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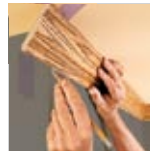
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Woodsmith **PLANS**

THREE BOOKCASES



THREE BOOKCASES

We started with one basic “case” and added some unique details to end up with three distinct projects.

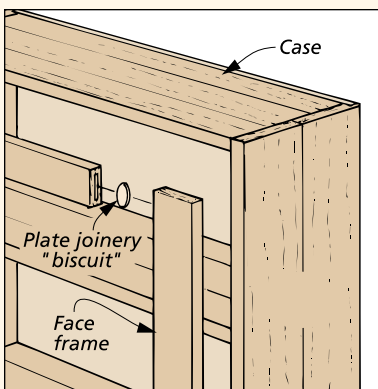
As soon as we decided to feature a bookcase in *Woodsmith* magazine, I was flooded with suggestions. One person wanted a traditional oak version. Another was hoping it would be “country pine.” And I was thinking about designing a simple bookcase made out of maple.

Instead of building only one of these bookcases, we decided to feature all three. The reason we could do this was because they all start the same. Each one started with the same basic “case” made up of sides, shelves, and a back. At that point, the only difference was the type of wood used.

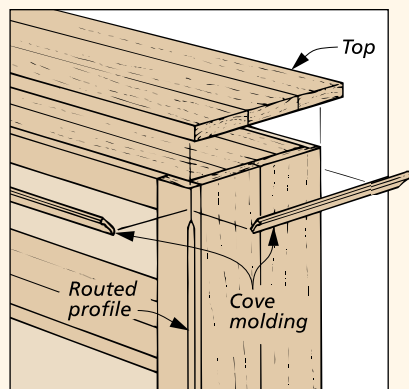
The next step was to add the elements that gave each bookcase its unique appearance. Each one got a slightly different face frame. Then a top panel and some molding. In the end, we were able to create three different-looking bookcases simply by changing the wood and a few details.

These bookcases go together fairly quickly. One reason for this is that we used plate joinery. Biscuits hold the cases together and the face frames as well. And in case it's been awhile since you've had your plate joiner out of the case, don't worry. There's a separate technique article on page 7 that covers each of the joints used.

If you don't own a plate joiner, don't feel you need to go out and buy one just for this project. The bookcases can easily be built using more “traditional” joinery as well.



▲ After the basic “case” was built, a face frame was added for strength. Plate joinery was used to join both the case and face frame.



▲ With the face frame attached, each bookcase was given its unique personality by adding different moldings and profiles.

MATERIALS & CUTTING DIAGRAM

CASE MATERIALS (COMMON TO ALL BOOKCASES)

- A** Sides (2) $\frac{3}{4} \times 11\frac{1}{4}$ - 55 $\frac{3}{4}$
- B** Shelves (5) $\frac{3}{4} \times 11$ - 34 $\frac{1}{2}$
- C** Back (1)* $\frac{1}{4}$ ply. - 35 $\frac{1}{2} \times 51\frac{3}{4}$
- D** Filler Blocks (2) $\frac{1}{2} \times \frac{1}{4}$ - 4

• (46) #16 x $\frac{3}{4}$ " Wire Brads

*On the country pine bookcase, this is beaded paneling (though you can substitute bead board planks).

$\frac{3}{4}$ " x 6" - 72" (Four Boards @ 3 Bd. Ft. Each)



$\frac{3}{4}$ " x 6" - 72" (Five Boards @ 3 Bd. Ft. Each)



Basic Case Construction

Underneath the face frames and moldings of these bookcases is a simple case: solid wood sides connected with five shelves and a back, see Case Exploded View. The pieces are pretty much the same no matter which bookcase you're building.

GLUE UP PANELS. The first task is to tackle the solid wood panels. The two sides (A) and five shelves (B) are all glued up from 3/4"-thick stock.

After the panels have been planed flat, they can be cut to size. Accuracy is important here. If the panels aren't consistent, the case won't end up square. So to help with these long panels, I used a simple panel cutting jig.

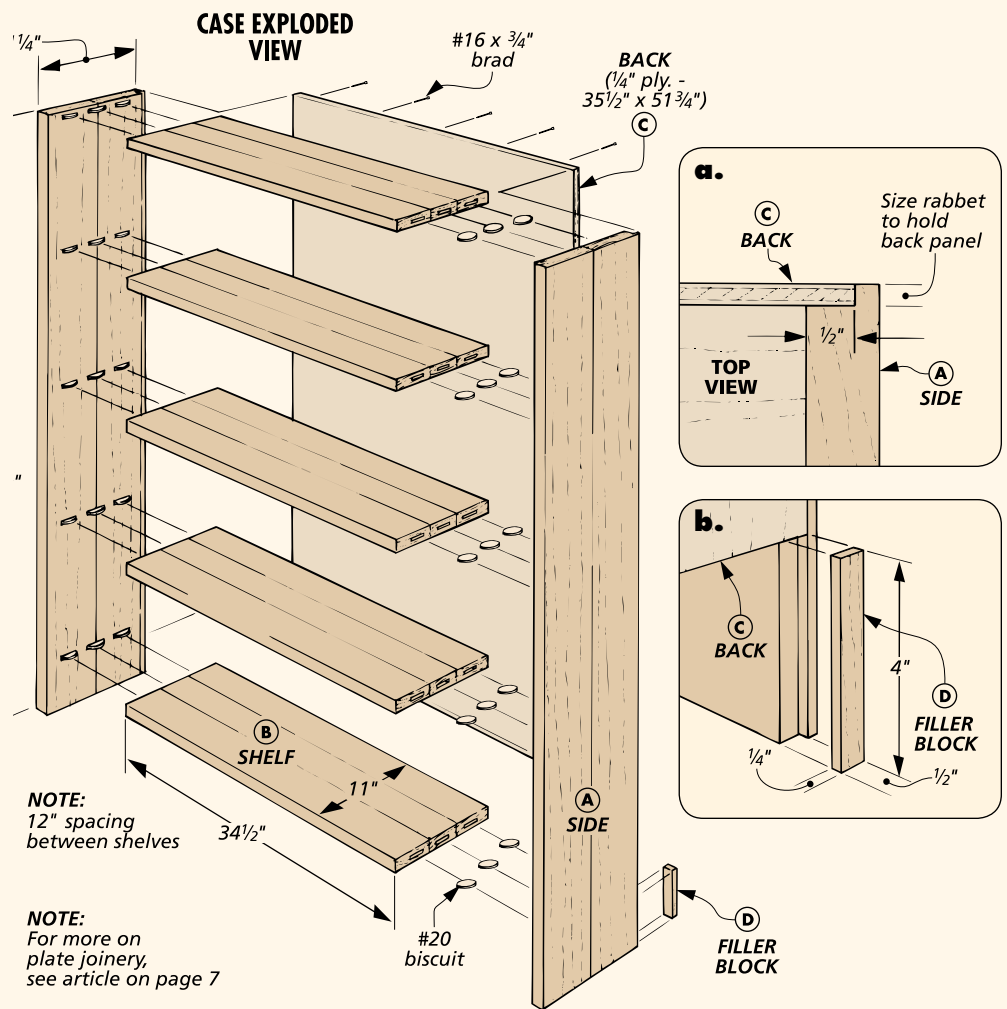
The sides are 1/4" wider than the shelves. This extra 1/4" is for the back, so I cut a rabbet along the back edge of each side to hold it, see detail 'a.'

Note: With the oak and maple cases, I used plywood for the back (slightly under 1/4"). But for the pine bookcase, I purchased beaded plywood that was almost 3/8" thick.

