frames is to round over the outside edges on both sides of each frame. This is done on the router table with a roundover bit.

After the end frames are completed, you can set them aside to work on the seat frame.

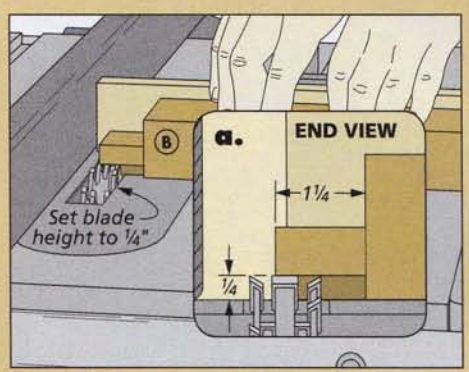
How-To: Cut Offset Tenons



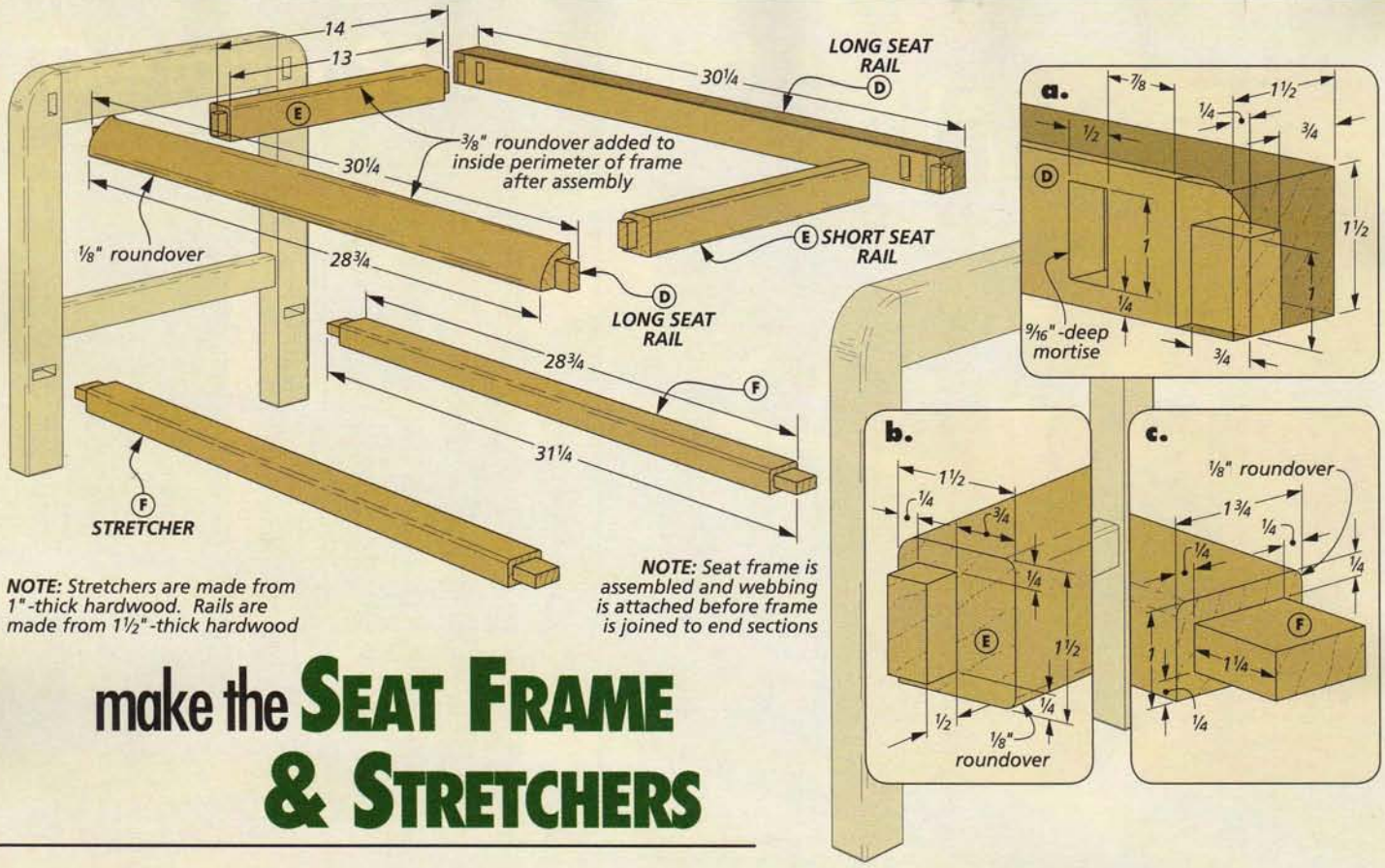
Offset Tenon. *The first cheek cut for the offset tenon is made with the saw blade raised to ¾". Detail 'a' shows the length.*



Shoulder Cut. *The second cut is made on the adjoining shoulder. The the saw blade stays set at ¾" high.*



Finish the Tenon. *The final cheek and sholder cuts are made with the blade lowered to ¼". This forms the offset tenon.*



make the SEAT FRAME & STRETCHERS

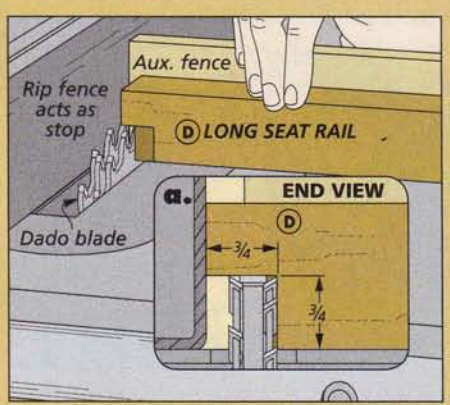
The seat frame and stretchers connect the end assemblies to complete the structure of the bench. The seat frame consists of two rounded long rails and two short rails. The two sets of rails are joined together and to the end sections with mortise and tenon joinery.

LONG SEAT RAILS. After cutting the rails to length, I cut the tenons to fit the mortises in the end frames. Then I drilled out the mortises that will hold the short rails, as shown in detail 'a.' Once the tenons and mortises are completed, you can turn your attention to shaping the rounded edge on the long rails.

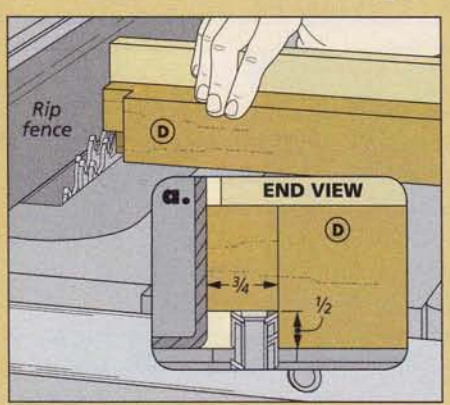
ROUND OVER RAILS. The large (1½") radius on the long rails is roughed out on the table saw. The box on the next page steps you through the process. First, mark the radius on the ends of the rail, using a circle template, as shown in Figure 1. Then tilt your saw blade to 45° and cut off the corner (Figure 2). The final steps on the saw are to tilt the saw blade to 22½° and cut to the line on either side of the 45° surface (Figures 3 and 4).

You can clean up the remaining ridges and smooth the curve with a file, as shown in the photo on the opposite page. Light sanding will smooth out the roundover. When the curve is shaped, take the rails over to the router table to rout the small roundover on the lower outside edge of the rail.

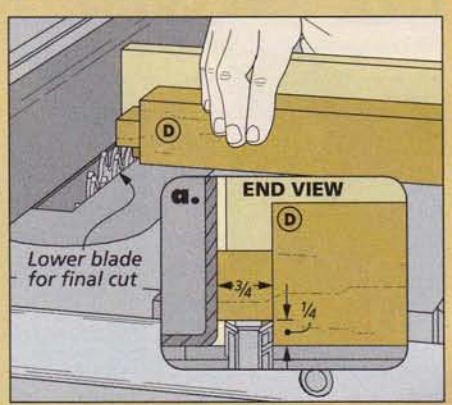
How-To: Cut Offset Tenons on Long Seat Rails



First Cut. *The tenon on the side rails is offset. Cut both ends of the rail before you move on to the next cut.*



Second Cut. *The second cut of the long rail seat is cut on the shoulder with the saw blade set at a height of ½".*



Complete the Tenon. *The final two cuts are made on adjoining faces with the blade at the same height for both sides.*

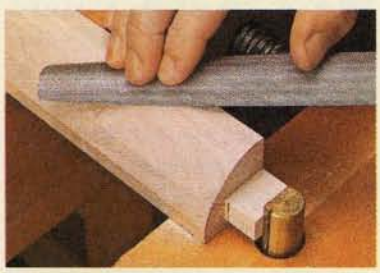
SHORT SEAT RAILS. The next step is to make the short seat rails. The important thing to note when making this rail is that the shoulder-to-shoulder distance of the rail has to match the distance between the long rails exactly.

To make sure I had the length correct, I dry assembled the end frames and long seat rails together and then measured the distance between the rails. Be sure to add the length of the tenons before you cut the short seat rails to length. Then you can cut the tenons, sneaking up on the shoulder-to-shoulder length of the short rails. The roundover on the outside edge can be routed when the tenons are completed.

ASSEMBLY. After the rails are made you can assemble the seat frame. Since the large roundover on the rail makes clamping with conventional clamps difficult, I used a band clamp to assemble the seat frame. (Figure 5). The roundover around the inside top edges of the frame is routed next (Figure 6).

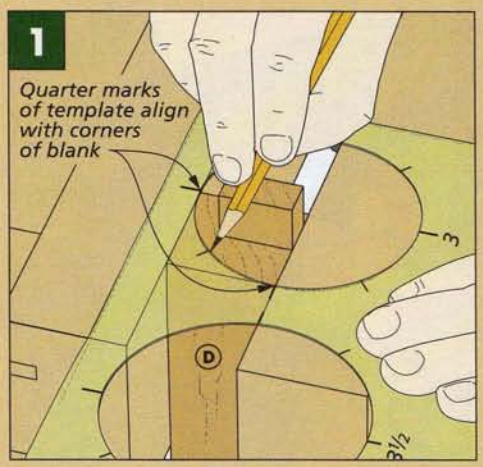
STRETCHERS. When the frame is finished you can set it aside to make the stretchers. In order for the bench to square up in assembly, the shoulder-to-shoulder length of the stretchers needs to be the same as the shoulder-to-shoulder length of the long seat rails. I just measured a long seat rail to get the correct length.

There's just enough clearance between the seat frame and the end frames to allow for the webbing. For this reason, the webbing needs be attached before the bench is assembled. You'll be able to weave the webbing more easily.

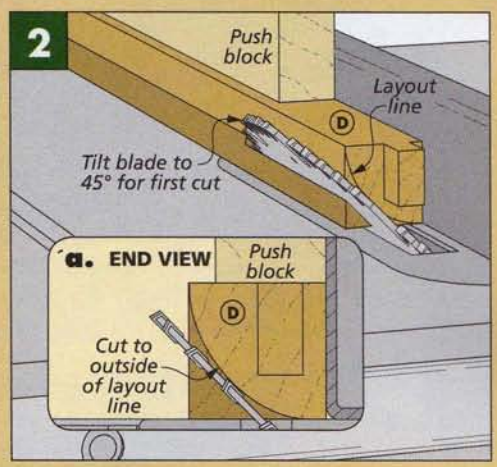


▲ A file makes quick work of rounding over the high spots on the long rails of the frame.

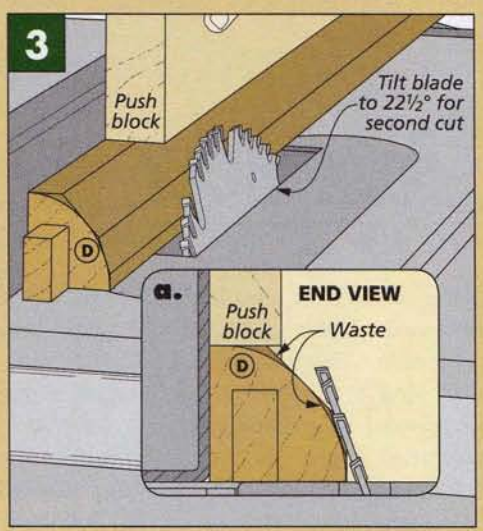
How-To: Shape & Assemble



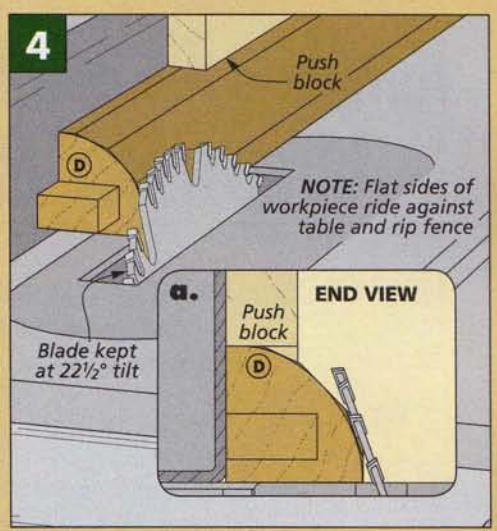
Mark the Curve. *A circle template will help you mark the roundover radius on the ends of the rails before you cut off the waste.*



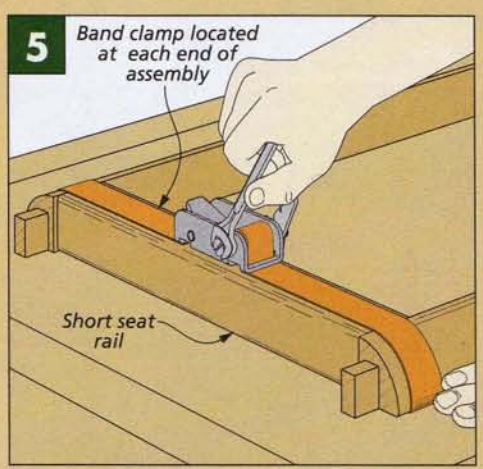
First Cut. *The first cut to shape the roundover is done with the blade tilted to 45°. Align the blade with the line marked on the end.*



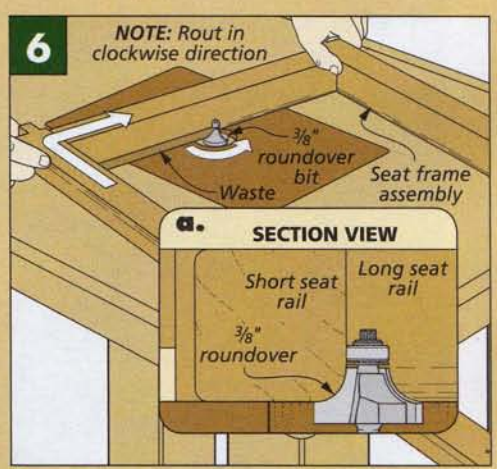
Second Cut. *To make the second cut, move the fence to the opposite side of the blade and tilt the fence to 22½°.*



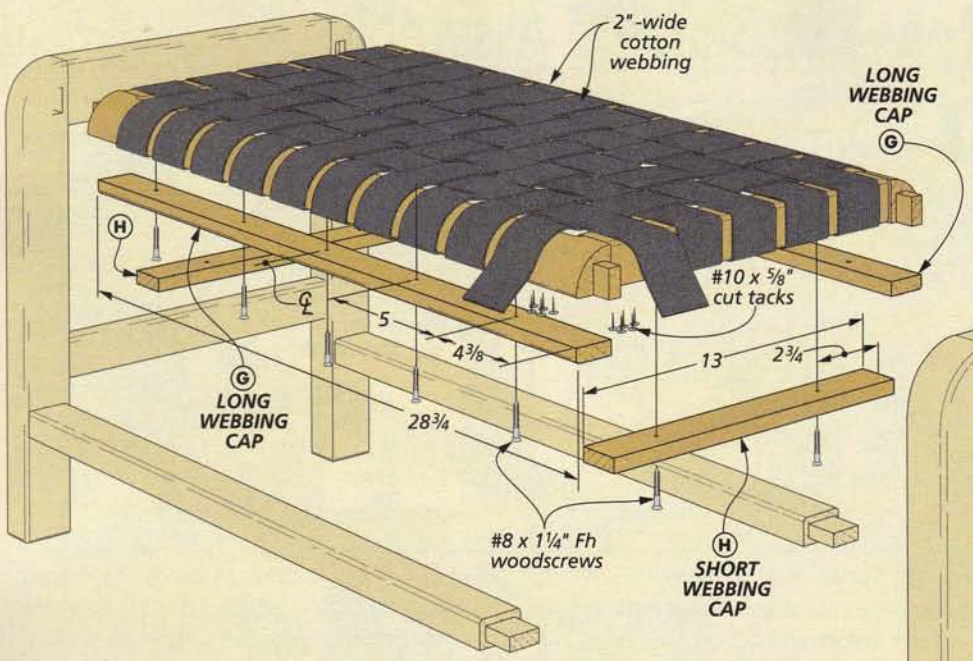
Third Cut. *To cut the remaining waste turn the workpiece and flip it end for end so it fits against the fence and table.*

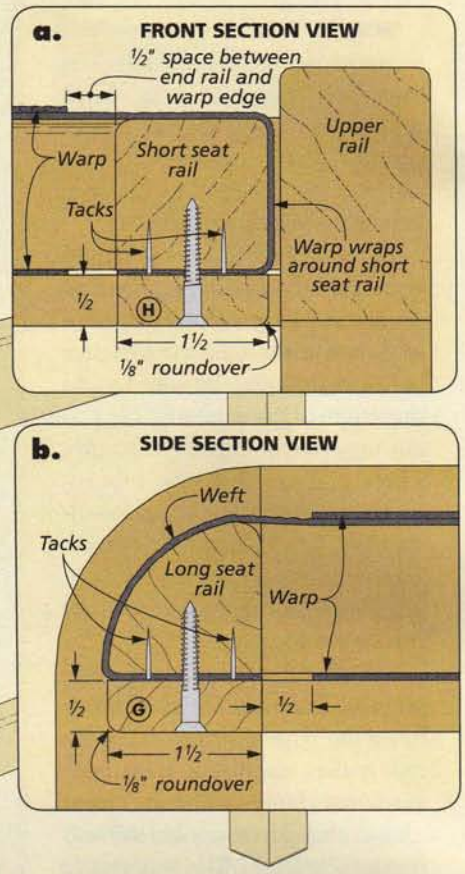


Clamp. *A band clamp pulls the long seat rails tight to the short seat rails during the glue up of the seat frame.*



Rout Roundover. *The inside roundover on the seat frame is routed on the router table once the seat frame is assembled.*





complete the bench
WEBBING & ASSEMBLY

Most of the projects I build are assembled first and then finished. But the finish on this bench needs to be applied before the webbing is attached. And, as I mentioned, the webbing needs to be attached to the seat frame before assembly to the end frames. So the sequence for the remaining work is to apply the finish, weave the seat, and then complete the assembly of the bench. The last step will be to add the webbing caps.

