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WORKBENCH®

WOODWORKING TO IMPROVE YOUR HOME®

October 2005

Build Your Own Dream Island

Our Pro Tips & Techniques Make it Easy!

PLUS:

7 Revolutionary NEW TOOLS! Pg. 66

WORKBENCH

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EDITOR'S NOTES

It seems like more people than ever are being bitten by the home improvement "bug." A neighbor of mine made a simple wall shelf as his first project. Then he tackled a built-in bookcase. Now he's installing a hardwood floor.

Of course, there are any number of reasom why such an enthusiastic woodworker like my neighbor gets hooked on building projects. It certainly makes his house more attractive. And it's a terrific way to increase the value of his home. Still, I think there's more to it than that.

One powerful motivator has to do with the "improvement" part of home improvement that happens *after* the tools are packed away. It's when you proudly tell your friends that yes, you actually built that project all by yourself. (Okay, so what if you did have a little help from *Workbench*?)

It's also when you just might notice that, in addition to the physical improvements, you also begin to get a refreshing new outlook on even the ordinary day-to-day activities around the house.

Kitchen Island — Take cooking, for instance. The kitchen island that's featured in this issue has a built-in grill that makes cooking more of a social event than a solitary chore. Just fire up the grill, throw on some burgers, and the island instantly becomes a magnet for family and friends.

And as they gather around to watch and catch up on their day, an unusual thing begins to happen. Somewhere between the cooking and the conversation, preparing meals becomes the enjoyable experience it's meant to be. In my book, that's home improvement at its best.

Tim

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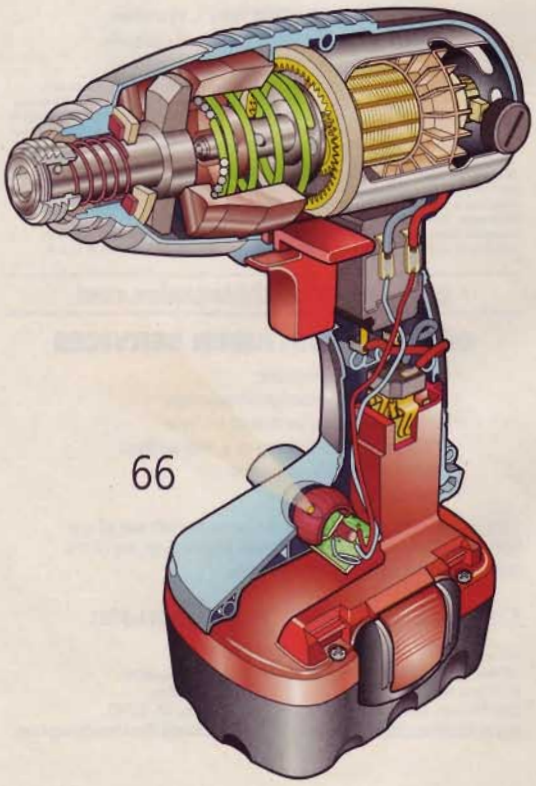
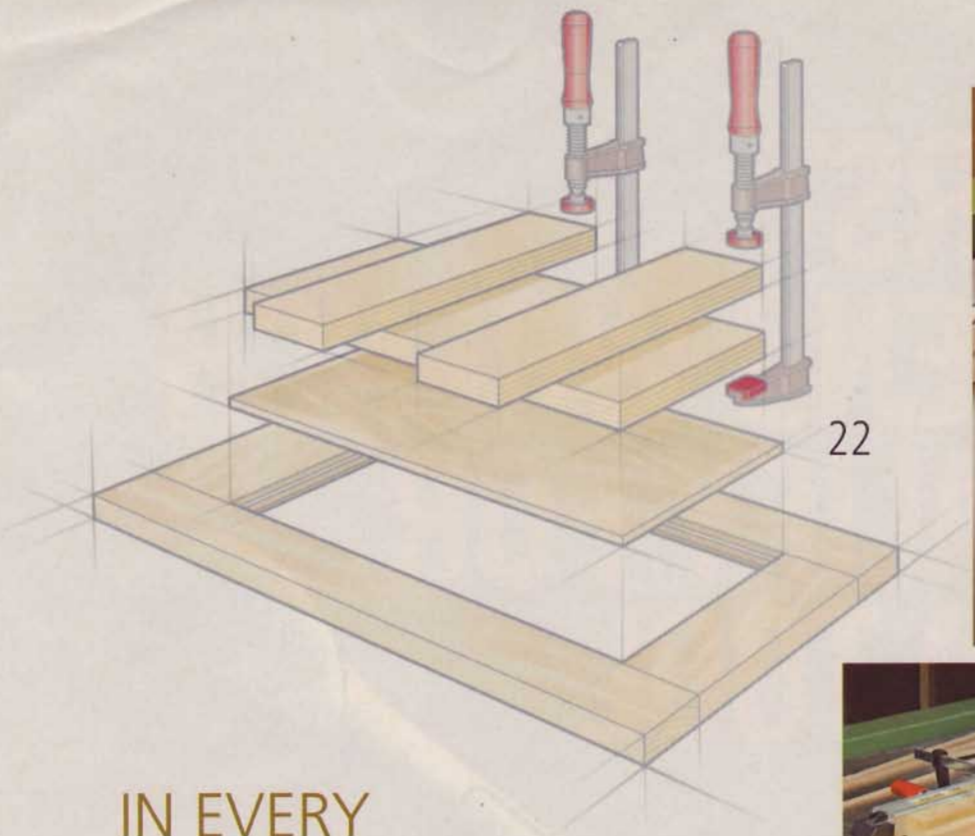
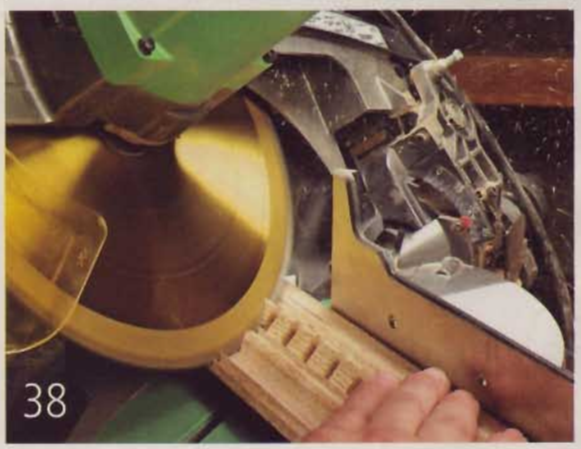


FEATURES





IN EVERY ISSUE

WORKBENCH SHOP TIPS

READER'S WORKSHOP

BENCH BASICS

THE CUTTING EDGE

DEPARTMENTS

Questions & ANSWERS

on edge about THICKNESS PLANING?

Q *I don't have a jointer for putting flat, straight edges on stock. I do have a thickness planer, though, that does a great job on the faces of boards. Can I use it to "joint" boards by feeding them through on edge?*

Ralph Hansen
Atlanta, GA

▲ To trim multiple workpieces to the same width, place the pieces on edge, gang them together, and then feed them through a thickness planer.

A I'd never call a planer a substitute for a jointer, but there are times when it's the perfect tool for putting a smooth, finished edge on a workpiece.

When planing workpieces on edge, though, you need to remember that a planer is capable of the task, but not designed for it. That brings a few special considerations into play.

Gang Cut for Consistency — The most effective way to edge-plane is to group multiple pieces together, and run them all through the planer at the same time (*Photo, above*). I find this particularly useful for trimming door rails and stiles to *exactly* the same final width.

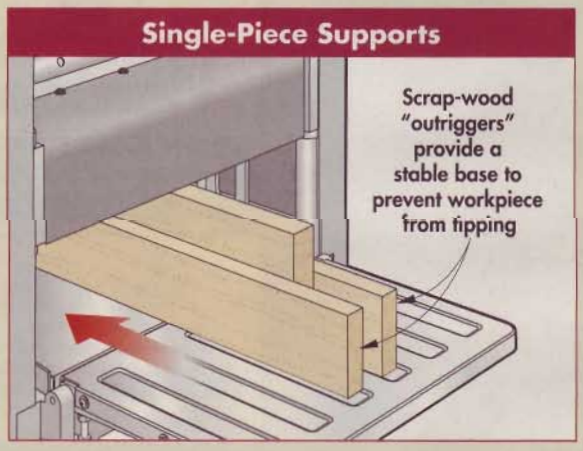
For best results, cut all of the pieces to the same rough width before planing. Also, start with pieces that are extra long so that you can cut off any snipe at the ends.

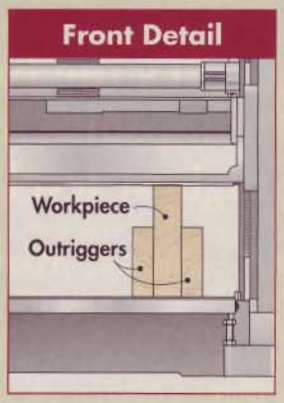
Then, just hold the pieces together and pass them through the planer. You can make a large group easier to handle by sticking them together with double-sided tape. Just make sure to carefully align the edges that will ride against the planer table.

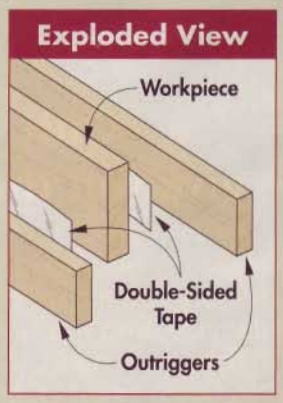
Supports Aid Single Boards — It's also possible to edge-plane a single board. But the board can easily tip over because the planer has no fence to support it, and the feed rollers and knives exert a lot of force. The board isn't likely to kick back, but it will get torn up.

To solve this problem add scrap-wood "outriggers" (*Illustrations, right*). Stick the outriggers to the workpiece with double-sided tape, making sure they sit flush with the bottom edge of the workpiece.

Parallel Doesn't Mean Square — Remember a planer produces an edge *parallel* to the edge that's against the planer table. So if that edge isn't square, the one you're planing won't be, either. Whether gang-planing or using outriggers, make sure every board has one square edge.







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self-centering drill bit HELPS ALIGN HINGES

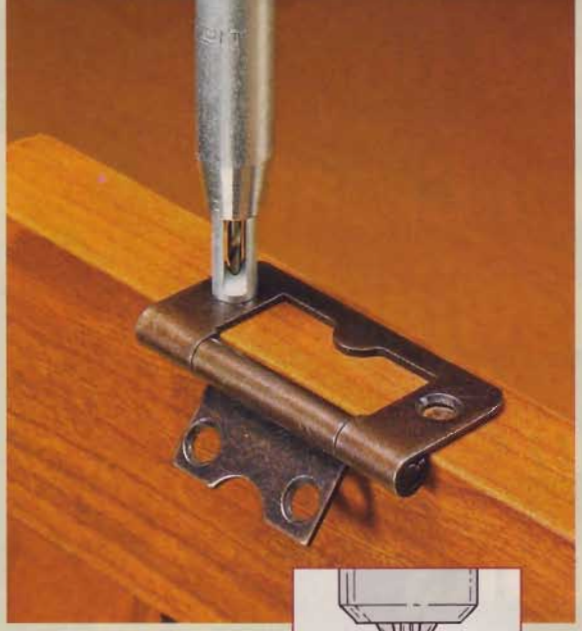
Q *When drilling holes for mounting cabinet-door hinges, I have a lot of trouble getting the pilot holes centered exactly in the hole in the hinge. As a result, the hinges bind. Is there a simple trick that will make this task easier?*

Kevin Copple
Buffalo, NY

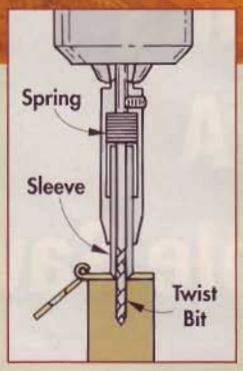
A The simplest "trick" I know for drilling perfectly centered hinge-screw holes is to use a self-centering drill bit.

This type of bit has a standard twist bit in a special housing. The housing contains a spring-loaded sleeve that's tapered at the tip, so it seats automatically in the countersunk hole in the hinge. When you push down, the sleeve slips into the housing, allowing the bit to plunge into the wood.

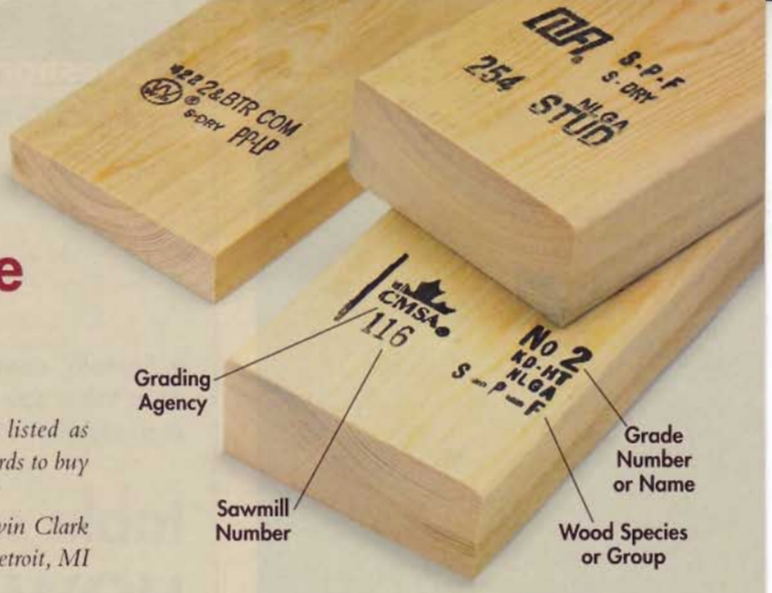
You'll find self-centering bits (also called Vix bits, the brand name of the original) in woodworking catalogs in sizes to match common screws.



▲ The tapered tip of a self-centering bit seats in the hinge mounting hole as you press it into the hinge. This ensures accurate screw positioning and hinge alignment.



species combine to create "S-P-F" LUMBER



Q *Most of the construction lumber I find at home centers is listed as "S-P-F." What does this mean, and how do I know which boards to buy for my projects?*

Kevin Clark
Detroit, MI

A S-P-F is an abbreviation for "Spruce, Pine, and Fir," and it indicates that the board you are buying could be milled from any of these species. This grouping makes sense because all three types of wood look almost exactly the same. And, all three share similar properties that make them well-suited for building structures.

You can always tell whether you're looking at S-P-F lumber by examining the grade stamp or label on each board *(Photo, above)*.

Which board you should buy depends largely on what you'll use it for. Some are graded for strength, and others for appearance.

"Stud" grade lumber meets specific strength requirements, so you can be confident that boards with this stamp will perform well in walls.

Lumber bearing a "No. 1" or "No. 2" mark is meant for general light framing (and is suitable as studs).

Boards that have "common" or "com" after the number are graded for appearance, not strength. Use these for trim work, shop projects, or as non-load-bearing framing members.

▲ S-P-F lumber comes from three species with similar characteristics. The grade stamp shows the details.

► Smooth, consistent cuts on a table saw require a properly aligned blade.

table saw type determines HOW TO ALIGN THE BLADE

Q *Your table saw tune-up article (Workbench, August 2005) shows how to align the saw blade on table saws that have table-mounted trunnions. On my saw, the trunnions mount to the saw cabinet, instead. How do I align the blade on this type of saw?*

Ron Larson
Minneapolis, MN

A Trunnion-mounting systems do vary depending on the type of saw you have. On cabinet saws, the trunnions mount to the saw cabinet, while on contractor-style saws, they mount to the table. Each type gets adjusted differently to align the blade parallel with the miter-gauge slots.

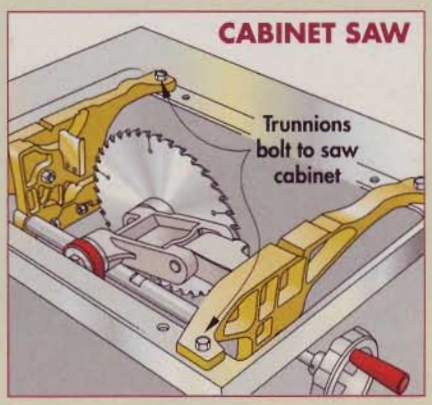
Cabinet-Mounted — On large, stationary table saws, manufacturers use a fully-enclosed base, or cabinet. And because the cabinet is made of heavy-gauge steel, the trunnion assembly can be bolted directly to it *(Cabinet Saw, below)*.

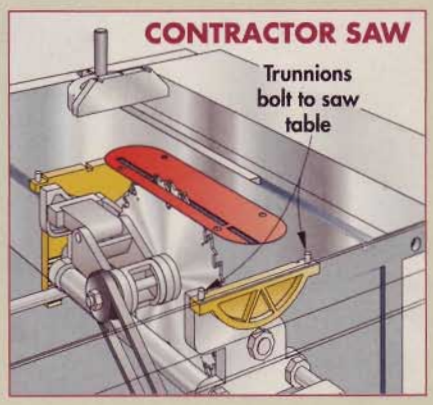
To align the blade on these saws, you simply loosen the bolts and pivot the table. You'll find this type of trunnion assembly makes blade adjustment much easier than the table-mounted trunnions common on contractor-style saws.

Table-Mounted — Contractor's saws are designed to be somewhat portable, so they come equipped with a lightweight, open-legged stand. The problem is that the stand may flex as it gets moved around. To give the trunnions a more secure mounting point, they bolt directly to the saw table *(Contractor Saw, below)*.

To align a table-mounted trunnion, you loosen the mounting bolts and then pivot the trunnion assembly. This can be cumbersome because the bolts are difficult to access. Plus, you have to take care to prevent the the trunnions from slipping out of alignment as you tighten them.

Buyer Beware — Don't think, by the way, that an enclosed base guarantees cabinet-mounted trunnions. The new "hybrid" saws often have a cabinet-style base, but use table-mounted trunnions.





Tips & techniques

▼ This miter-gauge-mounted taper jig makes it easy to cut tapers up to 12" long. And it only takes a few minutes to assemble.

quick & easy TAPER JIG

Making tapers on the table saw usually requires buying or building a complicated jig that mounts to the rip fence. But in a couple minutes I built a simple jig that attaches to the miter gauge and lets me cut tapers up to 12" long with ease.

This taper jig is an L-shaped assembly made up of two plywood "legs" *(see Assembly View at left)*. The long leg acts as a fence that supports the side of the workpiece. The short leg mounts to the miter gauge. It also forms a "heel" that pushes the workpiece past the blade.

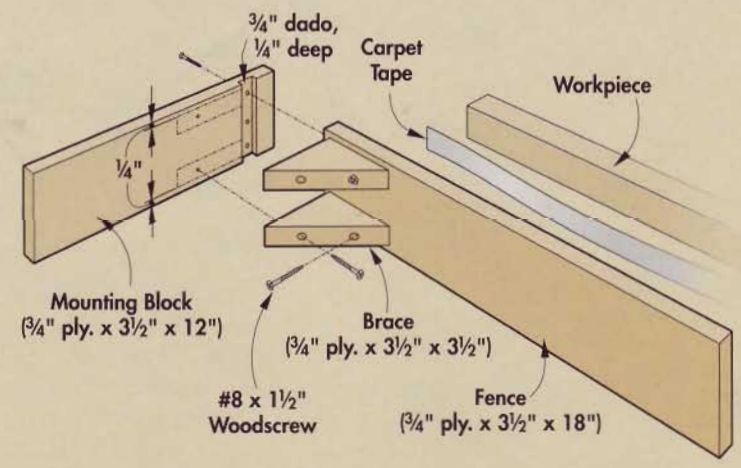
To make the jig, cut a dado in the mounting block to accept the fence. Then glue and screw the jig together. A couple of triangular braces glued and screwed into the corner add rigidity.

To set up the jig, just clamp it to the miter gauge. Set the taper angle by rotating the head of the miter gauge. Make sure it's tilted *away* from the saw blade to prevent the workpiece from binding *(Top View Detail)*. Then attach the workpiece with carpet tape. (I use cloth-backed tape because it has a stronger grip than the paper-backed type.) After securing the workpiece, slide the miter gauge — jig and all — past the blade to cut the taper.

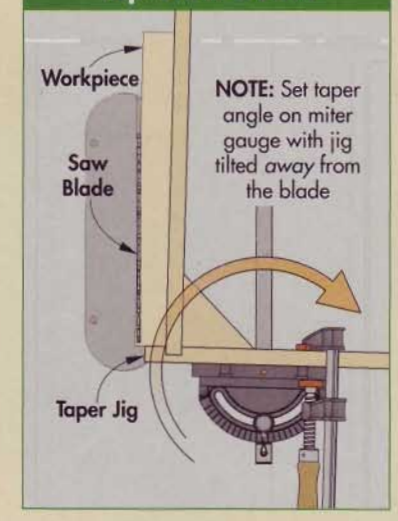
When cutting adjacent (two-sided) tapers, simply rotate the workpiece and reattach it to the jig. To cut four-sided tapers, just reattach the wedge-shaped scrap pieces left from the first two cuts with carpet tape to hold the piece in proper position.

George Person
Costa Mesa, CA

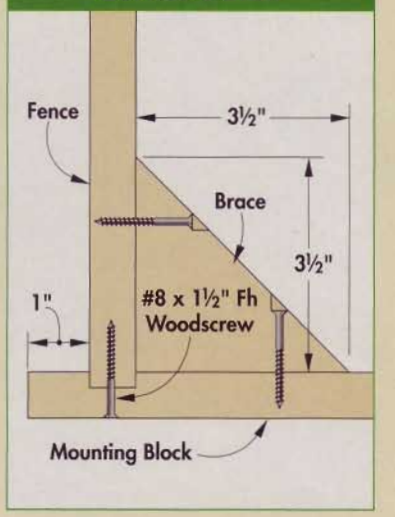
ASSEMBLY VIEW



Top View Detail



Corner Detail



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small-piece ROUTING JIG

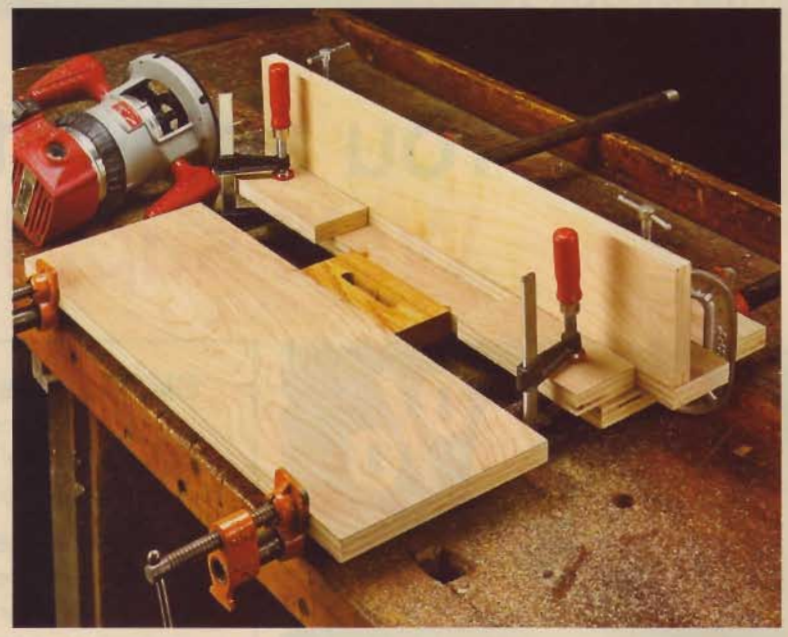
When it comes to routing a slot in a small piece, I prefer to start with an oversize workpiece that's easy to handle, and then cut it to final size *after* routing the slot. But that's not always possible. So I devised this simple jig that lets me cut a slot in a small piece safely and easily with a plunge router.

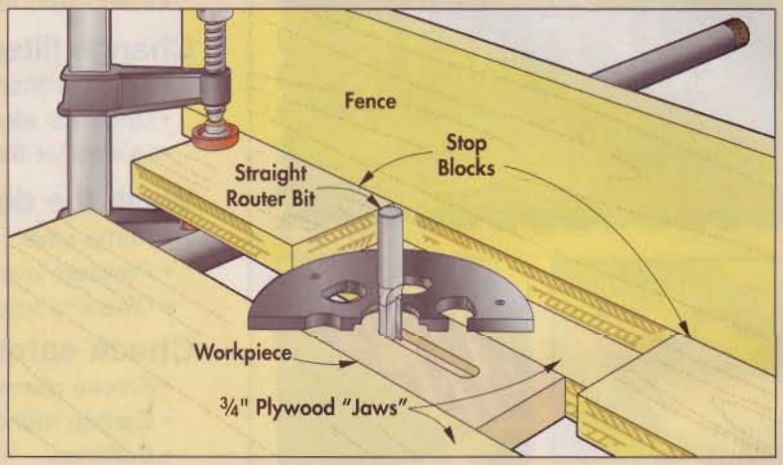
The jig uses pipe clamps to pinch the workpiece between two plywood "jaws." Besides holding the workpiece, these jaws provide a large, stable base for the router. A pair of stop blocks define the limits of the router's path. And an L-shaped fence, clamped to one of the jaws as shown, guides the base of the router.

To set up this jig, clamp the workpiece between the jaws, making sure it's flush with the top of the jaws. Next, determine the placement of the stop blocks and clamp them as shown in the *Photo* at right. Finally, position the fence so the slot will be cut in the desired location, and clamp it in place.

To rout the slot, set the router base against the fence and stop block *(see Illustration)*. Then plunge the bit into the workpiece, and rout in both directions until the router contacts the stop blocks. Continue routing a series of deeper passes until you cut the slot all the way through.

Serge Duclos
Delson, QC, Canada





QUICK TIPS

Curved Surface "Belt" Sander

It's hard to sand a workpiece with a curved profile (such as crown molding). A power sander "erases" the fine details, and finding (or making) a sanding block that matches the profile can take some time.

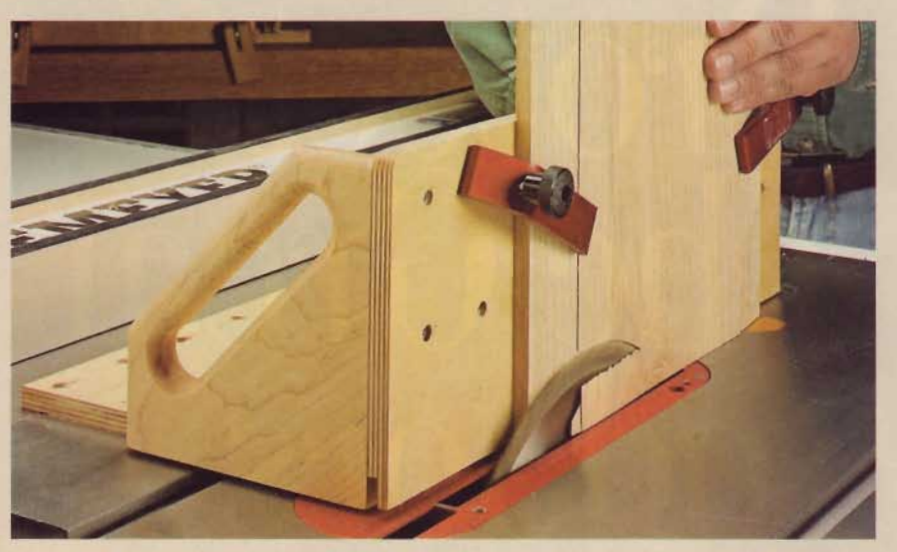
One simple solution is to stick a strip of self-adhesive sandpaper to an old leather belt. The leather is flexible enough to conform to the curves of crown molding, yet still distributes pressure evenly.

Norm Ward
Indianapolis, IN

Super Glue "Bandage"

Small cuts and nicks are a pain, but so is having to stop work and rummage around to find a bandage. So if I get a minor cut, I put on a dab of instant glue (Super Glue) to stop the bleeding. It also keeps splits on dry hands from cracking open again. And there's no need to remove the glue "bandage," as it will wear off in time. **Note:** Don't use instant glue for serious cuts.

Allen Landin
Boone, IA

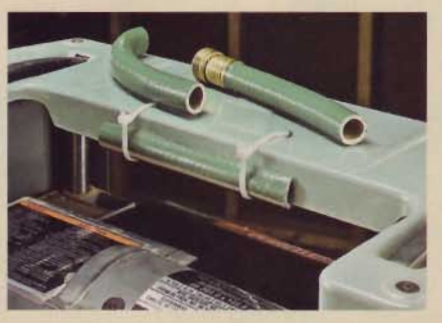


make raised panels with a SHOP-MADE TENON JIG

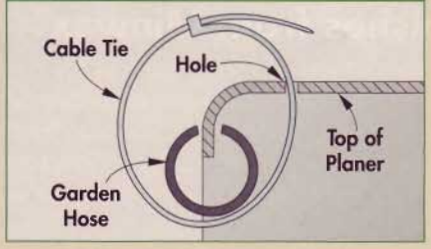
I built the multipurpose table saw sled featured in the August 2005 issue of *Workbench*. Besides using it for crosscutting and cutting tenons, I found it also works great for making raised panel doors. Simply remove the back stop from the tenon jig accessory and clamp the panel to the face of the jig with the aluminum hold-downs. Then tilt the saw blade to the desired bevel angle, and cut all four sides of the panel *(see Photo)*.

Lloyd Lowry
Galveston, TX

hose helps you TAKE THE EDGE OFF



Handle Detail



My portable thickness planer has built-in handles for carrying it around, but there's not enough clearance under them for me to get a good grip on the tool. So I usually pick it up by the top. The problem there, however, is that the top has sharp edges that dig into my hands.