CUT SLOTS FOR BISCUITS. At this point, the slots for the biscuits can be cut. With the side panels, the key is that the opposing slots align so the shelves will be level when the case is assembled. To ensure this, I clamped the sides back-to-back. Then I laid out the bottom edge of each shelf and clamped a straightedge along these lines, see Figs. 1 and 2.

This straightedge becomes the "corner" that the plate joiner butts against, see Fig. 2. I cut three slots in each side so the joint would be plenty strong when the shelves were loaded down with books.

When the slots are cut in the sides,



NOTE:
12" spacing
between shelves

NOTE:
For more on
plate joinery,
see article on page 7

matching slots can be cut in the ends of the shelves. Just like the sides, you'll use the base (not the fence) of the plate joiner to reference the cuts.

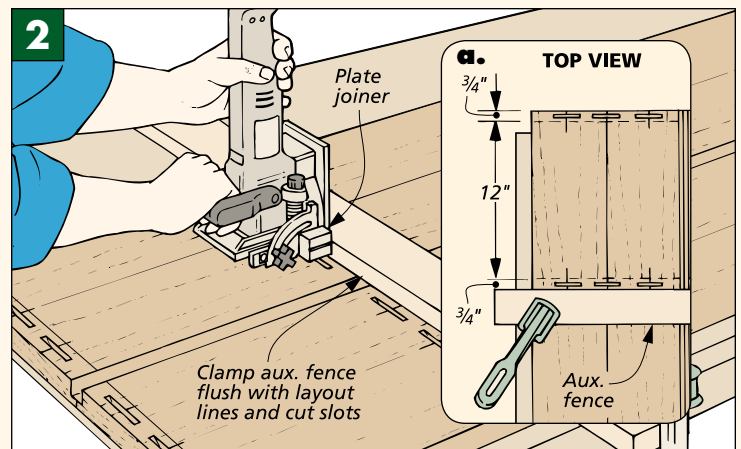
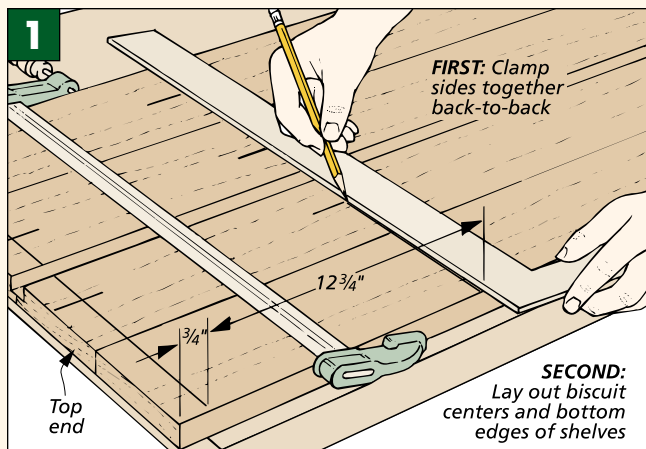
Now the case can be dry assembled, and a back (C) can be cut so it fits between the rabbets and is flush with the top and bottom shelves, see Case Exploded View.

With the back cut to size, it's time to find someone to help you get the case assembled — it's a big job, and you have to work quickly. To buy

myself a little extra time, I used liquid hide glue. And I simply set the back in place to hold everything square.

After the glue dries, you can nail the back in place. Shop Tip: It's awkward to apply finish to the back after it's installed, so I do this before nailing the back in place.

When the back is on, the last thing to do is fill in the rabbets below the plywood panel. I simply cut two small filler blocks (D) to size and glued them in place, see detail 'b' above.



Traditional Oak Bookcase

With the basic case built, it's time to begin adding the elements that give each bookcase its particular "look."

The place to start is with the face frame.

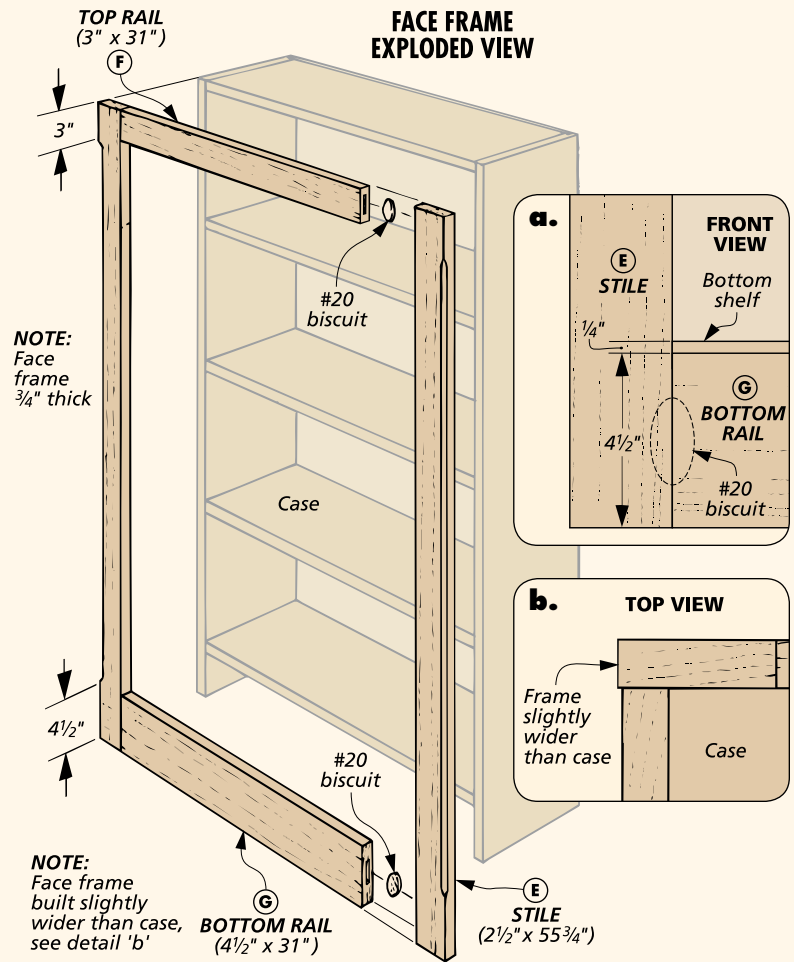
FACE FRAME. Regardless of which style bookcase you choose, the case needs a face frame to stiffen it and prevent it from racking, see Face Frame Exploded View.

Traditionally, the two stiles and two rails of a face frame would be joined with mortise and tenons (which you can still use if you don't have a plate joiner).

However, whether you build the frame with mortise and tenon or use biscuits, you're going to have the same challenge. You have to build a large frame that covers the edges of the case *exactly*. And if the case is even a little out of square, the frame won't be flush even if it is the correct size.

To solve this problem, I like to build the face frame a smidgen wide. For these bookcases, I did this by ripping the stile pieces a hair wide (less than $\frac{1}{16}$ "), refer to detail 'b' above right. Then after the face frame is glued to the case, the sides of the frame can be trimmed to match the case.

STILES & RAILS. To build the frame, I started by cutting the **stiles (E)** to length, see Face Frame Exploded View. Then I ripped them slightly wide. The **top rail (F)** and **bottom**



rail (G) are both cut to finished size. Now you can lay out and cut the slots for the biscuits. For more on this, turn to page 7. (Or you can cut the mortise and tenon joints.) Then after the frame is glued together, it can be glued to the front of the case, as illustrated in Fig. 1.

Note that the bottom rail (G) shouldn't be flush with the bottom shelf, see detail 'a' above. Its top edge ends up $\frac{1}{4}$ " lower than the shelf to create a simple shoulder.

