Woodsmith PLANS

BOW-FRONT END TABLE

TOTAL SUCCESS
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BOW-FRONT END TABLE

You might expect a bow-front end table like this to throw you a few curves, but creating each of the formal details is pretty straightforward.

Here's a little challenge. Set this end table in a room with a bunch of woodworkers and see what they look at first. I bet you nine times out of ten, the bow-front drawers will be opened first and given a close inspection. And frankly, I'd do the same thing. The drawers are one of the most intriguing features of this project.

You don't see bow-front drawers very often. So it's natural to be curious about how they're built. Are they bent to this shape or cut from a thick block? And how do you go about joining the bowed front to the straight sides?

For these drawers, I used a procedure that was a little unusual, but it allowed me to build the drawers without any special jigs or materials. Start off by building an ordinary ½"-thick drawer with machine-cut dovetails. But before gluing these drawer pieces together, I glued a thick block to the front piece and cut out the curves.

Once you've discovered the trick to how the drawers are built, there are still a few other design details on this table you'll want to look at a little closer.

FLUTED LEGS. Take the legs, for instance. They look like square columns with flutes on the outside faces and chamfers on the corners. Here, consistency is everything. The three flutes on each face must be spaced evenly and stop the same distance from the top and bottom of the legs. The procedure isn't complicated. You just need a careful setup on the router table with a common core box bit.
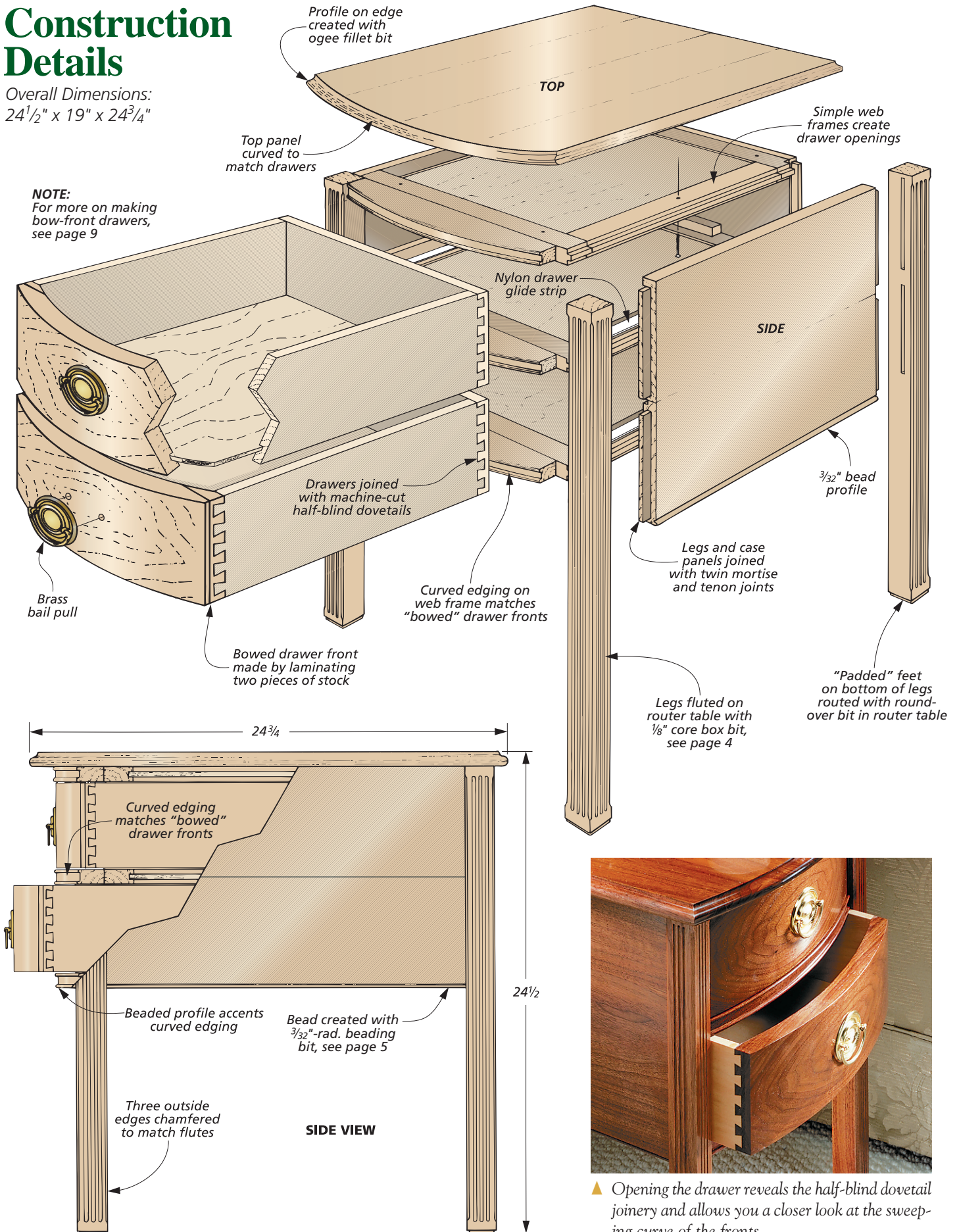
CURVED EDGING. This end table has plenty of other details: the bead profiles on the sides, the curved edging, and the ogee profile around the top. One detail you won't be able to resist touching is the finish. The top of this table has a glass-smooth finish. It takes a few extra coats and a little elbow grease, but it's well worth it (page 10).