WEBBING CAPS. Although you won't need the webbing caps right away, you can go ahead and cut them to size so they're ready when the bench is assembled. But wait to drill the holes for the mounting screws until you're ready to attach the caps. This way it will be easier to align the holes with the spaces between the webbing strips.

FINISH. With all the workpieces complete, you can apply finish to them. If you turn to Sources on page 51, you'll find more about the finish I used. Be sure to keep the tenons free of finish by covering them with masking tape.

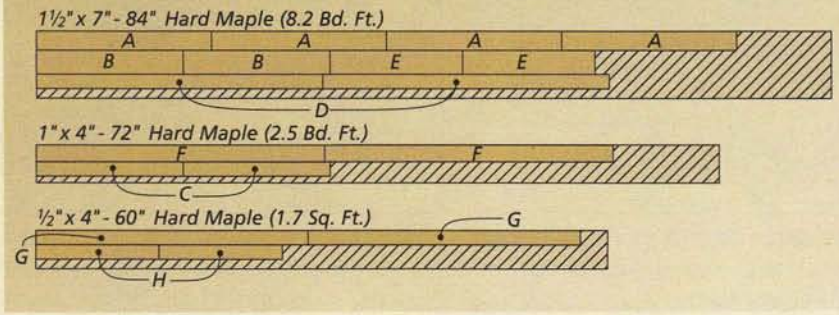
WEBBING. Lengths of cotton webbing are woven together to form the bench seat (read more in Sources on page 51). The long strips that attach to the short seat rails are called the "warp" and the short strips that weave into the warp and attach to the long seat rails are called the "weft." Because the webbing needs to be pulled tight and tacked at the same time, it's a good idea to have a helper to give you a hand.

The first step is laying out the placement for the webbing, as shown in Step 1 on the opposite page. The goal here is to space the webbing evenly across the seat frame in both directions.

Materials, Supplies & Cutting Diagram

A	Legs (4)	1 1/2 x 2 - 18 1/2	
B	Upper Rails (2)	1 1/2 x 2 1/2 - 15 1/2	
C	Lower Rails (2)	1 x 1 1/2 - 15 1/2	
D	Long Seat Rails (2)	1 1/2 x 1 1/2 - 30 1/4	
E	Short Seat Rails (2)	1 1/2 x 2 1/2 - 14	
F	Stretchers (2)	1 x 1 3/4 - 31 1/4	
G	Long Webbing Caps (2)	1/2 x 1 1/2 - 28 3/4	
H	Short Webbing Caps (2)	1/2 x 1 1/2 - 13	

- (1) 36-ft. Roll 2"-wide Cotton Webbing
- (150) #10 x 5/8" Cut Tacks
- (12) #8 x 1 1/4" Fh Woodscrews



Once the frame is marked on all four sides, you can start the warp by attaching one end of the webbing to a short side rail (Step 2). I used cut tacks to do this because they have a broad head to hold the webbing and a sharp point that will easily penetrate most hardwoods. When one side is attached, enlist your helper to pull and stretch the length of the webbing tight across the seat as you drive in the tacks on the opposite end of the frame (Step 3).

The tautness of the webbing is important. There should be very little give to the individual webbing strips. A good test is to press down on the webbing after it's attached. If the webbing gives more than ¼", it will be too loose to form a comfortable seat.

After you've attached both ends of the webbing, you can cut the strip free from the roll with a sharp utility knife (Step 4). Keep working across the seat until you have all the warp webbing attached.

The cotton webbing used to make the seat has a tendency to fray. But a little yellow glue brushed onto the ends of each strip will keep this in check.

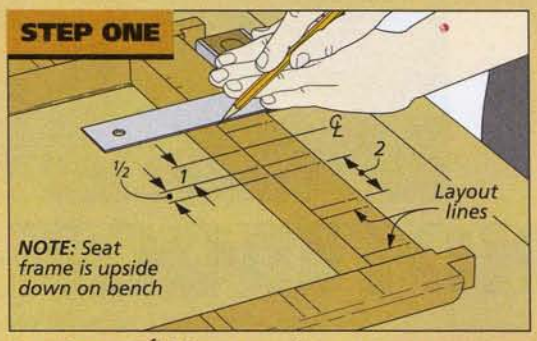
The weft strips are attached to the seat in the same way. You'll just need to weave the pieces through the warp as you go, as shown in Step 5.

FINAL ASSEMBLY. The bench is completed by joining the end frames with the seat frame and stretchers. Since the finish is already applied, it's a good idea to mask the ends of the stretcher and frame with tape. This way any glue squeeze-out will stay off the finish.

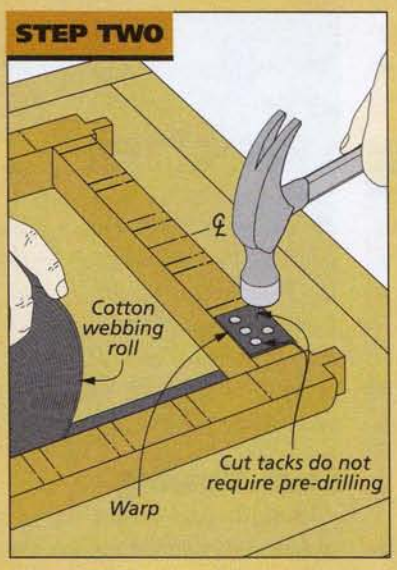
To keep from marring the fresh finish on the bench, I used a couple of blocks under the clamp jaws during assembly. This will also distribute the force of the clamps on the bench. Finally, attach the webbing caps to cover the ends of the webbing, as shown in the photo on the right.

All that's left is to choose the best location in your home to show off your great new bench.

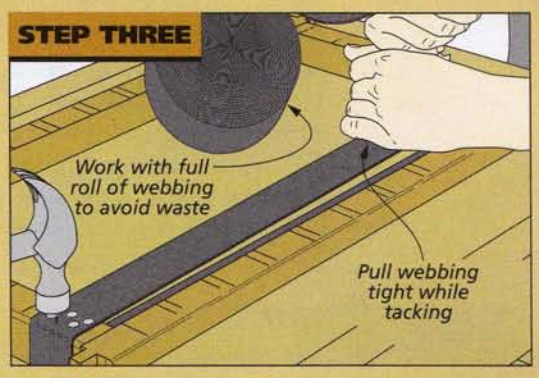
How-To: Webbing Installation



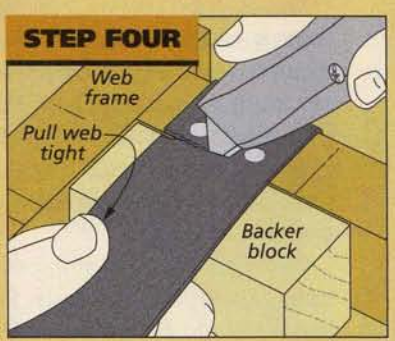
Lay Out Webbing Locations. *Use a square to mark the position of the webbing. Start from the center and space the strips evenly.*



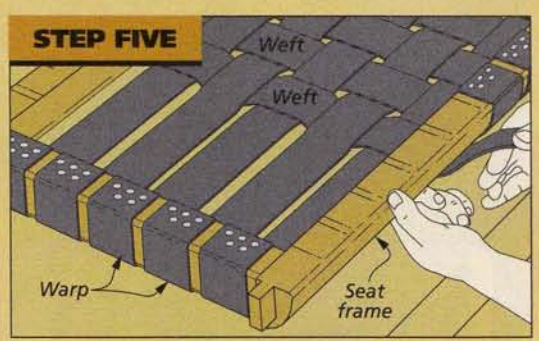
Secure One End. *Each end is secured with five cut tacks in the pattern shown in the drawing.*



Pull it Tight. *Enlist a helper to pull the webbing tight while you secure the opposite end. The webbing should give only a bit for a comfortable seat.*



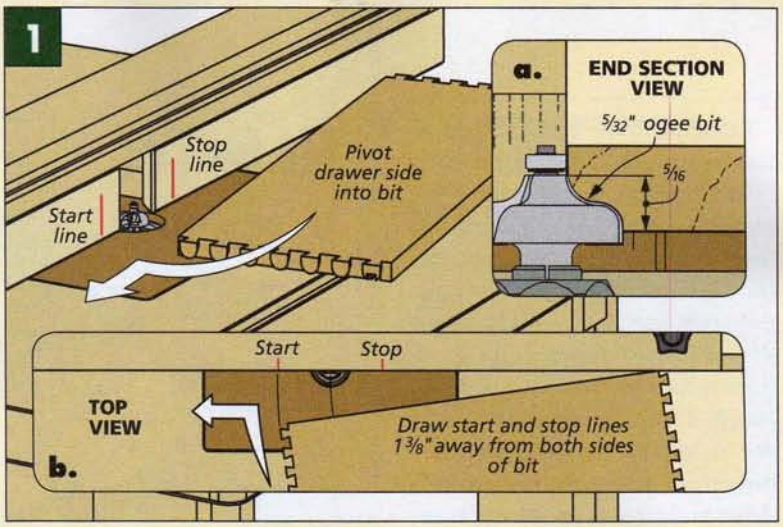
Cut the Ends. *Cut the webbing free from the roll with a sharp utility knife. A block protects the frame.*



Weave the Weft. *The free end of the weft is woven into the warp and attached with tacks. Then pull the webbing and tack the other side.*

▲ Webbing caps cover the ends of the webbing and create an attractive trim under the seat. Locate the countersunk screw holes between the webbing strips.

SHOP NOTEBOOK

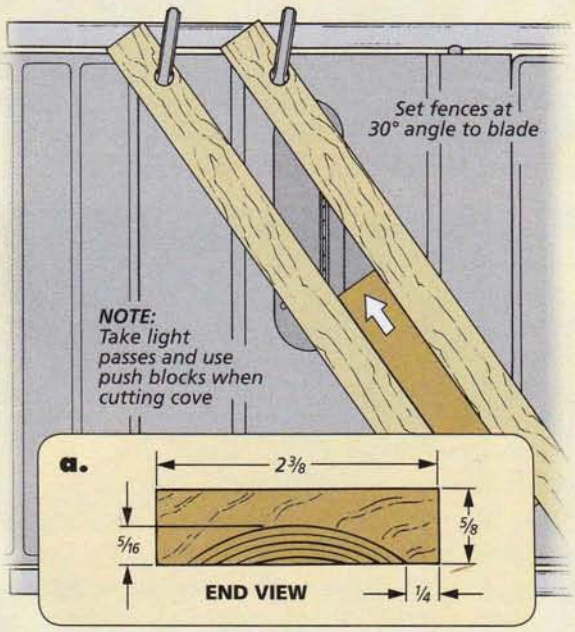


Stopped Ogees

The drawers for the sideboard on page 32 feature stopped ogees on the inside edges of the sides. This profile adds a subtle detail to the project and helps to soften the edges of the drawer sides.

I created these ogees on the router table. The trick is to rout the profiles before you assemble the drawers. To do this, I drew a couple of start and stop lines on the fence of my router table, 1⅜" from the edge of the router bit, as shown in the drawing above.

With the ogee bit raised to the correct height, you can pivot the drawer side into the spinning bit so that the end of the workpiece lines up with the start line on your router table fence (detail 'a'). Then simply push the workpiece forward until the end of the piece reaches the stop line.



Cove Molding

Although you might think the cove molding used for the mirror on page 20 was made on a router table or shaper, it's actually made entirely on the table saw.

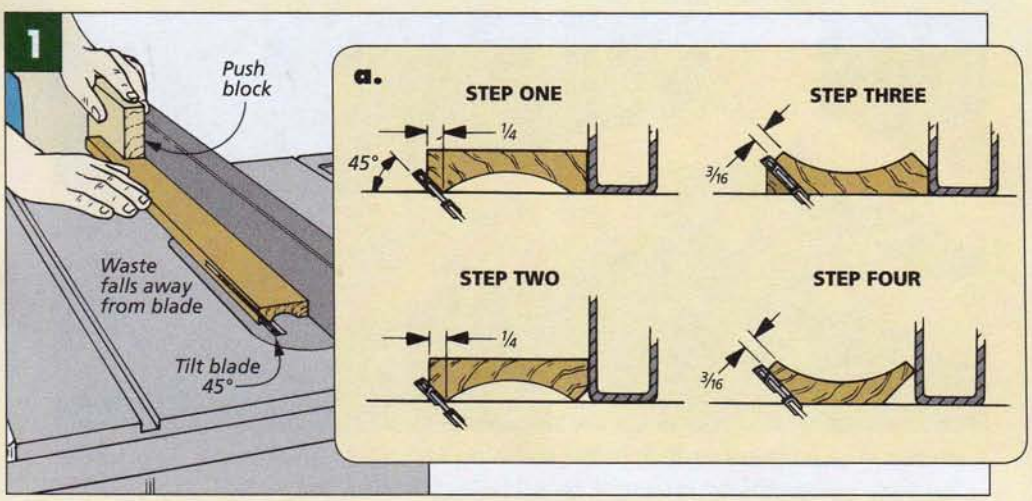
You start by cutting a shallow cove on one face of a blank. To do this, lay out the cove on the end of a blank (detail 'a' at left). Then clamp a pair of fences to the top of your table saw at a 30° angle to the blade, as shown in the main drawing at left.

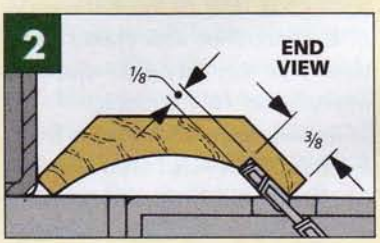
Cut the cove by making multiple passes over the blade, raising the blade no more than 1/16" after each pass. Note: Make sure to use push pads or push blocks when cutting the cove.

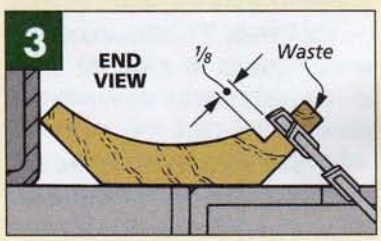
After cutting the cove and sanding away any saw marks, you'll need to make a series of beveled rip cuts along all four edges of the blank. This will allow the molding to fit against the shelf and mirror frame at an angle.

All the cuts are made with the blade tilted 45°. You can see the sequence of cuts I used in Figures 1 and 1a below.

The last step to complete the cove molding is to cut the small rabbet, or fillet, along the bottom edge. I did this in two steps. First, cut a wide rabbet, as shown in Figure 2. Then, turn the workpiece over and position the fence to trim the edge (Figure 3).







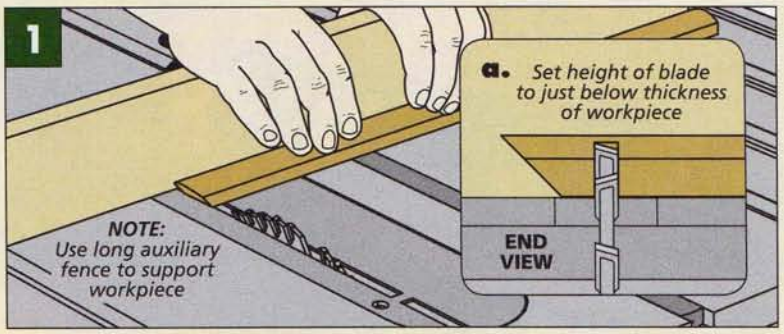
Cutting Mitered Returns

Both the sideboard and the wall mirror call for mitered trim or moldings with short returns on the ends (see photo at right).

Trying to cut very short pieces of trim on a miter saw or table saw can be a challenge. When you cut the return off the end of a longer piece, it usually "zings" across the shop, often getting lost.

To make the task a little easier, here's a simple trick. Start by mitering the end of the molding or blank. Now, instead of completely cutting the return off the end of the blank, lower your saw blade so it's about 1/32" below the height of the molding, as shown in Figure 1.

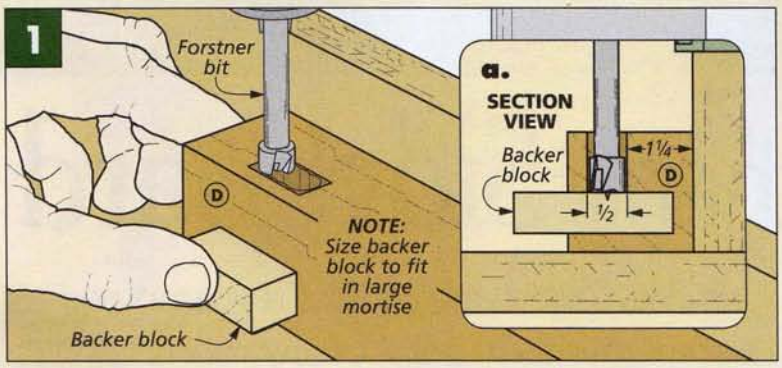
This way, when you cut the return to length, it remains attached to the rest of the molding by a thin "bridge." A utility knife can then be used to cut the return free from the rest of the molding (Figure 2).

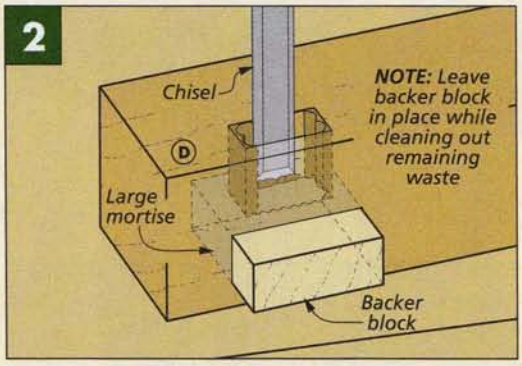


Intersecting Mortises

Each leg of the bench on page 24 has a pair of intersecting mortises to hold the upper rails. There's nothing out of the ordinary about these mortises. But when it comes to drilling and chiseling out the waste for the second mortise, you run the risk of splitting and tearing out the sides of the mortise as the drill bit and chisel break through the bottom and into the open space created by the first mortise.