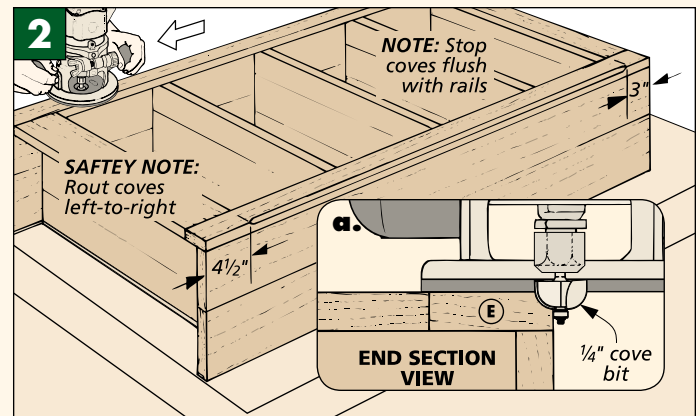
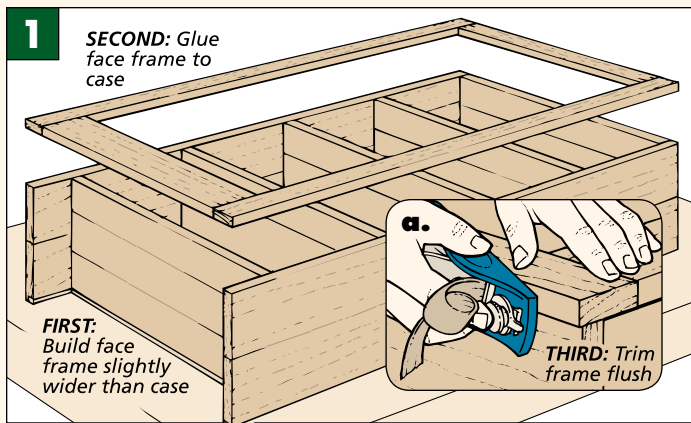
At this point, the sides of the face frame can be trimmed flush.

This was a good opportunity for me to get my block plane out and create some shavings, see Fig. 1a.

With the face frame trimmed, the last thing to do is rout a stopped $\frac{1}{4}$ " cove along the outside corners, see Figs. 2 and 2a. This is easy to do with a hand-held router — the base rests secure on the frame. And to stop the coves flush with the rails, I simply transferred their inside edges across the stiles with a square.

TRIM & TOP. With the face frame complete, it's time for the details that really make this bookcase distinct.

▲ This traditional oak bookcase is "dressed up" with cove molding and a simple apron.



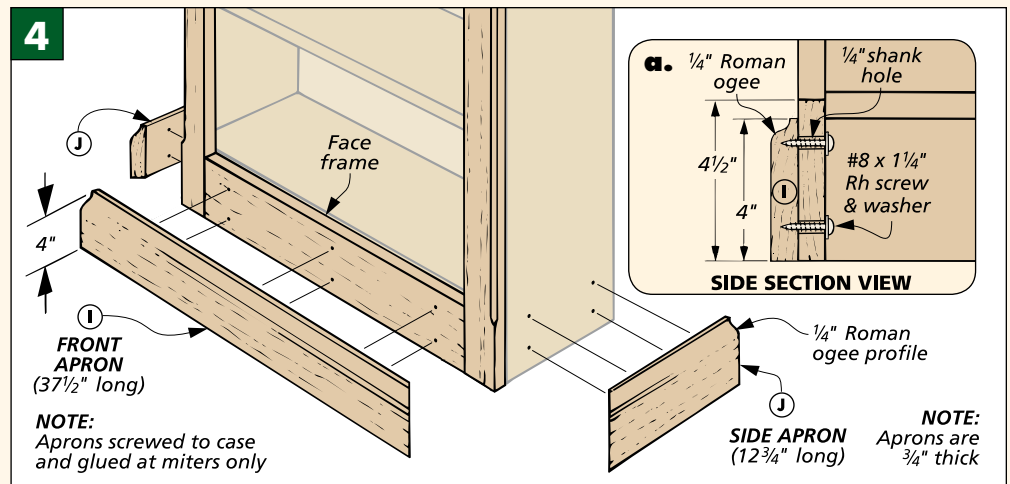
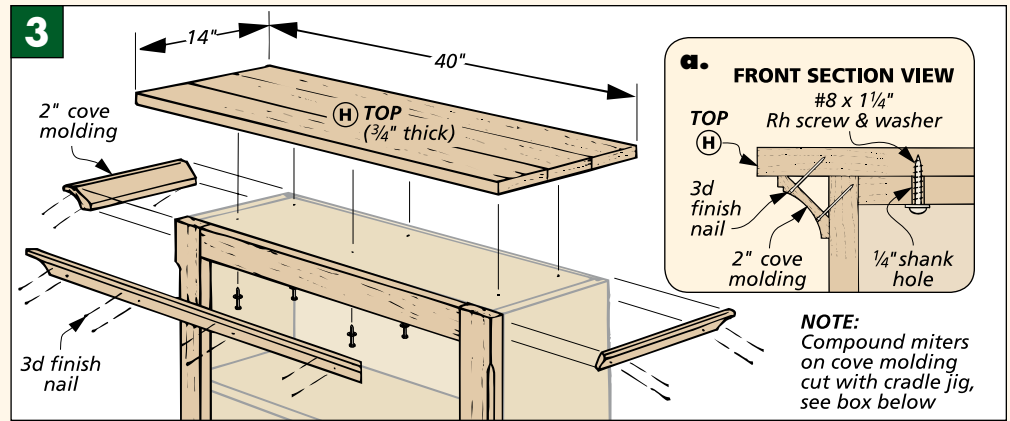
First, I added the top and dressed it up with cove molding. Then I added an apron around the base.

TOP PANEL. Before you can add the cove molding, the $\frac{3}{4}$ "-thick panel for the **top (H)** needs to be glued up and cut to size (14" x 40"), see Fig. 3. Then to allow for wood movement, I drilled oversize shank holes and used roundhead screws and washers, see Fig. 3a. (The top is centered side-to-side and flush with the back.)

COVE MOLDING. With the top in place, you can begin working on the cove molding underneath the top, see Fig. 3. (I purchased the 2"-wide molding at a local home center.)

Cove molding "leans" forward, so it requires compound miters. This typically means angling the miter gauge and tilting the saw blade. But to make the setup much easier, I like to tilt the *molding* and leave the blade square to the table. I do this with a simple cradle, see box below.

The other trick to cutting compound miters successfully is to put your tape measure away. Instead, cut the front corner of the sides and then hold it up to the case and mark the back edge. When it's cut to length, repeat this procedure for the other side piece of molding. Then clamp both sides in place, and sneak up on the final length of the front piece until it fits between the sides perfectly. When all the pieces are cut, I nailed the molding to the top, see Fig. 3a.



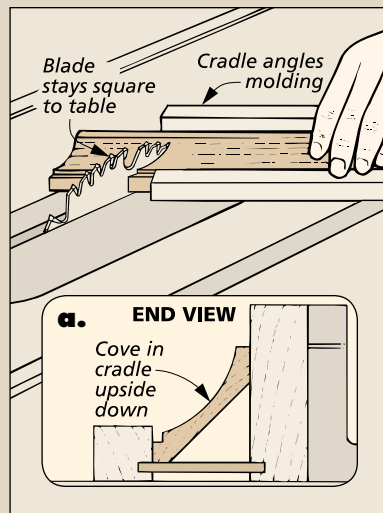
BASE APRON. With the cove molding on, the last pieces to add are the **front (I)** and **side aprons (J)** around the base, see Fig. 4. Unlike the cove molding, these pieces are joined with simple miters. But before cutting the miters, you need to rout the ogee profile along the top edge, see Fig. 4a.