To ease these sharp edges, I covered them with short pieces of garden hose that are slit lengthwise *(see Photo)*. The hose is held in place by plastic cable ties that pass through holes drilled in the top *(see Illustration)*. This arrangement lets me move my planer around comfortably.

Bruce Wrenn
Apex, NC

Finishing Fundamentals

understand stains to GET TRUER COLORS

Q *I've noticed that some of the stains I use have a thick sludge at the bottom of the can that I have to stir in, while others do not. Are these stains different? Is one better than the other?*

Bob Stiers
Portsmouth, NH

A Most wood stains get their color from a mixture of pigment (natural or synthetic colored earth) and dye (a chemically-made colorant). These two ingredients are mixed with a liquid "binder," which is usually oil but can also be varnish, lacquer, or water-based, to create stain. Many stains also contain mineral spirits, which is the vehicle used to carry the stain to the surface of the wood.

Pigment-Heavy Stains — Some stains (usually the darker colors) have far more pigment than dye. Pigment doesn't dissolve in liquid, so it often settles to form that sludge you noticed on the bottom of the can *(Photo, above right)*.

To get a consistent color with this type of stain, it's important to stir the sludge in frequently while you work. Another thing to be aware of with pigment-heavy stain is that it doesn't penetrate wood as well as dye. If you let it sit too long, it can obscure the grain, so be sure to thoroughly wipe off the excess stain. And wipe *with* the grain, as pigments have a tendency to leave cross-grain streaks.

Dye-Heavy Stains — Stains with more dye, which are usually lighter colors, won't settle, so you don't have to worry about stirring them as much. They also penetrate the wood better. As a result, they showcase the grain instead of obscuring it. But these dyes are usually less resistant to fading, so it's best to avoid using them on a project that will get a lot of direct sunlight.

▲ **Pigment or Dye? Here's How to Check —** To see if the stain you chose has more pigment or more dye, use a stir stick to scrape the bottom of a new can. If it pulls up solids *(right)*, then that is pigment you'll want to stir in well. If there are no solids, but the stick gets colored easily *(left)*, then the stain is mostly dye.

LINSEED VS. SOY STAINS

Aside from the pigment or the dye, the binder can affect the color of wood stain as well. Most stains use linseed oil as the binder. It has a dark, murky color like unused motor oil. But some of the newer wood stains use a soy-based oil binder, which has a clearer color like vegetable oil.

To see if soy oil stain actually creates truer color, I ran a test. I stained two sides of a wood panel with "Red Oak" stains, one soy-based (from Varathane), and one linseed-oil-based. Sure enough, the soy-based stain had a truer reddish color that highlighted the grain instead of obscuring it, like the linseed oil stain.

▼ A soy-based stain *(left)* provided better color and clarity than linseed oil *(right)*.

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demystifying SEALCOATS

Q I noticed a product called sanding sealer at my local home center the other day. What is the purpose of this product? Will it give me better results with my finishing jobs?

Matthew Morris
Columbia, MO

▲ Sanding sealer is just a thinned finish with zinc stearate added to it. The zinc stearate makes it sand easily, but it creates dust as you sand.

A Sanding sealer is intended to be applied to wood *before* the topcoat to make sanding easier. In reality, it's nothing more than a thinned finish that has zinc stearate (a common lubricant) mixed into it. The sealer is available in varnish, lacquer, and water-based formulations.

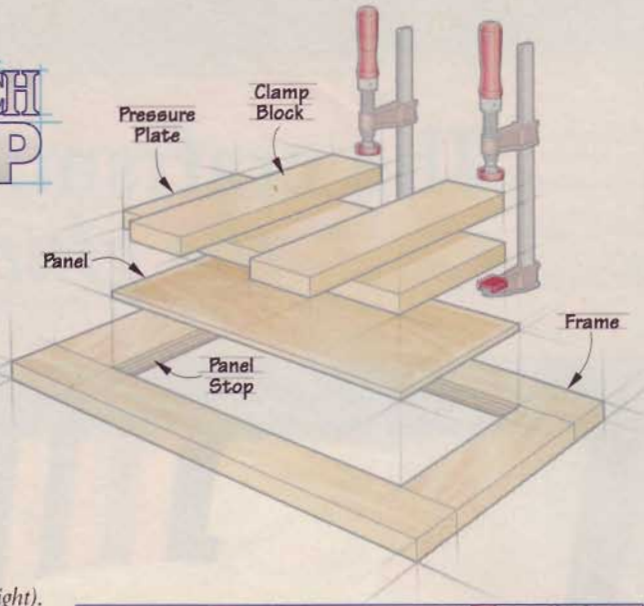
Zinc stearate makes sanding sealer softer than cured finish, so sanding is a smoother process. But it does produce a lot of dust as you sand, so be sure to remove it before applying the next coat. That coat, by the way, should be the regular finish. Too many coats of a stearated finish will produce a "soft" surface.

To save money, you can skip the sanding sealer and use a thinned-down version of the topcoat as the sealcoat. If you're using varnish, for example, just mix varnish and mineral spirits in a 1:1 ratio for the sealcoat.

TIPS FROM THE WORKBENCH SHOP

3 quick & easy CLAMP SOLUTIONS

Like many projects, the kitchen island *(page 46)* provides several clamping challenges. These three simple tips help solve them.



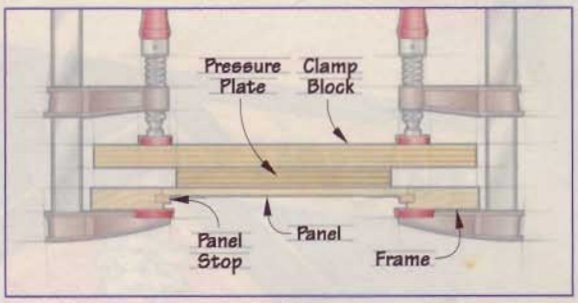
EXTEND REACH OF BAR CLAMPS

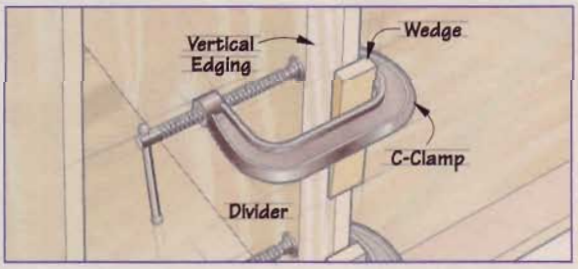
The construction of the doors and end assemblies of the island is a bit unusual. First, stops are glued into grooves in the frame pieces. Then 1/4" plywood panels are glued to the stops.

The only problem is most bar clamps don't have enough reach to clamp the panels.

To extend their reach, make a pressure plate and two clamp blocks from scrap 3/4" plywood *(Illustrations, right)*. The pressure plate is 1/2" smaller than the panel, so it sits flat against it. The clamp blocks just need to be long enough for the clamps to reach.

To glue in a panel, apply glue to the stops. Then put the panel into the frame, lay the pressure plate on top, and set the clamp blocks on top of it. Finish by clamping as shown.

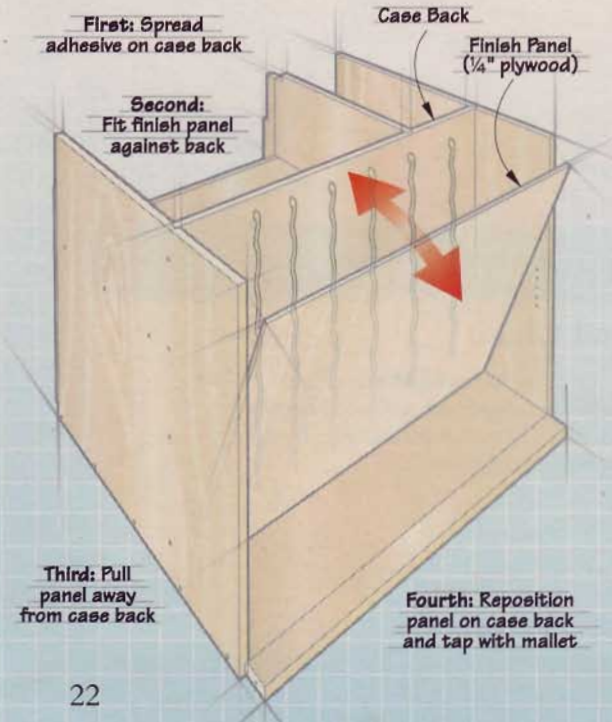




WEDGE WORKS WONDERS FOR CLAMPING EDGING

The vertical edging for the divider is applied *after* the case for the kitchen island is assembled. Since the back is already installed, you can't clamp acrosss the divider with a long clamp.

So I used C-clamps and wedges to apply pressure. Just tighten each C-clamp around the divider, as shown in the *Illustration*. Then tap in a wood wedge to apply pressure against the edging.



NO-CLAMP "CLAMP"

Sometimes the best clamping solution is to not use clamps at all. That's the case with the 1/4" plywood "finish" panel glued to the back of the case.

Since this panel is quite large, it's not practical, or even possible, to clamp it in place. And you don't want to risk using contact cement and prematurely adhering the panel before it's properly positioned.

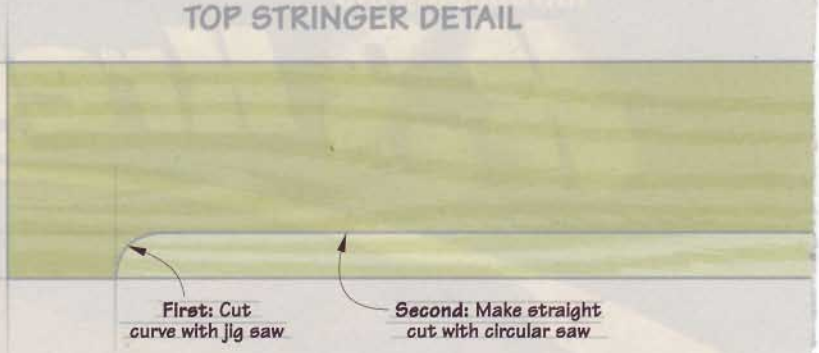
So the best solution is to use construction adhesive. You can apply the adhesive to the back of the panel *(Photo, above)*. Or, apply it to the back of the case *(Illustration, left)*. Either way, press the panel into place. To speed up the curing process, pull the panel away from the back to expose the adhesive to the air. Then reposition the panel and tap it with a mallet and block to ensure the glue is evenly distributed.

▲ A 1/4" bead of construction adhesive applied every 3" ensures a strong bond without clamping.

TIPS FROM THE WORKBENCH SHOP

save time — cut a smooth

NO-SAND NOTCH



Each stringer in the yard divider *(page 72)* has a long, decorative notch with rounded ends. Making the curved cuts is easy. Just use a jig saw *(Fig. 1)*. But if you cut the long, straight part of the notch with a jig saw, you'll be faced with the time-consuming task of sanding the edge smooth.

To make a straight, smooth cut, it's best to use a circular saw guided by a straightedge that's clamped to the stringer *(Fig. 2)*. This requires making a plunge cut, which is explained in *Figures 2 and 3*.

▲ After laying out the decorative notch, use a jig saw to make the curved cut at both ends of each stringer.

▲ Rest the front of the shoe firmly against the board, turn the saw on, and pivot the blade into the wood.

▲ To complete the cut, guide the saw along the straightedge until you reach the opposite end of the notch.

table saw sled for RIPPING THIN STRIPS

ONLINE Extra

Video: Ripping Thin Strips

WorkbenchMagazine.com

If you've built many cabinets from plywood, I'm sure you've experimented with different ways to rip the thin wood strips used to cover the exposed plywood edges.

One method is to set the rip fence so the strip that's cut ends up *between* the saw blade and the fence. With this method, you can set the fence once and forget it. The only problem is that the cutoff strip can bind against the blade and kick back at you.

Another approach is to cut the strip from the board so it falls to the *outside* of the blade. Using this method, you have to reset the fence for each cut, which makes it difficult to get strips of identical thickness.

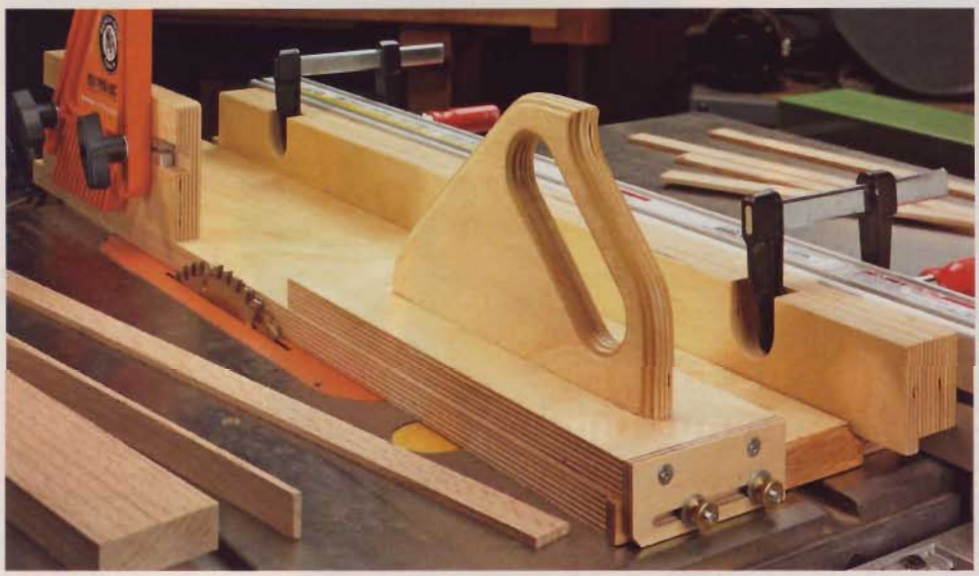
This table saw sled, designed by Suwat Phruksawan of Pleasant Hill, CA, solves those problems. It lets you rip multiple strips to exactly the same thickness without having to move the rip fence for each cut.

How It Works — If you look at the *Construction View* on page 27, you can see that the sled has three main parts: a guide that clamps to the rip fence, a sliding base, and a push block that's hinged to the base.

Notice that there's a tongue on the bottom edge of the guide that fits into a groove in the base. This interlocking tongue and groove keeps the base aligned during the cut.

As I mentioned, the base slides on the table saw. But it's important to note that it only does that during the *final* part of the cut. At the *beginning* of the cut, it's actually "locked" in place on the table. At this stage, the workpiece rides against it like a fence.

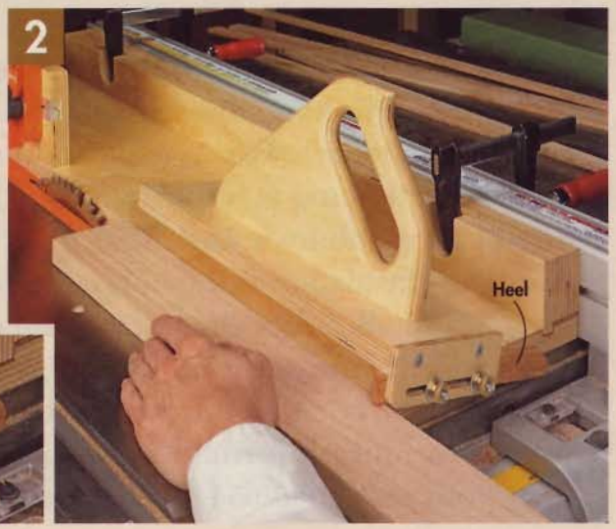
The easiest way to understand all this is to walk through a cut. Start by positioning the rip fence (with the guide clamped on), so the distance



4 STEPS TO RIPPING PERFECT STRIPS >>>

▲Position the saw's rip fence so the edge of the sled sits the width of a strip from the blade. Then adjust the heel so it touches the blade as shown. Tightening a pair of knurled knobs on the end of the push block locks in the setting.

►Next, tilt the push block up so the heel hooks over the edge of the saw and "locks" the sled in place *(Inset, below)*. To begin the cut, turn on the saw and run the workpiece against the edge of the sled.



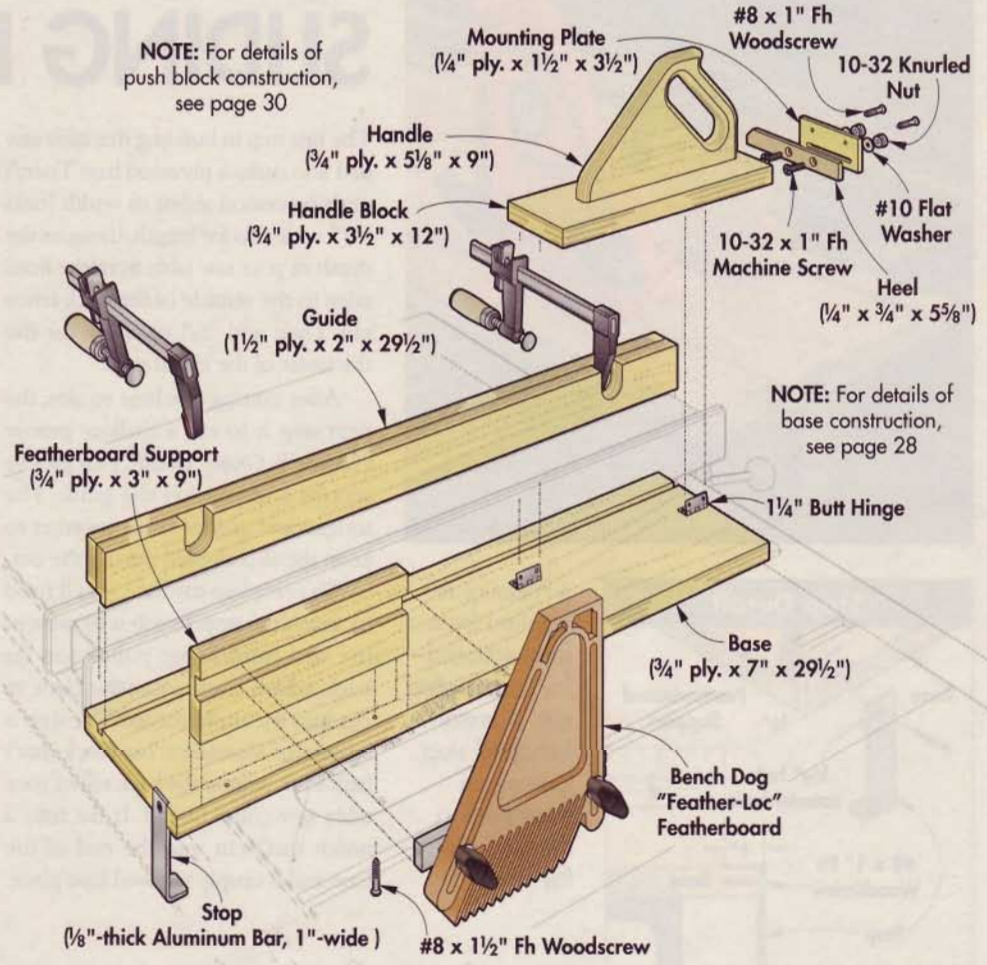
between the sled and the saw blade matches the width of the strip you want to cut. Then you adjust a small heel on the end of the push block, so it sticks out this same distance *(Fig. 1, page 26)*.

Now pull the sled toward you, until a metal L-shaped stop on the base hooks the far end of the saw table. Once the sled stops, tilt the push block up. This causes the inboard end of the heel to catch the saw table, which "locks" the sled *(Fig. 2)*.

To make a cut, begin by sliding the workpiece along the edge of the sled. When the end of the piece reaches the back of the sled, the push block flips down *(Fig. 3)*. This releases the sled, allowing it to slide forward and push the strip past the blade *(Fig. 4)*.

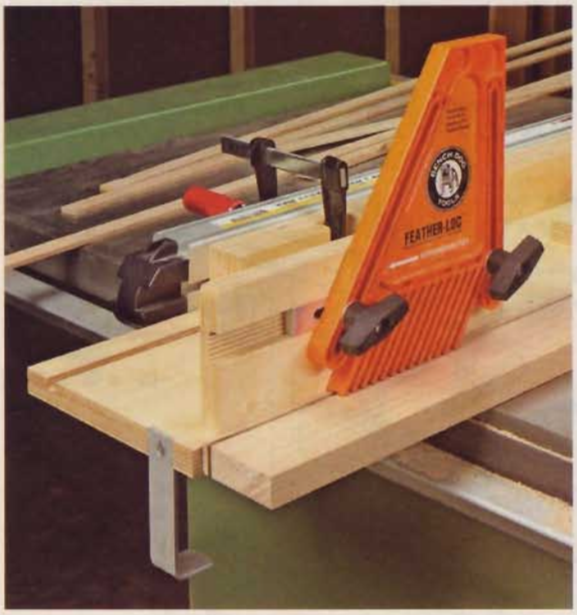
After completing the cut, you simply repeat the process for each additional strip until the workpiece is too narrow to make the cut safely. Be sure to work with a piece that's at least 2" wide. This way, your left hand will remain well away from the blade.

CONSTRUCTION VIEW



▲ When the end of the workpiece reaches the back of the sled, the push block flips down, allowing the adjustable heel to engage the board.

▲ The sled can now slide forward, allowing the heel on the push block to push the workpiece through the blade. A featherboard holds the strip down.



start by building the SLIDING BASE

The first step in building this table saw sled is to make a plywood base. There's nothing critical about its width (ours is 7" wide). As for length, measure the depth of your saw table from the front edge to the outside of the back fence rail. Then add 1/8" to allow for the thickness of the metal stop.

After cutting the base to size, the next step is to cut a shallow groove (*Tongue & Groove Detail*). This groove accepts a tongue on the guide. The tongue and groove work together to keep the sled aligned during the cut.

To complete the base, you'll need to attach the stop. Its job is to prevent the sled from being pulled too far back, which could cause the blade to cut into the featherboard. The stop is a piece of aluminum bar stock that's bent to fit around the back rail of your table saw (*Stop Detail*). It fits into a notch that's cut into the end of the base and is simply screwed into place.

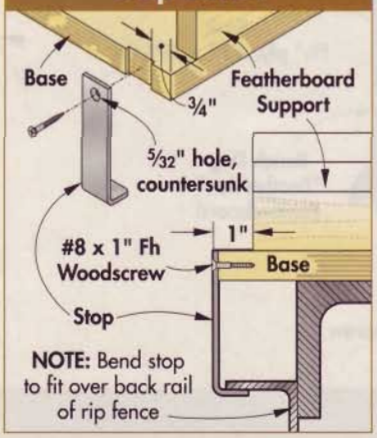
Make the Guide — Now you can focus on the guide that keeps the base on track. It's made up of two pieces of 3/4" plywood. To form pockets for clamps, cut a couple of notches in the outer piece. Then glue the halves together. Now it's just a matter of cutting a rabbet to form the tongue that fits into the groove in the base. The goal here is a smooth sliding fit.

Add a Featherboard — All that's left is to add a featherboard to hold down the thin strip as it's ripped from the workpiece. The featherboard is held in place by a plywood support. A groove in the support accepts the bar on the featherboard.

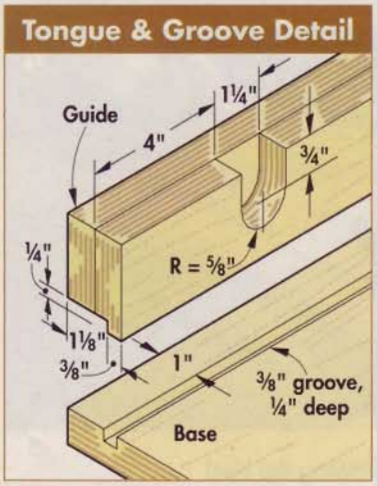
The location of the featherboard support is important. You'll want to position it so there's at least 1" clearance between the featherboard and the saw blade when the sled is pulled all the way back. This way, you won't accidentally cut into the featherboard.

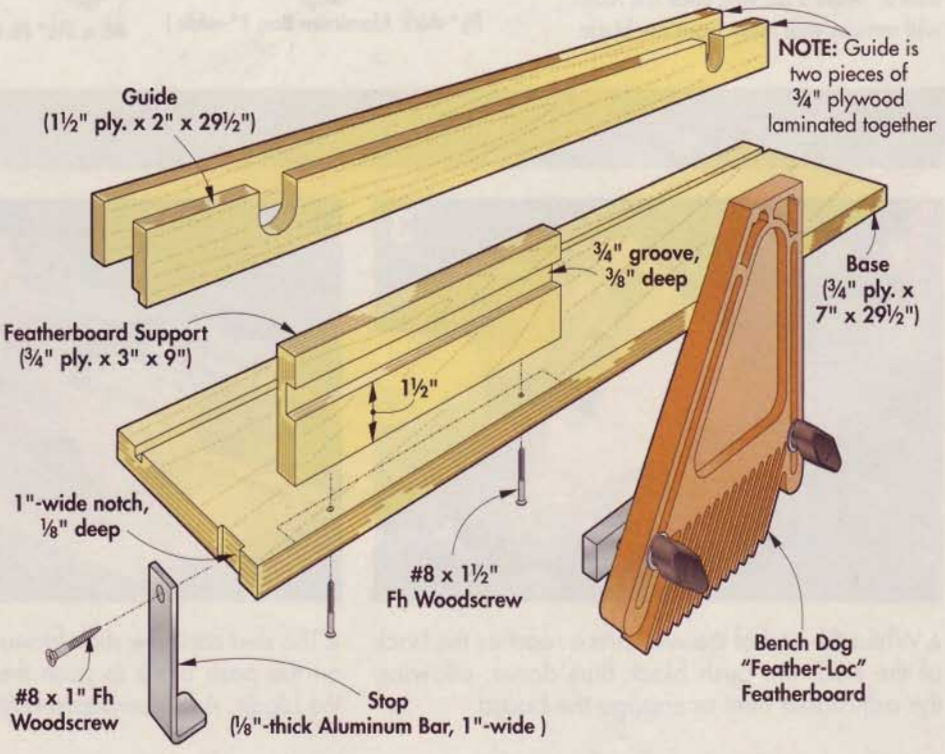
▲ Pressure is applied by a featherboard for a controlled cut. A metal L-shaped stop keeps you from pulling the sled too far back.

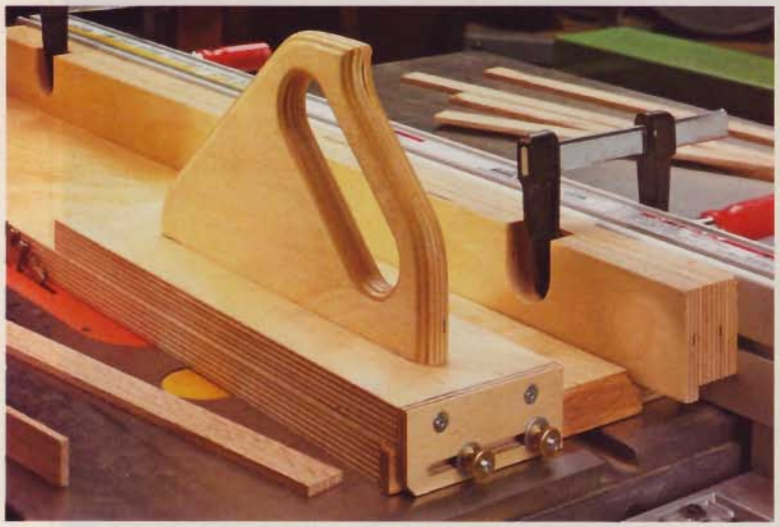
Stop Detail



Tongue & Groove Detail







it all hinges on the PUSH BLOCK

With its large curved handle, this push block could easily be mistaken for an ordinary push block *(Photo, left)*. A closer look reveals what makes it unique — an adjustable heel that pushes the workpiece through the blade *(see Illustration below)*.

Shape the Handle — Start by laying out the shape of the handle on a piece of 3/4" plywood *(Pattern, below)*. Then cut the handle to rough shape and sand up to the line. To provide a comfortable grip, you'll want to round over all the edges of the handle except for the bottom. A 1/4" roundover bit mounted in the router table makes quick work of that.

Once the handle is sanded and shaped, the next step is to mount it to a 3/4" plywood block. Simply glue and screw the handle to the block, as shown.

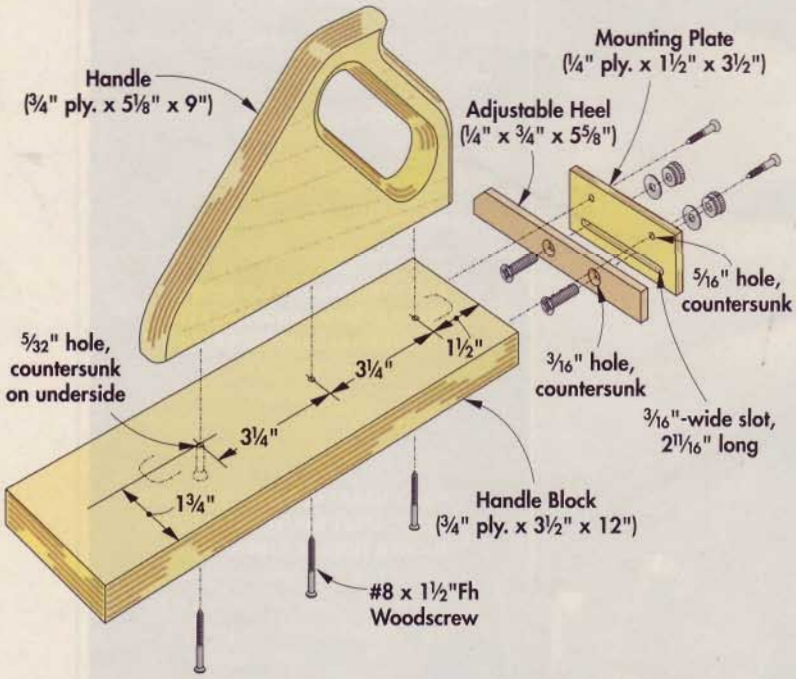
Adjustable Heel — Now it's time to add the adjustable heel. It's a strip of 1/4"-thick hardwood with the corner knocked off at an angle *(Parts View, below)*. This is so it won't catch on the guide when you tilt the push block up.