To prevent this, I simply cut a backer block to fit in the first (large) mortise, as shown in Figures 1 and 2 below. The backer block supports the bottom of the second mortise as you drill and chisel out the waste. Once you've finished squaring up the second mortise, simply remove the backer block.

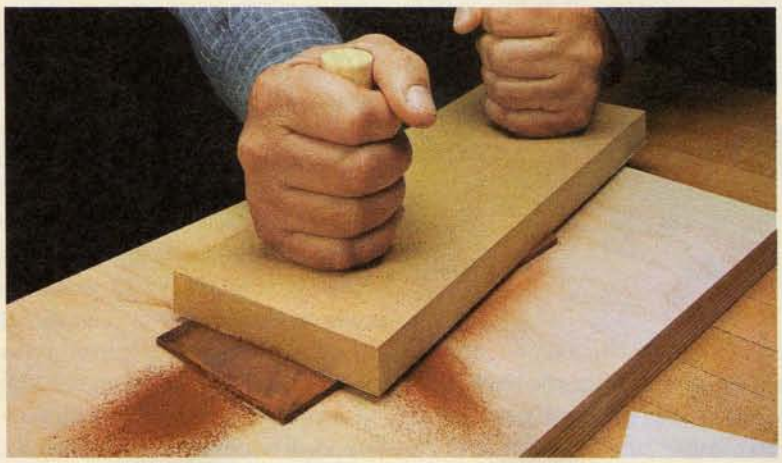




Sandpaper Plane

If you don't have a drum sander to sand the thin stock needed for the banding shown on page 14, you can make a sanding block to sand the stock by hand. It's just a piece of MDF with self-adhesive sandpaper attached to one side and a couple of dowels for handles.

After attaching the workpiece to a piece of plywood with double-sided tape, you can quickly remove any saw marks left behind from the resawing process. W



cherry Sideboard

▲ The shallow end compartments turn "hidden" space into efficient storage for glassware or other small items.

This classically styled cabinet is guaranteed to become the focal point of any room.

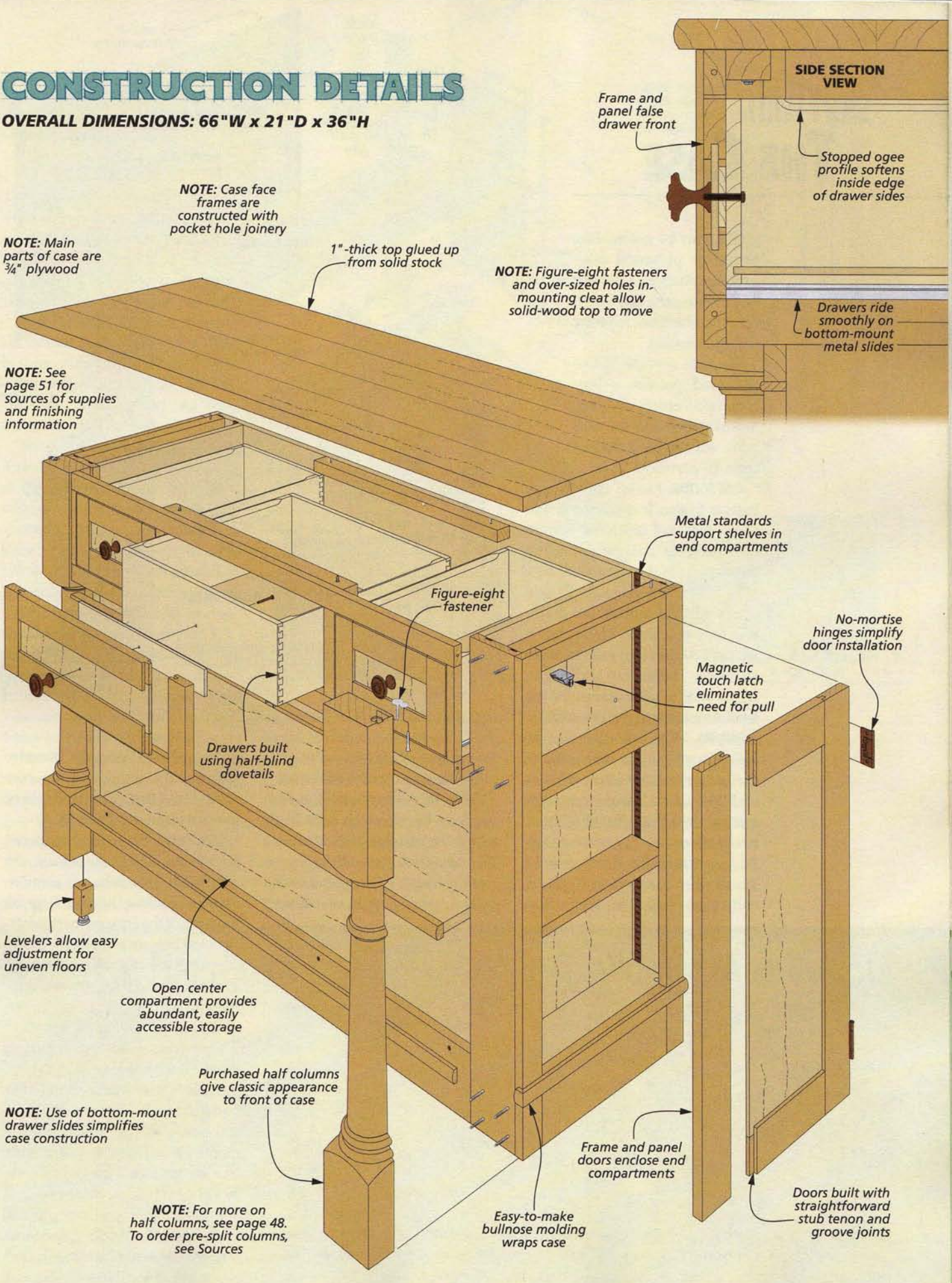
I'm a pretty big fan of traditional styles and design. But on the other hand, modern tools and techniques are my woodworking bread and butter. That's a big reason why building the cherry sideboard above is so satisfying. It offers the best of the old and the new.

The classic roots of this project are pretty plain to see. It starts with the tasteful half columns flanking the case. They create a very impressive, almost architectural appearance. And all the other details, from the frame and panel look to simple moldings, draw on the same theme.

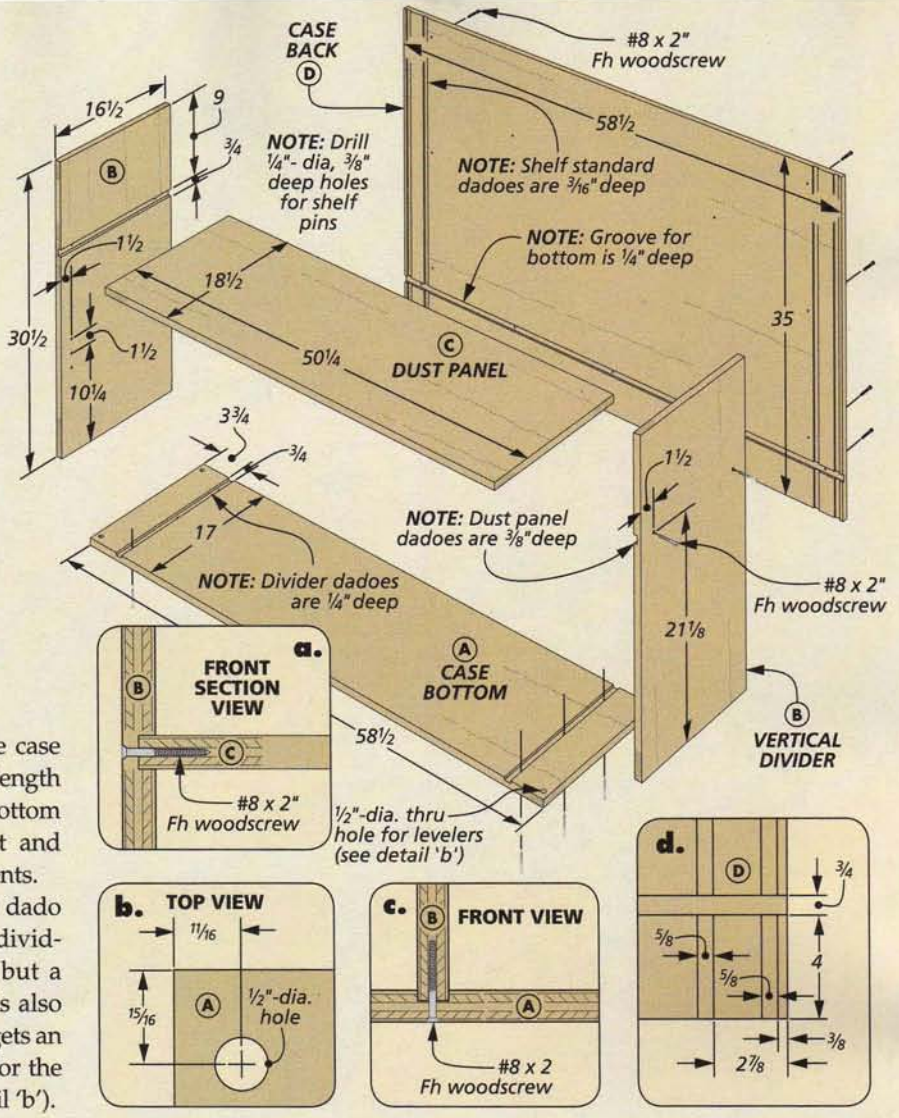
The beauty is that it all comes together with minimal effort. The sturdy case uses basic plywood construction. And don't worry about the columns — they can be purchased. Some quick and easy pocket hole joinery takes care of much of the rest. To be perfectly honest, I don't know where else you can come by this much versatile storage in such a handsome package without even breaking a sweat.

CONSTRUCTION DETAILS

OVERALL DIMENSIONS: 66"W x 21"D x 36"H



start with THE CASE



You'll start by assembling the large plywood case. The structure is a bit out of the ordinary, but you'll find that the work is pretty straightforward.

The case consists of five plywood panels: a bottom, two vertical dividers, a dust panel, and the case back. All the parts are cut from ¾" plywood.

CASE BOTTOM. First, I cut the case bottom to size. It spans the length of the case and forms the bottom of the center compartment and the shallow end compartments.

Now, you'll need to cut a dado near each end to hold the dividers. I used a dado blade, but a router and an edge guide is also an option. The bottom also gets an access hole in each corner for the levelers installed later (detail 'b').

DIVIDERS. The dividers come next. They form the side walls of the center storage compartment and the back of the end compartments. Note that they're ½" narrower than the bottom panel. Dadoes cut in the dividers hold the drawer dust panel. Again, a dado blade will take care of this. A series of shelf pin holes will complete work on the dividers.

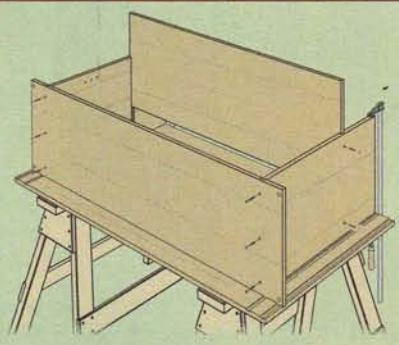
DUST PANEL. At this point, the dust panel can be cut to size. It fits flush with the back edge of the dividers and extends 2" beyond the front. Size the length of the panel so the center opening ends up square. To figure this dimension, measure between the dadoes in the case bottom and then add the depth of the dadoes in the dividers.

BACK PANEL. With the dust panel completed, I began work on the case back. This panel does more than just enclose the case. It forms the sides of the end compartments. And the bottom edge of the panel supports the case along the rear. This means the back requires a bit more work than usual, as you see in the main drawing above.

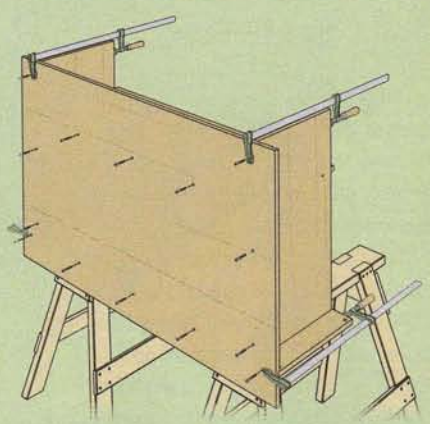
Your tasks consist of cutting a groove near the lower edge to hold the case bottom and a pair of long dadoes at each side for metal shelf standards in the end compartments (detail 'd'). A router with an edge guide is a good choice for tackling both these chores.

ASSEMBLY. Now, you can put the pieces together with glue and screws. The assembly order I used is shown in the How-To box on

How-To: Assembly



NOTE: Clamp dividers to case back during assembly



On Its Back. *Using the back to support the pieces, first screw and glue the bottom to the dividers. Then add the dust panel.*

Tip It Up. *To fasten the back, I turned the case upright. Make sure everything is aligned and square before you install the screws.*

case assembly. Just make certain the pieces are properly aligned and the case is square.

MAIN FACE FRAME

The next step is to add the first of the four separate face frames. The key here is to make and install each frame in order. You'll begin with the main, U-shaped face frame shown in the drawing at right.

ALL THE DETAILS. This frame is made up of two wide stiles and a wide bottom rail. The stiles provide a solid mounting surface for the columns. The bottom rail supports the front of the case.

The joinery is simple — pocket screws. But this is just one of the details that needs to be taken care of before installing the frame.

GROOVE. Here's the rundown. After the pieces are cut to size, the next task is to cut a groove in the rail and dadoes in the stiles. This allows the frame to fit over the bottom panel to provide better support. It's easiest to cut the groove piece by piece, as shown below. When this is completed, you can drill the pocket screw holes in the rail and set it aside.

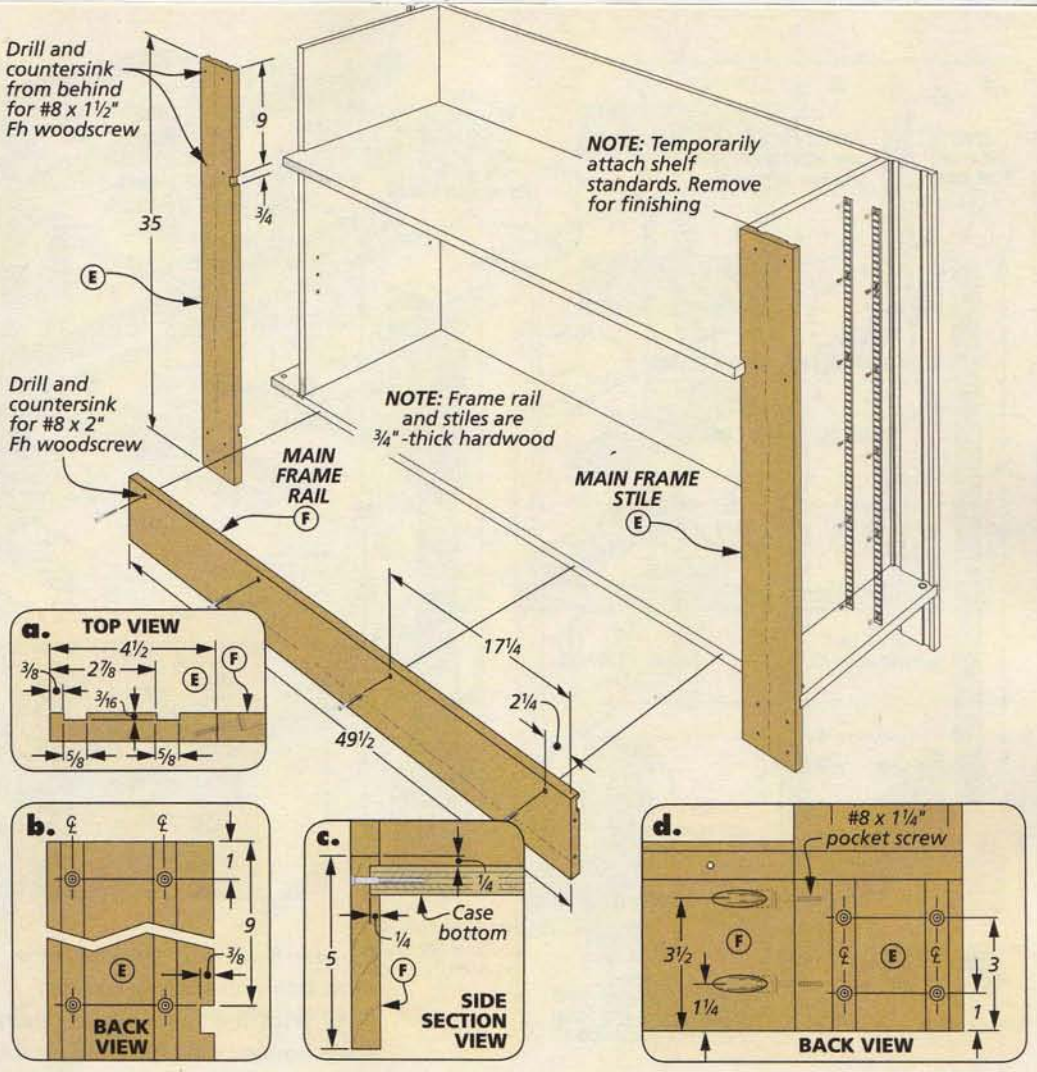
NOTCHES. The inside edges of the stiles fit flush with the inside edges of the plywood case dividers. To make this work out, the stiles have to be notched to fit over the dust panel, as in detail 'b.'

To mark each notch, I slipped the groove in the stile over the case bottom and snugged the stile up to the dust panel. Then nibble away the waste as shown below.