I attached the base aprons to the case the same way I attached the top. I allowed for wood movement by drilling oversize ($\frac{1}{4}$ "-dia.) shank holes in the case sides and using roundhead screws with washers, see Fig. 4a. But to keep the miters tight, I applied glue to each front corner.

COVE MOLDING CRADLE JIG

To simplify the table saw setup for cutting cove molding, I leave the saw blade square and use a simple cradle that attaches to the miter gauge and holds the *molding* at an angle, as shown in the drawings at right.

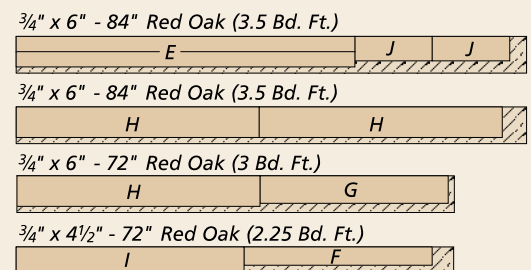
There are two important things to note. First, the molding should always be placed *upside down* in the jig. Also, you'll still have to move the miter gauge from one side of the blade to the other, depending on the corner being cut.



OAK BOOKCASE

E Stiles (2)	$\frac{3}{4}$ x 2 $\frac{1}{2}$ - 55 $\frac{3}{4}$
F Top Rail (1)	$\frac{3}{4}$ x 3 - 31
G Bottom Rail (1)	$\frac{3}{4}$ x 4 $\frac{1}{2}$ - 31
H Top (1)	$\frac{3}{4}$ x 14 - 40
I Front Apron (1)	$\frac{3}{4}$ x 4 - 37 $\frac{1}{2}$
J Side Aprons (2)	$\frac{3}{4}$ x 4 - 12 $\frac{3}{4}$

- (20) #8 x $\frac{1}{4}$ " Rh Screws
- (1) 2" Cove Molding (6ft.)
- (20) #8 Flat Washers
- (16) 3d Finish Nails



Country Pine Bookcase

In addition to the oak bookcase, we also wanted to build a less formal, "country" version, see photo. Pine was the obvious choice for the wood.

But there were a few other details I had in mind as well.

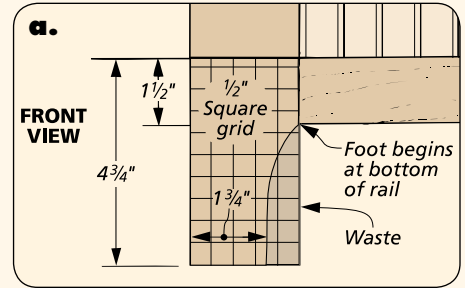
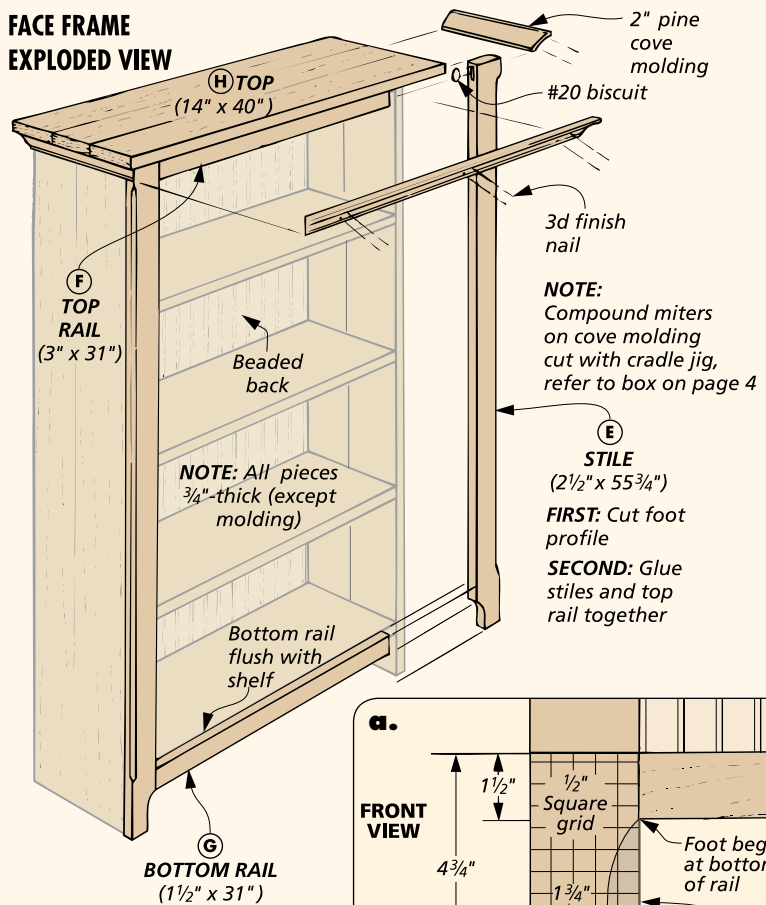
BEADED BACK. First of all, I wanted the case to have a beaded back. Typically, this would be individual solid wood boards, see the box below right. But I found a 4x8 sheet of beaded pine plywood that was much easier to install. (It was about $\frac{3}{8}$ " thick, so the rabbet in the back of the case sides had to be a bit deeper, refer to detail 'a' in the Case Exploded View on page 2.)

FACE FRAME. The other big difference is the "foot" profile on the bottom of the frame. This profile required a few adjustments to the building process.

The size of the face frame is the same as the oak bookcase — except for the bottom rail. I started by cutting the **stiles (E)**, **top rail (F)**, and **bottom rail (G)** to size. The bottom rail is only $1\frac{1}{2}$ " wide, which is too narrow to use biscuits. So I used biscuits to create a U-shaped assembly with the stiles and top rail.

But *before* gluing these three pieces together, I created the feet on the bottom, inside edges of the stiles. I dry assembled all the rails and stiles

FACE FRAME EXPLODED VIEW



THIRD: Attach bottom rail after stiles and top rail are glued to case

and drew the pattern out on each stile, (detail 'a'). Then the profile can be cut with a band saw and sanded smooth with a drum sander.

The bottom rail is attached *after* the U-shaped assembly has been glued to the case. (I did dry clamp the bottom rail in place to keep the frame square.) Then the bottom rail can be glued flush with the top of the bottom shelf. (It should also align with the "feet" on the stiles, see detail 'a.')

TOP & COVE MOLDING. After the frame is trimmed flush to the case and the

cove profile is routed on the outside edges, all that's left is to add the **top (H)** and some 2" cove molding, see Exploded View. Again, to cut the compound miters for the molding, I used a cradle jig, see the box on page 4.

FINISH. To give the pine a warm, golden tone, I applied a wood conditioner (to reduce any blotching) and stained the wood a honey maple color. Then I added a few coats of a wipe-on finish. (I had painted the beaded back before attaching it to the case.)

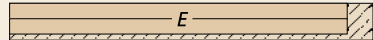


▲ With a beaded back, cove molding, and foot profile, this pine bookcase will look at home in any "country" setting.

PINE BOOKCASE

- E** Stiles (2) $\frac{3}{4}$ x $2\frac{1}{2}$ - $55\frac{3}{4}$ • (6) #8 x $1\frac{1}{4}$ " Rh Screws
- F** Top Rail (1) $\frac{3}{4}$ x 3 - 31 • (6) #8 Flat Washers
- G** Btm. Rail (1) $\frac{3}{4}$ x $1\frac{1}{2}$ - 31 • (1) 2" Cove Molding (6ft.)
- H** Top (1) $\frac{3}{4}$ x 14 - 40 • (16) 3d Finish Nails

$\frac{3}{4}$ " x 6" - 60" Pine (2.5 Bd. Ft.)