To make the heel adjustable, two machine screws pass through holes drilled in the heel and also through a slot in a 1/4" plywood mounting plate *(Adjustable Heel Mounting Detail)*. Tightening a pair of knobs on the ends of the screws "locks in" the adjustment.

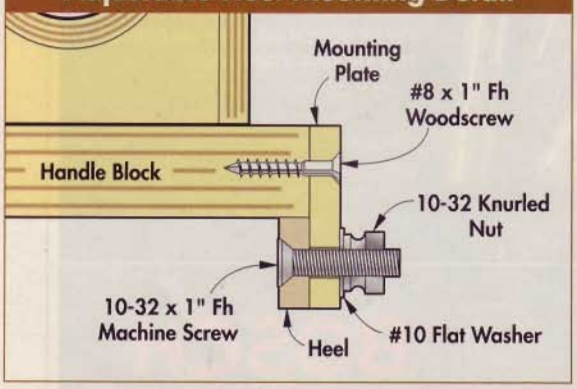
Since the mounting plate is fairly small, cutting the slot can be tricky. A safe way to do that is to drill a hole at each end of the slot and remove the rest of the waste with a scroll saw *(Parts View)*. That done, screw the mounting plate to the handle block and assemble the heel.

All that's left is to hinge the handle block to the base of the sled. To do that, simply align the handle block flush with the edge of the base and install the hinges, as shown in the *Construction View* on page 27.

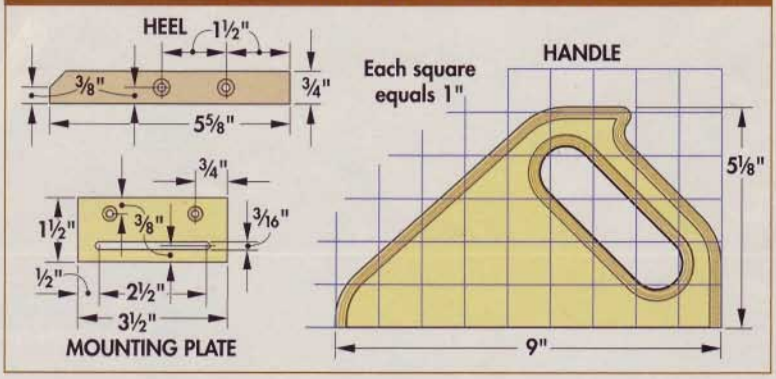
PUSH BLOCK ASSEMBLY



Adjustable Heel Mounting Detail



Parts View & Handle Pattern



BENCH BASICS
FUNDAMENTAL SKILLS FOR BETTER WOODWORKING

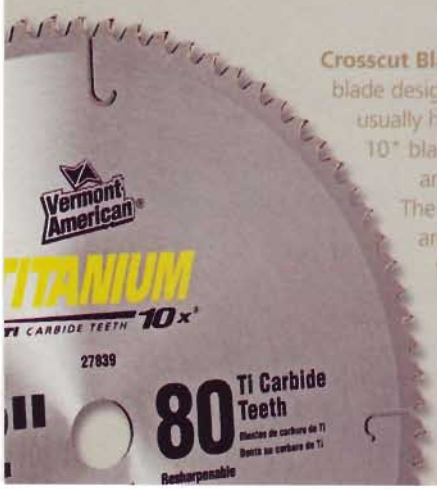
TIPS FOR TOP-QUALITY CROSSCUTS

There's no better tool than a table saw for cutting boards to exact length. Here's how to ensure that your cuts are smooth, square, and accurate every time.

CROSSCUT BLADE **CLOSE-UP**

Getting a clean crosscut requires a blade designed for the task *(Photo, below)*. That's because of the way wood fibers are oriented in a board. In simple terms, the fibers are like hollow straws running lengthwise. When crosscutting, you're actually tearing through the tough walls of these fiber "straws."

To understand this, think about chopping a log with an axe — sort of a 1-tooth saw blade. You can split (rip) the wood easily in a few strokes because you're forcing the fibers apart, but you have to chop many times to cut a log to length.



Crosscut Blade Anatomy. A blade designed for crosscuts usually has 80 teeth (on a 10" blade) that are small and closely spaced. The tops of the teeth are angled to shear through the walls of the wood fibers.

One of the most basic table saw operations, yet one of the most critical for woodworking success, is the crosscut. As the name implies, this means cutting across the width of a board to trim it to exact length.

Usually, crosscutting involves cutting across a board at 90°. It's possible to crosscut at an angle, but these angled cuts are usually referred to as miters. Here, we'll focus on 90° cuts.

In order to crosscut a board safely and accurately on the table saw, you need a means of holding it precisely square to the blade as you cut. This is accomplished with a miter gauge, shown on the next page.

The miter gauge is really nothing more than a push block attached to a long bar that rides in either of two slots in the saw table. There's one slot on each side of the blade, which means you can use the miter gauge in either of two locations.

The head of the miter gauge has a flat face that pushes the board and can be adjusted to change the angle of the cut. Simple as it may be, you'll find that accurate crosscuts depend on a good miter gauge.

Remember, too, that you'll never get top performance unless the blade is set parallel to the miter-gauge slots. You can refer to the August 2005 issue of *Workbench* for information on aligning the blade. Or, check your owner's manual for instructions.

Another thing that determines crosscutting success is the type of saw blade you use. You can get very good results with a carbide-tipped "combination" blade designed for both crosscuts and lengthwise (rip) cuts. But for top-quality crosscuts, invest in a crosscut blade *(Box, left)*.

With a tuned-up saw, a properly adjusted miter gauge, and the correct type of blade, you're ready to crosscut. We'll show you how over the next three pages.

READY THE MITER GAUGE

A miter gauge holds a board at a particular angle to the blade as you cut. It consists of an adjustable, protractor-style head with a face the board rests against, and a steel bar that slides in slots in the saw table *(Illustration, right)*.

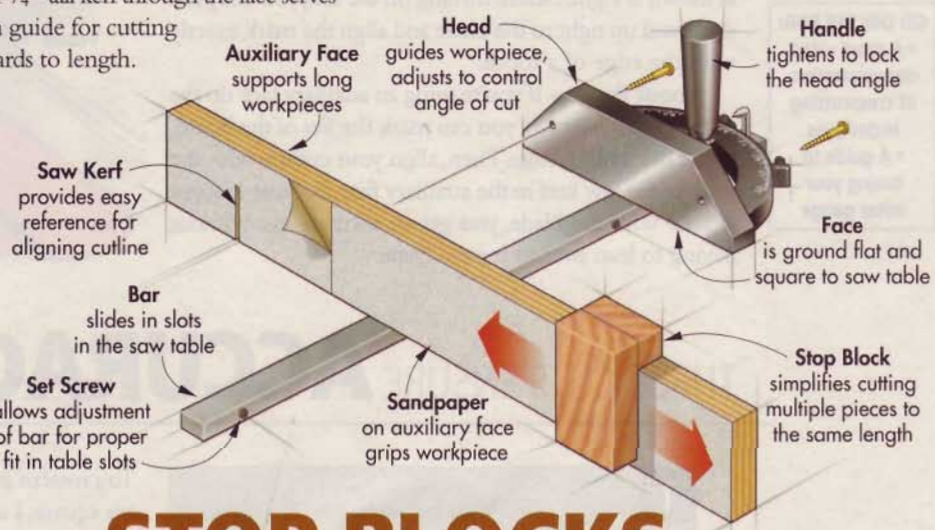
Using a miter gauge is simple. Just hold the board snug against the face, and then push the gauge and board together past the blade.

Adjust the Gauge — To get great results, you need to set up the miter gauge accurately. Start by making sure the bar fits snugly in each slot, but without binding. If there's slop, some bars have adjustable set screws.

Now use a square to set the head at exactly 90° to the saw blade. Then set the stop on the head *(Detail)*. For more setup tips, go to Bench Basics Online at WorkbenchMagazine.com.

Shop-Made Upgrade — A miter-gauge face is only 6" to 7" wide, which makes it hard to push workpieces longer than about 18" without them racking.

To increase miter-gauge capacity, add an auxiliary face. Mine is a $2^1/_2$"×24" piece of $^3/_4$" plywood. It extends beyond the blade to push the workpiece and cutoff through the cut. A $1^1/_4$"-tall kerf through the face serves as a guide for cutting boards to length.



FOR REPEATABLE RESULTS, USE STOP BLOCKS

When cutting multiple pieces to the same length, measuring each one can lead to error. Instead, position a stop block the desired distance from the blade, and then butt your workpieces against it. I use two types of blocks.

Auxiliary-Face Stop Block — The stop I use most clamps to the auxiliary face *(top right)*. It's L-shaped, so it's easy to set up and sits square. The stop hangs $^1/_4$" above the saw table to prevent sawdust from accumulating and causing inaccurate cuts.

Rip-Fence Stop Block — My other favorite stop block clamps to the rip fence several inches *before* the blade. As you push the board with the miter gauge, a gap opens between the end of the piece and the fence to prevent binding *(bottom right)*. Use this block for cutting short pieces, or those too long for a face-mounted block.

Auxiliary-Face Stop Block. To accurately crosscut multiple workpieces to the same length, clamp a stop block to the auxiliary face. The "keeper" (the piece you want to save) sits between the blade and stop block. The waste (which you'll discard or cut another piece from) is on the far side of the blade.

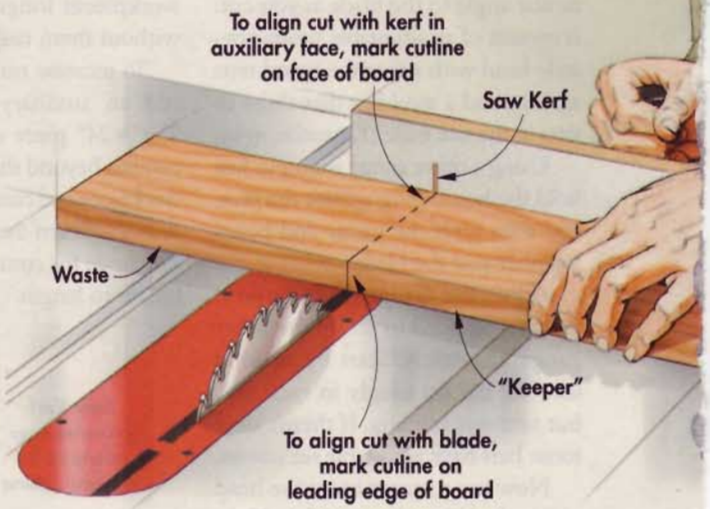
Rip Fence Stop Block. Never use the rip fence alone as a stop when crosscutting. The cutoff can get trapped between the fence and blade and kick back. A fence-mounted block removes the hazard by creating a gap between the end of the board and the fence. In this case, the "keeper" is between the fence and the blade.

TWO WAYS TO MARK A CUTLINE

If I only need to cut one or two pieces to a specific length, I don't bother with a stop. I just mark a cutline on the board. That sounds simple enough, but where you make the mark is important.

On Edge — Often, people mark the cutline on the face of the board, near the leading edge. This leaves room for error as you "eyeball" its position relative to the blade. Instead, make your mark on the leading *edge* of the board, as shown at right. Before turning on the saw, you can push the board up tight to the blade and align the mark exactly with the edge of a tooth.

About Face — If you're using an auxiliary face on the miter gauge *(page 33)*, you can mark the *face* of the board, but at the trailing edge. Then, align your cutline with the edge of the saw kerf in the auxiliary face. Because it aligns exactly with the blade, you get an accurate cut without having to lean over to see the blade.



BENCH BASICS ONLINE
www.WorkbenchMagazine.com

GO ONLINE FOR:
- A short video demonstration of crosscutting techniques
- A guide to tuning your miter gauge

THREE CUTS ENSURE ACCURACY

The Rough Cut. Start by laying out the location of the piece you want to keep on the board. Then crosscut the piece about 1" longer than needed. Also be sure to cut around any defects in the board.

Square One End. Hold the blank with its straightest edge snug against the auxiliary face, and make a square, finished cut on one end.

Trim To Length. Turn the workpiece end-for-end, keeping the same face up, and then crosscut this end to trim the piece to final length.

To crosscut pieces to exact length and ensure the ends are square, I always use a three-cut technique. I start by rough-cutting an extra-long "blank." Then I recut each end to trim the workpiece to final length. I do this for two main reasons.

First, friction between the table and board can cause the board to drag as you push it with the miter gauge. If the board is long or heavy, it may "rack," or pivot away from the miter gauge. Even the slightest amount of rack will result in an out-of-square cut.

Second, even if the edges of a board appear straight and have been ripped parallel, they may be slightly curved due to warping. That means when one section of a long board is tight against the miter gauge, another section will sit at an angle to the blade. That, too, will result in an out-of-square cut. Cut that board into shorter pieces, though, and each one will have an edge that is essentially straight.

Making the Multi-Step Crosscut — Keeping these things in mind, you can now use the three-cut technique I mentioned earlier to crosscut a board accurately. Start by laying out the extra-long blank on the board. Then place the straightest edge of the board against the miter gauge and cut the blank free *(Fig. 1)*. Next, place the blank against the miter gauge, and cut one end square *(Fig. 2)*. Then you can trim the board to final length by cutting off the opposite end *(Fig. 3)*.

TECHNIQUES FOR
SPECIAL CUTS

WIDE BOARDS

Most woodworking projects don't call for solid-wood parts more than about 6" wide. (Wider panels are usually glued up from narrower boards.) That means you rarely have to make finish-quality cuts in wide workpieces. But when you do, there are some rules to keep in mind.

Some boards are too wide to crosscut safely. As the *Photo* at right shows, there needs to be a gap between the blade and the leading edge of the board to start the saw safely. And at least the face of the miter-gauge head should be on the saw table. If you have to back the miter gauge off the table, it will likely bind as you push it. (If a board is too wide, crosscut it with a circular saw.)

When cutting a wide board, be sure to hold it tightly against the auxiliary face to maintain control.

The Squeeze Play. When cutting wide stock, keep a good grip on the board by hooking your fingertips over the leading edge, well away from the blade, and holding the board firmly against the auxiliary face on the miter gauge.

A Support Group. Hold up a long board using a side support. To make one, just clamp a piece of scrap to a sawhorse so it matches the height of the saw table.

LONG BOARDS

Again, you won't be required to make exacting cuts in extremely long pieces very often when building most projects. But, like all general rules, this one has exceptions. Cutting those long "exception" boards is tough.

For starters, few saw tables are wide enough to support a long board. And even if you can hold the board flat against the table as you start the cut, you'll have a tough time keeping one piece or the other from tipping up after the cut. So use a support, such as the sawhorse setup at left, to hold the end of the board.

Also, long boards are the most prone to pivoting away from the miter gauge. This is another time that the long auxiliary face on the miter gauge comes in handy. It pushes over a wide area, giving better control. Hold the board tightly with one hand as you push with the other.

SHORT BOARDS

I don't like to cut pieces less than about 6" long using a stop block clamped to the miter-gauge face. That's because I can't hold the piece securely without getting one hand uncomfortably close to the blade. When I need to cut short pieces, I rely on the rip-fence stop block and auxiliary miter-gauge face *(see page 33)*.

When setting the desired length of your workpiece, remember that you can't use the measurement scale on your rip fence. To set the length, hold the stop block against the fence alongside the blade and measure the distance between the block and blade. Then clamp the block to the fence several inches before the blade.

The Short Stop. When cutting short pieces, a rip-fence stop block ensures accuracy and keeps your hands away from the blade. The miter-gauge auxiliary face pushes the cutoff safely past the blade.

TITANIUM COATINGS

Helpful ... or Hype-Full?

Titanium-coated cutting tools are all the rage these days. To prove a point, just look at all the gold-colored bits and blades the next time you're in the tool aisle at the home center.

Of course, the big question is whether they actually *improve* the performance of these bits and blades. To find out, we bought several titanium-coated cutters (reciprocating saw blades, table saw and miter saw blades, drill bits, router bits, and driver bits) and put them to the test.

Durable Cutting Edge — One thing we discovered about these coatings is they produce a hard, durable cutting edge. This became quite clear when comparing a titanium-coated reciprocating saw blade (a Lenox "Gold" wood- and nail-cutting blade) to a standard blade.

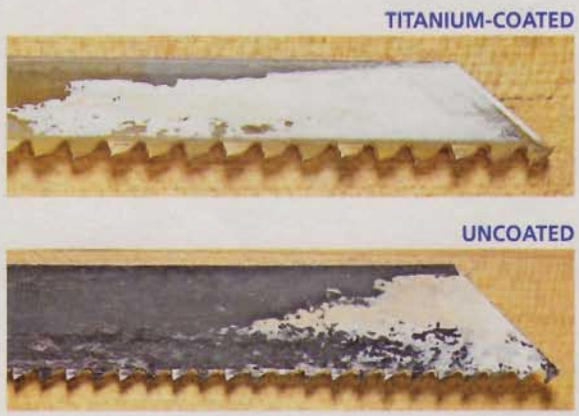
After cutting through a nail-embedded board with the Lenox blade *(Photo above)*, the teeth remained sharp and intact *(Upper Photo, right)*. And even though some of the white paint scraped off the blade, the titanium coating hadn't worn off. (For more information on Lenox blades, call 800-628-8810 or visit LenoxSaw.com.)

As for the standard blade, the dull, broken, and missing teeth speak for themselves *(Lower Photo, right)*.

Smooth Cuts — In addition to a durable cutting edge, I also found that the titanium-coated bits and blades produced a smoother, burn-free cut than uncoated ones. That's because titanium reduces friction better than most metals, so the heat build-up that causes burning isn't a problem.

This was especially apparent when using the titanium-coated miter saw and table saw blades, drill bits, and router bits. (For detailed test results on these cutters, turn to page 40.)

The Bottom Line — As you'd expect, the benefits of titanium come at a cost. Not as much as you might expect, though. Plan to spend a few dollars more for titanium-coated bits and blades than for uncoated ones.



▲ After cutting through a nail-embedded board, the "Gold" titanium-coated Lenox blade *(top)* was still usable. The uncoated blade *(bottom)* was ruined.

SAW BLADES FOR SMOOTH CUTS

Protective coatings on saw blades are nothing new. With its new titanium-coated blades, though, Ridgid has taken the idea a step further.

We tested the full line of these carbide-tipped blades, which includes 7¼", 10", and 12" blades. The 10" and 12" "Ultimate Polished Finish" blades were the most impressive. Using the table saw blades, we made crisp, clean crosscuts in hardwood plywood and melamine with absolutely no chipout. The miter saw blades produced equally smooth cuts in intricate moldings *(Photo, right)*. The blades are available at Home Depot (HomeDepot.com).

▲ Ridgid's new 12" blade combines a titanium coating with 100 teeth for super-smooth miter cuts.

COOL-RUNNING DRILL BITS

Drill bits were the first industrial tool to get a titanium coating, and now the sheer number of titanium-coated drill bits boggles the mind. We're talking spade bits, Forstner bits, countersinks, and even hole saws, to name a few.

To test these bits, we decided to try out a set of large titanium-coated saw-tooth bits *(Photo, below)*. After drilling dozens of large counterbores in plywood *(Photo, left)*, the friction-reducing properties of titanium became evident — not a single burn mark like you sometimes get with uncoated bits. All in all, that's a good testament to the cooler running, titanium-coated bits.

A set of 16 saw-tooth drill bits is available through Woodworker's Supply for about $70. (Call 800-645-9292 or visit Woodworker.com.)

STAY-SHARP ROUTER BITS

With so many other titanium-coated cutting tools, it was just a matter of time before we started to see the coating applied to router bits as well. And cutting tool manufacturer Vermont American was one of the first to deliver with this set of router bits *(Photo, above)*.

These bits are made of high-speed steel with a titanium coating. (There's no carbide on the cutting edges.) Now, high-speed steel holds a keener edge than carbide, but the downside is it doesn't *stay* sharp for long. The titanium coating makes them stay sharp longer.

Of course, you can't expect these bits to stay sharp as long as those with carbide-tipped cutting edges. Still, they're priced much lower than carbide. For more info, go to VermontAmerican.com.

TITANIUM-COATED

UNCOATED

HARD-DRIVING BITS

A power driver bit is hardly the most exciting tool, but a titanium coating sure helps. These new driver bits from Bosch are a good example. We tested them by driving woodscrews into a thick chunk of oak with a coated and uncoated driver bit.

The results of our informal test are shown at left. The titanium-coated bit from Bosch drove the screw all the way into the wood without stripping out the head of the screw or marring the bit *(Upper Photo)*. The uncoated bit mangled the screwhead long before it was completely seated.

Here, we attributed these great results to the hard, durable titanium coating that protects the driver bit from wear. The bit also has a rough surface texture, so it "grabs" the screwhead better.

For more information, call 877-267-2499 or visit BoschTools.com.

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What made the difference? An exclusive LENOX® combination of advanced technologies that includes a cutting edge coated with titanium-nitride, shatter-resistant bi-metal construction, and optimized blade geometry—all made in the U.S.A.

"We'd be eating up a ton more blades if we hadn't switched," said George White, project manager and superintendent for LVI Services.

You don't need a huge job to appreciate the performance of longer-lasting blades. They're available in multiple types for most any project—including cutting sheet metal and heavier metals, wood and wood with nails.

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"We'd be eating up a ton more blades if we hadn't switched."

George White
project manager and superintendent, LVI Services

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Product Information Number 294


GRILL IT RIGHT!

Contemporary Craftsman KITCHEN REMODEL

She's contemporary. He prefers the Craftsman style. He likes to grill. She'd rather bake. They both want a new kitchen that will suit their different tastes while also meeting their common needs. Needs like feeding a family of four and occasionally entertaining friends.

Can one kitchen possibly fill the bill? This one did.

It has all the standard fare of any well-appointed kitchen including a conventional oven, cooktop, and microwave oven. But it's the details of this kitchen that truly reflect the divergent tastes of the homeowners.

He got his grill built right into the kitchen island, which also serves nicely as a gathering point for dinner guests. Her contemporary sensibilities are completely satisfied with a stylish stainless-steel sink, trendy accessories, and fashionable fixtures and hardware. As for his Craftsman affection, the styling of the cabinets and butcher block countertops more than do the trick.

In the end, they wound up with a kitchen that they can both live with and live in. And over the next two issues, we'll show you how to recreate this contemporary Craftsman kitchen in your own home.

We begin with the furniture-style island, including how to build the base cabinet and all the decorative accents. Then we top it off with a laminate countertop that you make yourself. We also highlight some of the best kitchen accessories that will add organization and functionality to any kitchen.

In the next issue, we'll cover the matching cabinets, as well as the butcher block countertops and installation of an undermount stainless-steel sink.

KITCHEN ISLAND

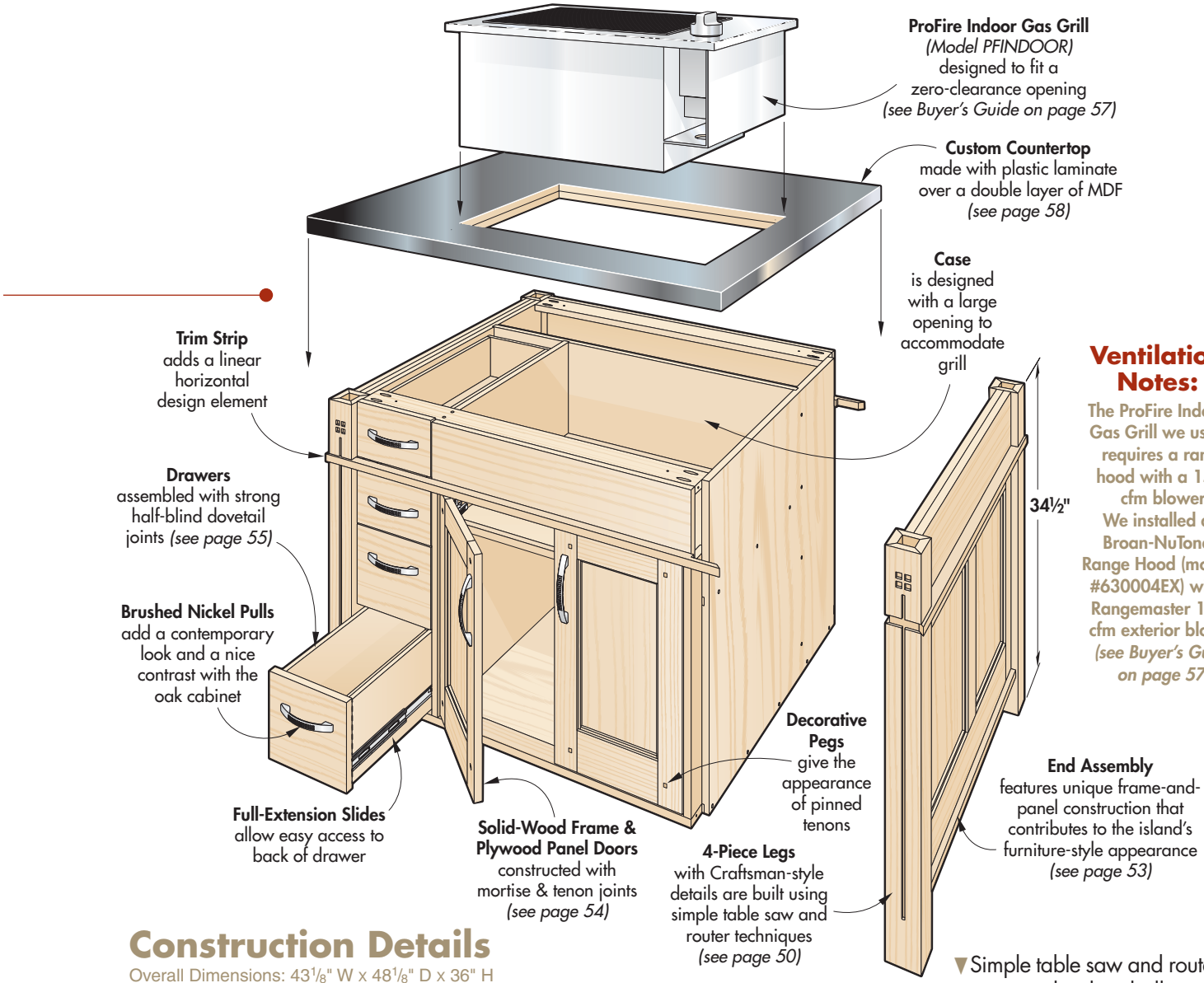
start entertaining and get grilling —*all indoors!*

As we took an inventory of the "must-haves" for our kitchen island, we didn't get any further than the first item on the list — an indoor grill — before we knew for certain that no ordinary island would do *(Photo, left)*.

Mounting a gas grill in what is essentially a cabinet is no small thing, after all. But we didn't want the island to be reduced to nothing more than a place to house this unique kitchen appliance. We also wanted to include additional storage for everything from grilling utensils to our favorite cookbooks. And, of course, the island had to look like it belonged in a kitchen.

Fitting the Grill — As you look over the *Construction Details* on the next page, you'll see that this kitchen island is a bit unorthodox in the way it's compartmentalized. By dividing the island in this manner, we were able to create a separate compartment for the grill and still make use of the rest of the cabinet for a bank of drawers, some undercounter storage, and even a bookshelf on the backside of the island.

Of course, the design of the island depends on using this particular grill. Specifically this model from ProFire *(Buyer's Guide, page 57)* allows for a "zero-clearance" installation, which



Ventilation Notes:

The ProFire Indoor Gas Grill we used requires a range hood with a 1500 cfm blower. We installed a Broan-NuTone Range Hood (model #630004EX) with a Rangemaster 1500 cfm exterior blower *(see Buyer's Guide on page 57)*

Construction Details

Overall Dimensions: 43⅛" W x 48⅛" D x 36" H

means we didn't need to be concerned with how close the case parts are to the grill. That allowed us to really maximize the space.

Furniture Styling — Technical issues aside, another priority for this island was to create a furniture-like appearance that could be carried to the other kitchen cabinets. To that end, we treated the island to a set of Craftsman-inspired legs that would look just as good on a living room piece as they do here *(Photo, right)*.

The island is further embellished with frame-and-panel end assemblies and applied molding. The cabinet doors are built using genuine mortise-and-tenon joinery and are adorned with wood pegs. And, of course, the drawers are dovetailed together, so they're on par with all the other fine details of the island.

Wood selection was another important choice. We carefully selected quartersawn red oak for the solid-wood pieces and looked for the straightest grain we could find when shopping for plywood.

Naturally, not just any countertop would do. So we built our own. We used time-tested plastic laminate over an MDF substrate to create the perfect countertop for this island.

Over the next few pages, we'll walk you through the construction of this kitchen showpiece. From the basic case, to the decorative legs, and all the way through the custom countertop, the step-by-step instructions begin on the next page.

▼Simple table saw and router techniques make the shallow square recesses, decorative groove, and wrap-around trim easy to create.