Construction Details

Overall Dimensions:
24$\frac{1}{2}$" x 19" x 24$\frac{3}{4}$"

Profile on edge created with ogee fillet bit

Top panel curved to match drawers

NOTE:
For more on making bow-front drawers, see page 9

TOP

Simple web frames create drawer openings

Nylon drawer glide strip

SIDE

Drawers joined with machine-cut half-blind dovetails

Brass bail pull

Curved edging on web frame matches "bowed" drawer fronts

$\frac{3}{32}$" bead profile

Legs and case panels joined with twin mortise and tenon joints

Bowed drawer front made by laminating two pieces of stock

Legs fluted on router table with $\frac{1}{8}$" core box bit, see page 4

"Padded" feet on bottom of legs routed with round-over bit in router table

24$\frac{3}{4}$

Curved edging matches "bowed" drawer fronts

Beaded profile accents curved edging

Bead created with $\frac{3}{32}$"-rad. beading bit, see page 5

24$\frac{1}{2}$

Three outside edges chamfered to match flutes

SIDE VIEW

▲ *Opening the drawer reveals the half-blind dovetail joinery and allows you a closer look at the sweeping curve of the fronts.*

Fluted Legs

Though the bow-front drawers on the end table attract the most attention, the legs also deserve a closer look. On each outside face, I routed three flutes (rounded, stopped grooves like those you might find on a column), as shown at right. The flutes are fairly simple to create. They're done on the router table with a core box bit, as you'll see on the next page.
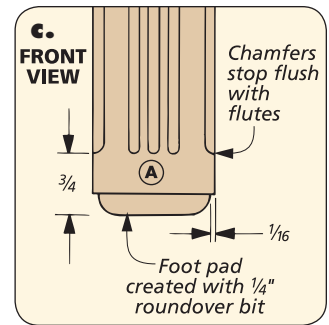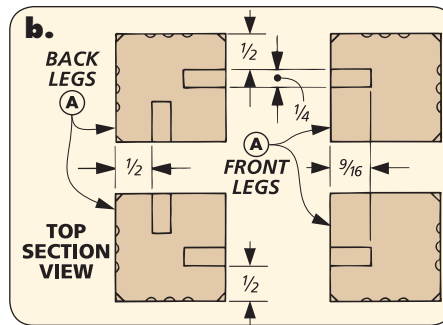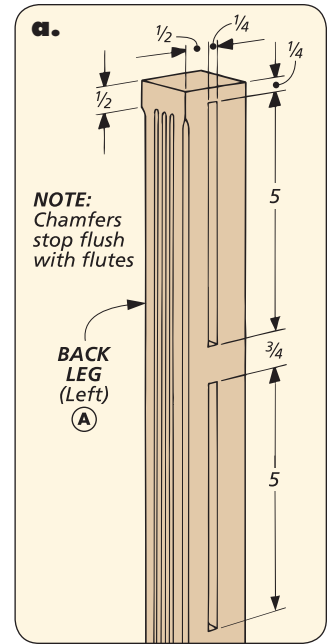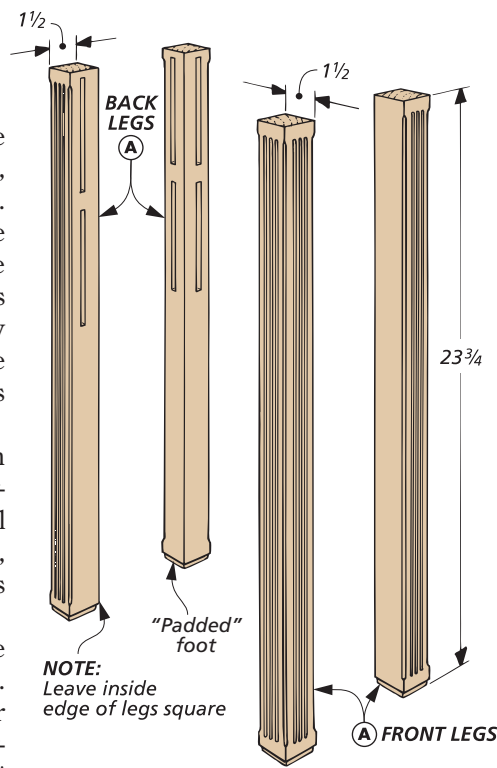