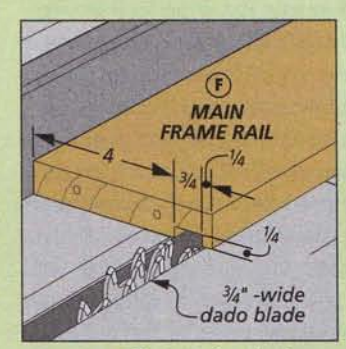
FINAL STEPS. There are two more pre-assembly steps. First, I cut grooves in the backs of the stiles for shelf standards. Then I drilled countersunk screw holes in the grooves that I later used to attach the columns (details 'a' and 'b').

ASSEMBLY & INSTALLATION. Finally, you can assemble the frame. A scrap of plywood keeps the groove aligned while the pocket screws are added (right drawing below).

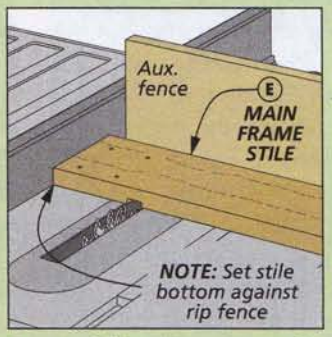
When installing the frame, the stiles are glued to the dividers while the rail is glued and screwed to the case bottom. You'll find some clamping tips on page 12.



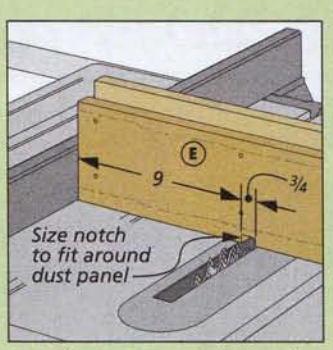
How-To: Handle the Details



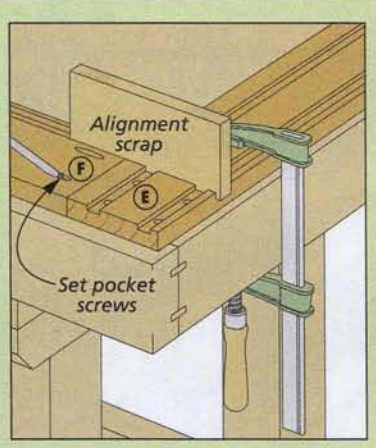
Frame Rail. *Set the rip fence to position the groove in the frame rail accurately.*



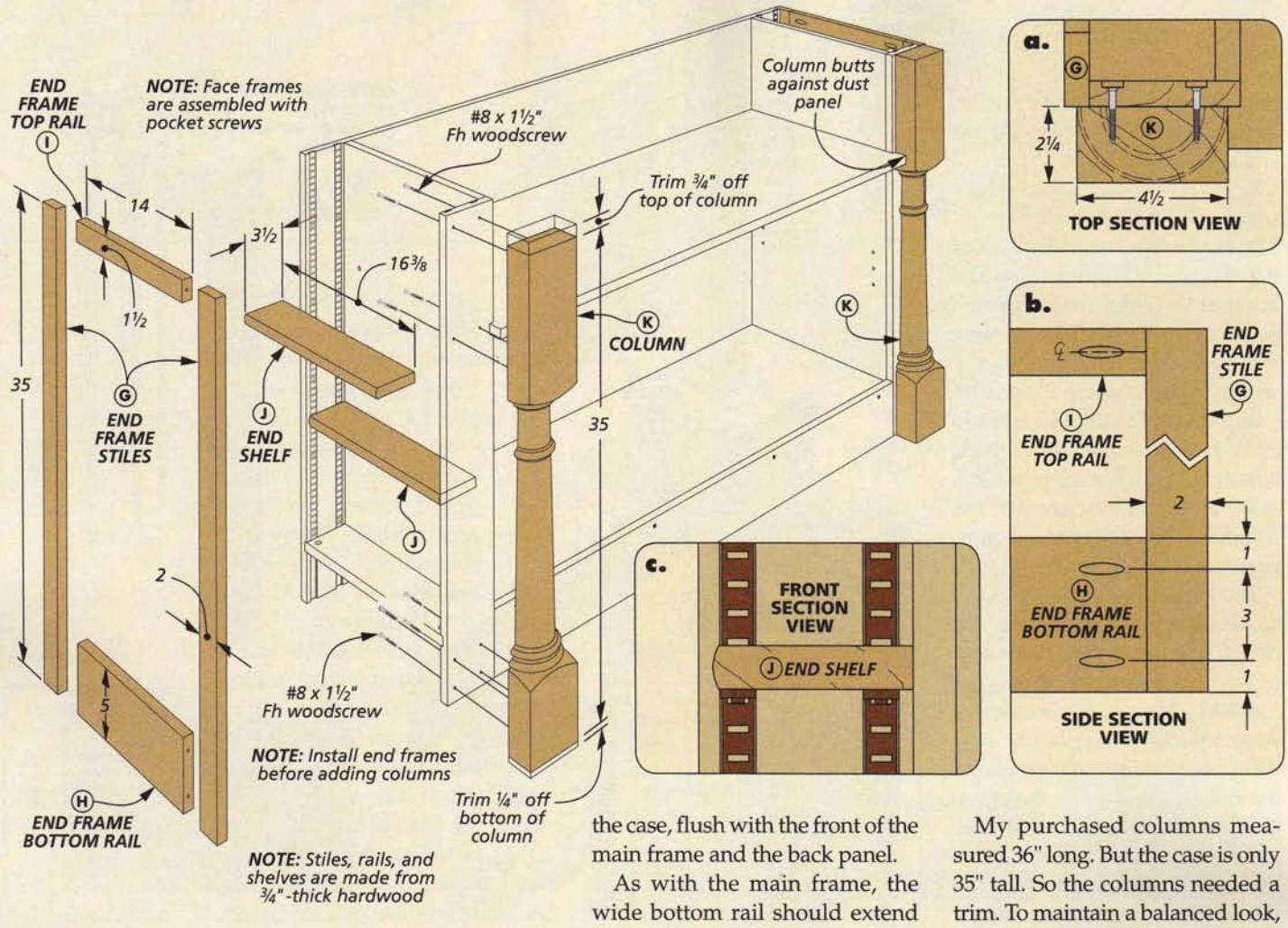
Frame Stiles. *You can use the same rip fence setting to cut the grooves across the stiles.*



Notches. *To cut the notches in the stiles, nibble away the waste with multiple passes.*



Easy Assembly. *A scrap of plywood bridges the rail and stile, automatically aligning them.*



completing the CASE

With the main face frame installed, the case can stand on its own. So now your job is to just keep adding parts. The two face frames that cap the ends of the case are up next.

END FACE FRAMES. Building and installing the end frames is very straightforward compared to the main face frame. The stiles and rails can simply be cut to size and then joined with pocket screws, as shown in the main drawing and in detail 'b.' The frames are sized to fit over the ends of the case, flush with the front of the main frame and the back panel.

As with the main frame, the wide bottom rail should extend above the case bottom to form a short lip. Once the frames are assembled, you can glue them to the case. You want to make certain the exposed joint line at the front of the case is nice and tight.

AN EASY TASK. After the two end frames were in place, I took the time to complete a simple chore. Each of the end compartments needs a couple of shelves (detail 'c'). These are cut from solid stock and then have a bullnose routed on the front edge, as shown in the box on the opposite page.

THE COLUMNS. Things are really beginning to take shape, but the case still looks pretty plain. The next step — adding the columns, is sure to change the appearance.

I purchased a pair of nicely made half columns (photo at left). If you're ambitious, you may want to turn your own. You'll find some information on making and using sectioned turnings on page 48. Regardless of the route you take, once the columns are in hand, installing them is an easy task.

My purchased columns measured 36" long. But the case is only 35" tall. So the columns needed a trim. To maintain a balanced look, I ended up cutting ¼" off the bottom and ¾" off the top.

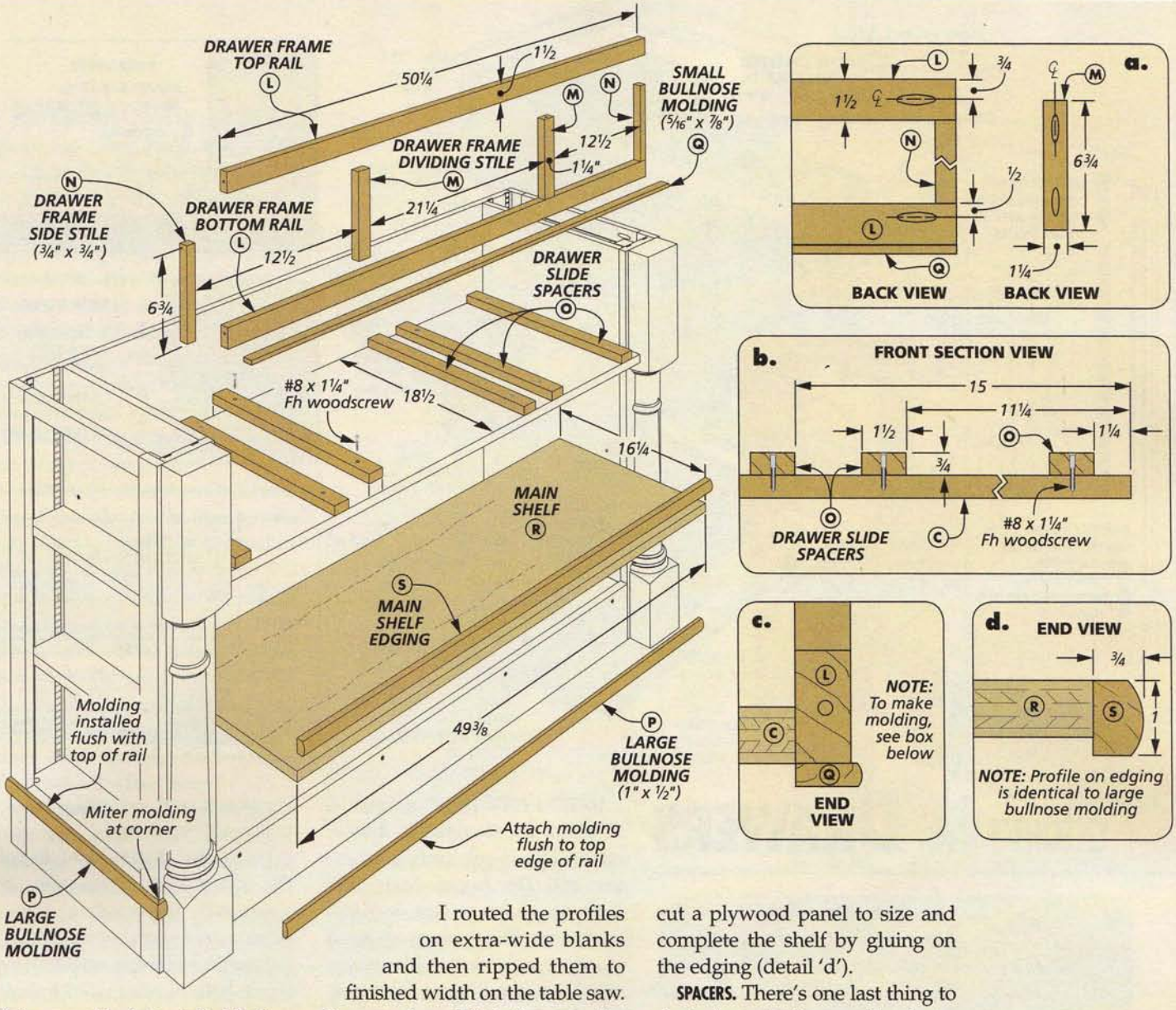
The columns can then be attached to the stiles using glue and the pre-drilled screw holes (detail 'a'). Position them so that the upper post butts against the protruding edge of the dust panel. This will center them side to side.

DRAWER FACE FRAME. The face frame that creates the three drawer openings fits between the upper posts of the two columns. So with the columns in place, you can now make and install this assembly.

The main drawing on the opposite page shows how the frame is made up of two long rails, two dividing stiles, and a pair of narrow side stiles. Like the others, this frame uses pocket screw joints. I also used pocket screws to fasten it in place on the case.

When the parts are all cut to final size, you'll need to drill pocket holes in the ends of the rails and the dividing stiles (detail 'a,' opposite page). Next, you can assemble the rails and two dividing stiles.

◀ A pair of split columns can be purchased, almost ready to install. You'll find the source on page 51.



This assembly is installed before the side stiles are added.

Start by gluing the bottom rail to the dust panel. The lower edge should be flush with the lower edge of the panel. Then fasten the rails to the column posts, using the side stiles as spacers. Finally, glue the side stiles to the columns.

ODDS AND ENDS. At this stage, the bulk of the work on the case is done. But there are still a handful of details to complete.

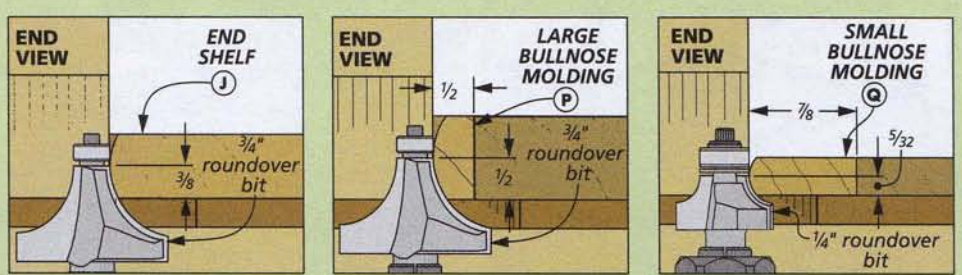
First, I dressed up the case by adding a couple different types of trim. A band of bullnose molding wraps the base of the case flush with the top edge of the face frame rails (main drawing). A smaller piece of bullnose molding fits between the columns beneath the lower rail of the drawer face frame, as in detail 'c.' The How-To box shows how to make the moldings.

I routed the profiles on extra-wide blanks and then ripped them to finished width on the table saw. Once made and fit to the case, the moldings are glued in place.

A LARGE SHELF. While set up at the router table to make the base bullnose molding, I also made some edge molding for a shelf that goes into the center compartment of the case. So now I took the time to cut a plywood panel to size and complete the shelf by gluing on the edging (detail 'd').

SPACERS. There's one last thing to do before starting on the drawers. Each drawer opening needs a pair of spacers to hold the bottom-mount slides (detail 'b'). The spacers butt up to the back of the bottom rail and are screwed to the dust panel. They should fit flush with the top of the rail.

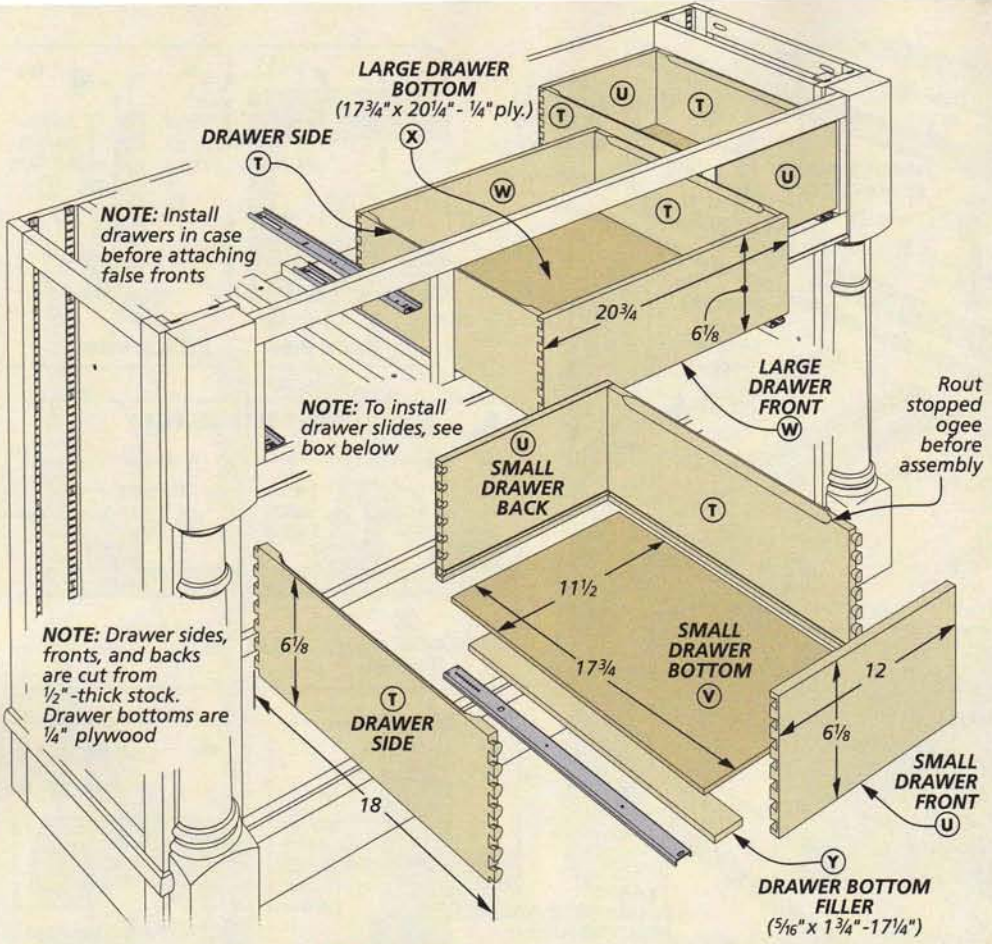
How-To: Rout Bullnose Profiles

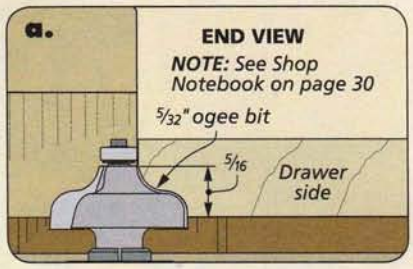


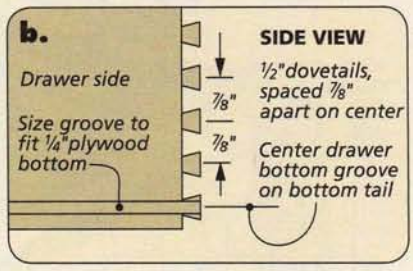
Bit Height. *Adjust the bit height to half the thickness of the workpiece.*

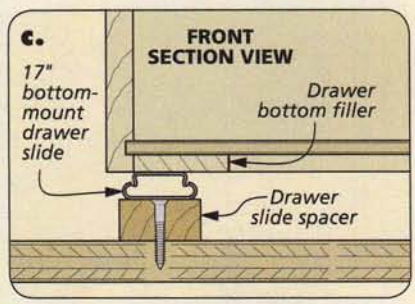
Wide Blank. *When making both trim pieces, start with an extra-wide blank.*

Two Passes. *After a pass on one side, flip the blank to complete the profile.*









adding the DRAWERS

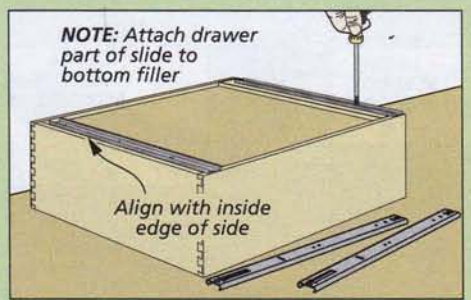
Now the case is ready for the drawers. Here, I used the best of the old and new. The drawer boxes are built using half-blind dovetails. Frame and panel false fronts further add to the traditional style. But the drawers are installed in the case on metal, bottom-mount slides. This combination makes for drawers that will last a lifetime and always open and close easily.