"nearly standard" case

CONSTRUCTION

Beneath the decorative legs, applied molding, and frame-and-panel end assemblies, this kitchen island is a *nearly* standard plywood case *(Case Assembly)*. I say *nearly* standard because there are a few unusual details. We'll come to those soon enough, but first let's look at the the basic case.

The case consists of a bottom (A), two sides (B,C), a back (D), a vertical divider (E), and a fixed shelf (F). All of these parts are cut from 3/4" plywood and joined with dadoes, rabbets, grooves, and woodscrews.

The plywood edges get covered with solid-wood edging, and that's when those unusual details I mentioned start showing up.

Case Panels — To get started, cut the panels (A through F) to size. Now cut a notch on the top corner of the vertical divider *(Notch Detail, page 49)*. This notch will accept a stiffener a little later. Simply lay out the notch, and cut it with a handsaw.

The next step is cutting the joinery, and this is where you find the first of those unusual details.

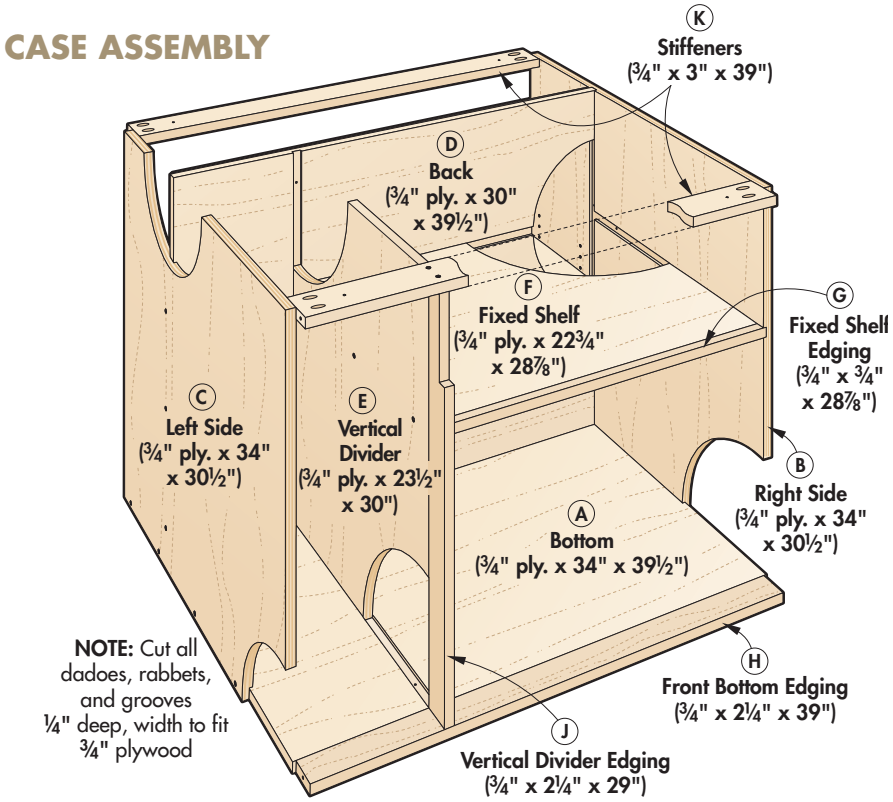
Notice that the case sides have different letter designations (B,C) even though they have identical dimensions. What differentiates these parts is the joinery. The right side panel (B) has a dado for the fixed shelf, and the left side (C) does not. It's an important detail that's easy to overlook.

With that in mind, you can get started making the joinery. The size of the plywood panels, and the fact that some of these joints are "stopped," pretty much dictates that you use a handheld router and a straight bit to make the joints. Clamp a straightedge to the workpiece to guide the base of the router, and use some wood scraps as stop blocks when routing the stopped dadoes.

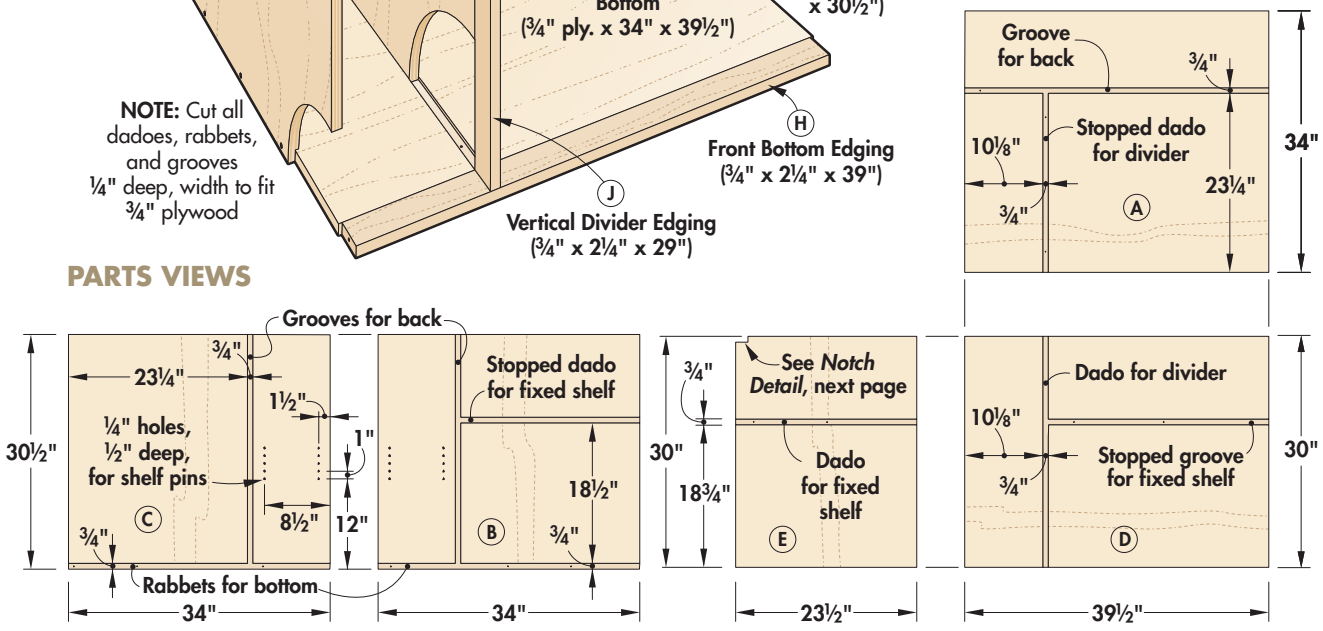
Hardwood Edging — With the panels cut to size and the joinery completed, you're ready to add hardwood edging. And once again we encounter some of those "details."

The four pieces we're dealing with here are the fixed shelf edging (G), the front and back bottom edging (H, I), and the vertical divider edging (J). Of these, only the fixed shelf edging is what you might think of as typical. It's cut to match the shelf in both thickness and width and then applied with glue and clamps.

CASE ASSEMBLY



PARTS VIEWS



ASSEMBLING THE CASE

The bottom edging pieces are a little more involved. First of all, notice in the *Edging Detail*, right, that these pieces stop 1/4" shy of the panel edge. This is because of the way the legs interlock with this panel. A second important point is that these edging pieces are *not* the same thickness. The edging on the *back* edge of the panel is *thicker* so it will match an adjustable shelf that you'll make later on.

The final detail to be aware of with these edging pieces is a pocket hole that must be drilled in each end. This will be used to attach the legs when the time comes.

As for the vertical divider edging, what makes this part unusual is a notch in the upper front corner *(Notch Detail)*. This accommodates an apron that gets attached later.

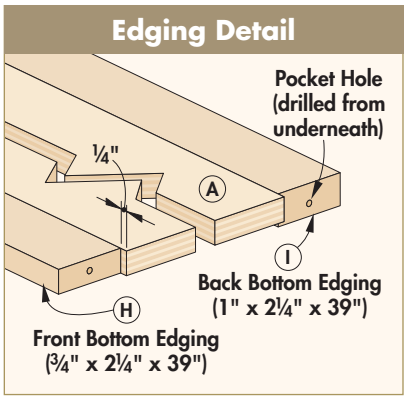
Assemble the Case — The *Illustrations* at right should make the assembly sequence clear. But there are a couple of points to take note of.

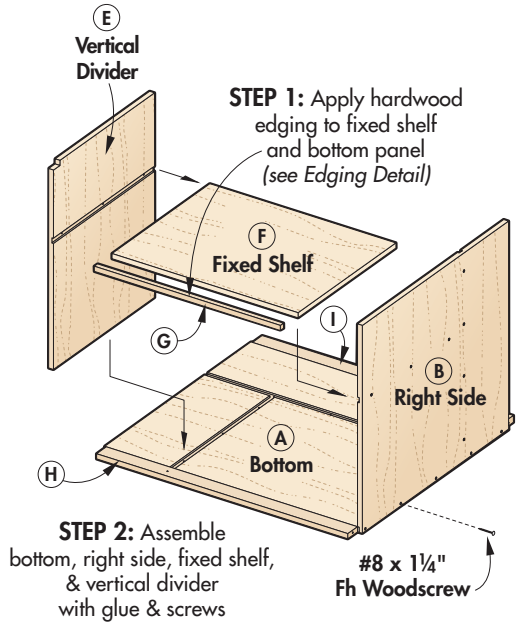
First, the vertical divider edging presents a bit of a clamping challenge. Fortunately, we worked out a simple tip for applying this piece *(page 22)*.

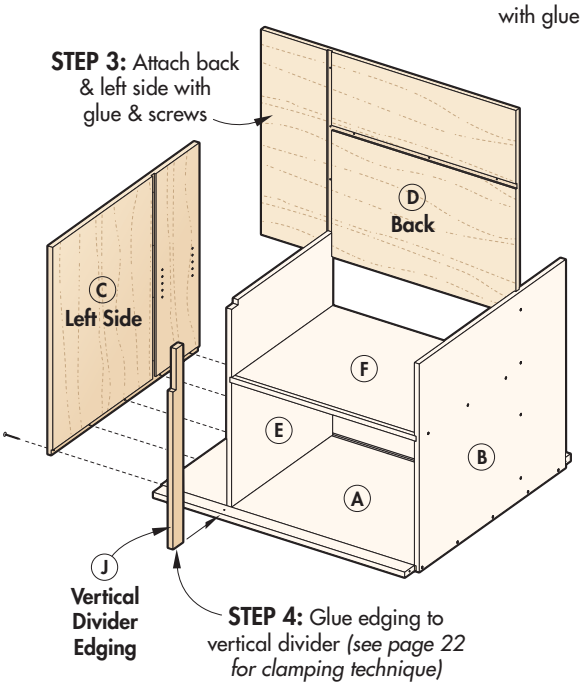
Next are the hardwood stiffeners (K). These need to be pre-drilled with two pocket holes *(Stiffener Detail, below)*. One hole is used to connect the stiffener to the case. The other helps secure the legs to the assembly later.

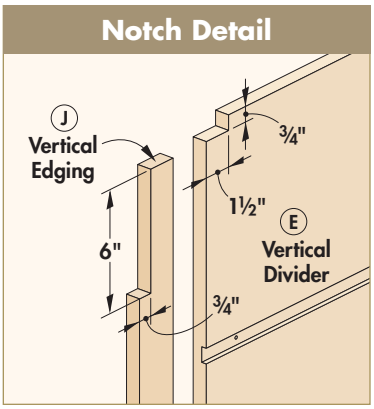
Then there's a 1/4" plywood finish panel (L) that's glued to the back of the case. This panel not only hides the screws in the back, it also let us select an attractive grain pattern for this highly visible area of the island. However, clamping this panel would be tricky at best, so we used construction adhesive to create a strong bond. There are some helpful tips for this process on page 22.

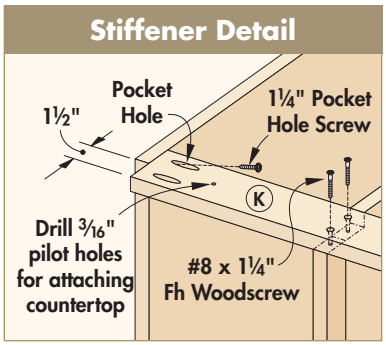
The final piece of the case is an adjustable shelf (M). The shelf is 1" thick, so it can support heavy appliances or books without sagging. Simply cut the shelf to size from solid wood, and set it aside for now.

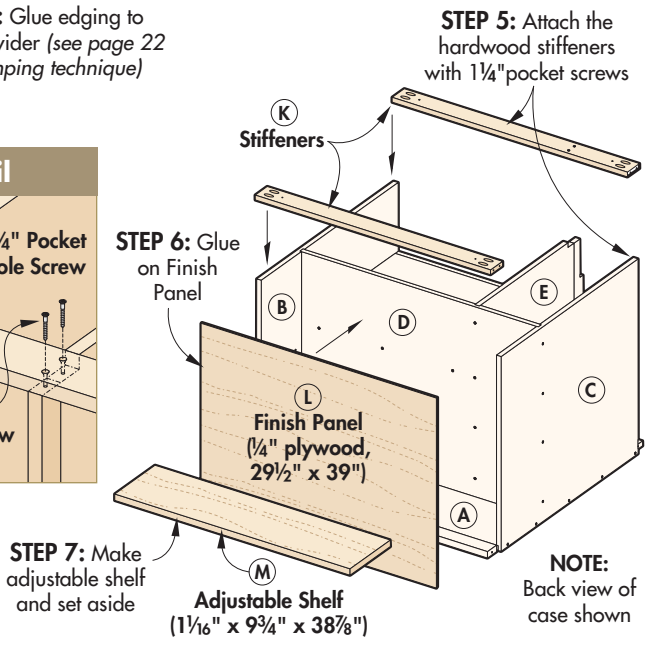












Craftsman-inspired legs in
FOUR EASY PIECES

The Craftsman-inspired, furniture-style legs are clearly the most striking feature of this kitchen island. That's due to the square recesses and long, decorative groove that adorn one face of each leg.

But just as interesting as the look of these details is the technique used to create them. They're not hand-cut, as it may appear, but rather made using a combination of table saw and router table techniques.

That's possible because each leg is actually made from four boards, rather than a single, thick blank. By ripping one of these boards into thin strips, it's simple to cut or rout the decorative details. Then the strips get glued back together to create the finished face.

But that's only one reason to build legs in this manner. It also creates a much more stable leg than a single, thick board would — provided you could even find stock large enough to make these legs. And in the end, you actually wind up using less material this way than if you tried to work with a solid piece of hardwood.

So now that we know the advantages of four-piece legs, let's get started making them. Just to clarify, each of the four legs is made up of one decorative face (N) and three plain faces (O) *(see Leg Assembly, below)*. The decorative faces are where we are going to get started.

Decorative Faces — As I mentioned, each decorative face will be ripped into strips (five to be exact), so we can cut and rout the decorative elements in those individual strips.

That means we need to account for the waste that's lost when we rip each blank apart. So to get started, you'll need four face blanks that are 3½"-wide. These should also be extra long (36" or so). They'll be cut to finished length after the leg is assembled.

When you have the four blanks ready to go, you need to mark them in such a way that you'll easily be able to reassemble the strips correctly. If the strips get mixed up during this process, you could wind up with mismatched grain. An easy way to prevent that is to mark one end of each blank with a different color of marker.

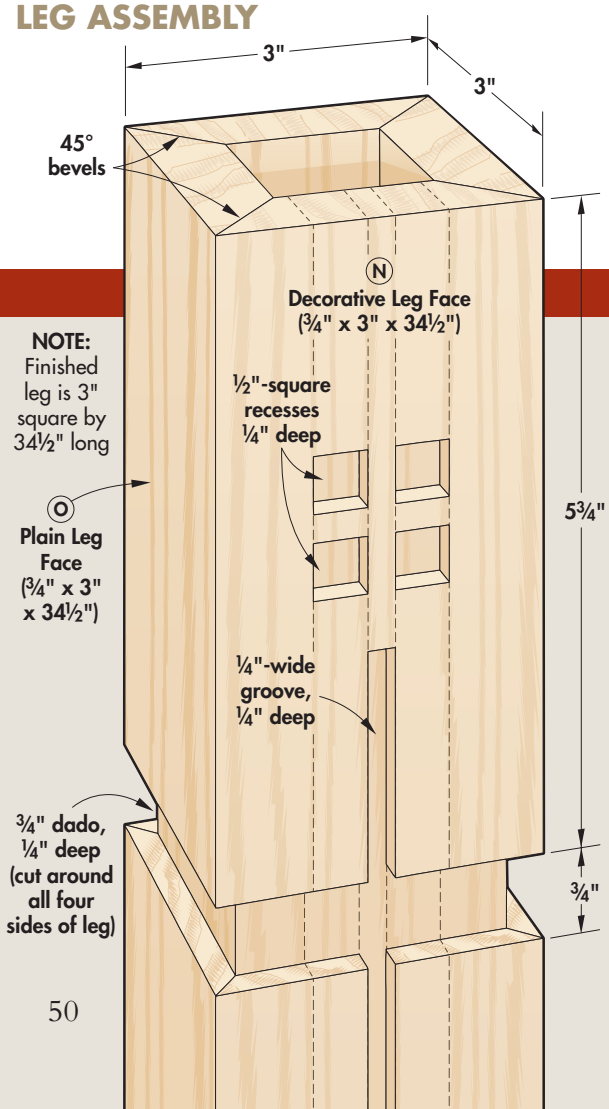
Now you're ready to rip the blanks into strips *(Illustrations, page 51)*. This requires a couple different table saw setups. First, position the rip fence 7/8" from the blade. Cut the first strip from the blank, then turn the board end for end, and rip a strip from the opposite edge. Repeat this process for each blank.

Now, reposition the fence to cut a ½"-wide strip, and use the same process as before to cut the two inner strips. The final cut you make also forms the ¼"-wide center strip.

Take a moment now and make sure all the strips are grouped with their matching parts before moving on to the next step.

Dadoing the Details — The four square recesses that adorn the leg faces are created by cutting dadoes in the ½"-wide inner strips. Use a miter

LEG ASSEMBLY



ASSEMBLING THE FOUR-PIECE LEGS

The four-piece legs are assembled with miter joints to prevent the edge grain from showing. It's important when assembling the legs that all four faces are the same width. Ideally, the decorative faces you've already made are 3" wide. If not, simply rip the three plain faces to match.

Once you've ensured that all the leg faces are the same width, the next step is to rip a bevel on both edges of each face in preparation for assembly.

Start by tilting the saw blade to 45°. Then position the fence so you're just cutting away a wedge from the edge of the board *without* making the face any narrower *(Fig. 1)*. You may want to perfect this setup on a scrap piece before moving on to the actual leg parts.

To assemble the legs, lay the faces flat on pieces of tape. Spread glue on the mating edges. Then "roll" the leg faces together into a single post, and secure them with the tape *(Fig. 2)*.

After the glue dries, the next step is to trim the legs to length (34½"). Measure down from the top of the leg to establish the cut line, then trim them, as shown in *Figure 3*.

Finally, mount a dado blade in your table saw to make the final cut in the legs. This dado will accept a trim strip that gets attached later in the island construction. Cut the dado all the way around the leg using the rip fence as a stop block *(Fig. 4)*.

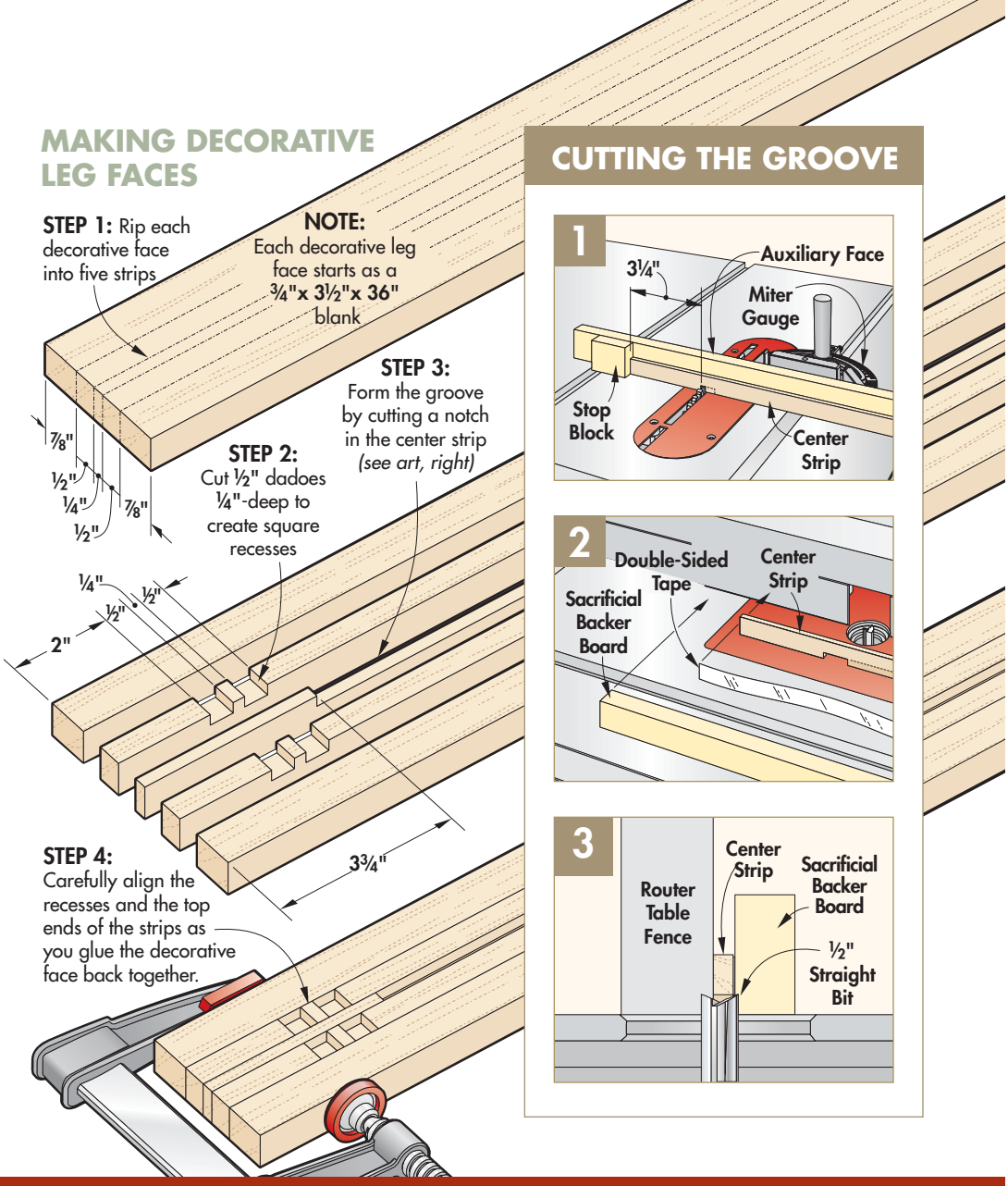
gauge and stop block to ensure consistent results when making these cuts.

Routing the Groove — Next comes the decorative groove. It's formed by cutting a long notch in the center strip. Most of this material will be removed on the router table, but it's best to first establish the shoulders of the notch on the table saw *(Fig. 1)*. Once that's done, remove the stop block and make several more passes to widen the cuts to about $^1/_2$". This will make it easier to start the cut on the router table.

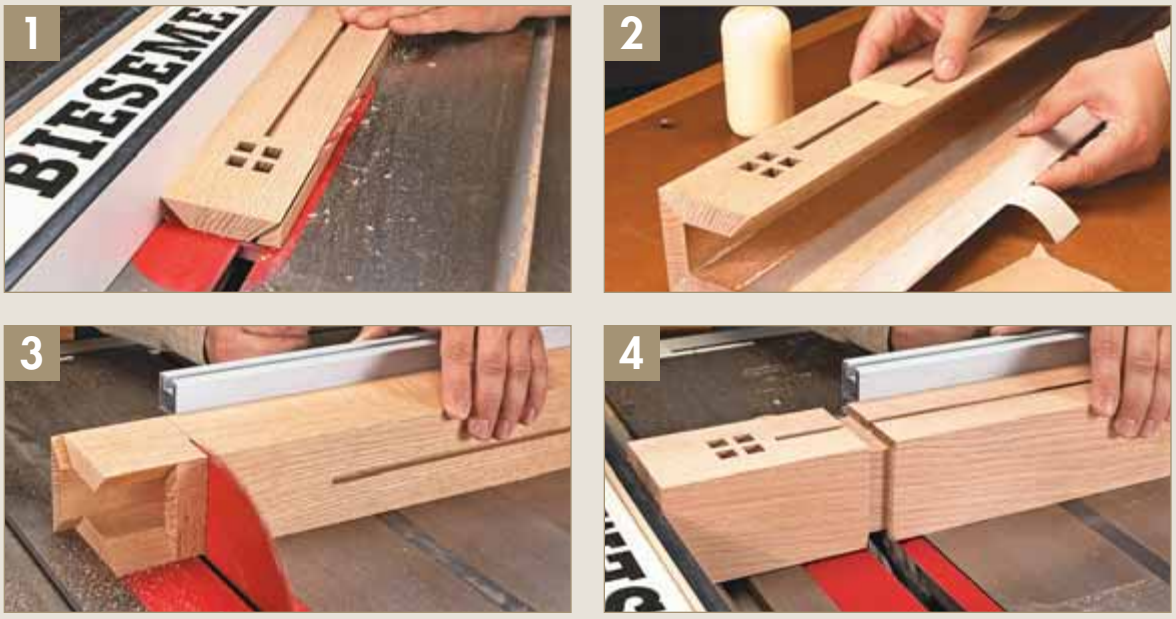
To do that, mount a straight bit in the router table. Then tape the strip to a sacrificial backer board for support and to give yourself a safe handhold *(Fig. 2)*. Now make a sideways plunge cut into the bit to remove the remaining waste material *(Fig. 3)*.

Reassembling the Face — Now reassemble the strips into a single face. First, ensure that the strips are back in their original group. Then spread glue on the mating edges and align the recesses as you clamp the assembly. After the glue dries, assemble each leg, as shown below.

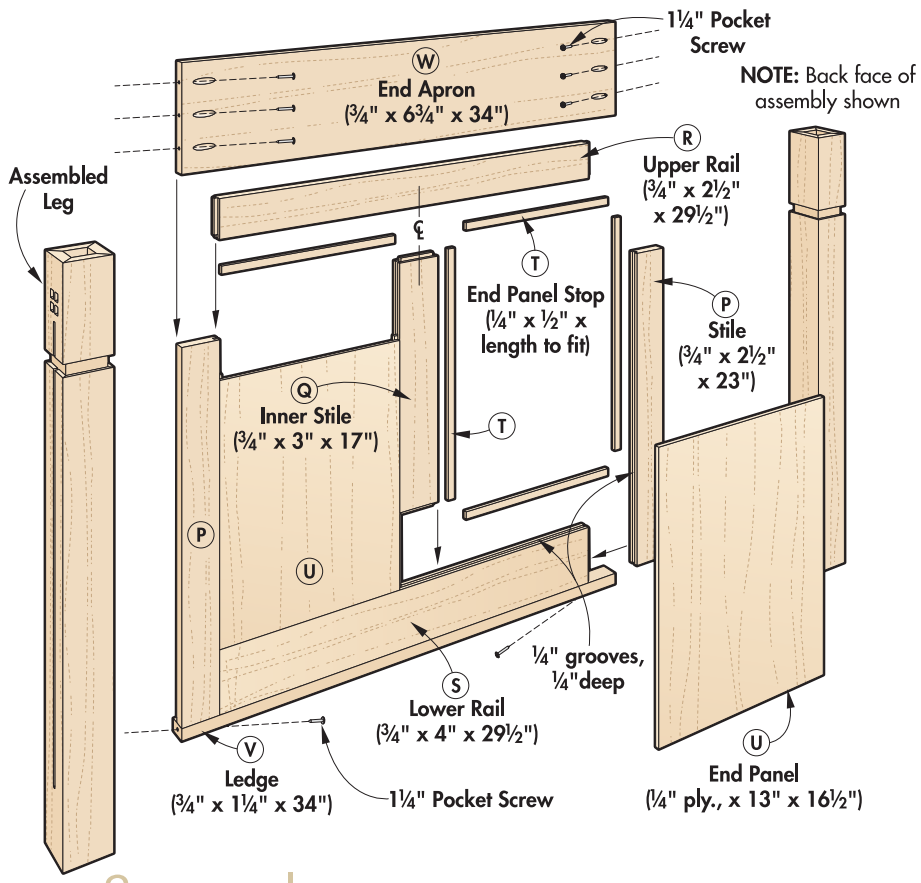
MAKING DECORATIVE LEG FACES

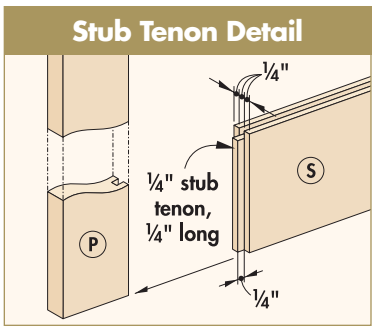


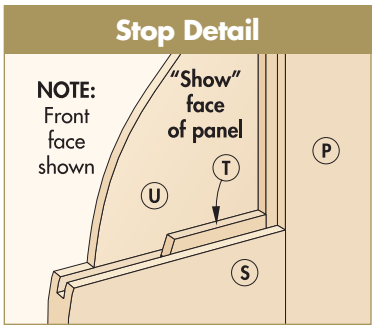
CUTTING THE GROOVE

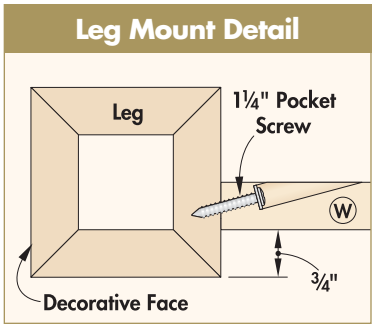


END ASSEMBLY VIEW









frame & panel

END ASSEMBLIES

The frame-and-panel end assemblies are just as important to the furniture-like appearance of this island as the legs are. And, just like the legs, they feature some unusual construction.