CUT TO SIZE. For the legs, start with 8/4 stock that's cut 1½" square (drawing at right). Then, cut the legs to final length. (I used walnut for this table, but mahogany or cherry also looks nice with a formal project like this.)

CREATE MORTISES. The legs will be joined by a back and two side panels. This U-shaped case is held together with mortise and tenon joints. However, since the panels will be over 11" wide, I wanted to keep the leg mortises as strong as possible. So instead of a single mortise on each face, I cut two shorter ones (detail 'a').

Before carrying the legs over to the drill press, I took the time to carefully lay out the mortises. There's nothing more frustrating than drilling a mortise in the wrong place. Plus, the legs on this table aren't identical, as you'll notice in detail 'b.' The back legs are mortised on two adjacent faces. The front legs on only one face.

To create mortises, I like to drill overlapping holes and clean up each mortise with a chisel (Figure 1). I typically drill them ¹⁄₁₆" deeper than the length of the tenons. This way, there will be room for excess glue.

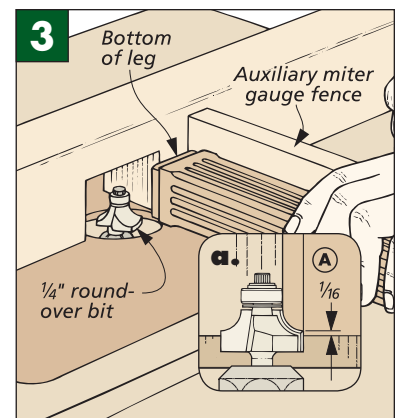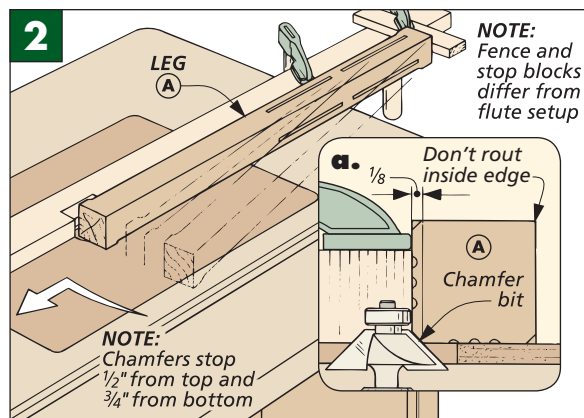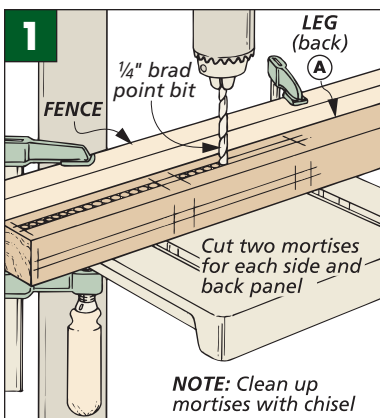**ROUT FLUTES.** With the mortises cut, work can begin on the narrow flutes. The goal with the flutes is to get them evenly spaced and to get them to line up on the top and bottom. This is easy enough to do on the router table with a core box bit. All you need is a long fence and a couple of stop blocks. For more on this, refer to the next page.