DOVETAILS FIRST. Your first task is to build the dovetailed drawer boxes. This is relatively straightforward. The fronts, backs and sides are all cut to size from ½"-thick stock. The drawers are sized to allow a ½" total side-to-side and ⅝" top-to-bottom clearance. (The bottom-mount slides need a minimum ⅜" clearance.)

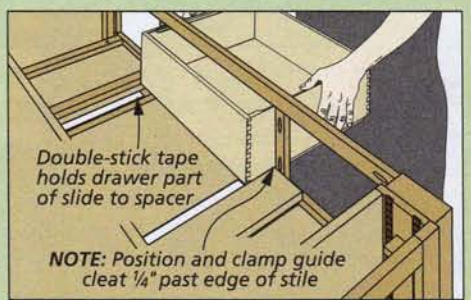
With all the parts for the boxes in hand, I got out my dovetail jig and router and set up to rout the joints. Detail 'b' above gives you the spacing for the joints. This is pretty standard — I used ½" dovetails cut ⅞" on center.

PRE-ASSEMBLY DETAILS. Now, before the dovetailed boxes can be assembled, there are a couple more chores to complete. First, all the parts need a groove along the inside bottom edge sized to hold the ¼" plywood bottoms (detail 'b'). And once this is completed, you can take the sides to the router table. Here, I softened the inside edge of the sides with a stopped ogee profile, as in detail 'a.' You'll find more on this on page 30.

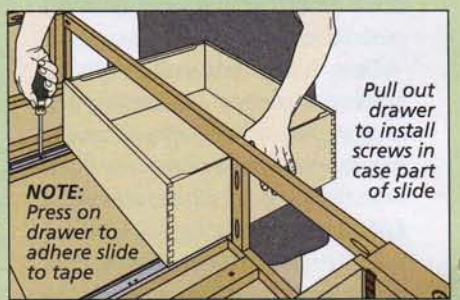
How-To: Install the Slides



The Drawer. *Start by attaching the drawer parts of the slides to the drawer bottom. Then slide the case parts over them.*



Spacer and Tape. *Next I used a guide cleat and double-stick tape to position the drawer and the slides in the case.*



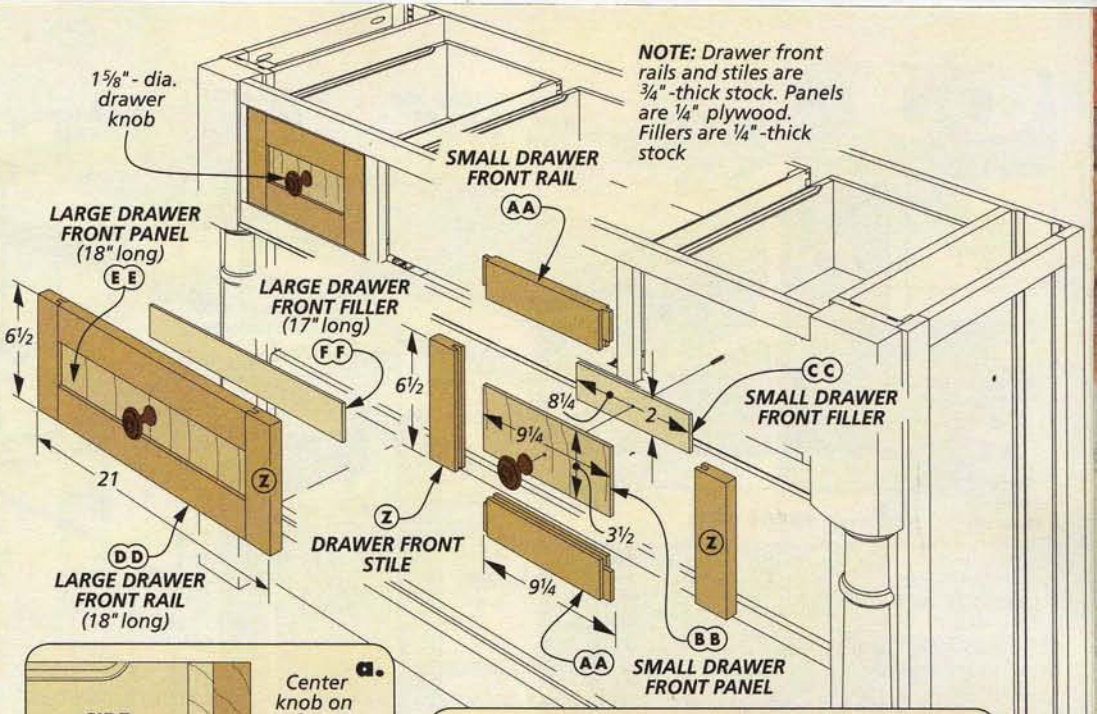
Screws. *The tape will hold the case part of the slide in place while you back out the drawer and complete the installation.*

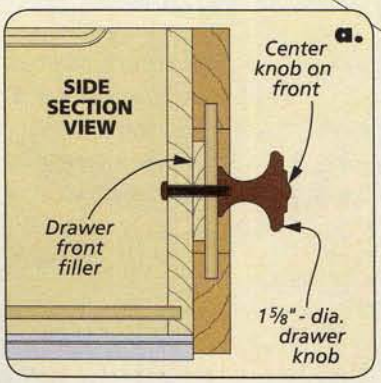
POST-ASSEMBLY. Once the boxes are glued up, they need one more addition before they're ready to be installed in the case. The bottom-mount drawer slides I used eliminated the need to add partitions to the drawer compartment. But in order to mount the slides, you have to glue a pair of fillers to the bottom of each drawer. These solid-wood fillers are sized to fit flush with the lower edges of the drawer box, as shown in detail 'c' on the opposite page.

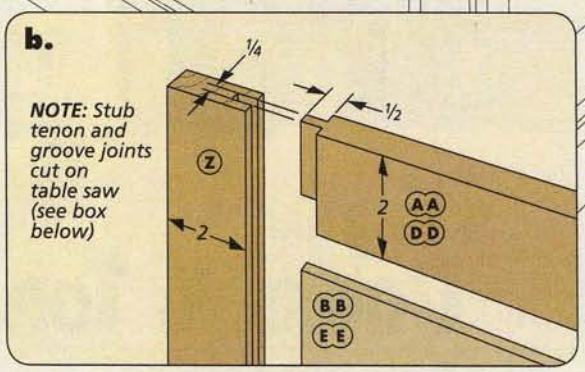
SLIDES NEXT. Rather than make and install the false fronts, then mount the slides on the drawers and in the case, I did the reverse. It's much easier to center the fronts in the openings with the drawer boxes and slides already positioned in the case. The How-To box on the opposite page shows the steps involved. The boxes are recessed so the false fronts will fit flush with the face frame.

FALSE FRONTS. When you're satisfied with how the slides work, you can start on the frame-and-panel fronts. These go together with stub tenon and groove joinery (detail 'b'). All the work takes place at the table saw as shown in the box below. I sized the fronts for a healthy ⅛" gap on all sides.

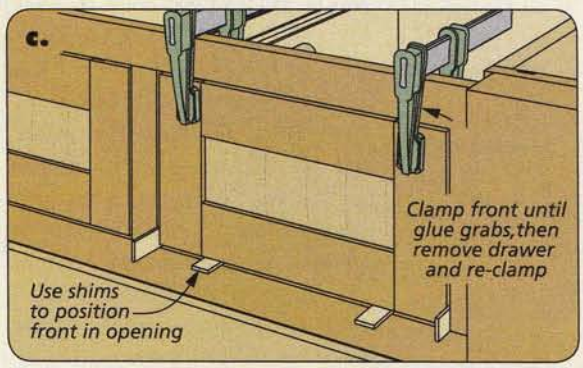
FILLERS. Once the joinery was completed and the fronts assembled, I added a filler behind each panel. This creates a sturdier surface on which to mount the centered knobs (detail 'a').



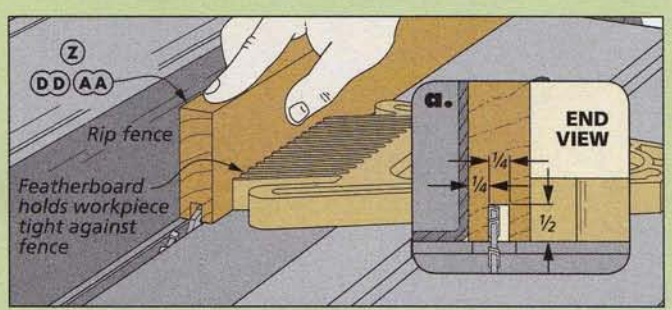




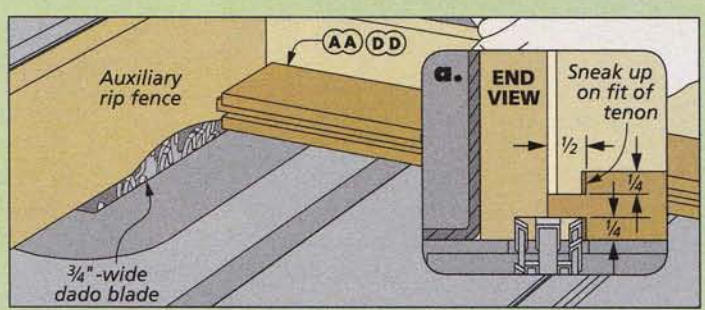
GLUED ON. The fronts are glued to the drawer boxes. The trick is to end up with the fronts centered in their openings. To do this, I applied glue and then temporarily clamped the fronts to the boxes in the case. Shims keep the fronts centered (detail 'c'). I gave the glue a minute or two to tack up, then removed the drawers from the case and clamped them more securely. And finally, I installed the knobs (detail 'a').



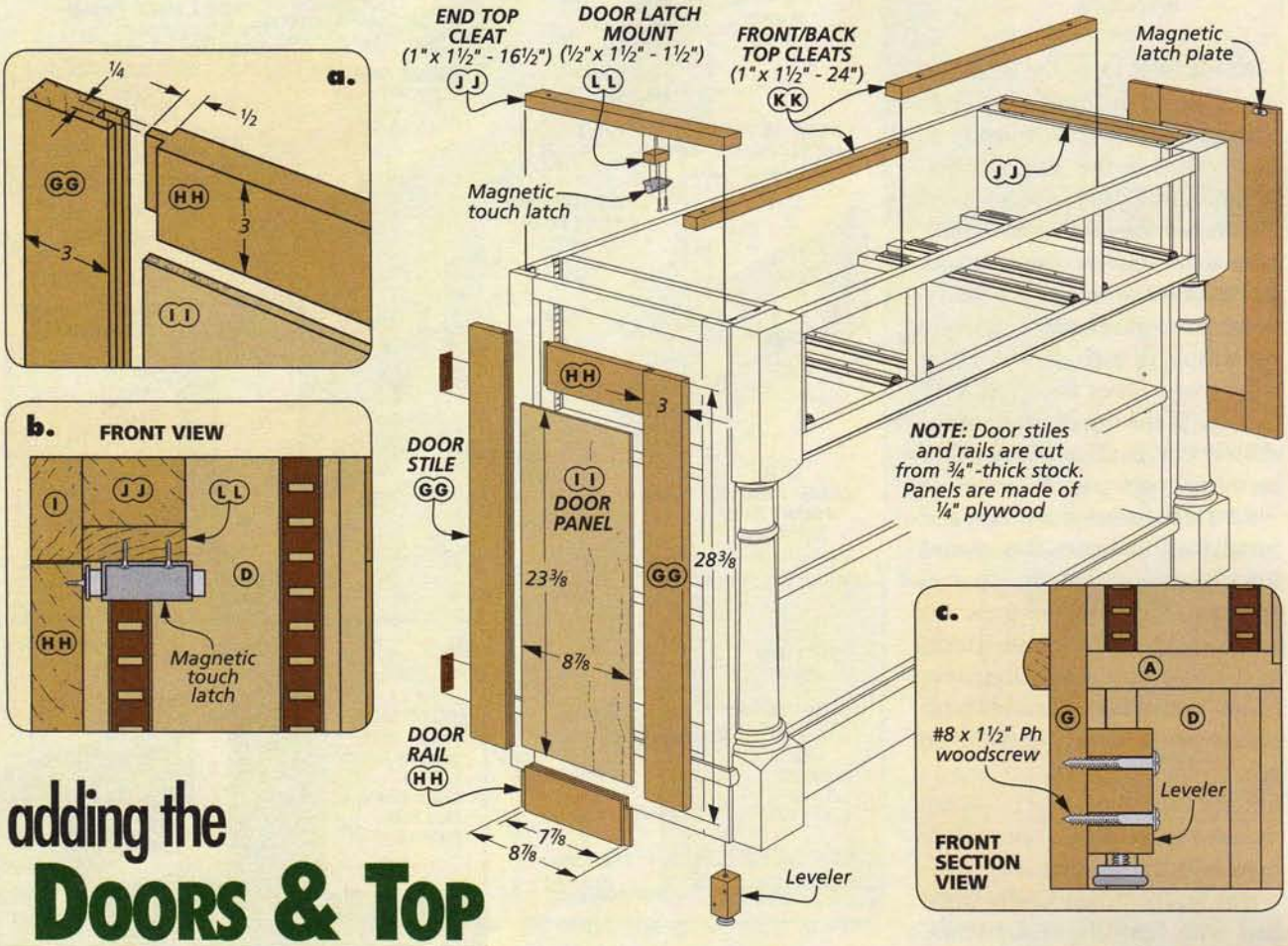
Stub Tenon and Groove



A Centered Groove. *The first step is to cut a centered groove in the pieces sized to fit the ¼" plywood. Make two passes flipping the piece end for end between them.*



Stub Tenons. *To cut the stub tenons on the rails, use a wide dado blade buried in an auxiliary rip fence. Tweak the height of the blade and the position of the fence to sneak up on a tight fit.*



adding the Doors & Top

You're on the home stretch now. All that's left to do is add the doors, some mounting cleats, the levelers, and finally, the top.

THE DOORS. Building the frame and panel doors will seem like familiar work. The stub tenon and groove joinery is identical to that used on the drawer fronts (detail 'a'). The only difference is that I tightened up the clearance gap for the doors to 1/16" all around.

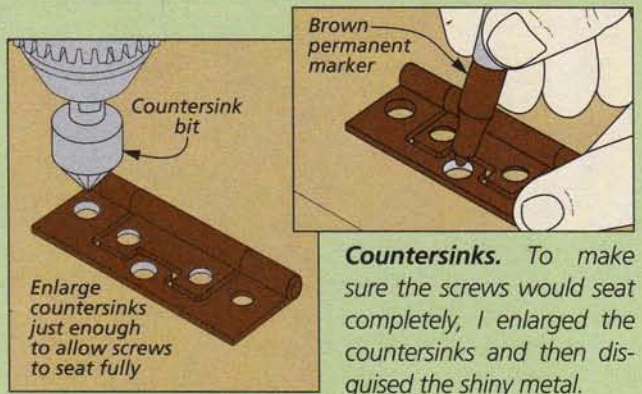
NO MORTISES. Once the doors were glued up, I installed them the easy way — with no-mortise hinges. A simple procedure for this is shown in the box below.

CLEATS & LATCH. I didn't want knobs to detract from the clean look of the ends of the case. So to avoid the need for knobs, I decided to install magnetic touch latches. All you need to do is push gently on the door and it pops smoothly open. They work really well.

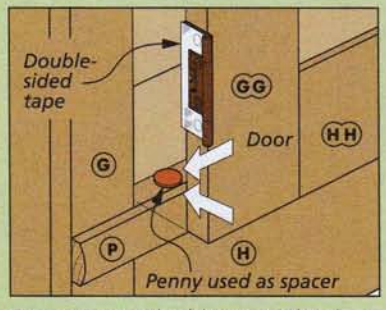
The latches are attached to small mounting blocks behind the top frame rail. These blocks are glued to the end cleats used to screw the top to the case (detail 'b'). So before adding the touch latches, I installed all the top cleats.

As you see in the drawing above, there are four cleats — one at each end, one at the front, and one at the back. After cutting them to size, I pre-drilled holes for the screws before gluing in place.