The frames themselves are fairly standard — they're solid-wood pieces that are assembled with stub-tenon-and-groove joinery *(End Assembly View, above)*. What makes these assemblies unique is that the groove doesn't house the panel, as you might expect. Rather, it accepts a panel stop, which in turn holds the panel. This simple design twist adds one more layer of detail, or depth, to the assembly to make it look more like fine furniture and less like another ordinary cabinet.

Frame First — To get started on the assembly, cut the stiles (P), inner stile (Q), and rails (R,S) from ¾"-thick hardwood.

Next, cut a groove in the inside edge of each of the frame pieces (in both edges of the center stile) to accept the panel stop that will support the ¼" plywood panels. Then, cut stub tenons on the ends of the rails and the center stile to fit into these grooves *(Stub Tenon Detail, above)*.

Now it's time to assemble the frame. Be sure to make alignment marks to position the center stile as you glue and clamp the frame together.

Panel Stops — With the frames assembled, you're ready to add the panel stops (T). Besides providing a way to attach the panels, the stops serve another purpose. Notice how they add extra depth and dimension to the end assemblies in the *Photo* on page 46. To make the stops, plane some stock to thickness to fit snugly into the grooves. Then rip the stops to width, cut them to length, and glue them into the grooves *(Stop Detail)*.

End Panels — Next, measure the opening in the frame, and cut the plywood end panels (U) to fit. Before gluing the panels into the frames, take a minute to mask the panel with tape, so any excess glue winds up on the tape *(Photo, right)*. By the way, be sure you're masking the good, or "show," face of the panel — ¼" plywood only has one such face.

Ledge and Apron — Now it's time to add a decorative ledge (V) and end apron (W) to the assembly. Cut these pieces to size from ¾"-thick hardwood and then drill pocket holes in them as shown in the *Assembly View*. These pocket holes will be used to join the end assembly to the legs. Once these holes are drilled, glue the ledge and apron to the frame-and-panel assembly.

Assembly — Connecting the completed assemblies and legs can be challenging because you have to manage fairly large units *and* keep them aligned. And speaking of alignment, note how the end assemblies are set back ¾" from the face of the leg *(Leg Mount Detail)*. This is yet another detail that helps create a furniture-style look.

To assemble these pieces, start by placing the legs (outside face down) on a large, flat surface. Then position the end assembly (also face down) between the legs. Support the assembly with some 3/4" scrap pieces. This will give you the perfect setback from the face of the legs to the face of the end assembly.

Align the parts so the tops of the legs are flush with the top of the end assembly. Install the pocket screws to secure the whole works.

Add the Spacers — Before the end assemblies are ready to be attached to the case, you need to add a couple spacers (X). As the name implies, they "fill" the space between the end assemblies and the case, and also create a large glue surface for attaching the end assemblies to the case *(Spacer Detail)*. Cut these pieces to fit between the legs, and glue and screw them to the end assemblies.

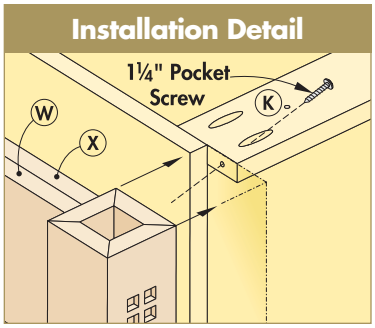
Now you can attach the end assemblies to the case. You'll need to "jack up" the case, so it's flush at the top with the end assemblies. Spread glue on the spacers, and then clamp them to the end assemblies. Next, drive pocket screws from the stiffeners and into the end assemblies *(Installation Detail)*.

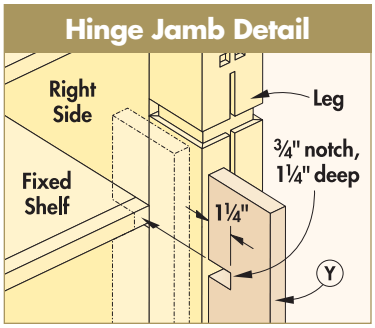
Applied Details — There are just a few details left to complete the case. First is a hinge jamb (Y). This piece ensures the proper clearance between the door and side of the case, so the hinges will be able to swing fully open. Notice that this piece has a notch cut in it to go around the fixed shelf *(see the Hinge Jamb Detail, below)*.

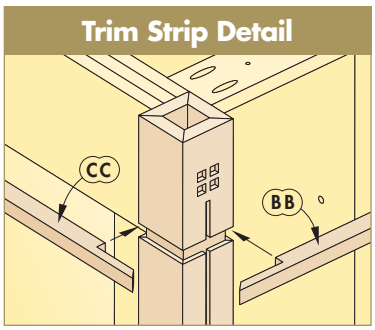
Next are the front and back apron pieces (Z, AA). These are simply cut to fit, and then they are pocket-screwed to the case sides.

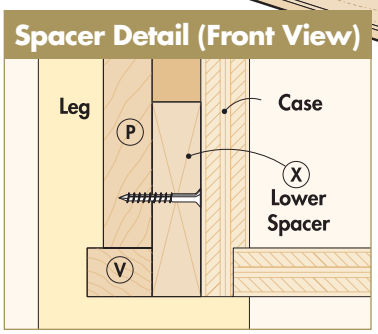
Finally, add the decorative trim strips (BB, CC) that wrap around the case. First, cut a notch in both ends of each trim strip to fit into the dadoes in the legs. Then miter the pieces to length, and glue and clamp them in place.

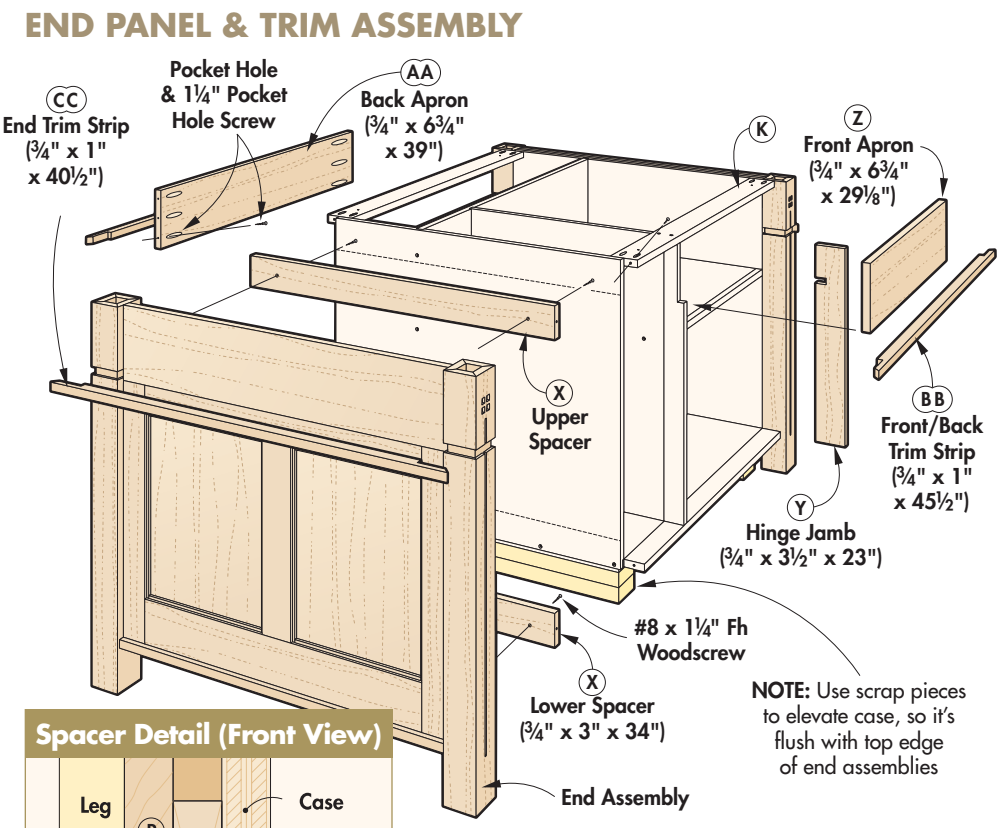
◄ To protect the panel from glue squeeze-out, run masking tape 1/4" in from the edges of the panel before gluing it in place.

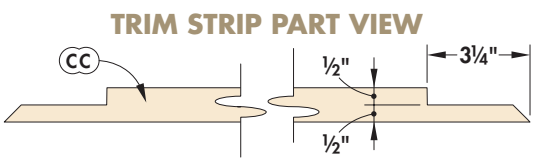




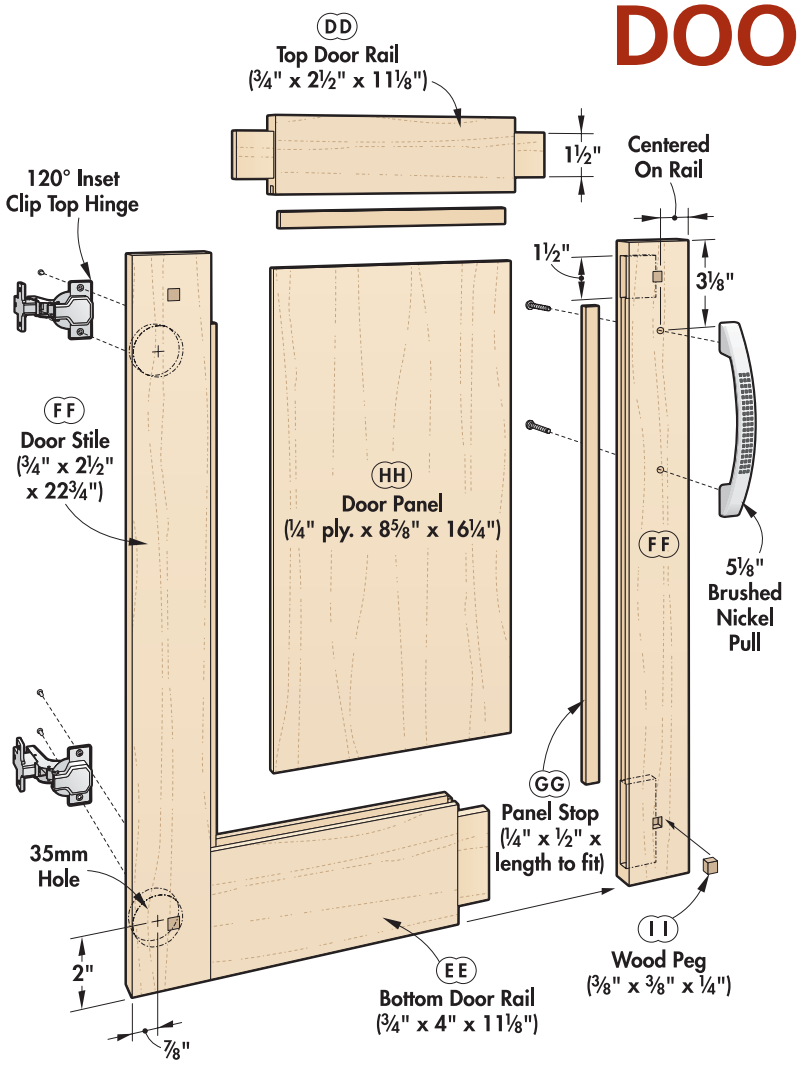








assembling the DOORS & DRAWERS



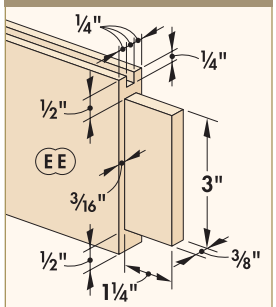
These doors share the frame-and-panel look of the end assemblies and require some of the same techniques *(Door Construction)*. The difference in the doors, however, is joinery. Here, the rails and stiles are joined with mortise-and-tenon joints for extra strength.

Door Frames — Get started building the doors by cutting the rails (DD, EE) and stiles (FF) to size.

Now cut the tenons and mortises in these pieces. To cut the mortises, either use a mortising machine, or drill out the rough shape with a Forstner bit, and then chisel them to final size *(Mortise Detail)*. The tenons are easy to make with a dado blade on the table saw *(Tenon Detail)*.

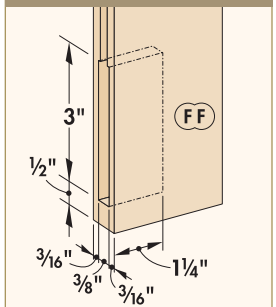
Next, cut the groove in the frame pieces for the panel stop. You'll want to do this on the router table, so you can stop the grooves in the mortises. Use stop blocks on the router table fence to start and stop this cut. Then assemble the door frames using glue and clamps.

Lower Tenon Detail



NOTE: Upper tenon is identical, except it is 1½" wide

Lower Mortise Detail

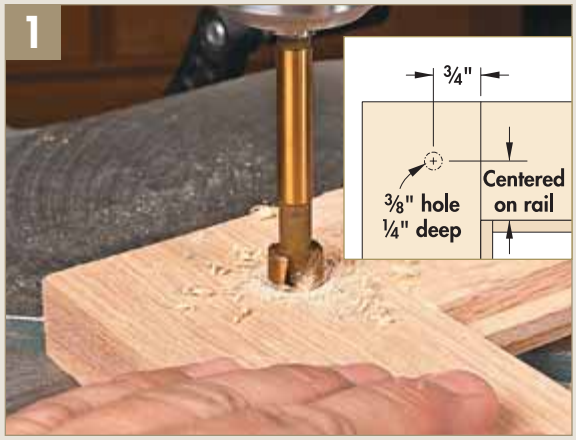


NOTE: Upper mortise is identical, except it is 1½" long

MAKING THE SQUARE PEGS

There was a time when wood pegs were used to add even more strength to a mortise-and-tenon joint. With today's adhesives, that extra step isn't really necessary. Nonetheless, the pegs still make a nice decorative element. But since they are only decorative, there's no need to extend the peg all the way through the workpiece. Rather, by drilling a shallow hole and then chiseling it square, you can create a mortise to accept a short peg that looks like the real thing, but requires a lot less work.

And by having the end grain of the peg exposed, it will contrast with the frame pieces when you apply a finish. The *Photo* sequence will walk you through the rest of the process.



▲To add the decorative wood pegs, start by using a 3/8" Forstner bit mounted in the drill press to drill a 1/4"-deep hole in the door stile.

Panel Stops — The plywood panels in these doors, just like the panels in the end assemblies, are held in the frames with panel stops (GG). Just as before, plane these to thickness and cut them to fit. Then glue and clamp them into the grooves in the door frame.

Now measure the opening in each door, and cut a plywood panel (HH) to size. Once again, use masking tape to keep excess glue off the plywood panel.

Decorative Pegs — To add a bit more Craftsman flavor, these doors are accented with decorative wood pegs (II) at the corners. The four-step process for this is shown in the *Sidebar* below.

Hardware — The completed doors are now ready for hardware, which amounts to a couple of cup hinges and a door pull. Drill and mount those pieces according to the dimensions in the *Door Construction Illustration* on page 54.

Dovetailed Drawers — Now you're ready to build the drawers *(Drawer Construction Illustration)*. These are standard dovetailed boxes with a false front.

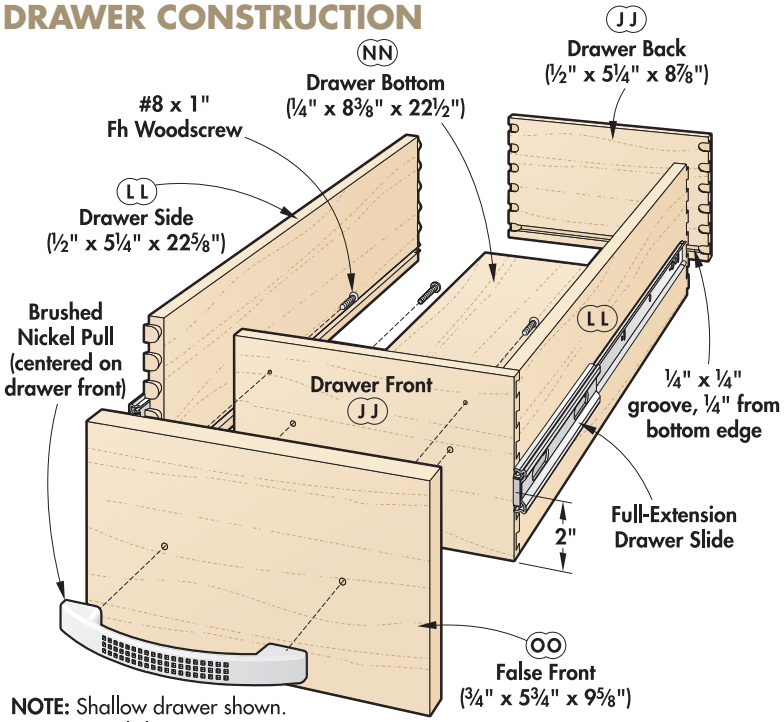
Start by cutting the drawer fronts, backs (JJ, KK), and sides (LL, MM) to size. Then lay out the dovetails according to the dimensions in the *Dovetail Detail*. Cut the dovetails with a handheld router and a half-blind dovetail jig. (For more information on routing half-blind dovetails, see the article in the *Online Extras* section at WorkbenchMagazine.com.)

After routing the dovetails, cut a groove in the drawer box pieces to accept the plywood bottom. Now cut the bottom (NN) to fit, and glue and clamp the drawer box together.

Next, cut the false fronts (OO, PP) to size, and then screw them to the boxes with the bottom edges flush.

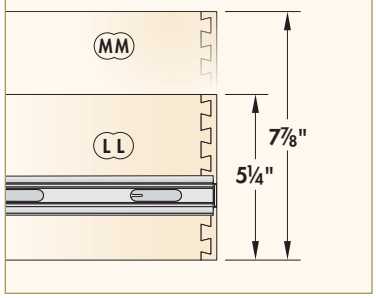
Now drill each drawer for the pulls, and install the hardware. Finally, install the drawer pulls, and mount the drawers in the island with full-extension drawer glides.

DRAWER CONSTRUCTION

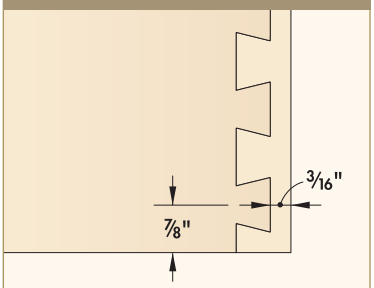


NOTE: Shallow drawer shown. See materials list on page 57 for dimensions of large drawers

Drawer Detail



Dovetail Detail

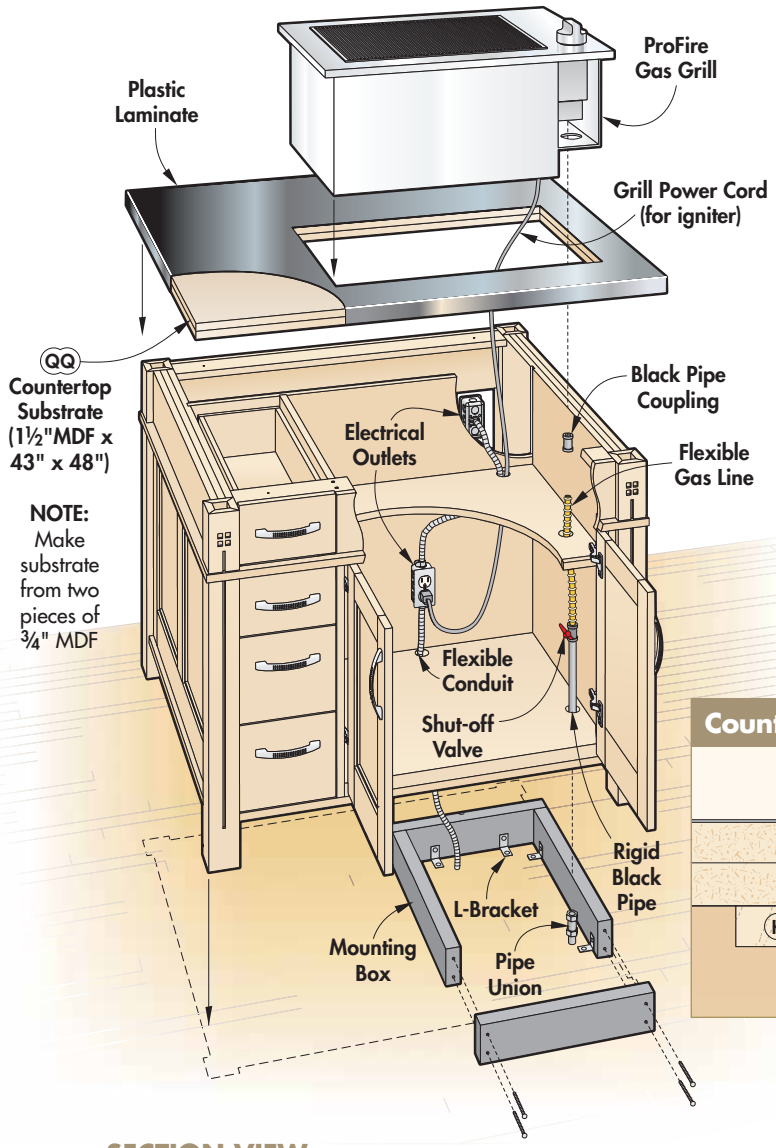


▲ Next, use a chisel, and cut across the grain to establish the first edge of the mortise. By cutting *across* the grain first, you will prevent the the wood from splitting during the next few cuts.

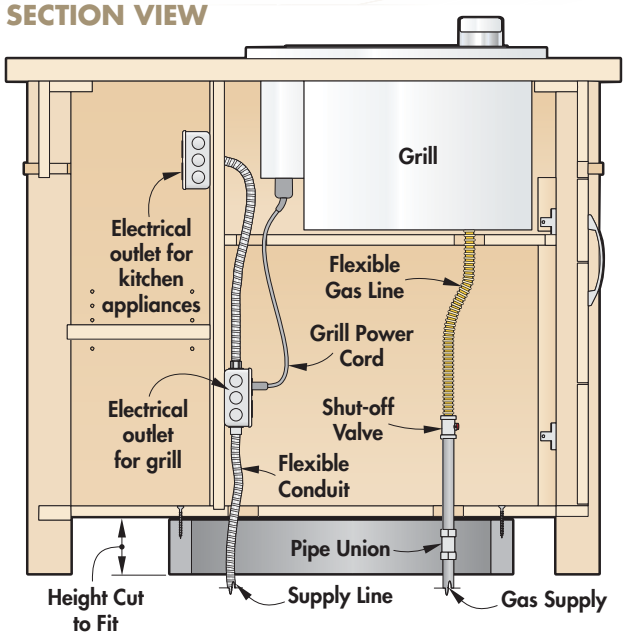
▲ Now, cut *with* the grain to square off the remaining edges of the mortise. The intersecting edges of the mortise have already been established, so this part of the cut will go smoothly.

▲ Finish up by gluing a 3/8" x 3/8" peg into the mortise. Leave the peg slightly proud, and then sand it flush with the surface after the glue dries.

COUNTERTOP ASSEMBLY



SECTION VIEW



island installation & COUNTERTOP

Installing the nearly complete kitchen island is more than just setting it in place. The island will also have to be wired with electricity and plumbed with gas.

The power line will feed two outlets: one inside the compartment for the grill igniter to plug into and another that's accessible from the outside of the island for plugging in appliances *(see Illustrations at left)*. The gas line needs to include a shut-off valve inside the compartment. You'll want to have easy access to this shut-off valve, so it's important to keep the gas line toward the front of the island.

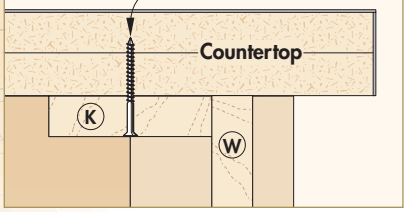
Both lines should be fed from underneath the floor and into the compartment through access holes drilled in the bottom of the case. This will leave the lines partially exposed where they span between the floor and the bottom of the island, so you'll need to protect them.

A simple box with one removable side (in case you need to access the utilities) will serve nicely. The box consists of four boards ripped to width from 2x6 stock to fit under the island and then butted and screwed together. Use metal L-brackets to secure three sides of the box to the floor.

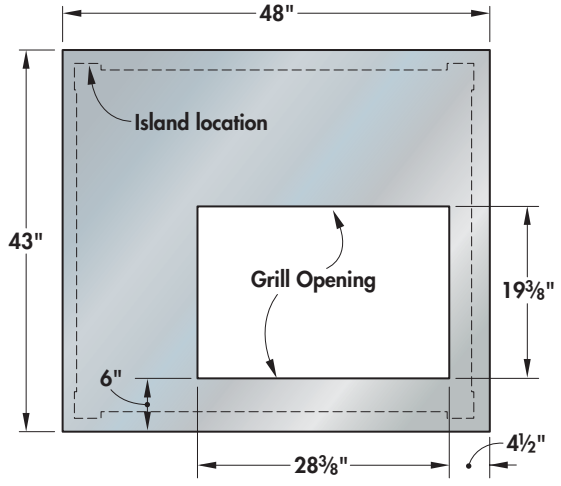
Once the utilities are taken care of and you've moved the island into position, drive screws through the case bottom and into three of the box sides (but not into the removable side).

Custom Countertop — Building a custom countertop for this island was an absolute necessity. There's no way we could find a pre-made version that would

Countertop Mounting Detail



COUNTERTOP (TOP VIEW)



KITCHEN BUYER'S GUIDE

ProFire Indoor Grill
Dvorson's Food Service
877-386-7766
Dvorsons.com

Range Hood
Broan NuTone
800-558-1711
Broan.com

Drawer/Door Pulls
Smedbo Cabinet Hardware
866-695-6627
MyKnobs.com

Cup Hinges
Blum
866-344-6437
BlumHinges.com

Drawer Slides
Blum
800-857-8721
CabinetParts.com

Plastic Laminate
Formica
800-367-6422
Formica.com

Faucet/Sink
Kohler
800-456-4537
Kohler.com

Countertop
John Boos
217-347-7701
JohnBoos.com

be large enough or provide the perfect complement to the look of the island.

The easy choice was to fabricate our own countertop using an MDF substrate and plastic laminate *(Countertop Assembly)*. The technique couldn't be much easier. One unexpected bonus is how affordable this material turned out to be compared to other popular countertop materials (about $5 a square foot for laminate versus as much as $90 a square foot for solid-surface material).

The fundamentals of building your own laminate countertop, and then cutting an opening for a sink, or in this case, a grill, are covered in the article on page 58.

There is one important detail in this version that differs just slightly, however.

In this case, the substrate is made of two full layers of MDF instead of one full layer on top and a series of cleats underneath. We wanted the extra strength that comes from two full layers of substrate to help support the weight of the grill.

Attaching the Countertop — After you've cut the opening for the grill, it's time to attach the countertop to the island. Position it on the island, and then check to ensure that it's sitting square and centered. Once you're satisfied with the position of the countertop, I recommend clamping it temporarily, so it doesn't shift while you're attaching it permanently.

As for attaching the countertop, you predrilled holes in the stiffeners as you were building the case, so you can simply drive woodscrews at those locations to secure the top.

All that's left is to install the grill. And the instructions that came with it are the best source as to how that's done.