CHAMFER EDGES. Besides the flutes, I also chamfered the outside edges of the legs. This is the same basic procedure that's used for the flutes. Just replace the core box bit with a chamfer bit and readjust the fence and stop blocks so the chamfers end up even with the flutes (Figure 2).

FOOT PADS. The last detail to add is a unique foot pad on the bottom of each leg (detail 'c'). This pad is rounded with a ¹⁄₁₆" shoulder, and it's routed on the router table using a ¼" roundover bit, as shown in Figure 3. (To back up the cut, I used a miter gauge with an auxiliary fence.)

BACK LEGS Ⓐ
1½
1½
23¾

"Padded" foot

NOTE: Leave inside edge of legs square

Ⓐ **FRONT LEGS**

a.
½ ¼ ¼
½
NOTE: Chamfers stop flush with flutes
BACK LEG (Left) Ⓐ
5
¾
5

b.
BACK LEGS Ⓐ
½
¼
FRONT LEGS
½ ⁹⁄₁₆
TOP SECTION VIEW
½

c.
FRONT VIEW
Chamfers stop flush with flutes
Ⓐ
¾
¹⁄₁₆
Foot pad created with ¼" roundover bit

1
FENCE
¼" brad point bit
LEG (back) Ⓐ
Cut two mortises for each side and back panel
NOTE: Clean up mortises with chisel

2
LEG Ⓐ
NOTE: Fence and stop blocks differ from flute setup
a.
⅛
Don't rout inside edge
Ⓐ
Chamfer bit
NOTE: Chamfers stop ½" from top and ¾" from bottom

3
Bottom of leg
Auxiliary miter gauge fence
¼" roundover bit
a.
Ⓐ
¹⁄₁₆

ROUTING THE FLUTES

Table legs don't usually attract a lot of attention. But the legs on this table have been "dressed up" with small, round flutes that really add interest.

Because the flutes attract more attention, you'll want to take extra care to make sure they're consistent. The trick is to get them spaced evenly. What's more, the flutes are stopped, so they have to line up at the top and bottom, too.

I routed the flutes on the router table, using a common core box bit. This is a plunge cut — at both ends. You have to set the leg onto the spinning bit at the beginning of the cut and lift it off at the end. This isn't difficult, though. For one thing, the bit is only $\frac{1}{8}$" in diameter and is cutting just $\frac{1}{16}$" deep. And a stop block at each end makes the starting and stopping just about automatic.

Setting up this cut is a two-step process. First, you work on the spacing of the flutes by setting the fence. Then you make sure they'll be aligned by adding the stop blocks.

SETTING FENCE. Routing three flutes on a face normally requires three fence settings. But to keep the spacing even, I set the fence once and then used $\frac{1}{4}$"-thick spacers to shift the piece (Steps 1-3 below).

Your normal router fence probably won't work. To clamp a stop block at each end, you'll need a fence over twice as long as the legs. I made mine out of $\frac{3}{4}$" solid wood and clamped it to the table face down so it was only $\frac{3}{4}$" tall, as you can see in the drawing below. This low profile allowed me to easily hold the legs *and* spacers together when routing.