How-To: Install No-Mortise Hinges



Countersinks. *To make sure the screws would seat completely, I enlarged the countersinks and then disguised the shiny metal.*



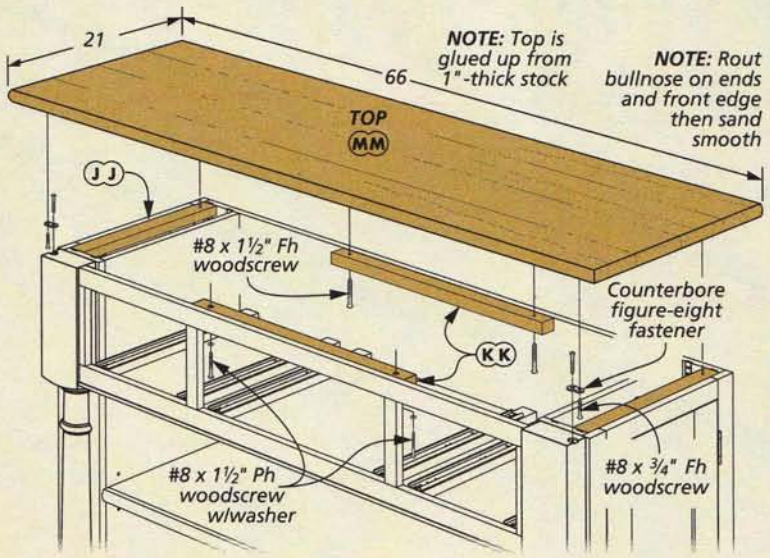
Tape. *Screw the hinges to the door, then use double-sided tape to stick the hinges to the case.*

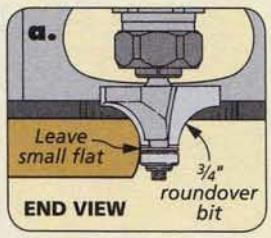
Drill and Drive. *Now, carefully open the door, drill the pilot holes, and finally, drive the screws.*

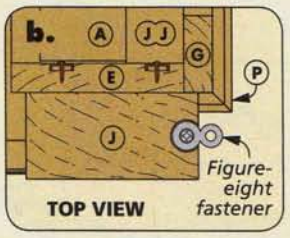
Note that there's only one hole near the back of the end cleats. And the holes in the front cleat are oversized to accommodate pan-head screws with washers (detail 'c' at right). This arrangement (along with a pair of figure-eight fasteners) allows the solid-wood top to expand and contract freely.

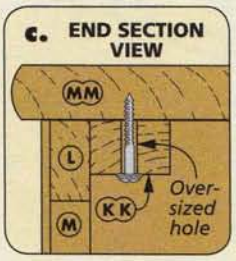
LEVELERS. After adding the touch latches, I carefully tipped the case on its back to add the levelers (detail 'c' on opposite page).

THE TOP. Making the top is a low key way to wrap up the project. I started by gluing up the 1"-thick panel from well-matched solid stock. Then I cleaned up the panel and trimmed it to size. It should fit flush with the back, overhang 3" at the sides, and ¾" at the front. The final step is to rout a bullnose on three sides (detail 'a'). Once the top is ready, you can fit the figure-eight fasteners as shown in detail 'b' and screw it down.







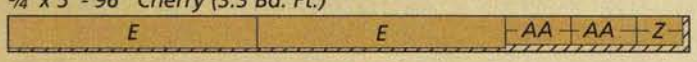


FINISH. I decided the sideboard deserved a special finish. A glaze was the answer. This is simply a second coat of stain applied over a sealer. The glaze in the corners, recesses, and on the surface adds depth of color and an aged look. And I think you'll agree, the result is an instant heirloom.

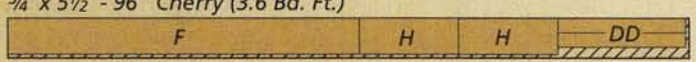
Materials, Supplies & Cutting Diagram

A	Case Bottom (1)	¾ ply.- 17 x 58½	**S**	Main Shelf Edging (1)	1 x ¾ - 49⅜	**KK**	Front/Back Top Cleats (2)	1 x 1½ - 24
B	Vertical Dividers (2)	¾ ply. - 16½ x 30½	**T**	Drawer Sides (6)	½ x 6⅛ - 18	**LL**	Door Latch Mounts (2)	½ x 1½ - 1½
C	Dust Panel (1)	¾ ply. - 18½ x 50¼	**U**	Small Drwr. Fts./Bks. (4)	½ x 6⅛ - 12	**MM**	Top (1)	1 x 21 - 66
D	Case Back (1)	¾ ply. - 35 x 58½	**V**	Small Drwr. Btms. (2)	¼ ply. - 17¾ x 11½	•	(6) 17" Bottom-Mount Drawer Slides	
E	Main Frame Stiles (2)	¾ x 4½ - 35	**W**	Large Drwr. Ft./Bk. (2)	½ x 6⅛ - 20¾	•	(8) 30" Shelf Standards w/Nails (Walnut)	
F	Main Frame Rail (1)	¾ x 5 - 49½	**X**	Large Drwr. Btm. (1)	¼ ply. - 17¾ x 20¼	•	(16) Shelf Clips (Walnut)	
G	End Frame Stiles (4)	¾ x 2 - 35	**Y**	Drawer Bottom Fillers (6)	5/16 x 1¾ - 17¼	•	(4) Shelf Pins	
H	End Frame Bot. Rail (2)	¾ x 5 - 14	**Z**	Drawer Ft. Stiles (6)	¾ x 2 - 6½	•	(2 pr.) 2½" No-Mortise Hinges w/Screws	
I	End Frame Top Rail (2)	¾ x 1½ - 14	**AA**	Sm. Drawer Ft. Rails (4)	¾ x 2 - 9¼	•	(4) Leg Levelers	
J	End Shelves (4)	¾ x 3½ - 16⅜	**BB**	Sm. Drawer Ft. Panels (2)	¼ ply. - 9¼ x 3½	•	(3) 1⅝"-dia. Drawer Knobs w/Screws	
K	Columns (2)	2¼ x 4½ - 35	**CC**	Sm. Drawer Ft. Fillers (2)	¼ x 2 - 8¼	•	(2) Magnetic Touch Latches	
L	Drawer Frame Rails (2)	¾ x 1½ - 50¼	**DD**	Lg. Drawer Ft. Rails (2)	¾ x 2 - 18	•	(2) Figure-Eight Fasteners	
M	Drwr. Frame Div. Stiles (2)	¾ x 1¼ - 6¾	**EE**	Lg. Drawer Ft. Panel (1)	¼ ply. - 18 x 3½	•	(24) 1¼" Pocket Screws	
N	Drwr. Frame Side Stiles (2)	¾ x ¾ - 6¾	**FF**	Lg. Drawer Ft. Filler (1)	¼ x 2 - 17	•	(2) #8 x ¾" Fh Woodscrews	
O	Drwr. Slide Spacers (6)	¾ x 1½ - 18½	**GG**	Door Stiles (4)	¾ x 3 - 28⅜	•	(14) #8 x 1¼" Fh Woodscrews	
P	Large Bullnose Molding (1)	1 x ½ - 96 rgh.	**HH**	Door Rails (4)	¾ x 3 - 8⅞	•	(28) #8 x 2" Fh Woodscrews	
Q	Small Bullnose Molding (1)	5/16 x ⅞ - 50¼	**II**	Door Panels (2)	¼ ply. - 8⅞ x 23⅜	•	(10) #8 x 1½" Ph Woodscrews w/Washers	
R	Main Shelf Panel (1)	¾ ply. - 16¼ x 49⅜	**JJ**	End Top Cleats (2)	1 x 1½ - 16½	•	(20) #8 x 1½" Fh Woodscrews	

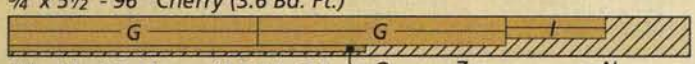
¾"x 5" - 96" Cherry (3.3 Bd. Ft.)



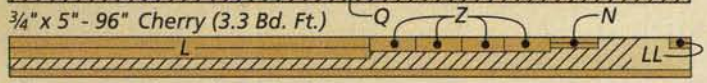
¾"x 5½" - 96" Cherry (3.6 Bd. Ft.)



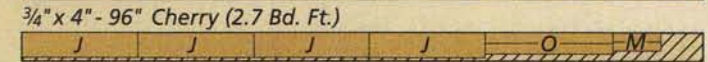
¾"x 5½" - 96" Cherry (3.6 Bd. Ft.)



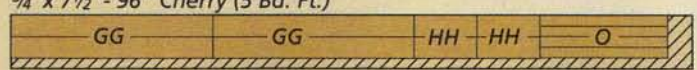
¾"x 5" - 96" Cherry (3.3 Bd. Ft.)



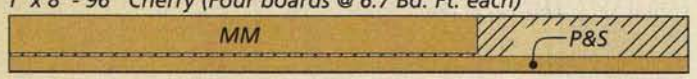
¾"x 4" - 96" Cherry (2.7 Bd. Ft.)



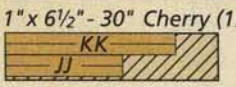
¾"x 7½" - 96" Cherry (5 Bd. Ft.)



1"x 8" - 96" Cherry (Four boards @ 6.7 Bd. Ft. each)



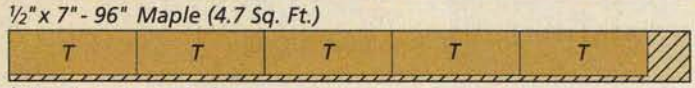
1"x 6½" - 30" Cherry (1.7 Bd. Ft.)



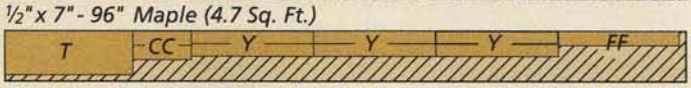
ALSO NEEDED:
Two 2¼" x 4½" - 36" half columns
Three 48" x 96" sheets ¾" Cherry plywood
One 24" x 48" sheet ¼" Cherry Plywood
One 24" x 48" sheet ¼" Maple plywood

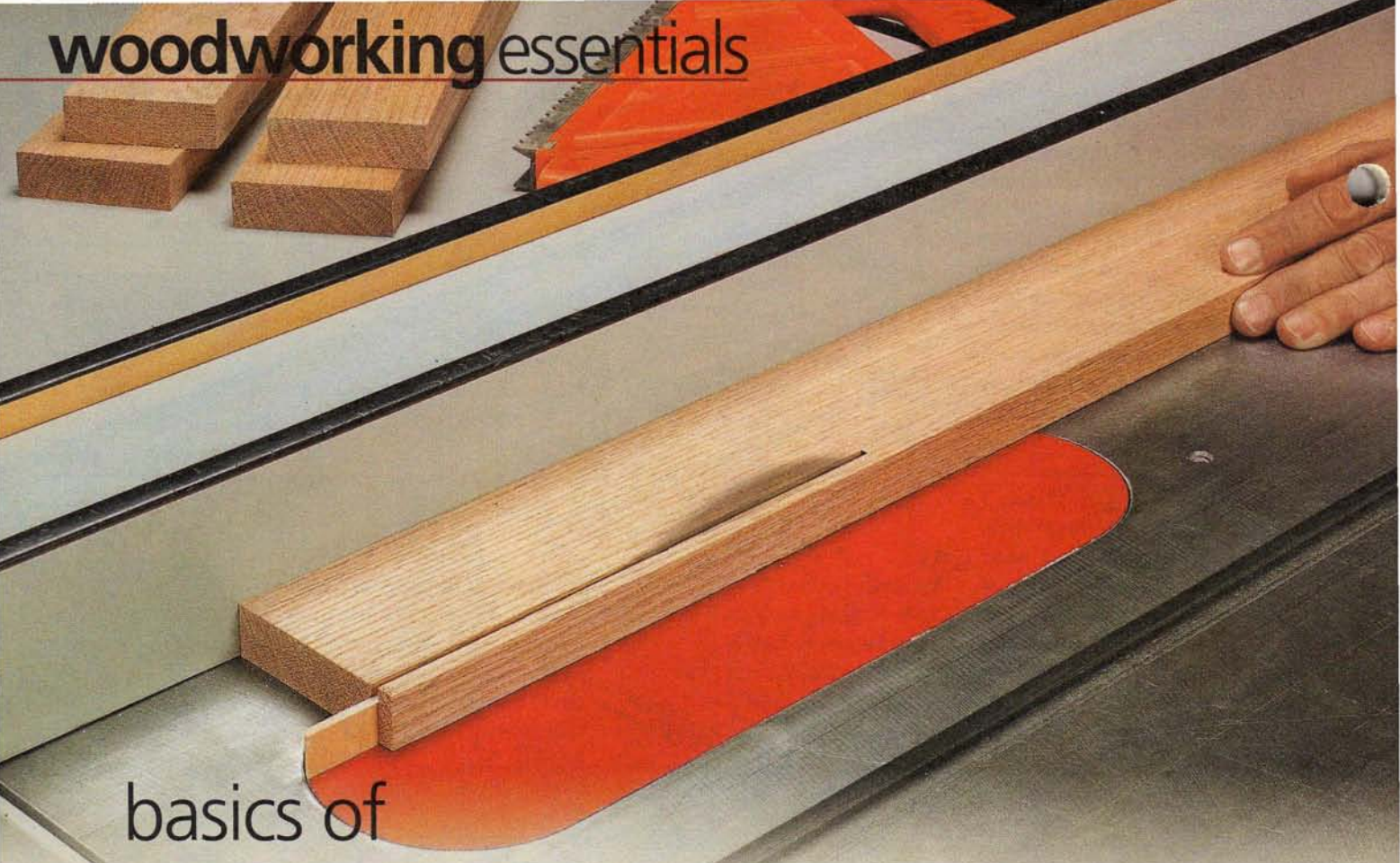
½"x 7" - 96" Maple (4.7 Sq. Ft.)

½"x 7" - 96" Maple (4.7 Sq. Ft.)



½"x 7" - 96" Maple (4.7 Sq. Ft.)



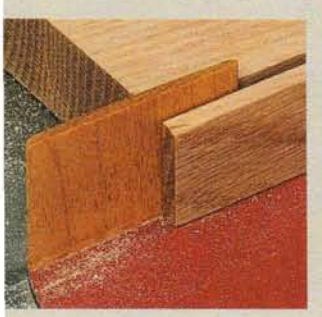


basics of

Sizing Parts on a Table Saw

Accurately sized project parts start at the table saw. Get top-notch results with these simple guidelines for ripping and crosscutting.

Use a splitter mounted in the insert to help prevent kickback.▼



Of all the tools in the shop, the table saw is the one I turn to most often for sizing parts. Since it's used to cut nearly every workpiece in a project, it's one of the first tools a woodworker needs to master. And once you do, building square, accurate projects becomes a lot easier.

Fortunately, sizing parts on a table saw isn't really all that difficult. It generally involves only two types of cuts — rip cuts and crosscuts. But beyond just knowing how to make these cuts, there are a few tips that will ensure all your parts end up straight, square, and accurately dimensioned.

GETTING STARTED. Before turning on the saw, there are a couple of things worth mentioning. First, it's impossible to get accurate results from a table saw that's out of adjustment. So if you haven't done so for a while, take the time to make sure that your saw is tuned up and accurately adjusted.

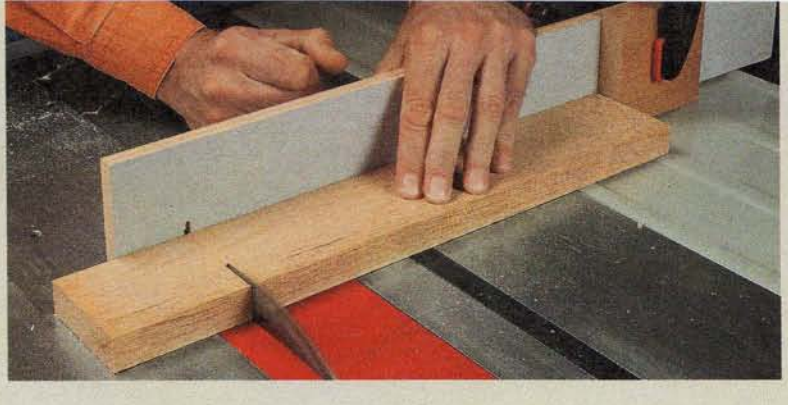
This includes making sure that the blade is parallel with the miter gauge slots and the rip fence. If it's not, dig out the manual for your saw and follow the directions for making the needed adjustments.

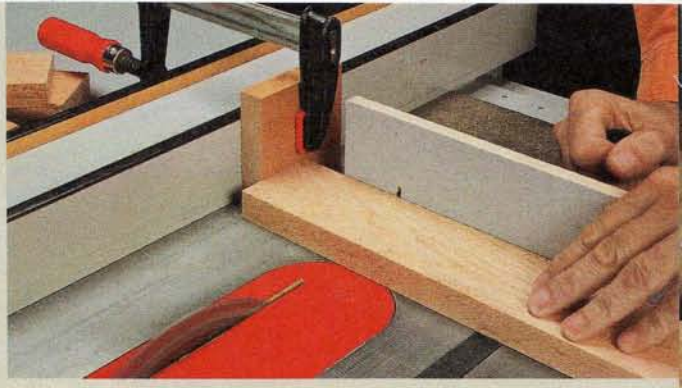
Second, you'll want to make sure you have a few necessary tools on hand. You'll need a quality, steel rule (I prefer an 18" rule), an accurate square, and a reliable tape measure, for measuring longer parts.

HAVE A PLAN. I've talked to many woodworkers just starting out who wait to cut each part until the project plans call for it. Or worse yet, they cut *all* the parts at the outset, and then try to fit them together like some sort of a giant puzzle. Neither of these is a particularly good approach.

Instead, I take the time to study the plans for the project and come up with a strategy for the best way to group and organize the cuts.

For example, if the project has several frame and panel assemblies,





I'll cut all the rails and stiles at the same time, so that like parts all end up the same size.

I also note which parts can be cut straight from the dimensions in the plans and which parts need to be "cut to fit" as the project comes together. This saves a lot of headaches during assembly.

Once you've formulated a game plan, you can begin cutting the first parts of your project to size. In most cases, I do this by ripping the stock to width first, and then crosscutting the pieces to length.

RIPPING

When ripping, your primary goal is to end up with a workpiece with two parallel edges that's also the exact width you need. An accurately adjusted rip fence (see box below) will take care of the width. But in order to get the edges of the board parallel, you first need to create a straight reference edge on one side of the board to ride against the rip fence.

Usually, this is done on a jointer. But if you don't own a jointer, you can use a "rip and flip" method instead. Set your rip fence about ½" wider than the desired dimension of your workpiece. After ripping one edge, flip the workpiece over, reposition your rip fence to the desired width, and rip the opposite edge of the board (photo on opposite page).

SPLITTER. One other thing that I find really helpful when ripping is a splitter (see margin photo on opposite page). A splitter not only helps to prevent kickback, it keeps the back of the workpiece from drifting away from the fence as you make the cut. So you end up with cleaner, more accurate cuts.