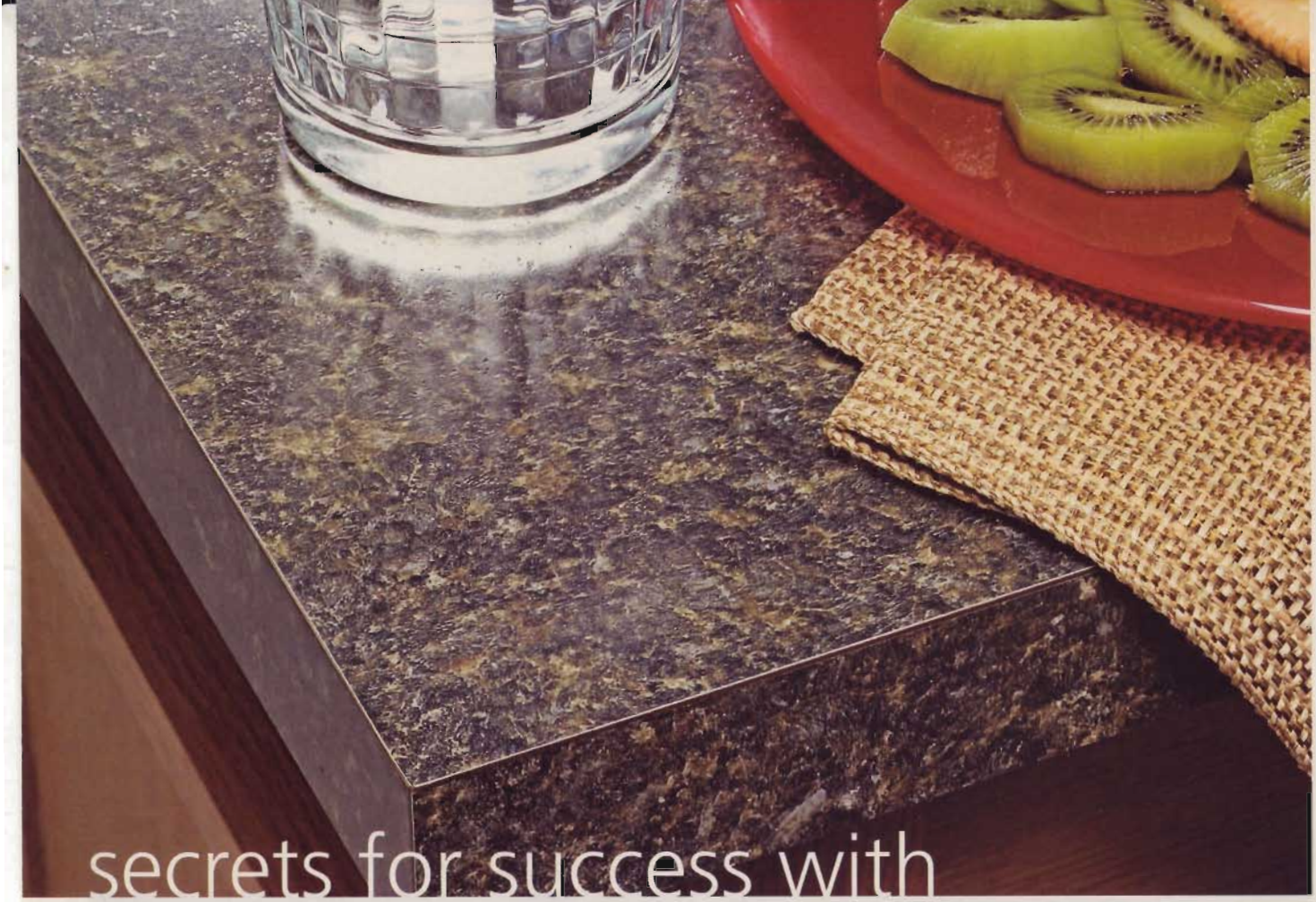
That completes your dream island and part one of this kitchen remodel. In the next issue, we'll detail the matching cabinets, an undermount sink, and butcher block countertops to complete the makeover.

MATERIALS & HARDWARE

	Part	Qty	T	W	L	Material
A	Case Bottom	1	¾"	34"	39½"	Oak Plywood
B	Right Side	1	¾"	34"	30½"	Oak Plywood
C	Left Side	1	¾"	34"	30½"	Oak Plywood
D	Back Panel	1	¾"	30"	39½"	Oak Plywood
E	Vertical Divider	1	¾"	23½"	30"	Oak Plywood
F	Fixed Shelf	1	¾"	22¾"	28⅞"	Oak Plywood
G	Fixed Shelf Edging	1	¾"	¾"	28⅞"	Oak
H	Front Bottom Edging	1	¾"	2¼"	39"	Oak
I	Back Bottom Edging	1	1"	2¼"	39"	Oak
J	Vertical Divider Edging	1	¾"	2¼"	29"	Oak
K	Stiffeners	2	¾"	3"	39"	Oak
L	Finish Panel	1	¼"	29½"	39"	Oak Plywood
M	Adjustable Shelf	1	1"	9¾"	38⅞"	Oak
N	Decorative Leg Faces	4	¾"	3"	34½"	Oak
O	Plain Leg Faces	12	¾"	3"	34½"	Oak
P	Stiles	4	¾"	2½"	23"	Oak
Q	Inner Stiles	2	¾"	3"	17"	Oak
R	Upper Rails	2	¾"	2½"	29½"	Oak
S	Lower Rails	2	¾"	4"	29½"	Oak
T	Panel Stops	16	¼"	½"	to fit	Oak
U	End Panels	4	¼"	13"	16½"	Oak Plywood
V	Ledges	2	¾"	1¼"	34"	Oak
W	End Aprons	2	¾"	6¾"	34"	Oak
X	Spacers	4	¾"	3"	34"	Oak
Y	Hinge Jamb	1	¾"	3½"	23"	Oak
Z	Front Apron	1	¾"	6¾"	29⅛"	Oak

	Part	Qty	T	W	L	Material
AA	Back Apron	1	¾"	6¾"	39"	Oak
BB	Trim Strips (Front/Back)	2	¾"	1"	45½"	Oak
CC	Trim Strips (End)	2	¾"	1"	40½"	Oak
DD	Top Door Rails	2	¾"	2½"	11⅛"	Oak
EE	Bottom Door Rails	2	¾"	4"	11⅛"	Oak
FF	Door Stiles	4	¾"	2½"	22¾"	Oak
GG	Panel Stops	8	¼"	½"	to fit	Oak
HH	Door Panels	2	¼"	8⅝"	16¼"	Oak Plywood
II	Wood Pegs	8	⅜"	⅜"	¼"	Oak
JJ	Shallow Drawer Fr./Bk.	4	½"	5¼"	8⅞"	Oak
KK	Deep Drawer Fr./Bk.	4	½"	7⅞"	8⅞"	Oak
LL	Shallow Drawer Sides	4	½"	5¼"	22⅝"	Oak
MM	Deep Drawer Sides	4	½"	7⅞"	22⅝"	Oak
NN	Drawer Bottoms	4	¼"	8⅜"	22½"	Oak Plywood
OO	Shallow Drawer False Fronts	2	¾"	5¾"	9⅝"	Oak
PP	Deep Drawer False Fronts	2	¾"	8⅜"	9⅝"	Oak
QQ	Countertop Substrate	2	¾"	43"	48"	MDF

- (4) Blum #55809 120° Inset Clip Top Hinge
- (8) Blum #34876 22" White Drawer Slide
- (8) Smedbo SME-04356 Drawer/Door Pulls
- (53) #8 x 1¼" Fh Woodscrews
- (28) 1¼" Pocket Screws
- (4) #8 x 1¾"" Fh Woodscrews
- (6) Metal "L"-brackets



secrets for success with LAMINATE COUNTERS

If your quest for a high-end countertop has left you with sticker shock, don't despair. You don't have to spend big bucks on solid surfacing or stone to create a first-class counter.

In fact, you can build your own great-looking, long-lasting countertop, like the one above that tops our kitchen island project *(page 46)*. All you need is plastic laminate and basic woodworking techniques.

That's right. Good old plastic laminate (known to many as Formica, the name of one brand) has been around for decades, but has taken a back seat to other materials in recent years. Now laminate is being rediscovered as a fantastic material for making countertops.

Part of the reason for this resurgence is that laminates are now available in a huge variety of styles, colors, and textures *(see below)*. Plus, laminate is a true bargain. A shop-built laminate countertop costs $4 to $5 per square foot, while solid surfacing or stone costs $45 to $90.

Best of all, plastic laminate is simple to work with using tools you probably already own. And building the underlying structure couldn't be more straightforward.

Here, we'll walk you through the basics of creating a laminate countertop. Whether it's going in your kitchen, workshop, or utility room, the procedures are the same. And so are the results: good looks at a great price without a lot of effort.

NEW LAMINATE OPTIONS

► Laminates are available that mimic almost any material, including wood and stone, quite convincingly. You can even get laminates that are made with metal to simplify the process of creating a stainless-steel backsplash, as seen in the kitchen project intro on page 44.

BUILD THE SUBSTRATE

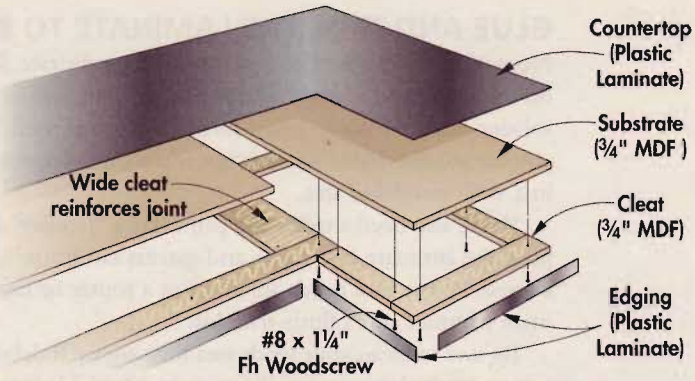
The first step in creating a laminate countertop is building a sturdy substrate. You need a material that's dense, stable, and dead flat. Medium-density fiberboard (MDF) makes a great choice.

MDF is sold most commonly in $^3/_4$"-thick sheets, and countertops are $1^1/_2$" thick, so you'll need to glue and screw two layers together to create your substrate. You can either build up two full layers, as we did for the kitchen island, or glue and screw 4"-wide cleats around the perimeter *(Illustration, right)*.

To make the substrate, start by cutting the top layer to exact size and shape. When making the bottom layer, cut it $^1/_4$" larger than the top all around to create an overhanging edge *(Overhang Detail)*. The overhang gets trimmed flush, as shown in the *Photos*, below right.

If an edge is going to abut a wall, it's best to size the bottom layer of the substrate so that edge *underhangs* the top layer *(Underhang Detail)*. This simplifies scribing the countertop to fit against the wall *(page 61)*.

If your counter is L-shaped, you can join the two top substrate sections with a simple butt joint. Then reinforce the joint with glue and screws driven up through the bottom layer (or reinforcing cleat) and into the top layer.



► Rout the overhanging edge of the substrate with a pattern bit, adjusted so its bearing rides against the top layer *(far right)*.

▲ A kerfed auxiliary fence, plus infeed and outfeed supports, allows one person to cut large laminate sheets. Use a grout float to grip and push the sheet.

CUT THE LAMINATE DOWN TO SIZE

When you buy laminate, it usually comes in sheets measuring 4'×8' or larger. Some manufacturers offer longer, narrower pieces (such as 30" widths), as well, that can save you some cutting when building countertops over base cabinets. Whatever size sheet you start with, it will need to be cut before you can attach it to the substrate. This task is made easier by the fact that you don't cut the laminate to exact size. Instead, you want it about 1" longer and wider than the substrate. You'll trim it to fit after the laminate is adhered to the substrate.

I prefer to use a table saw for straight cuts in laminate, as shown in the *Photo* at left. But, laminate is only about $^1/_{16}$"-thick, so it can slip under the rip fence on most table saws and bind in the cut.

To solve this problem, I use an auxiliary fence. It's just a 4-ft. long scrap of MDF that has a kerf cut near the bottom edge *(Detail)*. With the laminate in the kerf, I can hold it firmly against the fence.

Laminate also is very flexible, which complicates cutting. The kerfed fence traps the laminate to hold it flat.

GLUE AND TRIM THE LAMINATE TO **BRING IT ALL TOGETHER**

Now it's time to glue the laminate to the substrate. To do this, you need contact adhesive. It comes in either a solvent-based or water-based form. Both work well. If you use solvent-based cement, just make sure you work in a well-ventilated area.

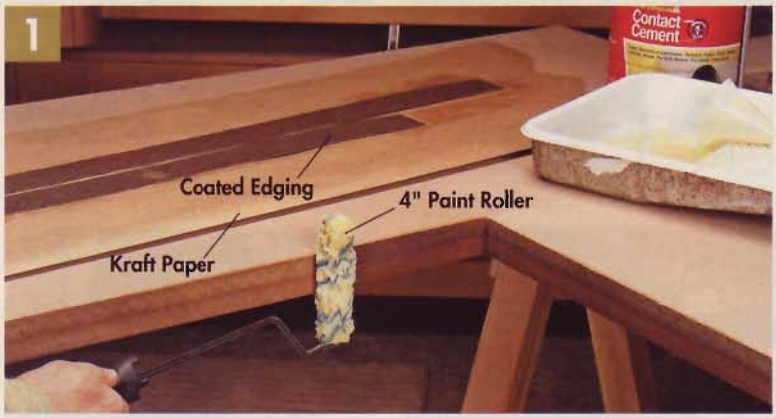
You'll also need a roller and paint tray, a "J-roller" to press the laminate into place, and spacers cut from $^1/_2$" dowels. Power tool needs are few, just a router or laminate trimmer and a flush-trim bit.

Be sure to clean your work area thoroughly. If debris gets under the laminate, it will form a highly visible lump.

Remember, too, that contact adhesive bonds instantly. So you only have one chance to position the laminate right. Use spacers, laid every 6" to 8", to hold it off the substrate until you're ready. I advise a dry fit, too, (with no adhesive) so you can check any overhangs and seams.

Speaking of seams, I always try to mate factory edges and ends. Usually, these edges are quite straight and provide a gap-free fit without needing to be trimmed.

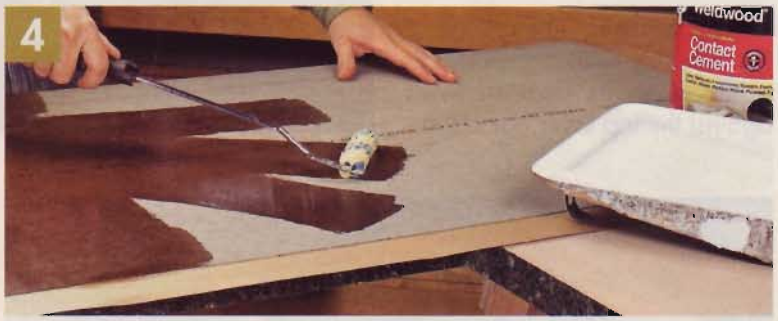
With all this in mind, follow *Steps 1-6* below to add laminate to the edge and face of your substrate. For more edging options, see the *Sidebar* on the next page.



▲ Always adhere the edging first. Roll one coat of adhesive on the laminate, then add two or three coats to the edge of the substrate. That's because MDF edges are porous and absorb the adhesive.

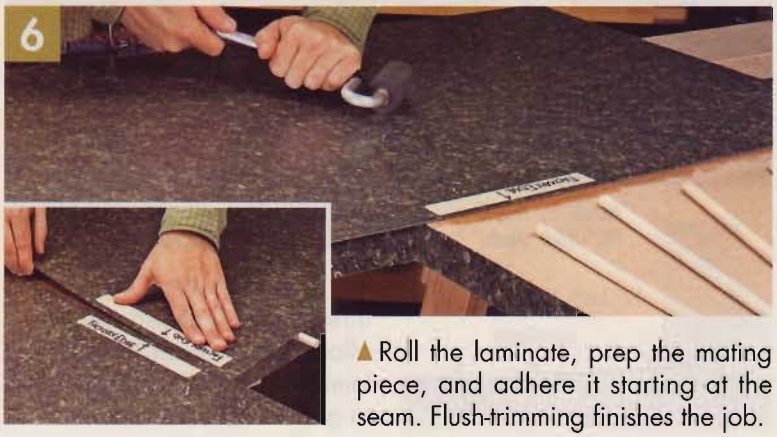
▲ When the adhesive no longer feels tacky, position the edging and stick it down, starting at one end. Use the J-roller to firmly adhere the laminate.

▲ Flush-trim the edging, and then file burrs and areas the bit can't reach.



▲ After cleaning up all debris from the edging, roll a coat of adhesive on the laminate and the substrate. Coat only those parts of the substrate that will get covered immediately.

▲ Set the laminate on spacers and align it with any layout lines, such as this seam. Remove one spacer at a time, and stick the laminate down as you go.



▲ Roll the laminate, prep the mating piece, and adhere it starting at the seam. Flush-trimming finishes the job.

SCRIBE TO GET A PERFECT FIT

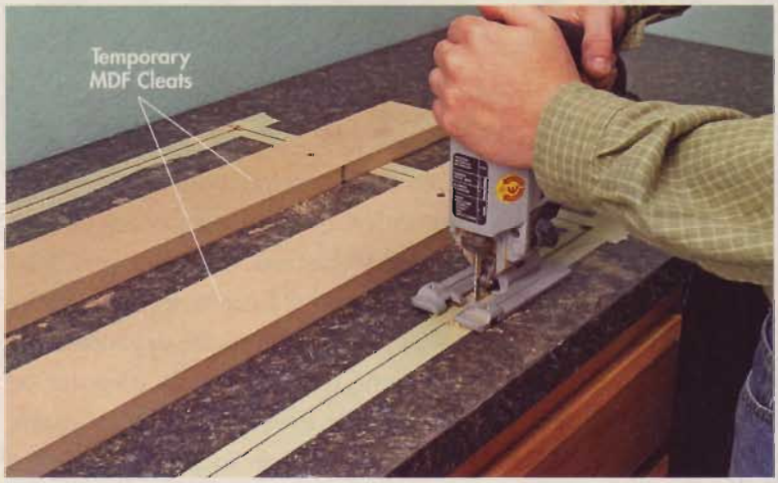
If the back edge of the counter will sit against a wall, you have a bit more work to do before you install the counter. That's because few walls are truly flat. So you have to shape the edge of the counter to fit.

To do this, temporarily set the countertop in place so it's positioned correctly (usually so the front is parallel to the face of the cabinets) and some part of the back edge touches the wall. Then scribe the contour of the wall onto the counter *(Inset, right)*.

Now remove the countertop, and use a belt sander to create the contour *(Photo, right)*. The underhanging lower layer makes this part easy, since you only have to sand $^3/_4$"-thick material instead of a full $1^1/_2$".

After checking the fit, you can permanently mount the counter by driving screws up through the corner blocks in the cabinets and into the substrate.

▲ Masking tape on the laminate makes the scribe line easier to see *(left)*. When sanding up to the line, brace the belt sander against your body and keep it square to the face of the countertop.



▲ After cutting the ends of the opening, screw a pair of cleats made of scrap material to the cutout. The cleats span beyond the cuts and prevent the cutout from falling into the opening as you finish sawing.

CUT A CLEAN, ACCURATE OPENING

Once the counter is secured, it's time to lay out and mark openings for such drop-ins as a sink or cooktop. Be sure to take your time and double-check measurements when laying out the openings. A new sink or cooktop will come with a template to make the task easier.

I like to put masking tape down and draw the layout lines on it. The lines are easy to see on the tape. And the tape simplifies removing or changing the layout lines.

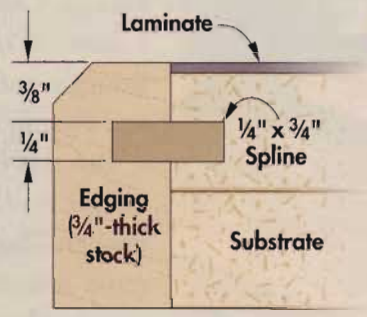
Now drill holes in the corners large enough for a jig saw blade to pass through. Then cut the opening using a jig saw equipped with a fine-tooth blade. Use a pair of cleats to support the cutout so it doesn't sag or fall as you cut, which might tear the laminate *(Photo, left)*.

By the way, cutting the opening may go slowly, especially when you're slicing through a full $1^1/_2$" thickness. But be patient. Your rewards are now here — a beautiful countertop that doesn't break your budget.

SOLID-WOOD EDGING OPTIONS

One way to create a distinctive look for your counter is to edge it with solid wood *(Photos, right)*.

When doing this, apply the laminate to the top of the substrate first. Then cut matching slots in the substrate and edging to receive splines made of hardboard *(Illustration)*. Now glue on the edging, and sand it flush with the laminate. Finally, mask off the laminate, and apply finish.



▶ Rounding over the oak edging *(top)* produces a classic, casual countertop. Chamfered maple *(bottom)* looks crisp and contemporary.

12 accessories to ORGANIZE a cluttered kitchen

Ever look around your kitchen and wonder how you've managed to avoid starvation, or at the very least malnutrition? I mean, let's face it, the way most kitchens are organized (or more to the point, not organized), it's amazing that anything edible ever comes out of them. Yet somehow we manage to prevail over the culinary clutter and keep ourselves fed. Even so, it's due time we take back the kitchen and put the pots, pans, utensils, and canned goods back in their place.

Fortunately, there are countless accessories that are designed to bring order to a chaotic kitchen. Over the next few pages, we highlight a dozen of our favorite off-the-rack organizers from manufacturers like Rev-A-Shelf, Rösle, and Rogar.

But this is just a small sample of the almost infinite number of solutions for organizing your kitchen. The *Buyer's Guide* on page 65 lists even more sources to find the perfect solution for your kitchen clutter.

Pots, pans, utensils, and small appliances complete a kitchen, but they can also clutter it. Corral them with these simple solutions.

▼ DRAWER DIVIDER

One size of drawer divider does *not* fit all. In fact, most of them waste enough space beside and behind the tray that you'd be better off without them. THE SOLUTION: Rev-A-Shelf's trim-to-fit tray is available in two sizes to accommodate drawers of almost any size and shape.

► MIXER LIFT

The hardest working appliance in my kitchen (the stand mixer) is also the hardest to move around and store. THE SOLUTION: A mixer lift from Rev-A-Shelf lets you tuck the mixer under the counter when it's not in use, and then quickly bring it up to work height when necessary. The lift holds up to 60 pounds and features adjustable spring tension.

▲ UTENSIL RAIL

Large kitchen utensils that need to be organized and kept within easy reach rarely fit well in typical silverware drawer dividers. And even if you can make them fit, they have a way of taking over the drawer and making everything else in there hard to find. THE SOLUTION: A simple storage rail like this model from Rösle lets you turn problem utensils into an attractive arrangement that suits your personal preferences. Made of stainless steel, this particular rail can be attached to the wall, as shown above. Or you can suspend it from a cabinet by simply changing the mounting hardware. A variety of accessories, such as a clock or paper towel holder, allow even greater customization.

▲ POT RACK/DISPLAY SHELF

Pots, pans, and large containers — you've got them, you need them, but there's no good place to store them. THE SOLUTION: Take advantage of some of that unused wall space with this combination pot rack and display shelf from Rogar. It comes in six colors and installs in just a few minutes.

Divide and conquer the space in your kitchen for maximum utilization and organization.

LID RACK

Lids. Everything seems to have one. You rarely use them, but they're always in the way. THE SOLUTION: Organize your lids with this lid rack from Loroman. It's divided for different lid sizes and slides out for easy access.

PULL-DOWN SHELF

To reach things in the upper cabinet you'll need either a step stool, a willingness to climb onto the countertop, or an NBA power forward. THE SOLUTION: Bring the contents of the cabinet down to you with pull-down shelving from Rev-A-Shelf. The wire frame lets you see what's in there — the pull-down mechanism lets you reach it.

TRAY DIVIDER

Pizza pans, cutting boards, and cookie sheets may be flat and thin, but they stack about as well as marbles. THE SOLUTION: Use tray dividers by Rev-A-Shelf inside the cabinet to store these space hogs on edge.

LAZY SUSAN

All that "dead space" in a standard corner cabinet is going to waste. And even if you can get anything tucked back into that space, you just about have to stand on your head to get it back out. THE SOLUTION: This kidney-shaped lazy Susan from Rev-A-Shelf takes full advantage of that space with two independently swiveling trays that nest inside the "dead space" when the cabinet is closed. Then they swing out to put everything you've stacked there within easy view and easy reach. A variety of sizes and materials are available to match your kitchen and your budget.

Some kitchen essentials are better left unseen. Keep them out of sight but not out of reach with these handy solutions.

PULL-OUT WASTE CONTAINER

Hiding a trash can under the sink is great for keeping it out of sight. But out of sight is also out of mind, which leads to infrequent emptying, trash overflow, and generally poor aim. THE SOLUTION: This two-container system from Rev-A-Shelf pulls out, so it's hard to miss and easy to empty. And two containers let you divide garbage from recyclables.

TIP-OUT TRAY

Less-than-appetizing sponges, dish cloths, and scrubbers don't belong scattered all over the sink and countertop. THE SOLUTION: Take advantage of the wasted space behind the false front for the sink with a tip-out tray from Rev-A-Shelf. It takes just a few minutes to install and can turn any non-operating drawer front into a hidden storage compartment.

TOWEL RACK

Cooking is messy business, so a ready supply of dish cloths and towels are a must. But where should they be in between messes? THE SOLUTION: Add a pull-out towel bar from Rev-A-Shelf in the under-sink cabinet. Towels and dish cloths are out of sight, but still in easy reach. And it also lets them air dry in between uses, so they don't get that funky dish-towel smell.

BOTTOM-MOUNT PULL-OUT BASKET

Maintaining a spotless kitchen requires a variety of cleaning solutions. Those usually wind up in a loose collection of bottles, boxes, and jugs under the sink. THE SOLUTION: Corral cleaning supplies, and lessen the chance of tip-overs and spills, with a wire-frame, bottom-mount basket from Rev-A-Shelf. The basket pulls out for easy access. And the stainless-steel construction is largely impervious to "chemical spills."

Buyer's Guide:

MANUFACTURERS

REV-A-SHELF
www.Rev-A-Shelf.com
800-626-1126

ROGAR
www.Rogar.com
800-351-1420

RÖSLE
www.Roesle.de/english

RETAILERS

AMAZON
www.Amazon.com

COOKING.COM
www.Cooking.com
800-663-8810

KITCHEN COLLAGE
515-270-8202

KITCHEN DIRECT
www.KitchenDirect.com
800-375-3128

KITCHEN SOURCE
www.KitchenSource.com
800-667-8721

ROCKLER
www.Rockler.com
800-279-4441

CORDLESS **IMPACT DRIVERS**

HOT NEW TOOLS!

FOR SERIOUS DO-IT-YOURSELF PROJECTS

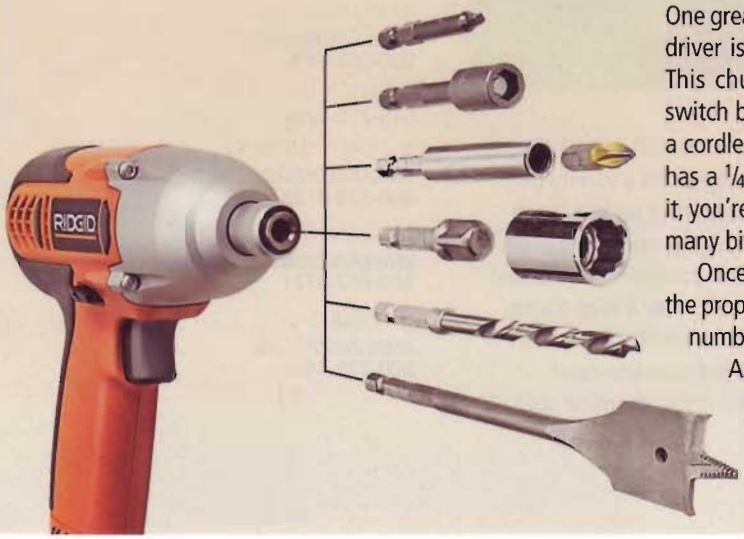
I have to admit that, at first, I was as skeptical as the next guy about these new cordless impact drivers. When I saw one at a woodworking show a few years back, I thought it looked like a cordless drill that forgot to take its vitamins.

Seeing the price tag didn't help my opinion much, either. Why would I pay $250 for an impact driver when I own a perfectly good drill?

But one weekend when I had a big shed to build (and hundreds of screws to drive), I decided to try one out. After all, if this was the "ultimate" driving tool it claimed to be, this would be the best way to put it to the test.

Compact Design — After I bought my driver, I was impressed by its light weight and short barrel (about 1 to 2 pounds and 3" to 4" less than a cordless drill, respectively). I knew right away that I'd have no trouble squeezing the driver into tight spaces, and my arm wouldn't be sore by the end of the day like it is after lugging an 18-volt drill around.

QUICK-CHANGE CHUCK MAKES IT VERSATILE >>>



One great feature of a cordless impact driver is its quick-change hex chuck. This chuck makes it even easier to switch bits than the keyless chuck on a cordless drill. And as long as the bit has a 1/4" hex shank with a groove in it, you're good to go. Just a few of the many bit options are shown at left.

Once your driver is equipped with the proper bit, you'll be amazed by the number of jobs this tool will handle. Aside from driving long screws quickly for framing jobs (like the shed shown above), it also has the torque to install big fasteners when equipped with a nut driver *(Fig. 1)*.

The compact design of the impact driver is also a real asset when it comes to drilling or driving in tight spaces *(Fig. 2)*. This is a huge advantage when you're working between floor joists or wall studs, just to name two examples.

A third use is driving fasteners into concrete or metal *(Fig. 3)*. In these tough materials, the extra torque of the driver proves invaluable.

As soon as I chucked up a bit and started driving screws, my doubts about these drivers disappeared. This tool was the real deal when it came to driving fasteners.

Big-Time Torque — When it's driving a screw, an impact driver seems to work like a drill at first. But once the tool experiences the type of resistance that usually makes a drill twist around in your hand, the driver kicks in with its ratcheting action and delivers enormous torque to the screwhead to drive it home.