When setting the fence, keep in mind that, like the spacers, the flutes need to be centered on the width of the legs. To do this, set the fence to cut the middle flute (the one routed with one spacer in Step 1). If this is centered, then the others will be in the correct positions, too.

SETTING STOP BLOCKS. With the fence set, it's time to add the stop blocks. These take care of the alignment of the flutes, so they stop and start in the same place.
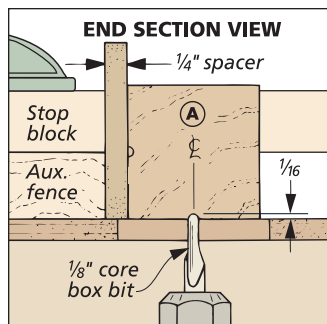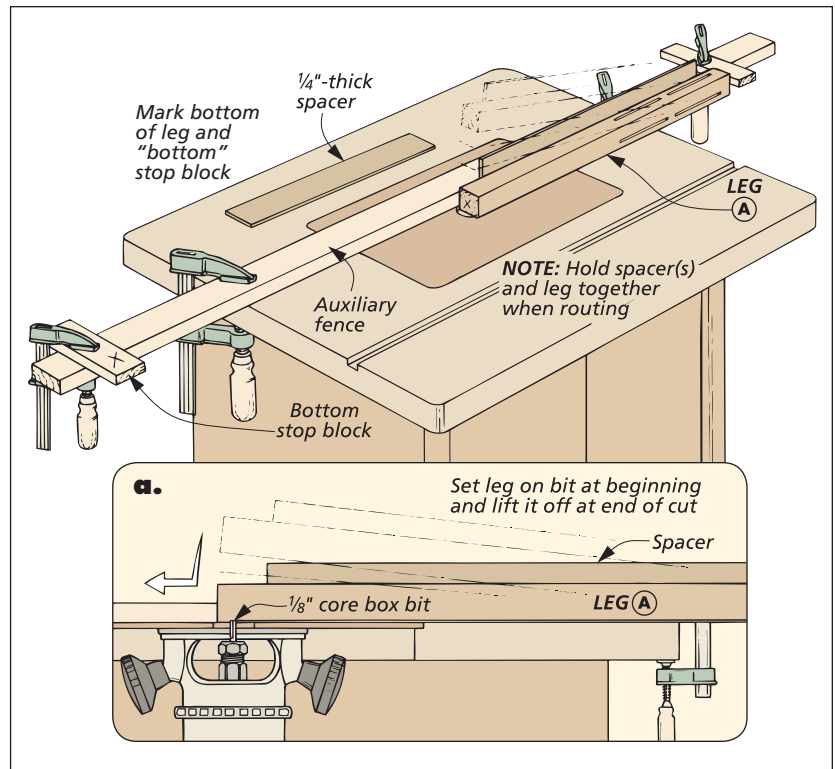
Just be sure to keep in mind that the flutes don't stop the same distance from each end (there's an extra $\frac{1}{4}$" on the bottom for a foot pad). The grooves stop $\frac{3}{4}$" from the bottom

of the leg and $\frac{1}{2}$" from the top (details 'a' and 'c' on page 3).

To remember which end of the leg goes against which stop block, draw an "X" on the bottom of the legs *and* on the stop block that they butt against, as shown in the drawing below.

Once the stop blocks are clamped in place, things go pretty quickly. When using the spacers, I simply held them to the legs as I ran them across the router (Steps 1 and 2).

After all the flutes have been routed, there may still be one step left. When routing, it's natural to slow down at the ends of the cut, and you'll probably notice some burning. So I wrapped sandpaper around a dowel and sanded the flutes as needed (Step 4).