CROSSCUTTING

Unlike ripping, when it comes to crosscutting, you don't have an adjustable fence to control the finished size of the workpiece. Instead, you have to rely on careful measuring, marking, and cutting to a line. But there are a couple of ways to make this a little easier.

For starters, I like to use an auxiliary fence with my miter gauge. This makes it easier to maintain control of the workpiece and prevents tearout by backing up the workpiece. A strip of adhesive-backed sandpaper on the face of the fence prevents the workpiece from slipping as you make the cut.

STOP BLOCKS. Most of the time when crosscutting, I need to cut several parts to the same length. Rather than measure and mark each part, it's much faster and more accurate to use a stop block. For longer parts, I attach the block to the miter gauge fence (left photo above). For short pieces, I clamp a stop block to the rip fence (right photo above).

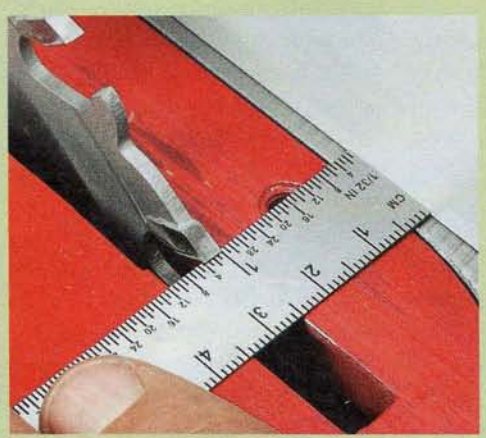
PERFECTLY SIZED PARTS. By following these simple procedures, you'll end up with accurately sized parts that fit together better. And this means that your projects will go together easily and look great once they're completed.

▲ When cutting multiple parts, use a stop block attached to the miter gauge (for long pieces) or clamped to the rip fence (for short pieces).

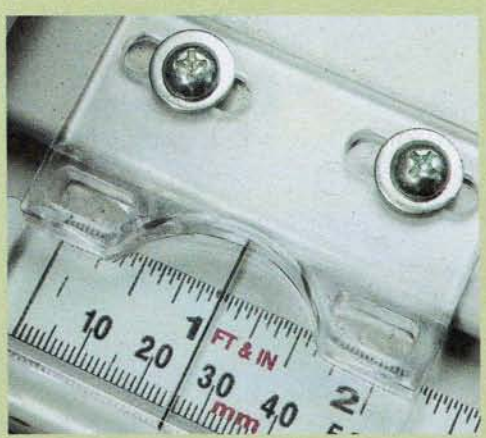
Table Saw Tip: Zero-Out Your Rip Fence

Most table saws sold today are equipped with reliable rip fences. But it's a good idea to periodically check the accuracy of the scale on your rip fence. (This is especially true if you own a left-tilt saw and change blades frequently.)

To zero-out the scale on your rip fence, start by using a rule to set the fence exactly 1" away from the blade (first photo at right). Then, check the indicator on the rip fence. If the cursor line doesn't fall right on the 1" mark of the scale, loosen the attaching screws and shift the indicator over until it does.



▲ Set the fence exactly 1" from the saw blade, measuring at the front of the blade with a steel rule.



▲ To adjust the indicator, loosen the screws that hold it to the rail of the fence and reposition it as needed.

versatile

Disk Sanders

A disk sander can handle chamfers, miters, and rounded corners with ease.

When it comes to most edge-sanding tasks, nothing can match the speed and precision of this easy-to-use tool.

I used to think of a disk sander as a "luxury" tool — something that might be nice to own, yet not all that useful. But my thinking changed when I started working in a shop that had a disk sander. I soon found myself turning to this tool on a regular basis. It's fast, easy to use, and excels at a range of tasks.

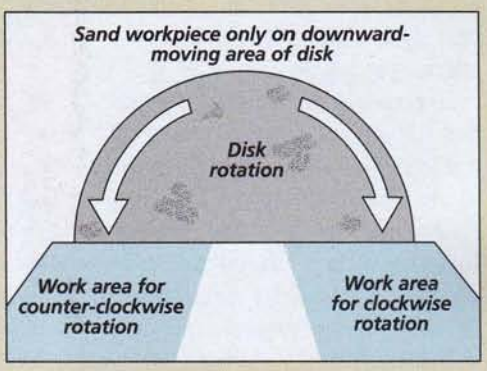
BASICS. A disk sander is a pretty simple tool. It's nothing more than a flat sanding disk driven by a motor. But it's the nature of the disk that makes this sander so useful. Unlike most other types of sanders, the hard, metal disk doesn't flex or deflect in use. So you can sand right up to a line with extreme accuracy.

Most disk sanders have a cast iron or steel table in front of the disk with a slot for a miter gauge. The table can typically be tilted up to 45° from the face of the disk to allow you to sand bevels.

Disk sanders range in size from small, hobby machines with 4"-dia. disks to industrial, 36"-dia. giants. For the home shop, 12"-dia. is a pretty common size. You can even purchase a disk that allows you to turn your table saw into a sander (see box on opposite page).

Sanding disks are available in just about any grit you need. Most sanding disks sold today are the PSA (pressure-sensitive adhesive) type, so it only takes a minute or two to peel off the old disk and slap on a new one.

USING A DISK SANDER. There's really not much to using a disk sander.



It's probably one of the simplest tools to operate. As with any abrasive tool, you'll want to make sure to wear proper eye protection. And to keep the workpiece resting securely on the table, you always want to use the half of the disk that is traveling downward, as shown in the drawing on the opposite page. (Note: Not all disk sanders rotate in the same direction.)

BURNING. One thing to watch out for when using a disk sander is burning. Because the disk is spinning at a high rate of speed (particularly near the edge of the disk), the friction can burn the workpiece. Use a light touch and make sure that you keep the sanding disk clean so it doesn't get loaded up with sawdust. If you experience burning, try moving the workpiece in closer to the center of the disk, where the speed is lower.

APPLICATIONS

A disk sander is a versatile tool. The high travel speed of the disk makes it great for quickly hogging off material and shaping parts. But it can also be used for accurate, precise sanding as well.

MITER JOINTS. One of the most useful tasks I use the disk sander for is fine-tuning miter joints. No matter how carefully you set up your table saw or miter saw when cutting miter joints, it's pretty common to have to take off just a hair at either the heel or the toe of the joint to get a good fit. With a disk sander, this is an easy task.

You can either tilt the table of the sander, or use a miter gauge to help "tweak" the fit of the joint (see photos at right). For making mitered frames, I find it an invaluable tool.

CIRCLES. It's hard to think of a better or faster tool for shaping circles. Using a simple jig, you can create perfectly sized circles in a matter of minutes. Start by laying out the circle on your blank and drilling a small pilot hole in the center. Next, rough out the circle on the band saw, staying just to the waste side of the line. To sand the circle to final size, place it over the pivot pin on the jig and slowly rotate it against the spinning sanding disk, as shown in the photo at left.

▲ With the help of a simple, adjustable, shop-made jig, you can easily sand perfect circles on a disk sander.

CURVES. A disk sander is also great for sanding convex curves, such as a radius on the corner of a workpiece (main photo on opposite page). I do this freehand, laying out the radius on the workpiece and then pivoting the workpiece against the disk in two or three passes, sanding down to the layout line.

▲ You can sand a bevel across the width of a workpiece by tilting the table of the disk sander. Use a light touch to avoid burning.

▲ Using a miter gauge to steady the workpiece, it's easy to "tweak" a mitered joint on the disk sander for a perfect, seamless fit.

CHAMFERS. Chamfering the end of a workpiece, such as a leg or a through-tenon for a piece of Craftsman-style furniture, is a perfect job for a disk sander. You can set the miter gauge to 45° and simply advance the workpiece into the disk to sand a chamfer on each edge (margin photo at right). And unlike using a router, you don't have to worry about tearout.

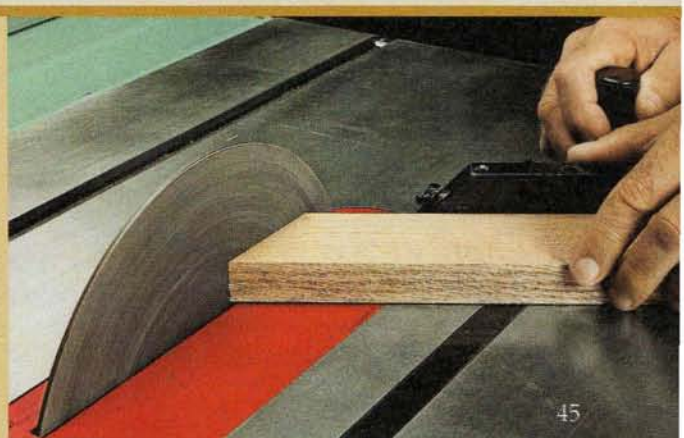
I'll admit that a disk sander doesn't fall into the category of "must-have" tools. But if you've got the space in your shop for one and your budget allows, it's definitely a tool worth owning.

▲ Tearout isn't a problem when sanding chamfers on a disk sander.

Option: Table Saw Disk Sander

You don't have to purchase a disk sander to get the benefits of owning one. A couple of manufacturers make 10"-dia. sanding disks that can be installed in place of the blade on your table saw, allowing you to use it as a disk sander.

The *Freud* sanding disk shown in the photo at right also doubles as a calibration disk. It provides a flat reference surface that comes in handy when adjusting and tuning up your table saw. For sources, refer to page 51.



brushing a Varnish Finish

The best route to a smooth, durable varnish finish is to apply it the old-fashioned way.

For all-around durability in a wood finish, varnish is hard to beat. And when you throw in the warm color it imparts to wood plus the fact that it's pretty user-friendly, you can see why a varnish finish is the top choice for many woodworkers.

Varnish gives you a nice range of application options. You can simply wipe on thinned varnish with a rag or you can even spray it. But when I want all the benefits that varnish has to offer, I apply it the tried-and-true way — with a brush. Several coats of brushed varnish will produce a smooth, classic look along with all the protection a truly first-rate project deserves.

Brushing a top-notch varnish finish isn't nearly the challenge it's made out to be. With just a short course on the basics, you'll be on the road to success.

Poly varnish (left) is harder, alkyd varnish (right) has more clarity. Both can be applied with a quality, white china bristle brush. ▼

WHICH VARNISH? You'll find two types of oil-based varnish for interior use — alkyd and polyurethane. The two types have slightly different durability and appearance qualities, but there's no difference in the way each is applied.

Unless I plan to rub out the finish to a high gloss, I always choose a satin or semi-gloss type. A duller sheen is less likely to show any minor imperfections.

A QUALITY BRUSH. To do the job well, you need the right tool for the job — a good-quality brush. The brush should hold a large amount of finish and then release it evenly onto the surface. A white china bristle brush is your best bet (left photo). The soft bristles allow you to lay on a smooth, even film.

CLEAN, CLEANER, CLEANEST. The bane of a varnish finish is dust. It can take an hour or two to dry dust-free and overnight to cure. So any dust that lands on the surface during the initial drying period is trapped and forms a nib or speck. These can be sanded off between coats, but a better solution is prevention.

If possible, do your finishing in a space separate from where you build and sand. This will help minimize dust problems. And be sure to clean the project thoroughly with a tack rag or vacuum before taking it into the finishing area.

GETTING READY. You want to stir the varnish gently and then pour the amount you need into a separate container. If the can of varnish is not fresh, it's a good idea to strain the varnish to remove any dried bits, globs, or impurities.

I always start with a light seal coat — a 50/50 dilution of varnish and mineral spirits (photo below). This thin coat will penetrate better, dry faster, and sand easier.

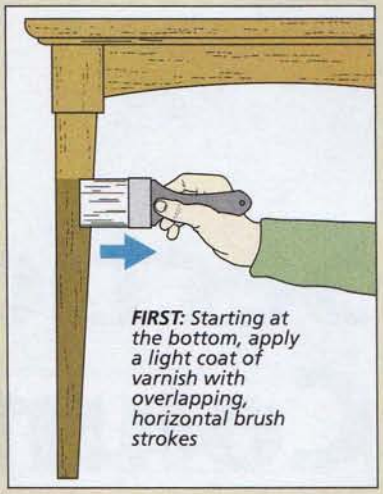
▲ For the seal coat, pour varnish into a jar and add an equal amount of mineral spirits.

PLANNING. Before getting started, I mentally break down the project into manageable sections. I like to work from the inside out. Or to put it another way, from the least noticeable to the most noticeable areas. Save the best for last.

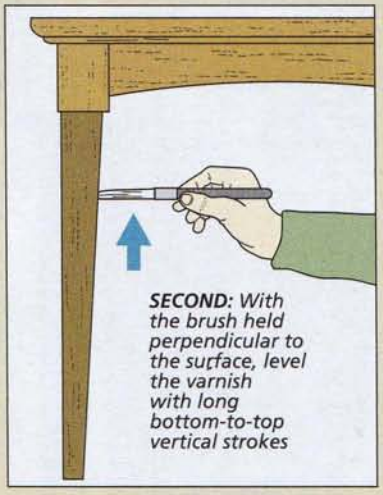
The project determines how you approach the job. For example, brushing a raised-panel door is different than brushing a flat tabletop. In general, I like to coat details and edges first and then brush the flat surfaces. So when brushing a raised panel door, the order is as follows: first the bevels of the panel, then the raised field, next the edges of the frame, and finally, the surface of the frame. This allows you to make certain the most visible surfaces are brushed out smoothly.

HORIZONTAL. Horizontal surfaces are always easier to brush. Gravity will help level the varnish, without fear of runs. So whenever practical, disassemble any major parts so you can lay them flat.

The box below shows how to lay a smooth film of varnish on a flat tabletop. The surface is always brushed with the grain. One key is to use enough pressure to put a slight bend in the bristles of the brush. The varnish should flow easily off the brush. When the brush starts to drag, stop and reload it (margin photo at right).



***FIRST:** Starting at the bottom, apply a light coat of varnish with overlapping, horizontal brush strokes*



***SECOND:** With the brush held perpendicular to the surface, level the varnish with long bottom-to-top vertical strokes*

SMOOTH & EVEN. The trick is to maintain a "wet" edge. Don't work too far ahead before starting a new brush line. Once a section is covered, use long strokes with the tips of the bristles (called "tipping off") to even out the coverage and remove brush and lap marks.

Don't be too concerned about bubbles. They'll dissipate and level out before the varnish dries.

VERTICAL SURFACES. On surfaces with the grain running vertically, you'll need to do things differently to avoid runs and drips. The drawings above demonstrate the technique of cross-brushing. Rather than brush up and down along the length of a surface, start by brushing horizontally across the grain from the bottom up. Once the surface is coated, you can tip it off with a bottom-up vertical stroke.

COAT BY COAT. After allowing the seal coat to dry overnight, I sand the surface lightly with 320-grit sandpaper to prepare for the first topcoat. This coat can be applied full strength, but I prefer to dilute the varnish with about 10% mineral spirits. It will brush easier and flow out better. You can sand this first topcoat a bit more aggressively to level any brush marks and remove dust nibs. Then the next coat goes on in the same way.

A sealer and two topcoats followed by a buffing with #0000 steel wool produces a durable film with a beautiful, satin sheen. Not always the quickest finish, but without a doubt, one of the best.

Avoid creating bubbles by touching the brush to the side of the jar to remove the excess varnish.

How-To: Brush a Flat Surface

▲ Start with a short stroke back to the edge. Try not to drag the brush over the edge, causing a run.

▲ Now overlap the beginning stroke slightly and brush to the other end, reloading with varnish as necessary.

▲ Finally, tip off the wet varnish by holding the brush almost vertical and using very light pressure.

Sectioned Columns

These simple decorative turnings can add a bold or subtle detail to a traditional furniture design.

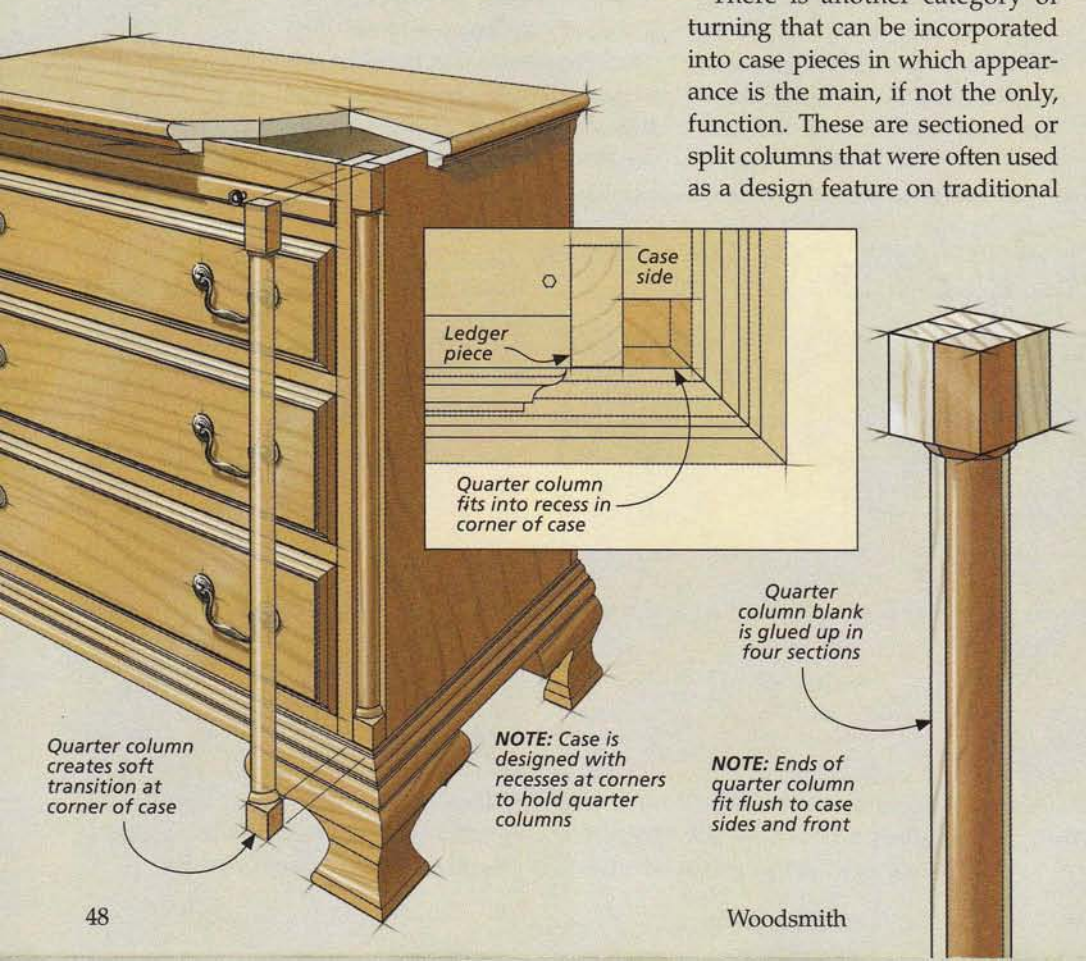
Turnings have been an important part of furniture design for centuries. And everyone is familiar with their common uses — table legs, chair legs and spindles, bun feet — even knobs. These are all essentially structural and functional uses with a secondary aesthetic benefit.