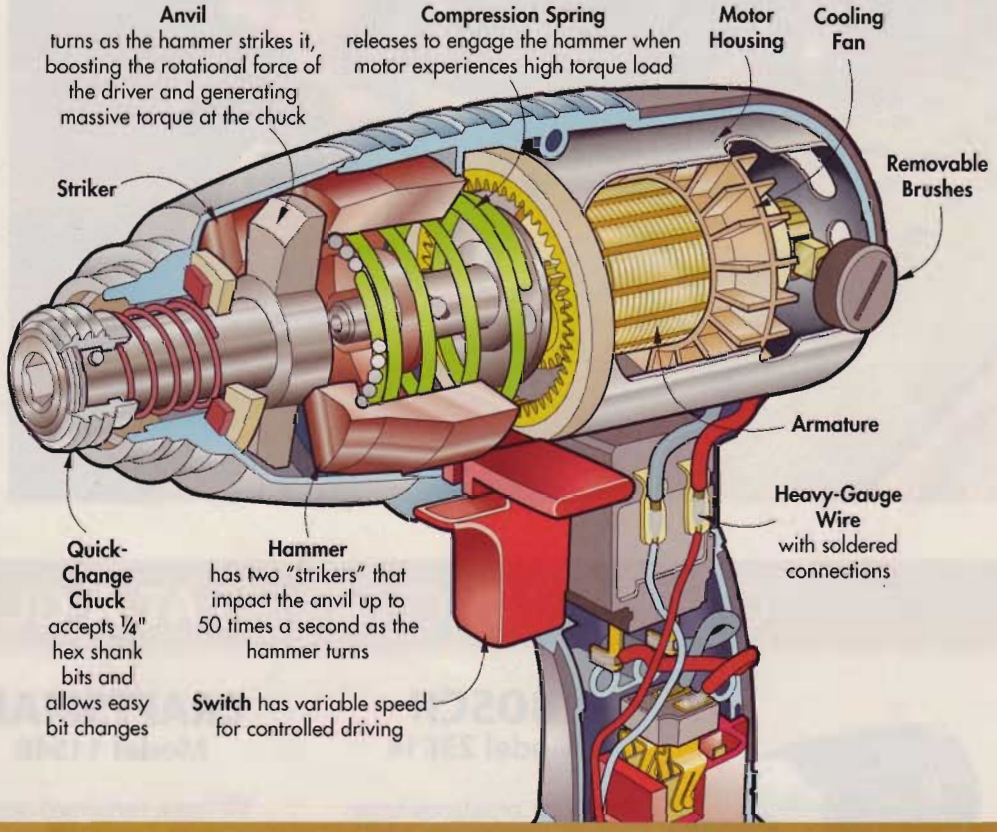
Using an impact driver ended up being a far different experience from using a drill. For one thing, when the ratcheting action kicked in, the driver let me know it with a loud "rat-tat-tat" sound. It was a little alarming at first, almost as if something was wrong with it. But the source of this noise is what gives the tool its incredible driving power.

Specifically, what's going on inside the tool is a compression spring is turning a hammer, which in turn strikes an anvil approximately 50 times a second *(Illustration, right)*. This is what creates the loud noise — but it also creates twice the torque of a cordless drill to make driving even large fasteners child's play.

Great Control — As the shed started coming together, I grew more and more impressed with this compact tool. For one thing, it had a great variable-speed trigger. So even though it lacked the clutch of a drill, it was easy to sink screws perfectly by just feathering the trigger. And because the impact driver doesn't twist your wrist like a drill does, I could drive screws one-handed in many cases, letting the tool do all the work.

Long story short, I'm now a believer in impact drivers. While this tool isn't necessarily a replacement for your cordless drill, it makes a nice complement to it — especially when it comes to driving lots of (or large) fasteners.

For more ways an impact driver can help with your home projects, see the *Box* below. And turn to page 68 for our in-depth review of seven impact drivers.



▲The high torque generated by an impact driver is great for big fasteners, such as lag screws and bolts.

▲When drilling holes through floor joists to run wiring, the compact size of the impact driver makes it a natural.

▲An impact driver also excels at driving fasteners into metal, or driving masonry screws into concrete and cinder blocks.

TOOL TEST

CORDLESS IMPACT DRIVERS

Hopefully, my shed-building experience has convinced you (as it did me) that an impact driver is a viable tool for your most demanding projects. But there's still the question of which impact driver to choose. And that's what this test is all about.

To find out which of these tools drives better, faster, and longer than the others, we took an up-close look at seven 14.4-volt models (Bosch, Craftsman, DeWalt, Hitachi, Makita, Milwaukee, and Ridgid).

To get a sense of how each tool would perform, we conducted several tests, including driving all sorts of large fasteners, drilling holes, testing battery life, and taking noise-level readings *(see Fig. 1, top right)*.

CORDLESS IMPACT DRIVERS **AT A GLANCE** >>>

BOSCH
Model 23614

Virtues: Consistently faster driving speeds and longer run-times than the other drivers. Features useful accessories and a comfortable-to-use design.

Vices: Belt hook gets in the way at times during use, but it can be easily removed.

Verdict: Bosch takes our "Editor's Choice" in a photo finish over the Makita and DeWalt. Great ergonomics, a few extra features, a lower price point, and faster drive times make the difference.

www.BoschTools.com
877-267-2499

CRAFTSMAN
Model 11546

Virtues: Performed nearly as strongly as the high-end drivers in this test (and has some of the same nice features) at about half the price.

Vices: Not quite as compact or comfortable as the more expensive drivers. Slightly slower driving times.

Verdict: Even for demanding projects, you won't be disappointed in the power and ability of the Craftsman. It's a natural choice for the budget-minded tool buyer.

www.Craftsman.com
800-377-7414

We also factored extra features, ergonomics, and price into our final recommendations.

Torque & Speed

One of an impact driver's big strengths is driving large fasteners (such as lag screws and long wood-screws). And most impact driver manufacturers boast high torque and RPM ratings for their tools to indicate how well their drivers can really do this. To see how each driver's RPM and torque ratings would equate with its performance in a real-life situation, we conducted a few simple tests.

First, we drilled pilot holes in a pressure-treated 6x6 and drove 3/8" x 5" lag screws, using a stop watch to check times *(Photo, left)*. The goal was to get an average of each driver's speed. After an afternoon of driving screws, we realized that all the drivers were *capable* at this task, but some (like the Bosch and Ridgid) were consistently *faster* than the others.

Then, to get a second opinion on driving speed, we conducted another test: driving masonry screws into concrete blocks *(Fig. 2)*. Not surprisingly, the speed and power recorded in this test closely mirrored the results of the first test.

Control

As mentioned earlier, these drivers lack the clutch of a drill, which made me wonder if they could drive screws with the same level of control.

To find out, we drilled countersunk holes and started driving wood-screws. We found that if you don't relax the trigger, these tools will drive a screw right through a board.

Still, the triggers on most of them are responsive enough that you can get fast, accurate results by driving a screw almost all the way into its countersink, and then just "feathering" the trigger to seat it. It doesn't quite make up for the convenience of the clutch on a cordless drill, but it's close.

One thing we noted is that the high RPM of some drivers (like the Hitachi) made controlled driving more difficult, and stripping out screwheads more common. The Bosch, DeWalt, and Makita drivers handled the task well.

▲ The ratcheting action that helps an impact driver create high torque also makes it very noisy. We used a decibel meter to see just how noisy each tool was.

▲ Driving masonry screws into concrete is just one of many applications at which an impact driver excels. We drove a bunch to see which drivers were fastest.

>>>

DeWALT
Model DW054K-2

Virtues: Performance and ergonomics on par with the Bosch and Makita. Also the fastest at driving deck screws and masonry screws.

Vices: A slightly higher price point with fewer features than the Bosch and Makita models.

Verdict: If you're a DeWalt loyalist, this tool is a good addition to your arsenal. Its strong performance and comfortable, ergonomic design pushed it into the upper tier of the tools we tested.

www.DeWalt.com
800-433-9258

HITACHI
Model WH14DMR

Virtues: Comfortable, compact, and eye-catching design; a unique belt hook with a built-in L.E.D. light; and a very competitive price.

Vices: The Hitachi stripped out screwheads more frequently than the other drivers in our test.

Verdict: The Hitachi finished in the middle of the pack during most of our tool tests, but it's a good tool at a reasonable price. It would be a fine addition to any shop.

www.HitachiPowerTools.com
800-829-4752

Drilling

Drilling isn't the main use of an impact driver, but in a pinch, it can drill with twist bits as large as 1/4" and spade bits as large as 1". The ratcheting action of an impact driver makes drilling slower, however.

To test their drilling capabilites, we drilled holes in a pressure-treated 4x4. All of the drivers did the job, but some were consistently faster than others. The Hitachi and DeWalt took top honors here.

Battery Life

The final test we conducted is a crucial one if you're away from the charger: How long will these drivers work before the battery dies? To determine this, we drove lag screws into a 6x6, with *no* pilot holes, until a drop in power occurred *(Fig. 3)*.

Most of the drivers handled many screws before power took a severe dip. The one notable exception was the Ridgid, which faded significantly faster than the others.

Accessories

Testing aside, we looked at a few other considerations that enhance or detract from the usefulness of these impact drivers.

L.E.D. Light — One accessory at first seemed like a gimmick, but it turned out to be extremely useful, and that's an L.E.D. light. Four of the drivers in our test had these lights built into the design of the tool. The lights on the Makita *(Fig. 4)* and Craftsman are located directly below the chuck. The light on the Bosch is located near the base of the tool, while the light on the Hitachi is built into the belt hook *(see below)*. All of the lights come in handy when working in dark locations, which happens more often than you might think.

Belt Hook — The second accessory included on two drivers (Bosch and Hitachi) is a hook for hanging it on your belt. The compact size of an impact driver lends itself nicely to carrying it around this way. The Bosch hook seemed to get in the way at times, but it was easy to remove by taking out one screw.

▲ Driving 5"-long lag screws into a 6x6, *without* pilot holes, gave us an excellent opportunity to see how long the batteries of these impact drivers would last.

▲ An L.E.D. light and glow-in-the-dark ring make the Makita well disposed to drilling in dark locations.

CORDLESS IMPACT DRIVERS **AT A GLANCE** >>>

MAKITA
Model 6935FDWDE

Virtues: The most compact driver (tied with Hitachi), with overall performance consistently near the top throughout our testing.

Vices: A slightly higher price with less features than the comparable Bosch.

Verdict: This Makita driver is a great tool, and it finished a very close second behind the Bosch for "Editor's Choice." It's a little more expensive, but you won't be the least bit disappointed with it.

www.Makita.com
800-462-5482

MILWAUKEE
Model 9081-22

Virtues: Performed near the top in most tests.

Vices: Heavier, longer, and noisier than any of the other drivers. Not as comfortable to use over long periods of time.

Verdict: The Milwaukee is undoubtedly a solidly built tool, but the design lacked some of the refinement of the other models. Its heavier weight and longer barrel could be a liability at times, and it's the most expensive tool in the test.

www.MilwaukeeTool.com
800-729-3878

Ergonomics

The final consideration when grading these drivers was design, or ergonomics. In our opinion, the Bosch, Hitachi, and Makita lead the pack here. These tools have everything you'd look for in a smart design: soft rubber overmolds, a handle that feels built for your hand, and a compact barrel that fits into tight spaces. Makita and Hitachi earn bonus points here for being the most compact drivers of the bunch.

Most of the other drivers are nicely designed, as well, but lack a few of the fine touches of the top three. The Milwaukee is the heaviest and longest of all the tools, but it still performed solidly throughout our testing.

Conclusion

All the impact drivers tested well, but three in particular rose to the top: Bosch, DeWalt, and Makita. The Bosch's ability to deliver top-notch performance at a lower price gives it the edge for "Editor's Choice."

The honor of "Top Value" goes to the Craftsman for its solid performance at a bargain price.

CORDLESS IMPACT DRIVERS: BY THE NUMBERS

	SPECIFICATIONS							PERFORMANCE					
Model	Price	Volts	RPM	Impacts Per Minute	Torque (in./lbs.)	Weight	Length	Noise (decibels)	Lag Screws (seconds)[a]	M. Screws (seconds)[b]	Deck Screws (seconds)[c]	Drilling (seconds)[d]	Battery Life (screws)[e]
BOSCH	$240	14.4	2,800	3,200	1,150	4 lbs	6½"	104	8.21	1.55	6.38	15.71	9
CRAFTSMAN	$120	14.4	2,500	3,000	850	4.2 lbs	7"	107	9.22	3.09	8.85	16.78	8
DEWALT	$250	14.4	2,400	3,000	1,150	4.1 lbs	6½"	108	11.28	1.35	5.47	13.06	8
HITACHI	$225	14.4	2,600	3,200	1,240	4.2 lbs	6⅜"	108	10.28	1.73	6.55	13.05	6
MAKITA	$250	14.4	2,600	3,200	1,240	3.7 lbs	6⅜"	106	10.83	1.81	6.14	14.55	9
MILWAUKEE	$275	14.4	2,200	2,500	740	4.4 lbs	7½"	113	9.44	1.95	6.22	14.77	8
RIDGID	$180	14.4	2,800	2,800	1,400	4.3 lbs	6¾"	109	7.94	2.28	5.75	14.37	4

a. Average time to drive 5" lag screws into pressure-treated pine 6x6. b. Average time to drive 3" masonry screws into concrete block. c. Average time to drive 6" deck screws into cedar 6x6. d. Average time to drill 1" holes through pressure-treated pine 4x4 with spade bit. e. Number of 5" lag screws driven before battery power dropped.

RIDGID
Model R82320

Virtues: Less expensive than every driver but Craftsman. Finished well in several speed-driving tests. Highest torque.

Vices: Power faded faster in the battery test than any other driver — and the tool comes with only one battery.

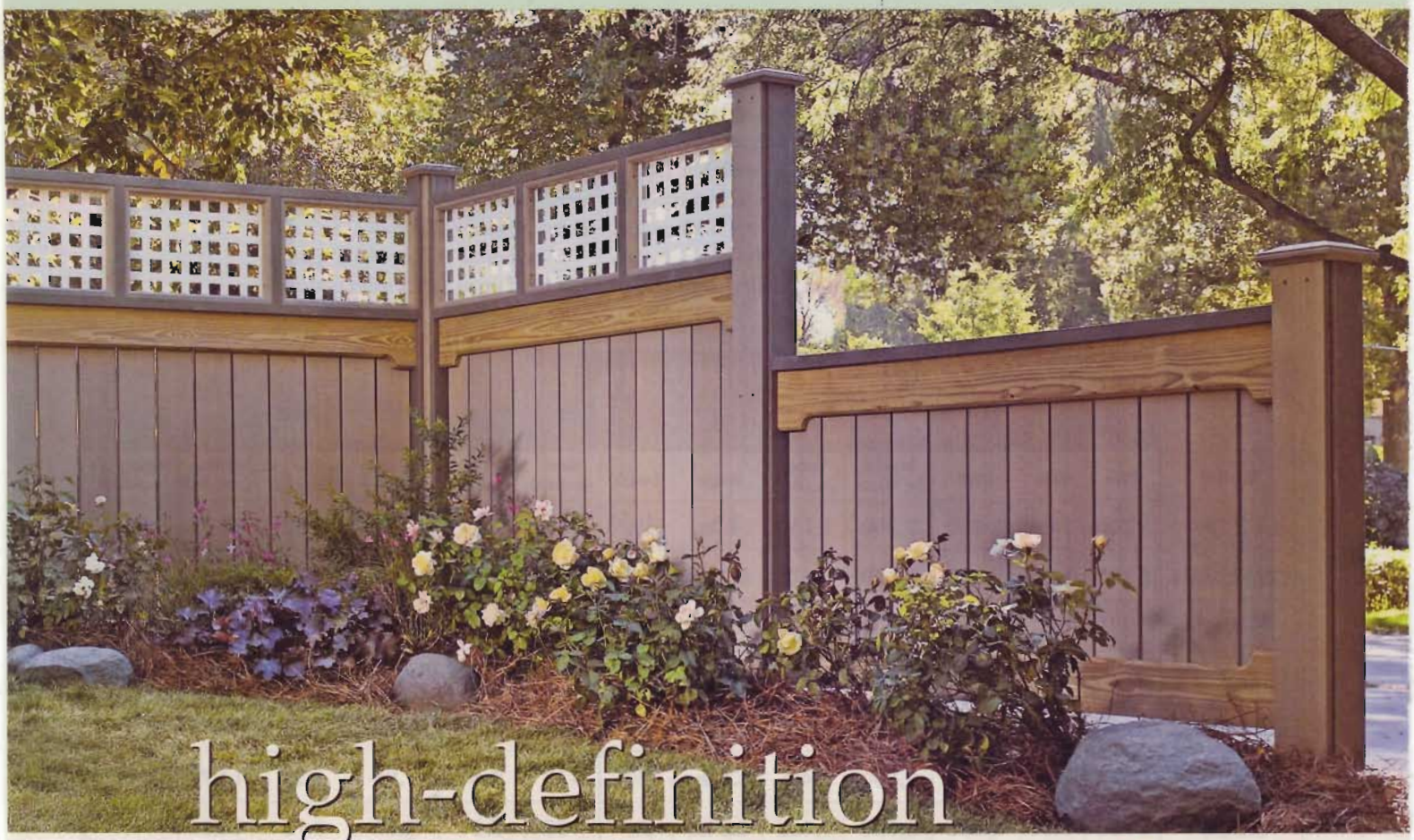
Verdict: At under $200, the Ridgid is an appealing choice for casual DIYers, but we were concerned with how fast the power faded during our battery life test.

www.Ridgid.com
800-474-3443

TWO TOOLS IN ONE

If you can't decide whether a drill or impact driver best suits your needs, then choose both. This 15.6-volt Panasonic EY6535GQWA ($300) features both a keyless chuck (for drill mode) and a quick-change hex chuck (for impact mode). You can switch modes with the push of a button.

I put the Panasonic in a head-to-head test with the other drivers. While a little slow in its driving times, it worked well. We found it appealing for its ability to perform the jobs of both tools. For more information, call 800-338-0552 or visit Panasonic.com.



high-definition Yard Divider

Define your yard, increase privacy, *and* create a stunning backdrop for plantings with this two-tier divider. Modular construction makes it as easy to build as it is attractive.

To increase the privacy in your yard (or to block an undesirable view), a privacy fence seems like the logical choice. But in many cases, a tall fence isn't necessary. A more compact structure — an outdoor screen of sorts — could do the job just as well. The problem is that most fence designs don't translate well to this type of structure. And, frankly, most privacy fences aren't designed for good looks.

A Divider That Conquers — For all of these reasons, I threw out the idea of a conventional fence and built this two-tier yard divider. It consists of tall and short decorative panels that fit between 4x4 posts *(Construction Details)*. The tall ones create a visual barrier, but at 6-feet tall, they don't tower over the yard. The short panels provide a transition between the tall panels and the ground.

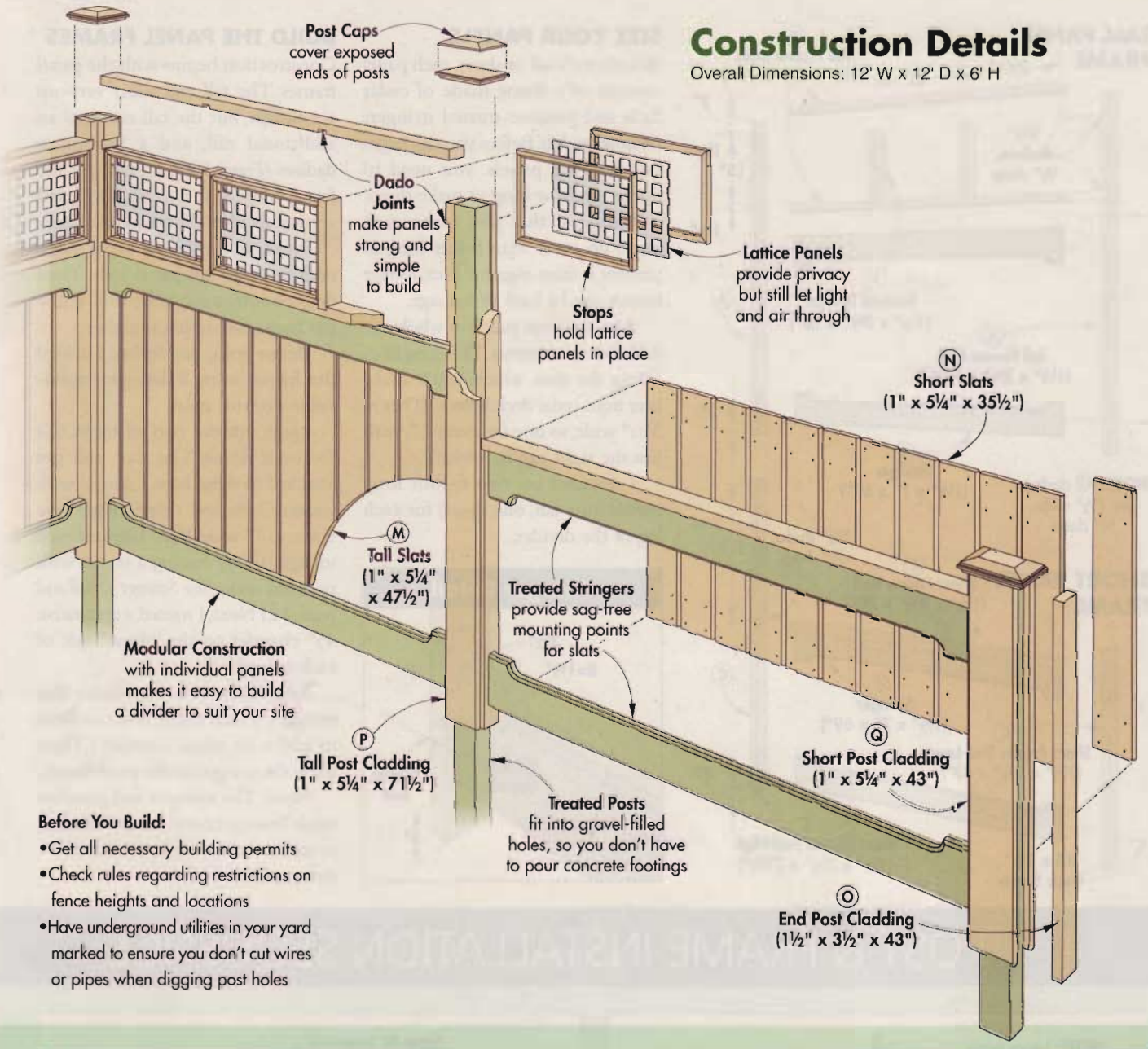
Modular Construction — This design also makes the divider modular, so you can build as many tall or short panels as you need. And you can build most of it in the shop or driveway where you have flat worksurfaces. Then, just set your posts, and install the panels *(page 74)*.

Simple, Sturdy Joinery — To ensure this project is easy to build, we used straightforward joinery. The frames for the panels fit together with dadoes to keep everything tight and square. Most of the other connections are made with butt joints and screws.

Finally, the divider is built to last a long time without much maintenance. Most parts are made from rot-resistant Western red cedar that's coated with solid-color stain. The posts, as well as the long stringers the slats attach to, are built from pressure-treated pine for extra strength.

Construction Details

Overall Dimensions: 12' W x 12' D x 6' H



Before You Build:

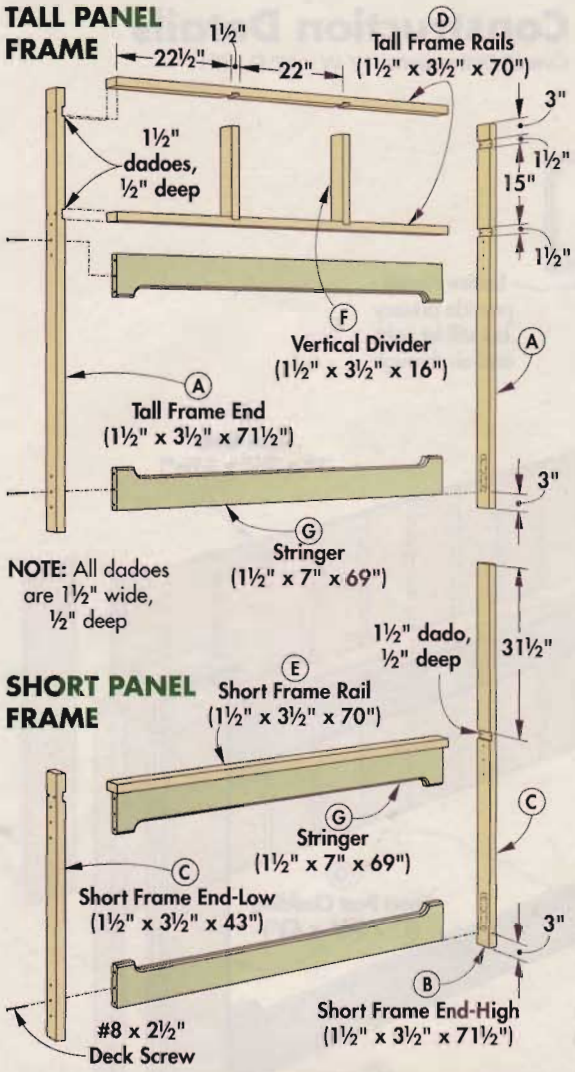
- Get all necessary building permits
- Check rules regarding restrictions on fence heights and locations
- Have underground utilities in your yard marked to ensure you don't cut wires or pipes when digging post holes

MATERIALS & HARDWARE

	Part	Qty	T	W	L	Material
A	Tall Frame Ends	4	1½"	3½"	71½"	Cedar
B	Short Frame Ends-High	2	1½"	3½"	71½"	Cedar
C	Short Frame Ends-Low	2	1½"	3½"	43"	Cedar
D	Tall Frame Rails	4	1½"	3½"	70"	Cedar
E	Short Frame Rails	2	1½"	3½"	70"	Cedar
F	Vertical Dividers	4	1½"	3½"	16"	Cedar
G	Stringers	8	1½"	7"	69"	Treated Pine
H	Tall Posts	3	3½"	3½"	115"	Treated Pine
I	Short Posts	2	3½"	3½"	86½"	Treated Pine
J	Lattice Panels	6	¼"	15"	22"	Plastic Lattice
K	Horizontal Lattice Stops	24	1"	1⅜"	22"	Cedar Decking
L	Vertical Lattice Stops	24	1"	1⅜"	15"	Cedar Decking
M	Tall Slats	12	1"	5¼"	47½"	Cedar Decking

	Part	Qty	T	W	L	Material
N	Short Slats	12	1"	5¼"	35½"	Cedar Decking
O	End Post Cladding	2	1½"	3½"	43"	Cedar
P	Tall Post Cladding	6	1"	5¼"	71½"	Cedar Decking
Q	Short Post Cladding	4	1"	5¼"	43"	Cedar Decking
R	Outside Corner Molding	1	¾"	¾"	71½"	Cedar
S	Inside Corner Molding	1	1"	1"	71½"	Cedar Decking
T	Square Post Cap Base	1	¾"	6¾"	6¾"	Cedar
U	Square Post Cap Top	1	¾"	7¼"	7¼"	Cedar
V	Rectangular Cap Base	4	¾"	6¾"	7¾"	Cedar
W	Rectangular Cap Top	4	¾"	6¼"	7¼"	Cedar

- (5 lbs.) #8 x 2" Deck Screws
- (2 lbs.) #8 x 2½" Deck Screws
- (40) 6d x 2½" Galvanized Finish Nails



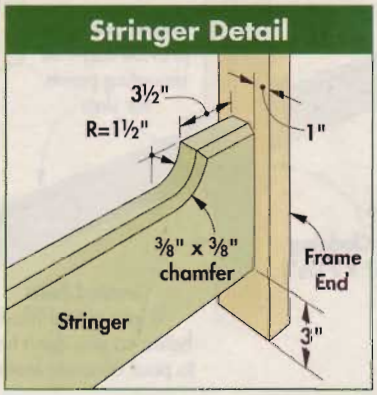
SIZE YOUR PANELS

Whether it's tall or short, each panel consists of a frame made of cedar 2x4s and pressure-treated stringers *(Illustrations, left)*. Before you can begin building the panels, you need to figure out how long to make them.

I suggest that you make each panel no more than 8-feet long to prevent it from sagging. Plus, longer boards can be hard to manage.

Also, size your panels in whole- or half-foot increments. This simplifies fitting the slats, which you'll make later from cedar deck boards. (They're 5¼" wide, so one fits every 6", with just the right gap between.)

I decided on two 6-foot long panels (one tall, one short) for each leg of the divider.



BUILD THE PANEL FRAMES

Construction begins with the panel frames. The tall and short versions are similar, but the tall one gets an additional rail, and a few more dadoes *(Frame Views)*. First, cut the frame ends (A, B, C), rails (D, E), and vertical dividers (F) from cedar 2x4s.

Next, cut the dadoes in the frame ends and the tall-panel rails. Then drill countersunk holes and screw the frame assemblies together.

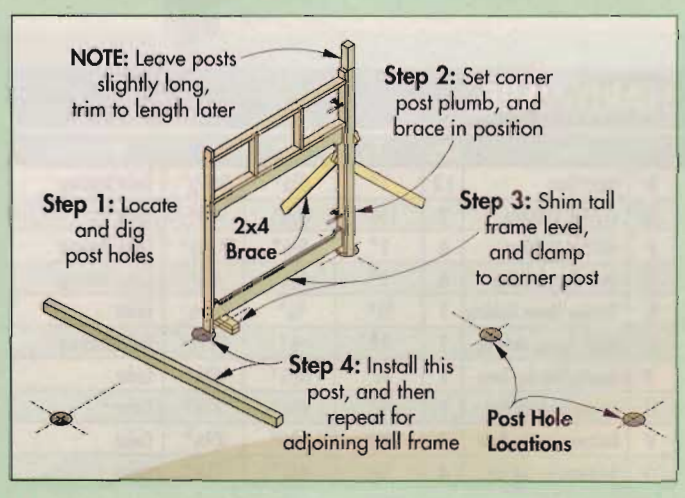
Before going any farther, I stained the frames using a dark gray solid-color exterior stain.

Next, cut the two stringers (G) for each frame. The slats will get attached to these later. I started with treated 2x8s and ripped each one down to 7" wide. Then I dressed each stringer up by cutting a notch with rounded ends. (See *Stringer Detail* and page 24.) Next, I routed a decorative 45° chamfer on the "show" side of each stringer.