Mark bottom of leg and "bottom" stop block

$\frac{1}{4}$"-thick spacer

LEG A

NOTE: Hold spacer(s) and leg together when routing

Auxiliary fence

Bottom stop block

a. Set leg on bit at beginning and lift it off at end of cut

Spacer

$\frac{1}{8}$" core box bit

LEG A

END SECTION VIEW

$\frac{1}{4}$" spacer

Stop block

Aux. fence

$\frac{1}{16}$

$\frac{1}{8}$" core box bit

1 *After setting the fence and stop blocks, rout the middle flutes with a $\frac{1}{4}$"-thick hardboard spacer.*
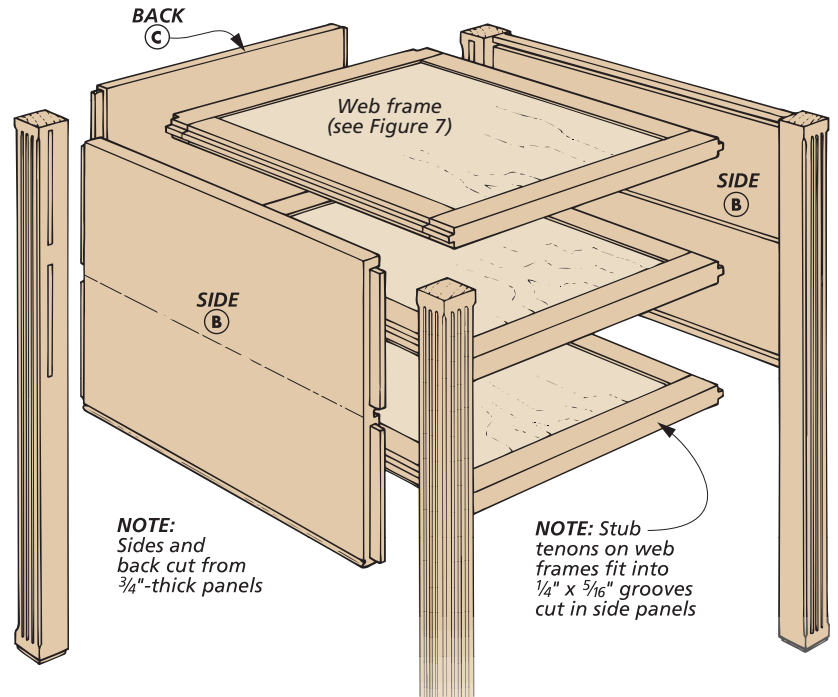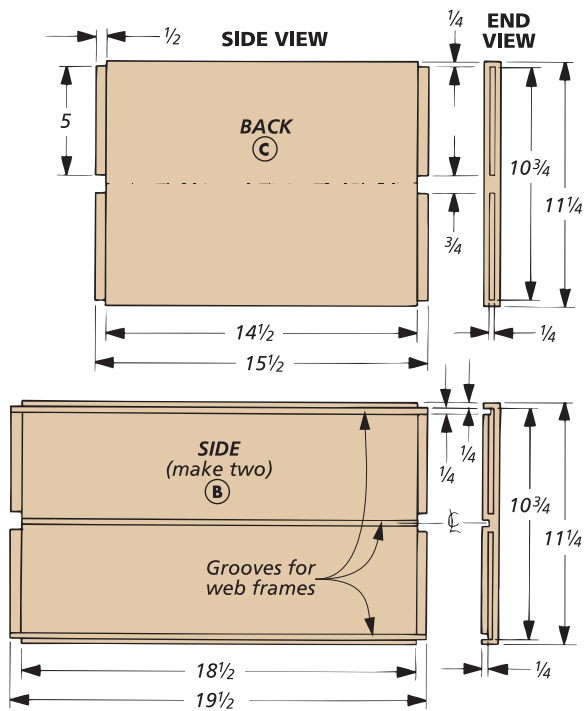

Two spacers
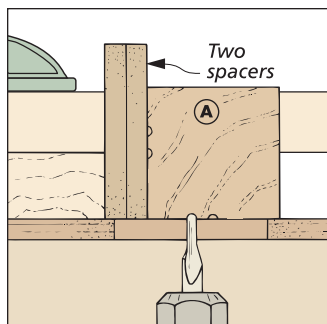
2 *Place another $\frac{1}{4}$"-thick spacer between the fence and leg and rout the second set of flutes.*
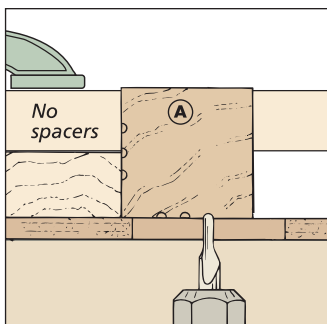
No spacers