$\frac{3}{4}$ " x 6" - 72" Pine (3 Bd. Ft.)



$\frac{3}{4}$ " x 5" - 84" Pine (2.9 Bd. Ft.)



BEADED BOARD BACK

If you can't locate any beaded pine plywood for the case back, don't worry. Before there was plywood, cabinets had solid wood backs.

One way to allow these solid wood backs to expand and contract freely was to use "beaded" boards, see photo.



These had interlocking tongues and grooves on their edges, which held the back together but still allowed the pieces to expand and contract.

Classic Maple Bookcase

The last bookcase I built was made out of maple, see photo at right. Of the three bookcases, this one is the simplest to build. There's no molding to install at the top or bottom — just a face frame (with a curved top rail) and a glued-up panel on top, see Face Frame Exploded View.

FACE FRAME. After the maple case had been assembled, I began work on the face frame, see Face Frame Exploded View. What's unique about this frame is that the stiles and rails are different thicknesses. I cut the **stiles (E)** from $\frac{3}{4}$ "-thick stock, but the **top rail (F)** and **bottom rail (G)** are only $\frac{1}{2}$ "-thick. This way, the stiles stand proud like a couple of simple columns.

When the stiles and rails have been cut to size, the curve can be cut on the top rail (F), see detail 'c' below. There are a couple ways you can lay out this large curve. You can either draw a half pattern and trace it onto the workpiece. Or you can put a few nails on the *back* face of the rail blank, bend a flexible straightedge against them, and trace along this straightedge. (A narrow strip of $\frac{1}{8}$ " hardboard is flexible enough for a curve this large.)

When the curve is laid out, you can cut it with a band saw or jig saw. Stay to the waste side of the line and then sand it smooth with a drum sander in the drill press.

Next, a $\frac{1}{8}$ " roundover can be routed on all of the face frame pieces, see Face Frame Exploded View. The

thicknesses force you to work a little "backwards." Instead of working off of the front faces of the stiles and rails, you have to lay out and reference the plate joiner on the back faces of these pieces — the ones that will end up flush. Then the face frame can be assembled and glued to the case. Note: The upper edge of the bottom rail (G) isn't flush with the bottom shelf, see photo. This rail sets $\frac{1}{4}$ " below the top of the bottom shelf.

TOP PANEL. After the face frame has been trimmed flush with the sides of the case, the only thing left to do is glue up a $\frac{3}{4}$ "-thick solid wood panel for the **top (H)**, see Face Frame Exploded View.

Because there's no molding underneath this panel, it's simply cut to overhang the front and sides 1". (It's flush with the back.) Then on its front and side edges, I routed a $\frac{1}{8}$ " roundover, like the ones on the face frame.

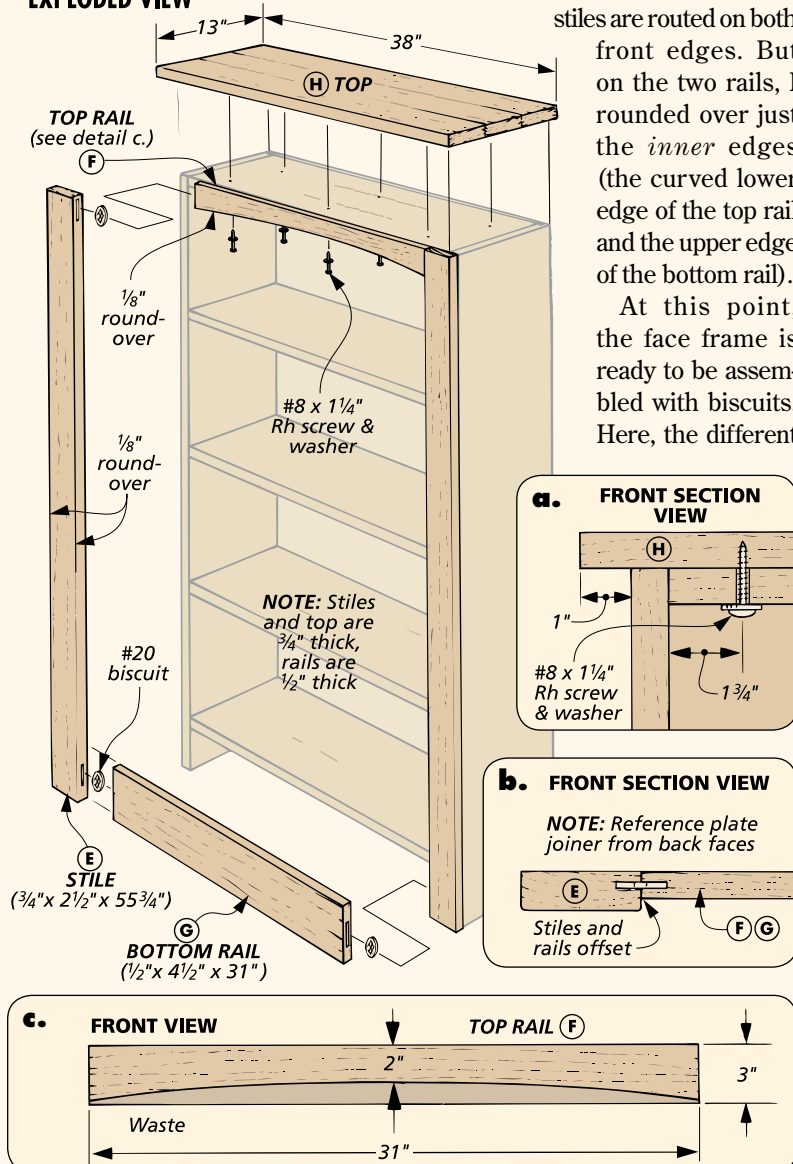
Finally, when screwing the top to the case, I drilled oversize $\frac{1}{4}$ "-dia. shank holes to allow the panel to expand and contract, see detail 'a.'

To finish the bookcase, I didn't apply any stain. Instead, I wiped on three coats of a "satin" finish. **W**



▲ On this maple bookcase, the rails are thinner and "set back" from the stiles.

FACE FRAME EXPLODED VIEW



MAPLE BOOKCASE

- | | |
|------------------------|--|
| E Stiles (2) | $\frac{3}{4}$ x $2\frac{1}{2}$ - $55\frac{3}{4}$ |
| F Top Rail (1) | $\frac{1}{2}$ x 3 - 31 |
| G Btm. Rail (1) | $\frac{1}{2}$ x $4\frac{1}{2}$ - 31 |
| H Top (1) | $\frac{3}{4}$ x 13 - 38 |
- (6) #8 x $1\frac{1}{4}$ " Rh Woodscrews
 - (6) #8 Flat Washers

$\frac{3}{4}$ " x 6" - 60" Maple (2.5 Bd. Ft.)

$\frac{3}{4}$ " x 5" - 72" Maple (2.5 Bd. Ft.)