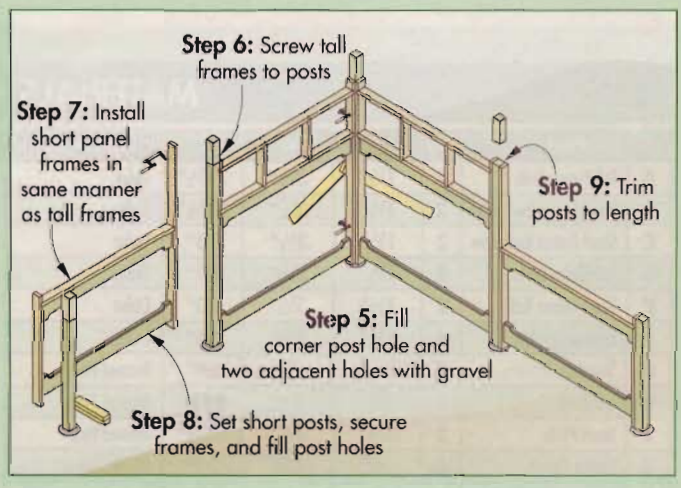
After that, you can finish the stringers. (I used a clear finish on these to add a bit more contrast.) Then screw the stringers to the panel frames.

Note: The stringers and posts are made from pressure-treated lumber, so make sure to use screws rated for that material.

POST & FRAME INSTALLATION SEQUENCE



▲ Set the corner post first, brace it plumb, and fill the hole. Clamp on a frame, shim it, and check to make sure it's square. Then set the next post and screw the frame in place.



▲ After installing the two tall frames, plumb the posts and fill the holes with gravel. Next, add the short frames and posts using the same process. Then trim all the posts to length.

INSTALL POSTS & FRAMES

With all four panel frames complete, it was time to dig post holes and start raising the divider.

The posts need to be sunk into holes that extend below the frost line. In my area, that's 42" deep.

The posts (H, I) are made from treated 4x4s. When first installed, they're left extra long. To determine this length, add the depth of the hole to the height of a panel end. Then add 4 1/2" for the gap between the ground and the lowest stringer. I started with posts cut to 8-feet and 10-feet long.

With the posts cut, erect the divider, following the *Post & Frame Installation Sequence*, below.

ADD THE LATTICE PANELS

The lattice panels that sit in the top portions of the tall frames add a distinctive look to this yard divider *(Lattice Panel View, right)*. These are made up of 1/4"-thick lattice panels (J) held between lattice stops (K, L).

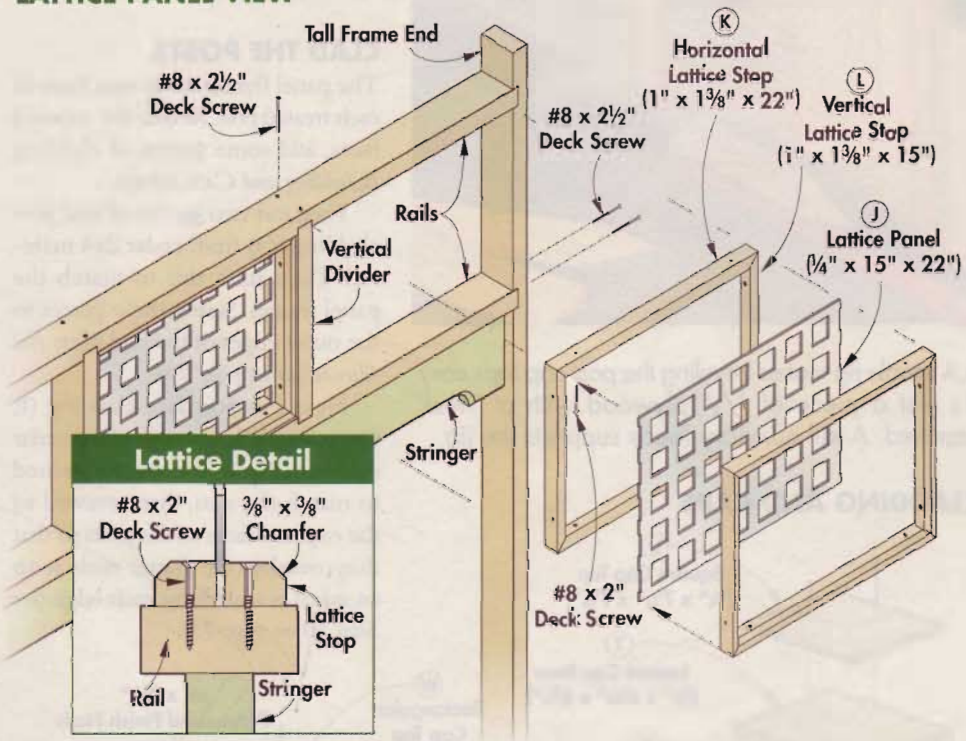
I made the panels from plastic lattice. It doesn't rot and is very easy to cut.

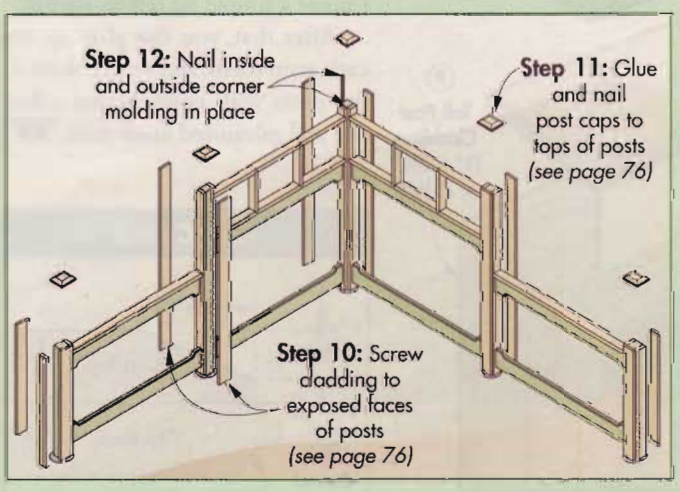
The lattice stops are narrow strips that are chamfered and then mitered to fit into the panel frames *(Lattice Panel View and Lattice Detail)*. To make them, I started with pieces of 5/4 cedar decking. I first cut them about 7-feet long and ripped off the rounded edges. Then I chamfered each edge of the board. Next, I ripped a strip from each edge. I repeated the process to make more stops.

Once the strips are cut, go ahead and apply stain to them. I used a light gray solid-color stain.

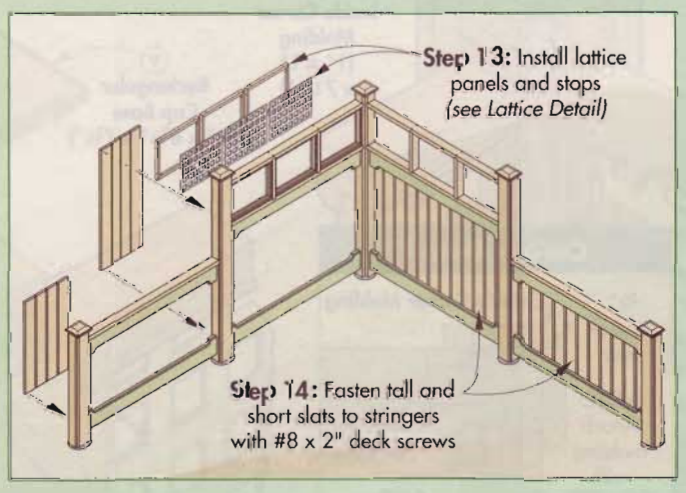
Now miter the stops to length to fit the openings. Drill pilot holes in the stops, and then mount the stops and lattice, as shown in the *Lattice Detail* below.

LATTICE PANEL VIEW





▲ The next step is to install cladding, caps, and molding. *(See page 76 for details.)* In addition to covering the treated posts, these pieces add decorative accents to the divider.



▲ To complete the divider, mount the lattice and stops so the lattice is centered on the rails. Make the slats from cedar decking *(page 76)*, and then attach them to the stringers.

▲ A simple jig makes beveling the post cap tops easy. It's just a piece of 1/2" plywood with a "heel" attached. A tall auxiliary fence supports the jig.

ADD THE SLATS

To pump up the "privacy" part of this divider, I added slats (M, N) to enclose the panels *(see Illustration on page 73)*. They're cut to length from 5/4 cedar deck boards. I stained them before screwing them to the stringers.

To ensure consistent gaps between the slats, I inserted 7/16"-thick spacers between them during installation.

CLAD THE POSTS

The panel frames cover two faces of each treated post. To hide the exposed faces, add some pieces of cladding *(Cladding and Caps, below)*.

First, cut two pieces of end post cladding (O) from cedar 2x4 material. Then stain this to match the panel frames. Screw these pieces to the outer edges of the end posts *(see Illustration on page 73)*.

Next, cut post face cladding (P, Q) to length from more of the cedar decking. These pieces get stained to match the slats, then screwed to the exposed faces of the posts so that they overlap the frame ends with an equal reveal along each edge *(see Step 10 on page 75)*.

On the outside of the corner post, the deck boards are too wide. So just rip one edge off each piece *(Corner Detail)*. An outside corner molding (R) fits between the pieces to close the gap.

Also add an inside corner molding (S), as shown in the *Corner Detail*. To make this, first rip a straight edge on a piece of decking. Rout a 3/4" cove, and then rip the molding free.

CAP IT OFF

To dress up the divider, I added caps atop each post *(Cladding and Caps)*. Because of the way the frames mount to the posts, the corner post ends up shaped slightly differently from the others. So it gets a square cap, while the others are rectangular.

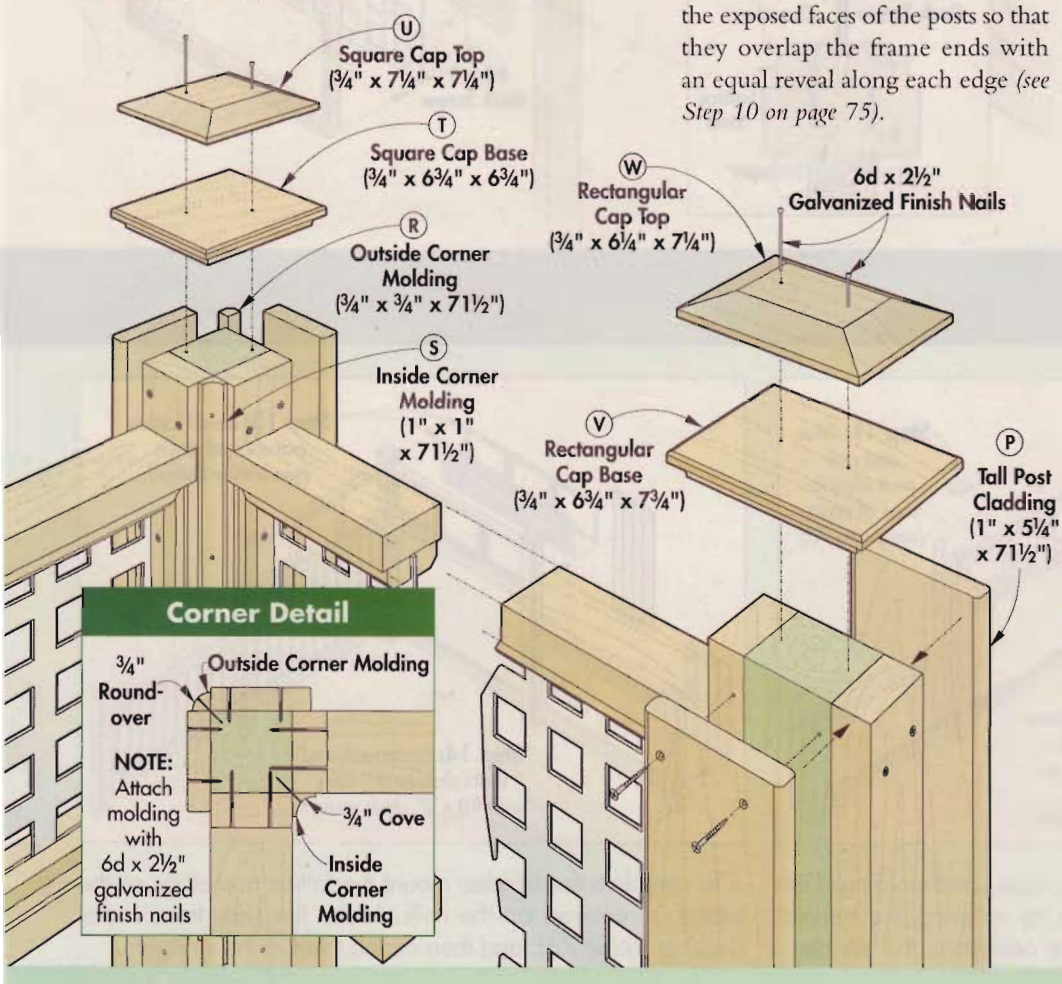
Regardless of shape, both caps consist of a base and a top that are cut to size, profiled, then glued together *(Cap Detail)*. Start by cutting the square cap base and top (T, U), as well as the rectangular cap base and top (V, W) to size from cedar 1x8 material.

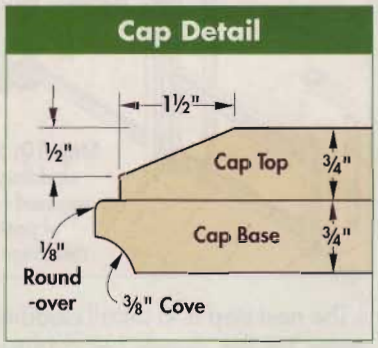
Then, to complete the cap bases, rout a 1/8" roundover around the upper edges and a 3/8" cove around the lower edges.

The tops get a wide bevel cut on each edge. This is accomplished most easily at the table saw. The only problem is the pieces are too small to safely pass by the blade on edge. So I made a simple jig *(Photo, top left)*.

After that, you can glue up the caps, stain them, and secure them to the posts with construction adhesive and galvanized finish nails.

CLADDING AND CAPS





TOOL Close-Up

a little jointer that WORKS BIG

▲ Chip and dust control are built right into the Palmgren jointer. The motor impeller creates airflow that directs the waste into a can or bag.

Benchtop tools have always been about compromise. In exchange for a tool that fits your limited space and/or budget, you give up up a little bit in the construction of the tool.

In the case of a benchtop jointer, those compromises have historically been less cutting capacity (4" is pretty standard for the category), shorter beds (making it a challenge to work with long boards), and less robust construction (stamped aluminum parts instead of cast iron are the norm).

This new benchtop jointer from Palmgren, however, feels less like a compromise and more like a tool that's meant to work big in a small space.

Jointer Details — First of all, the jointer boasts a full $6^1/_8$" cutting capacity, which puts it on par with many popular floor models.

Secondly, the infeed and outfeed tables offer a combined length of just over 27". That's about 3" longer than other benchtop models. And while three inches doesn't sound like a lot, every little bit counts when you're trying to control a long board.

On the other hand, this is still nearly 20" shy of a typical floor model jointer, so not all of the compromise has been removed from this tool.

Finally, the Palmgren has enough cast iron in it to build about four typical benchtop tools. The base, tables, and fence are all cast iron on this model. This gives the tool an impressive mass that dampens vibration, which lends itself to better quality cuts.

Impressions — When we measured the machined surfaces for flatness, we did find a slight dip in the fence, but nothing that would impact the accuracy of the cuts. More meaningful is that the fence adjusted easily and locked securely in both the 45° and 90° positions. We were also pleased with the quality of cuts from the two high-speed steel knives.

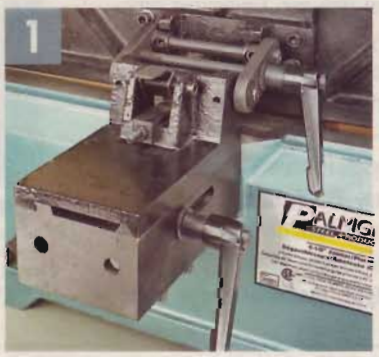
Changing the knives, on the other hand, is a bit of a nuisance. Where most jointers use pins or magnets to hold the knives in the proper alignment as you secure them, this jointer relies on the old-fashioned straight-edge-across-the-tables method. This is an unfortunate compromise that would have been easily remedied.

The fence adjusments are pretty standard, with locking levers that control both the position and angle of the fence *(Fig 1)*. To adjust the infeed table height (which sets the depth of cut), the jointer has a threaded knob. This makes super-fine adjustments very achievable.

The most unique quality of the jointer, however, is an integral dust collection system. Called "dustup" by the manufacturer, the system uses the airflow created by the motor impeller to direct dust and chips into either a trash can or bag. Even the most expensive stationary jointers require an external vacuum source to remove the voluminous dust and chip piles inevitably created by the tools.

The jointer sells for about $260 on Amazon.com, making it competititive with other benchtop models and significantly less than stationary tools.

Visit Palmgren.com or call 800-621-6145 for more information.



▲ Palmgren's use of cast iron extends all the way into the fence bracket, which houses the locking levers for adjusting the fence.

▲ The infeed table height is adjusted with a threaded knob instead of a lever for better control and finer adjustments.

Black & Decker PROJECT MATE

With the new ProjectMate from Black & Decker in your tool collection, there's no need to drag out the heavy-duty tools for light-duty jobs.

The ProjectMate is a lightweight, corded, multi-tasking tool that quickly converts from drill/driver to scraper to sander.

Of course, the ProjectMate isn't intended to replace any of those dedicated tools for heavy-duty work, but for small projects or light repairs around the house, this could easily become your go-to tool.

Scraping — The scraper head uses two types of blades. The first, a claw-shaped blade, removes paint quickly without the need for harsh chemicals *(Photo, right)*.

The second type of blade looks more like a putty knife. There are three blades of this type included with the ProjectMate in various thicknesses and widths. These blades are excellent at removing unwanted caulk or glue or even popping off old tile.

▲ This scraper head removes thick paint quickly with a sharpened, double-edged blade.

▲ A random-orbit action makes the ProjectMate sander perfect for paint removal and surface prep.

▲ A simple, self-aligning gear system makes head changes quick and hassle-free.

Sanding — The sanding head is an adaptation of Black & Decker's popular Mouse sander and accepts all the accessories for that tool. This means you can adapt it to a wide variety of sanding and polishing jobs. As it is, this head features a narrow point for reaching into tight spaces. The head can also be connected to a vacuum for dust-free sanding *(Photo, above)*.

Drilling and Driving — The drill/driver head features a simple, keyless chuck that makes changing bits tool-free and quick. The chuck accepts hex-shank bits and can drill up to a 1/4" diameter hole. This makes the ProjectMate perfect for tasks like installing a towel bar *(Photo, above)*, hanging curtain rods, or replacing light switches and outlet face plates.

Transforming — Changing heads on the ProjectMate is a simple matter of depressing a locking button at the front of the tool, pulling one head off, and snapping another one on *(Photo, left)*.

▲ The ProjectMate is ideal for drilling small pilot holes and then driving a screw to attach fixtures.

The ProjectMate sells for about $70 and includes everything shown in the *Photo*, above.

For more information on the ProjectMate, visit the company's website at BlackandDecker.com or call 800-544-6986.

Kreg Tool's Precision BAND SAW FENCE

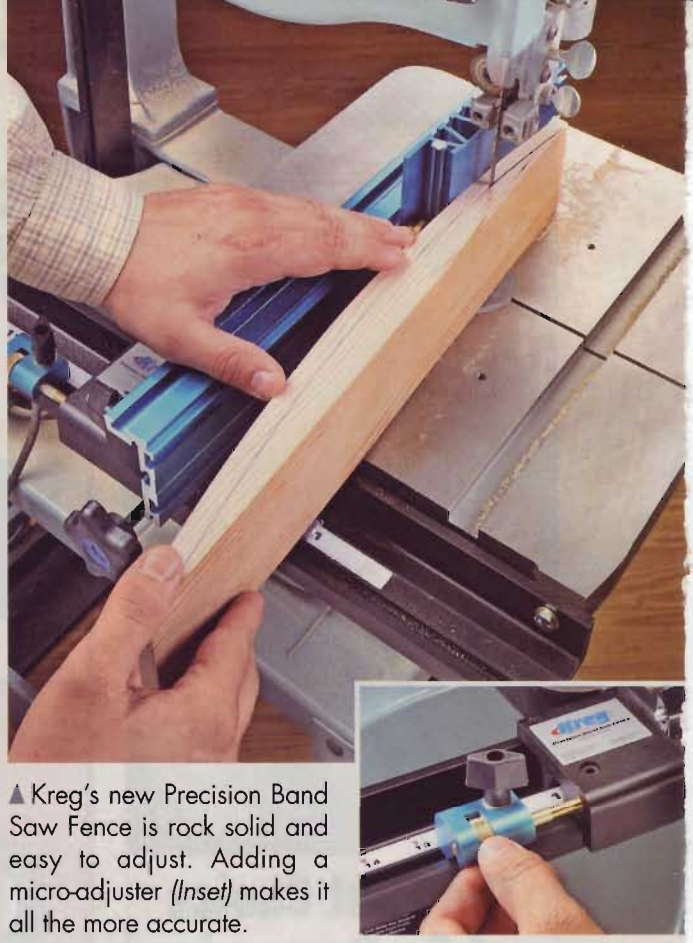
The latest additions to Kreg Tool's line of precision shop accessories (which previously included a miter gauge and miter saw track system) are an impressive band saw fence and some key accessories. The fence was designed with help from band saw guru Mark Duginske.

The basic kit ($120) includes a rigid extruded aluminum fence, a mounting track with measuring scale, a magnifying-lens cursor, and mounting hardware. The track is pre-drilled to fit most popular 14" band saws, including Jet, Delta, Grizzly, General, and others.

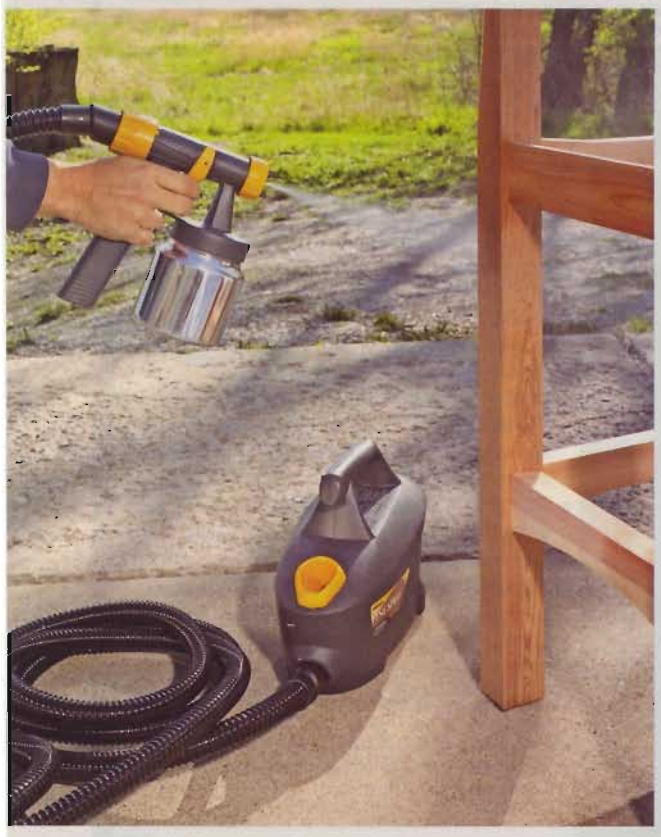
We mounted the fence on our Delta band saw in about 10 minutes, including an optional micro-adjuster ($15) and resaw guide ($18).

The fence slides smoothly on its rails and locks down solidly. We also appreciate being able to adjust the fence for drift when resawing. The micro-adjuster was especially valuable for positioning the fence precisely 3/4" from the blade when cutting a curved chair back *(Main Photo)*.

For more information on the Kreg Precision Band Saw Fence and accessories, visit KregTool.com or call 800-447-8638.



▲ Kreg's new Precision Band Saw Fence is rock solid and easy to adjust. Adding a micro-adjuster *(Inset)* makes it all the more accurate.



▲ Three spray patterns and variable flow control make it easy to dial in the Fine Spray 2400 for any finishing project, indoors or out.

With Wagner, HVLP Means HIGH VALUE, LOW PRICE

Okay, so HVLP actually stands for "High Volume, Low Pressure." But Wagner's Fine Spray 2400 might have you rethinking that acronym.

We did some test spraying to get a feel for the three pattern settings on the nozzle and found the application and control to be first-rate. We also achieved excellent results when staining a set of outdoor furniture *(Photo, left)*.

The Fine Spray 2400 comes with a 1 1/2-quart plastic container, 1-quart metal container, 20 feet of hose, and a viscosity cup to help achieve the perfect finish weight.

Now consider that all of this only costs $100, and all of a sudden, spray finishing is affordable to everyone.

Visit WagnerSprayTech.com or call 800-328-8251 for more information.

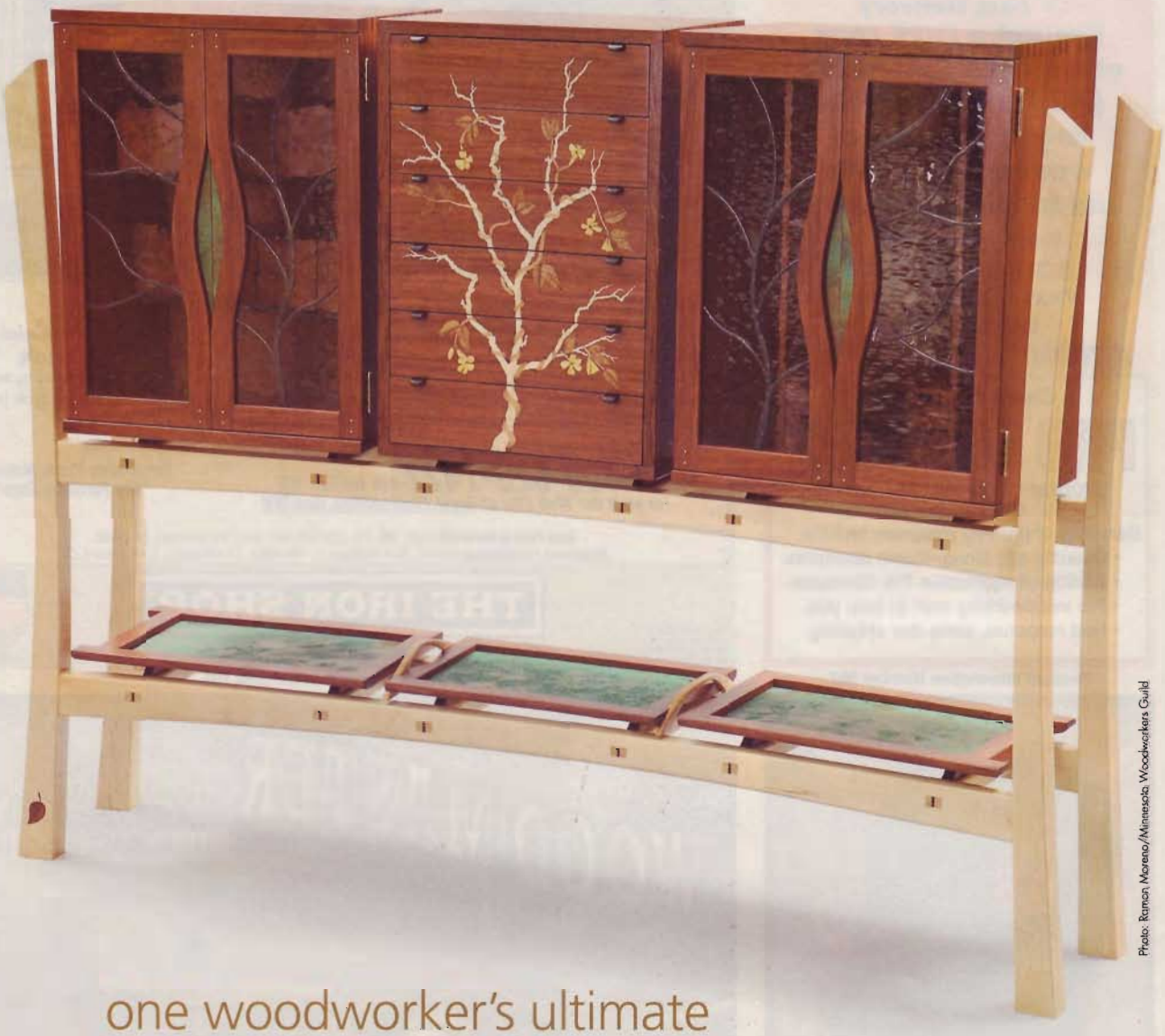


Photo: Ramon Moreno/Minnesota Woodworkers Guild

one woodworker's ultimate

WINE CABINET

To create this stunning wine cabinet, Minnesota woodworker Mark Laub uncorked his creative juices and poured them into the project by the bottleful.

Fine wines deserve a fitting home, and few bottles could find a home finer than this cabinet built by woodworker Mark Laub. It incorporates a half-dozen woods, brass, copper, and glass with an array of woodworking techniques.

Most obvious among these techniques is the marquetry used to create the vines. They're made by cutting individual pieces of veneer to various shapes and then inlaying them in the solid wood.

But it's the curves that take this cabinet to a higher level. You can see them in the arcs of the legs and rails, but you might not notice that the entire cabinet is curved. To accentuate this, the three cases that "float" over the base are wedge-shaped and joined by hand-cut dovetails.

This level of detail continues inside the cabinet, with inlays, carving, and still more curves. To see more of Mark's fine work, go to his website, MarkLaub.com.