There is another category of turning that can be incorporated into case pieces in which appearance is the main, if not the only, function. These are sectioned or split columns that were often used as a design feature on traditional case pieces. An example of this alternate use is the half columns applied to the front of the cherry sideboard on page 32. The columns add depth and attractive detail to an otherwise unadorned case.

ONLY A SECTION. A sectioned column is exactly what the name implies. Rather than use the entire column, it's split lengthwise and only a section of the column is fit to the case — typically a quarter or half section. The result is an appearance that mimics the columns gracing the façade of a classically styled building. This feature can make a very bold statement or it can simply be a detail that blends subtly into the overall design.

QUARTER OR HALF? As I mentioned, the two most common types of sectioned turnings are the quarter column and the half column. The drawings at left and at the top of the opposite page illustrate the appearance of the two styles. Although they're made in a similar way and share design features, the way in which they're integrated into a case is very different.

QUARTER COLUMN. Quarter columns were first used on case pieces dating back to the 18th century. The idea is that a column is turned and then split into four quarter sections. The quarter columns are



set into recesses in the two front corners of the case. Since the quarter columns are visible from both the front and sides, they provide a soft transition at the corners of the case. The effect is similar to shaping a chamfer on the corners, but a quarter column produces a more noticeable visual element.

Quarter columns are generally simple in detail and small in scale. A short square post is left at the top and bottom that ties the column into the case sides and front. The posts, usually not more than 1" square, can be part of the turning or added as separate pieces.

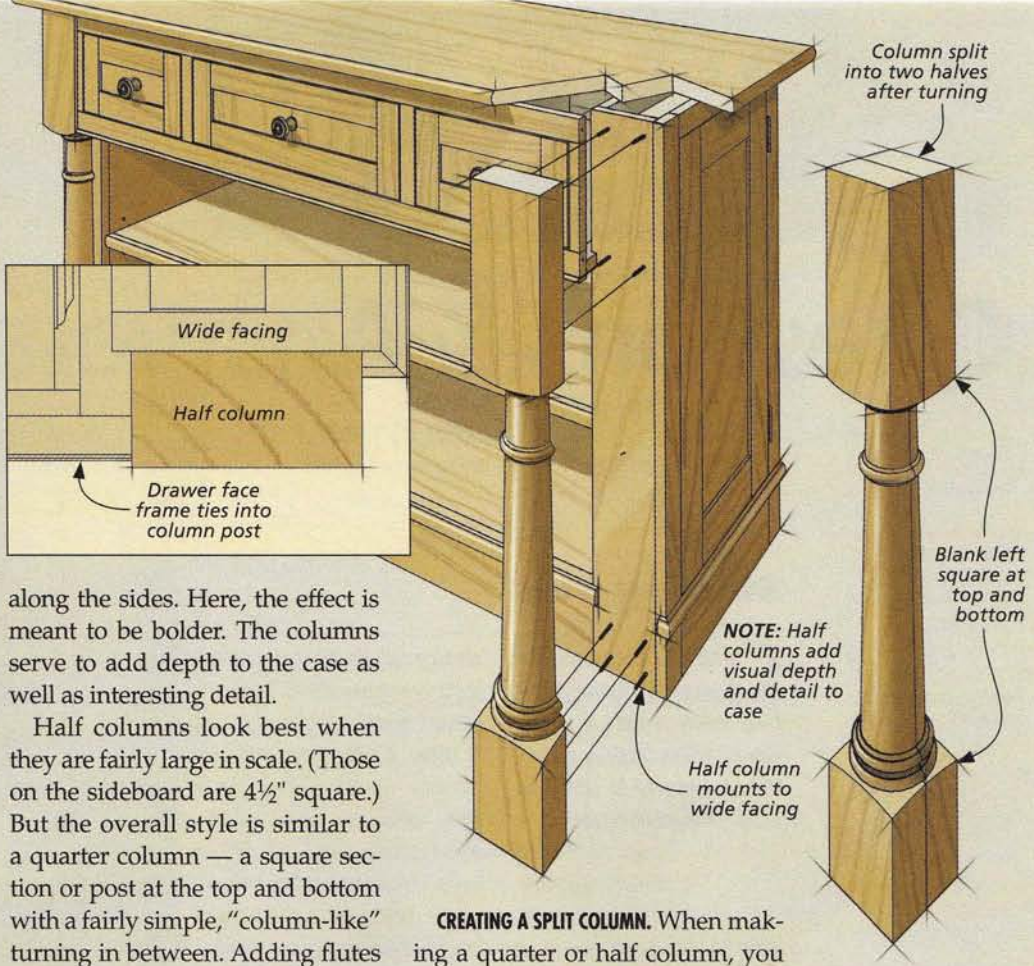
The turning often consists of a bead or two bracketing a long, round, middle section. If more detail is desired, the middle section of the column can be fluted or reeded along its length.

In order to accommodate quarter columns, a large "rabbet" has to be formed at the corners of the case. The traditional way of doing this is shown on the opposite page. The side of the case is stopped short of front and then a separate ledger piece is added on the inside, creating the pocket for the column.

HALF COLUMN. If you take a turned column and simply split it into two halves, you have different options for incorporating it into a case piece. Half columns are generally applied to the front of a case along the sides. Here, the effect is meant to be bolder. The columns serve to add depth to the case as well as interesting detail.

Half columns look best when they are fairly large in scale. (Those on the sideboard are 4½" square.) But the overall style is similar to a quarter column — a square section or post at the top and bottom with a fairly simple, "column-like" turning in between. Adding flutes or reeds is again, an option.

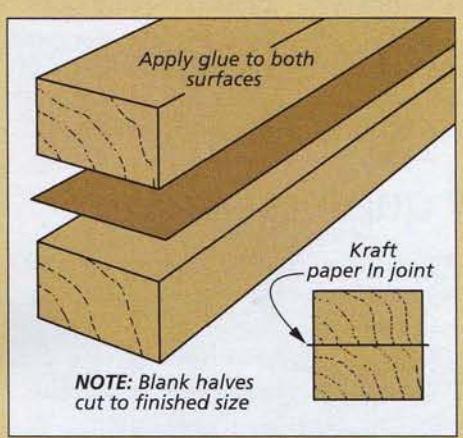
A large half column requires a fairly wide facing at the sides of the case. The columns can be fit flush to the sides of the case or inset slightly, as on the sideboard. Here, the upper posts of the column also serve an important functional role. They support the drawer frame and allow the drawers to extend over the main case.



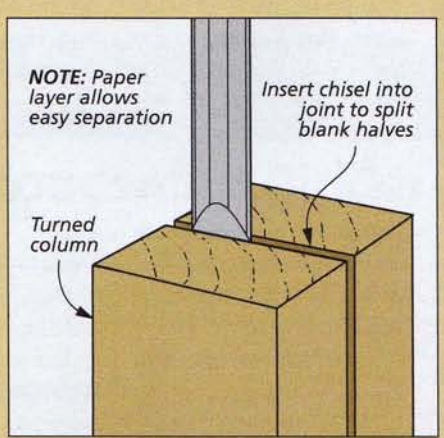
CREATING A SPLIT COLUMN. When making a quarter or half column, you have a couple of options. Traditionally, they were simply turned on the lathe and then cut into sections. An easier method that gives you a better result is shown below. It utilizes an old woodworking trick — a paper joint.

On the right project, sectioned columns can be the perfect complement. It's certainly a design feature that shouldn't be overlooked.

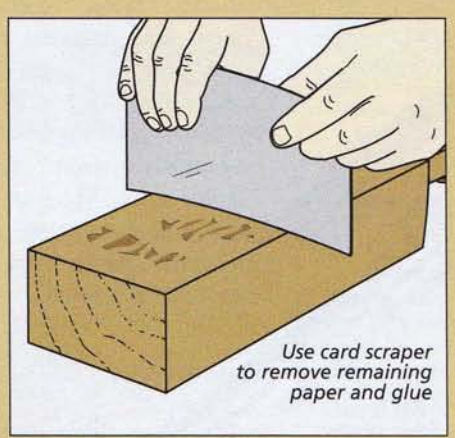
How-To: Make a Half Column



Paper Joint. *Start by gluing up a blank from two accurately sized half sections with heavy paper sandwiched in the joint.*



Split the Turning. *Once the turning is completed, split the two sections apart by carefully forcing a chisel into the joint.*



Clean the Surface. *Finally, remove the remaining glue and paper from the back surface with a scraper or sandpaper.*

Questions & Answers

Starting Pins

Q ***While shopping for a new router table, I've seen a lot of references to "starting pins." What exactly is the purpose of a starting pin?***

Andrew Brown
Oak Lawn, Illinois

A A starting pin is a simple, but handy router table accessory. It's a small pin that serves as an anchor point for routing profiles on curved or odd-shaped workpieces where a conventional fence can't be used.

The pin acts as a safety device by allowing you to start the cut in a controlled fashion. This way, you can avoid having the bit grab or kick back the workpiece. (Safety Note: Starting pins are intended for use only with bearing-guided bits.)

Starting pins were originally used with shapers, but they serve the same function on a router table. They're typically made of brass, steel, or plastic (see photo at left). The pin is removeable, and designed to be inserted in the router table insert plate, near the bit.

USING A PIN. To rout a profile using a starting pin, simply hold the workpiece against the pin. Then, using the pin as a fulcrum, carefully pivot the workpiece into the rotating bit.

Once the workpiece makes contact with the bearing on the bit, you can finish routing the profile as usual.

One common use for a starting pin is routing the profile on the curved upper rail of an arch-top cabinet door.

ADDING A STARTING PIN. Many commercial router tables and router table tops sold today are equipped with starting pins. But if your router table didn't come with a starting pin, adding one is a pretty simple task.

You can purchase commercial starter pins made from steel, brass or UHMW plastic for just a few dollars (see margin photo at left).

To install the pin, drill a hole in the your router table insert plate. Locate the hole a couple of inches to the right of the opening for the bit.

▼ Commercial starting pins are available in plastic, brass, or steel. Or, make your own out of a hex bolt.

▲ A starting pin allows you to safely rout a profile on round or curved workpieces, without the use of a router table fence.

SHOP-MADE. An easy alternative to purchasing a starting pin is to make your own out of a standard hex bolt (see lower photo in margin at left). Cut the head and tip off the bolt and then drill and tap a hole in your insert plate for the pin.

Unless, you work with a lot of curved workpieces, you probably won't find yourself using a starting pin too often. But for as simple and inexpensive as they are, it's worth having one on hand in case the need ever arises. W

Do you have any questions for us?

If you have a question related to woodworking techniques, tools, finishing, hardware, or accessories, we'd like to hear from you.

Just write down your question and mail it to us: Woodsmith Q&A, 2200 Grand Avenue, Des Moines, Iowa 50312. Or you can email us the question at: woodsmith@woodsmith.com.

Please include your full name, address, and daytime telephone number in case we have questions.

Sources

MICROPLANE RASPS

The *Microplane* rasps shown on page 8 are available from a number of woodworking retailers. You can also order any of the *Microplane* products directly from the manufacturer.

ROUTER ACCESSORIES

The router accessories shown on page 10 are a great way to get more out of your router. The guide bushings (59031) and edge guide (34420) both came from *Rockler*. We purchased the router trammel at the *Woodsmith Store*. And the *CMT* router collet extension is available from *Amazon*. Router mats are commonly available from a number of woodworking mail order sources.

PICTURE FRAME

The only hardware you'll need for the picture frame on page 18 are some brass turnbuttons (27912) and a sawtooth hanger (12097), both available from *Rockler*.

The frame is made of maple with walnut edging. The banding is holly and ebony. We applied a coat of *General Finishes' Java* stain to the edging to even out the color. Then after wiping on a coat of oil finish, the frame was sprayed with lacquer.

WALL MIRROR

The wall mirror on page 20 requires just a few hardware items. The brass turnbuttons (27912) can be purchased from *Rockler*. The mounting bracket (HP-6) came from *Hangman Products*.

To finish the wall mirror, we applied a coat of *Varathane Early American* stain followed by two coats of lacquer.

WOVEN-SEAT BENCH

Aside from a few woodscrews, the only hardware you'll need to build the bench shown on page 24 is some webbing and a box of cut tacks for nailing it down. We ordered the 2"-wide cotton webbing (W-C-01 2000) from *Jontay Distributing*. Their contact information is shown in the margin at right. The cut tacks were purchased at a local hardware store.

To finish the bench, we wiped on a coat of clear oil finish *(General Finishes' Seal-a-Cell)* to give the maple a warmer tone. Then we sprayed on a couple of coats of clear lacquer as a topcoat.

SIDEBOARD

The cherry sideboard featured on page 32 requires a fair amount of hardware, but all of it came from just two sources. *Rockler* supplied the shelf standards (34017), shelf clips (33852), shelf pins (22765), no-mortise hinges (28696), leg levelers (31210), and magnetic touch latches (28431). The knobs (02W33.22), the drawer slides (02K40.17), and the figure-eight fasteners (13K01.50) were purchased from *Lee Valley*.

The two sectioned columns used on the front of the sideboard were cut from a single column purchased from *Classic Designs by Matthew Burak* (507-CXM36.CH). When you order the column, you'll need to specify that you want it split into two halves. (There's an additional splitting fee involved for this.)

We stained the sideboard with a mixture of three parts *ZAR Cherry Stain* and one part *Wood Kote Jel'd Cherry Stain*. Then after spraying on a sealer coat of lacquer, we added a dark glaze to highlight the details, followed by two more coats of lacquer.

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Microplane
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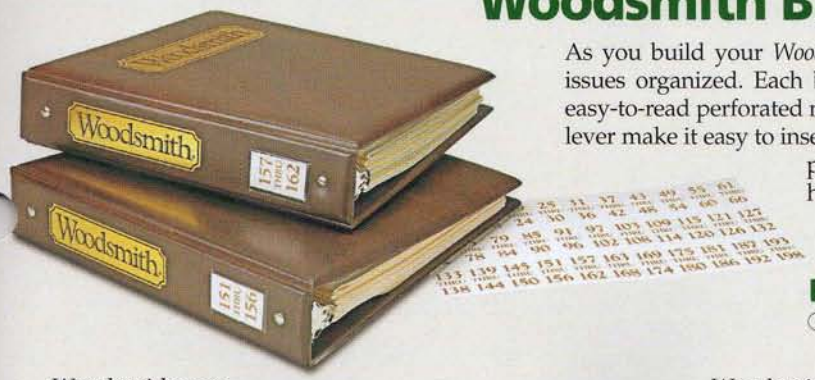

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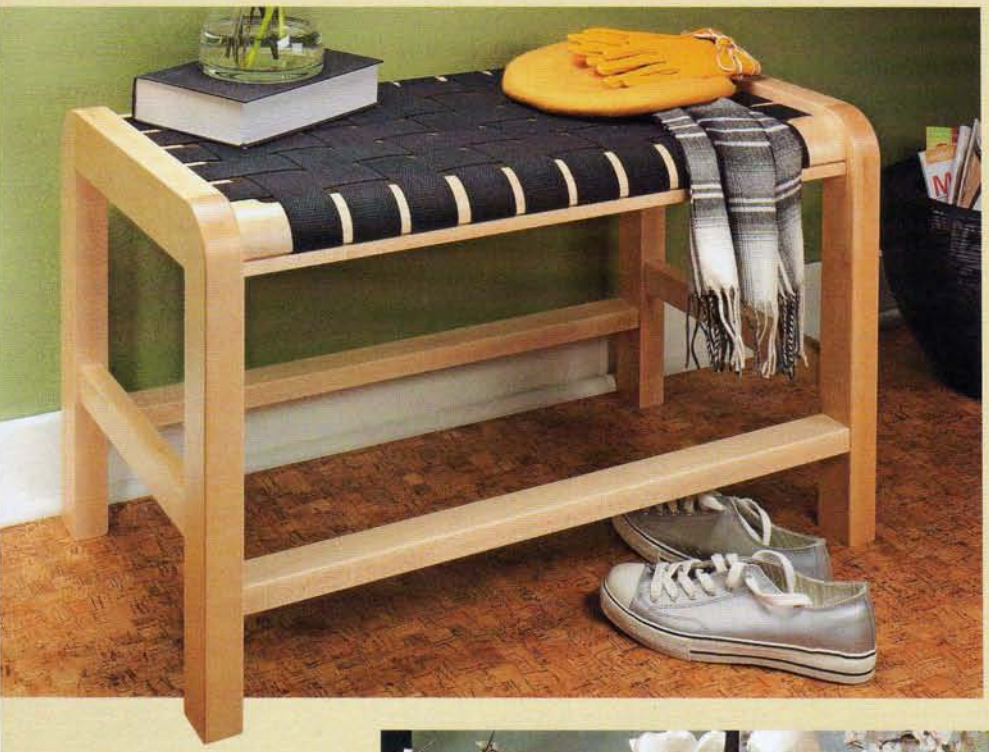

Wall Mirror. Mortise and tenon construction, shelf corbels, and a gentle curve give this oak wall mirror a distinctively Craftsman look. Complete plans start on page 20.

Woven-Seat Bench. This small bench offers a comfortable resting spot. We'll show you how to build the framework for the bench and then weave the seat. It all begins on page 24.

Cherry Sideboard. The half-round columns on this sideboard give it a classic look. But we've used some updated construction methods to build it. You can find out more by turning to page 32.