$\frac{3}{4}$ " x 5" - 96" Maple (Two Boards @ 3.3 Bd. Ft. Each)

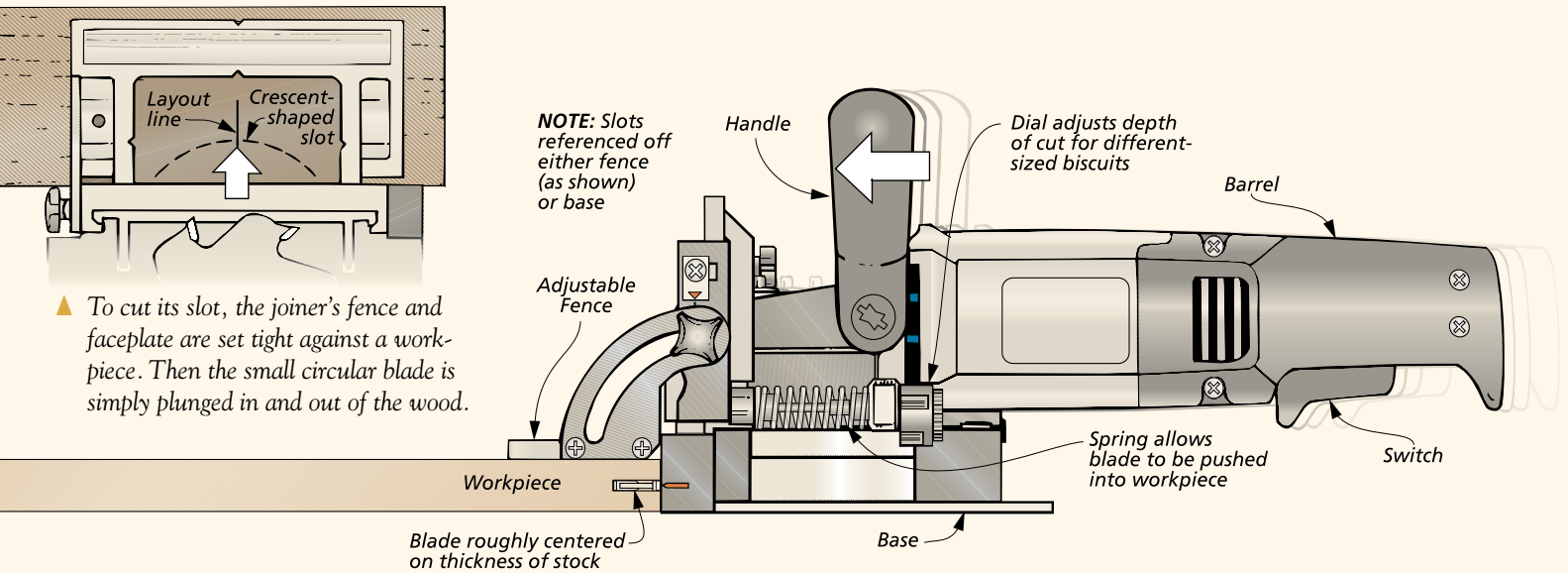
$\frac{3}{4}$ " x 5" - 96" Maple (Two Boards @ 3.3 Bd. Ft. Each)

$\frac{3}{4}$ " x 5" - 96" Maple (Two Boards @ 3.3 Bd. Ft. Each)

$\frac{3}{4}$ " x 5" - 96" Maple (Two Boards @ 3.3 Bd. Ft. Each)

PLATE JOINERY

In terms of sheer speed, nothing beats a plate joiner. You can have a joint cut and assembled in the time it takes just to lay out a traditional joint.



▲ To cut its slot, the joiner's fence and faceplate are set tight against a workpiece. Then the small circular blade is simply plunged in and out of the wood.

Pull a new plate joiner out of its box, and in a few minutes, you can be using it to build a project. Getting the basics down takes hardly any time at all. And when you start building the project, you'll be amazed at how quickly you'll be able to work. A joint can be laid out, cut, and assembled in minutes — with the same accuracy as other, more traditional joints that might take a half hour to complete.

SIMPLICITY. A plate joiner is so quick is because it's simple. It does one thing — scoop out a circular-shaped

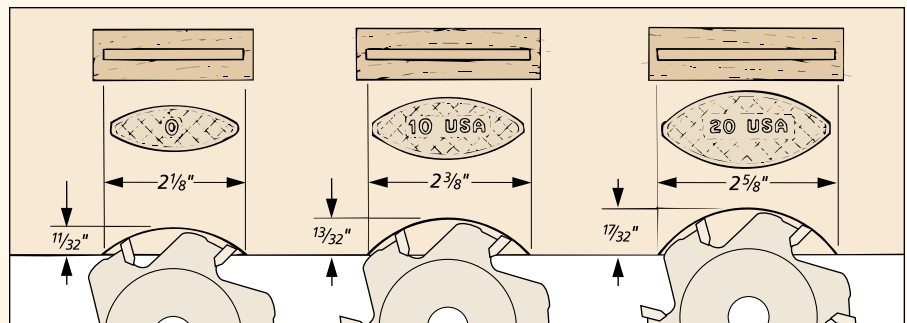
slot, see drawings above. A slot is cut in each of the mating workpieces that butt together. Then the joint is glued together with a special spline, a “biscuit” that's shaped like a football (drawing below). This biscuit is a compressed piece of solid wood. So when you add the glue during assembly, the biscuit swells, creating a tight fit in the slots.

The first time I picked up a plate joiner, I thought it looked and felt (and sounded) like a small right angle grinder. It's as if the grinding wheel was replaced by a small

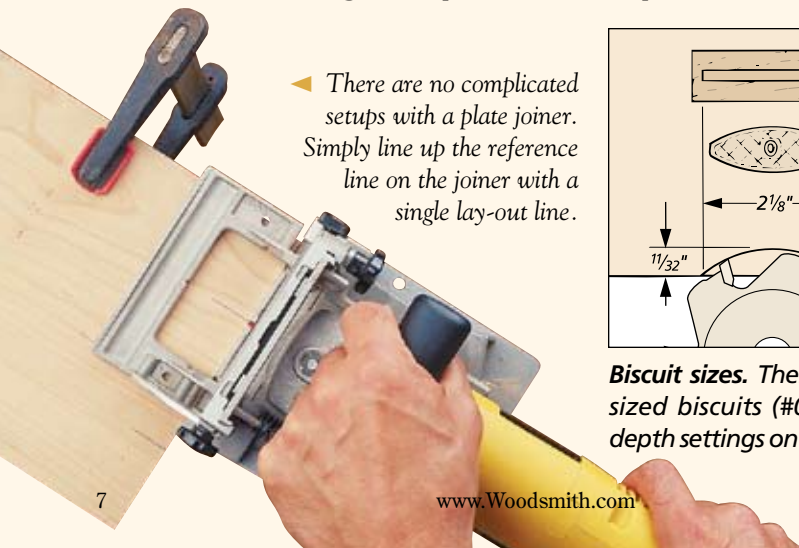
circular saw blade, though you don't actually see this blade — it's covered by the joiner's face plate and fence.

PLUNGING MOTION. But unlike a grinder, the plate joiner works with a quick plunging motion. With one hand gripping the trigger barrel and the other on the handle, you simply butt the fence and face plate against a workpiece and squeeze the trigger, see drawing above. Pushing the handles against the piece compresses a spring and plunges the blade into the wood. Although you never see the blade, you know the tool is

◀ There are no complicated setups with a plate joiner. Simply line up the reference line on the joiner with a single lay-out line.



Biscuit sizes. There are three standard sized biscuits (#0, #10 & #20). Preset depth settings on the plate joiner adjust the depths (and widths) of the slots, which are slightly oversize. The #0 biscuit requires a workpiece about 2 1/4" wide.



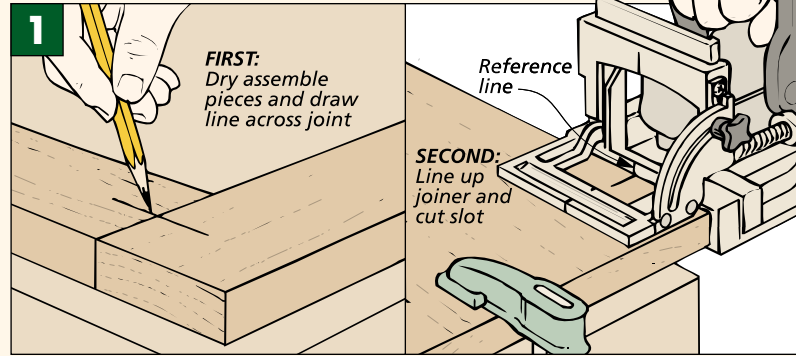
doing its job by the “whine” of the motor and the slot left in the piece.

This quick plunging motion is all there is to cutting the slots. But cutting the slot is only one part of the process. You also have to lay out the joint and set up the joiner for the cut. Fortunately, these tasks are almost as quick as cutting the slot.

LAYING OUT SLOTS. The layout is as easy as locating the center of each biscuit. And the spacing of the biscuits isn’t critical, either. So you don’t need any layout tools. Just dry assemble the two pieces and draw a quick line across the joint, see Fig. 1 above. Then when cutting the slots, align the layout line with the reference line on the plate joiner and make the cut, see Fig. 1 and photo on page 7.

If you’re like me, you’ll lay out the first few joints with the same precision as a hand-cut dovetail. But a biscuit joint isn’t a glove-tight fit. The slots are slightly wide and deep to allow for some built-in “breathing room,” see lower drawing on page 7. Because of this extra room, you’ll be able to adjust the workpieces during assembly to make sure they align.

SETTING UP JOINER. To set up a joiner, you have to set the depth of the slot, center the blade, and occasionally angle the fence. This sounds like a lot more



work than it really is. That’s because 95 percent of the time, I’m working with 3/4"-thick stock and a square fence, so all I have to do is set the depth of the slot. And even this is easy.

DEPTH OF CUT. There are three sizes of biscuits (see lower drawing on page 7), and the slot depths are all preset. So all you have to do is turn a dial to the right biscuit size, and you’re ready to begin cutting the slots.

FENCE HEIGHT. As for the fence, it should be set so the slots are roughly centered on the thickness of the pieces, see drawing at top of page 7. And as I mentioned earlier, the majority of the time I’m working with 3/4"-thick stock anyway, so I don’t have to adjust the fence very often.

When working with 3/4"-thick stock, you can also use the base as a reference. Just be consistent. Don’t use the

base for one piece and the fence for its mating piece — the two slots may not line up with each other.

FENCE ANGLE. With the depth of cut and fence set, you’re ready to cut the slots. However, with some joints, you also need to angle the fence. There are a number of ways to do this depending on your particular model of joiner, see margin photos on page 10. But again, most of the time you won’t have to think about this.

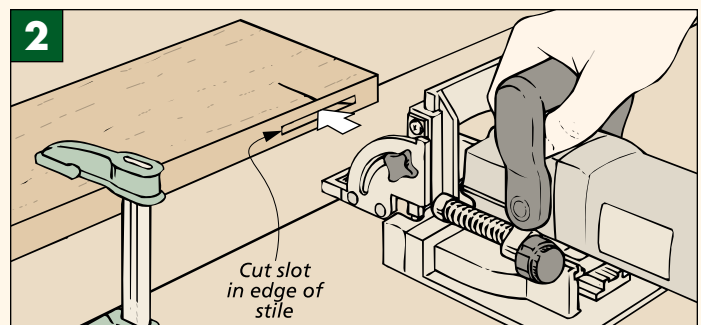
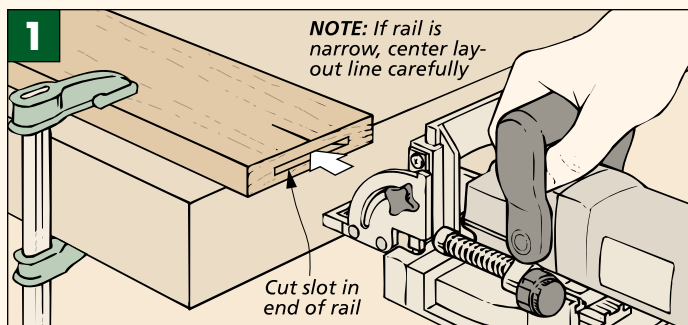
These are just some basic points. Before you get started, there are also a few simple setups to learn. Over the next couple of pages, I’ll talk briefly about the common joints you’ll build with your plate joiner, highlighting anything you need to watch out for. Plus, there are a few quick tips I’ve found useful when working with a plate joiner, see box on page 10.

Frame Joints

Frames are perfect for plate joinery, see photo. A slot is cut in the *end* of one piece and in the *edge* of the other, and you don’t have to worry about allowing for tenons — the rails and stiles simply butt together. The only limitation you’ll run into is with narrow boards. Even with a #0 biscuit, the workpieces have to be at least

2 1/4" wide, or the slots will cut all the way across the ends. (Note: When laying out narrow pieces, it’s a good idea to center the lines exactly.)

To make a frame, first dry assemble each corner and draw a layout line across the joint, see Fig. 1 above. Then clamp each piece down and cut its slot, see Figs. 1 and 2 below.



Corner Joint

A corner is also easy to create with a plate joiner. Here, the end of one piece is slotted and butts into the face of the other piece, see photo. But there's more to this than you might think.

LAYOUT. A corner joint begins like any other plate joint. The pieces are set together and layout lines are drawn on the *outside* face and end, see photo. Then the slots can be cut in the end of one piece, see Fig. 1.



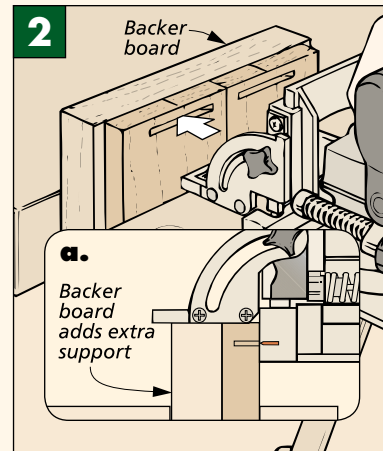
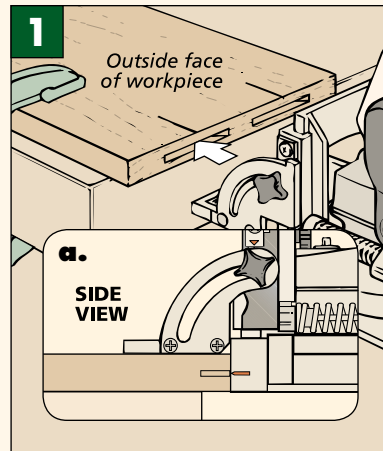
▲ To join a corner with biscuits, slots are cut in the end of one piece and the face of the other.

The trick comes when you're cutting the slots on the face of the mating piece. Here the fence rests on the end of the board, and it's a bit of a balancing act to keep *both* the fence and face plate tight against the piece. It's hard to "feel" if the joiner is sitting square on the thin end of the board.

BACKER BOARD. However, there is a simple solution. I clamp the piece vertically in a vise, see Fig. 2. And to

make the end "thicker," I slip a backer board behind the piece, see Fig. 2a. Then I cut the slots.

LONG WORKPIECES. Unfortunately, this technique won't work when you have long workpieces. You can't stand them on end. So instead, I lay the pieces down and treat them like a T-joint, see the section below. And to support the joiner, I also add a spacer block, see tip box on page 10.



T-Joint

A T-joint has slots cut in the end of one workpiece (the cross piece) and in the center of the other piece (the side), see photo at right. It's the side piece that requires all the work. The reason? There's no edge or corner to reference the plate joiner to. This means you have to "create" a temporary corner to butt the tool against.

LAYOUT. To lay out a T-joint, first draw a line to locate the *bottom* edge of the cross piece on the side piece and clamp the cross piece flush with this layout line, see photo at right and Fig. 1 below. Then you can lay out the centers of the biscuits on both the sides and cross pieces.

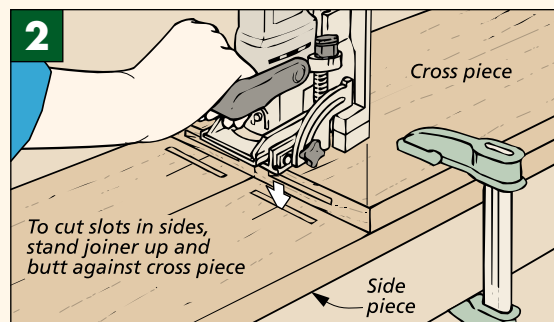
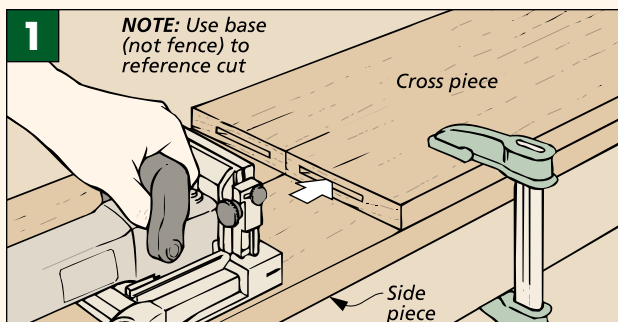
At this point, you're ready to begin cutting the slots. When joining the sides and shelves on the bookcases, I used a slightly different technique. To speed things up, I clamped the two sides together, added an auxiliary fence, and cut the slots in both sides at the same time (Fig. 2 on page 2).

USE BASE. A T-joint is unique in another way. You can't use the joiner's fence to reference the cuts on the side pieces — so you can't use the fence on the cross pieces either. Instead, the base is used for both. First, set the base on the side piece and cut the slots in the end of the cross piece, see Fig. 1 below. Then to cut the slots in



▲ To cut the slots in the side piece of a T-joint, you'll need to create a temporary corner for the joiner.

the face of the side piece, simply stand the joiner up and set its base tight against the cross piece, see Fig. 2.



Miter Joints

Because there's no end grain visible, I like the clean look that's created by miter joints. But it's nice if they can be reinforced. Here, a plate joiner really earns its keep. Adding a biscuit is a quick way to strengthen a miter joint, whether the workpieces are part of a frame or part of an apron, see the photos at right.

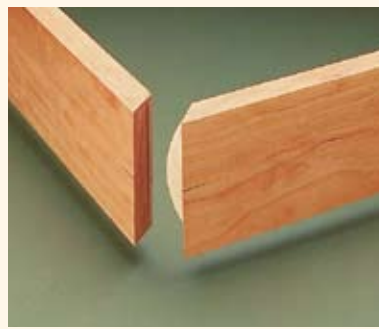
MITERED FRAME. Using biscuits to join a mitered "frame" (where the pieces are mitered across their widths) is almost identical to using them to build a face frame, see left photo. You don't even have to change the angle of the fence — the jointer cuts straight into the mitered end, see Fig. 1 at right. The only difference is that the slots are cut in the ends of both pieces.

Another benefit is that because a 45° miter is longer than the width of the workpiece, you can add a biscuit to a narrower piece (down to 1⁹/₁₆" wide) without the slot being visible.

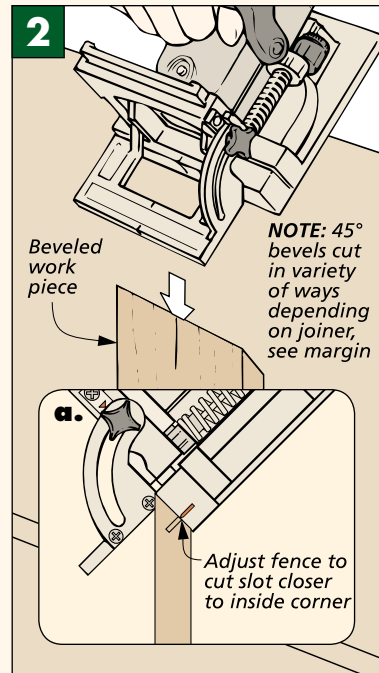
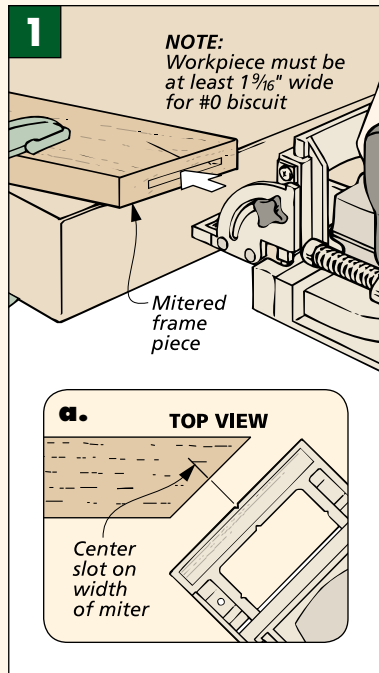
BEVELED MITER. Instead of being mitered across the *face*, a workpiece can also be beveled across the *ends*, see right photo above. This means you may have to adjust the fence to 45°, see margin photos at right. Depending on the model, there are two ways a plate joiner fence will tilt. Some sit on the face of the workpiece, straddling across the inside corner, see lower margin photo. But I prefer to have the jointer trap the point of the workpiece,



▲ Adding a biscuit to the ends of mitered pieces is a quick way to strengthen a frame.



▲ A beveled miter is also made a lot stronger by a biscuit. But with this cut you have to angle the fence.



▲ Many plate joiner fences adjust to trap the point of a 45° bevel.



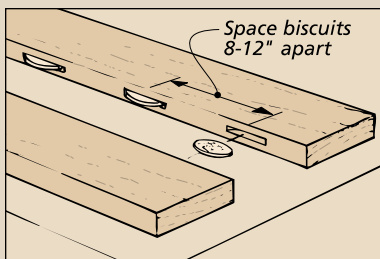
▲ Some plate joiner fences adjust to fit over the inside corner of a 45° bevel.

see Fig. 2 and upper margin photo. It feels much more secure.

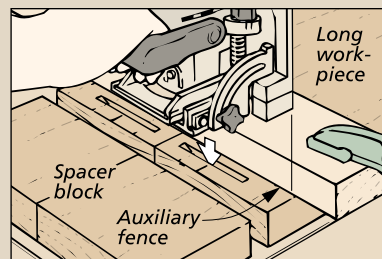
The thing that's critical when cutting a slot into the beveled end of a workpiece is the position of the fence. Instead of centering the slot on the

thickness of the piece, I set the fence so the slot is closer to the *inside* corner, see Fig. 2a. This way, you can use a larger biscuit without worrying about "blowing" through the outside face with the plate joiner. **W**

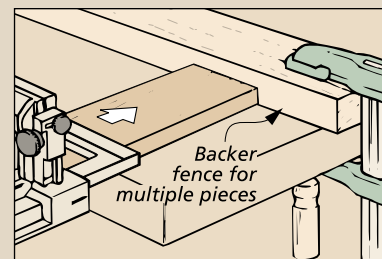
PLATE JOINERY TIPS



Edge-to-edge joints. While they aren't needed for strength, biscuits will help keep workpieces aligned when gluing up a long panel or one made up of many boards.



Long corner joints. To cut slots near the end of a long piece, the joint is treated like a T-joint, see page 9. Plus, a spacer block is used to provide extra support for the joiner.



Securing multiple pieces. With multiple pieces, you can save time by clamping down a backer fence to push the pieces against so you don't have to clamp each one separately.