3 *Finally, remove both hardboard spacers and rout the last set of flutes on the two outside faces.*
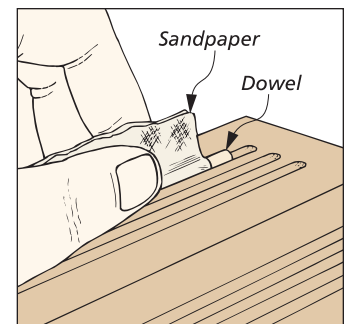
Sandpaper

Dowel

4 *If there are any burns, just wrap sandpaper around a $\frac{1}{8}$"-dia. dowel and carefully sand the flutes.*

Diagrams (top of page)

SIDE VIEW   **END VIEW**

BACK
(C)

1/2, 5, 1/4, 10 3/4, 11 1/4, 3/4, 14 1/2, 15 1/2, 1/4

SIDE
(make two)
(B)

Grooves for web frames

1/4, 10 3/4, 11 1/4, 18 1/2, 19 1/2, 1/4

BACK (C)

Web frame (see Figure 7)

SIDE (B)

SIDE (B)

NOTE: Sides and back cut from 3/4"-thick panels

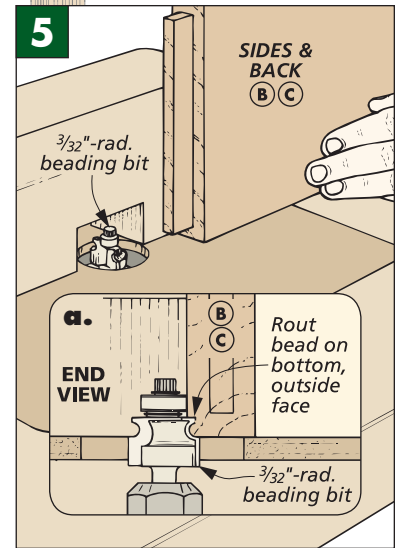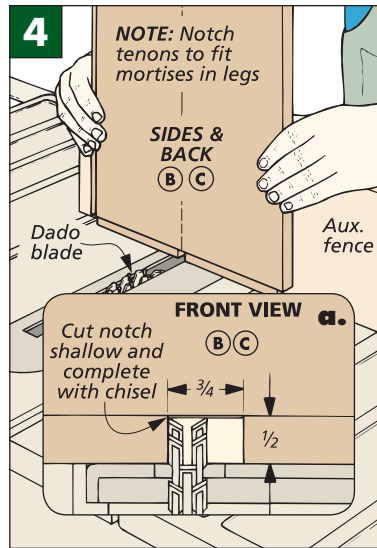**NOTE:** Stub tenons on web frames fit into 1/4" x 5/16" grooves cut in side panels

Case Panels & Frames

The next step is to make three wide panels that will connect the legs into a U-shaped case, as shown above. Then, to form the drawer openings that divide the case, you'll need to make three horizontal web frames.

SIDE & BACK PANELS

The side and back panels that connect the legs will end up over 11" wide. So the first thing to do is glue them up from 3/4"-thick pieces of stock (drawing above). Then, the side and back panels can be cut to size (Side and End Views above).

CUT TENONS. Next, two tenons can be cut on each end of the panels to fit into the mortises you cut in the legs. This isn't as complicated as it sounds. I simply cut one long tenon with 1/4" shoulders on the top and bottom. I did this just like I normally would, placing the pieces face down on the table saw, using a dado blade buried in an auxiliary fence.

▲ Use a 3/32"-rad. beading bit for all of the beads on this end table.

4

NOTE: Notch tenons to fit mortises in legs

SIDES & BACK (B)(C)

Dado blade

Aux. fence

FRONT VIEW   **a.**

(B)(C)

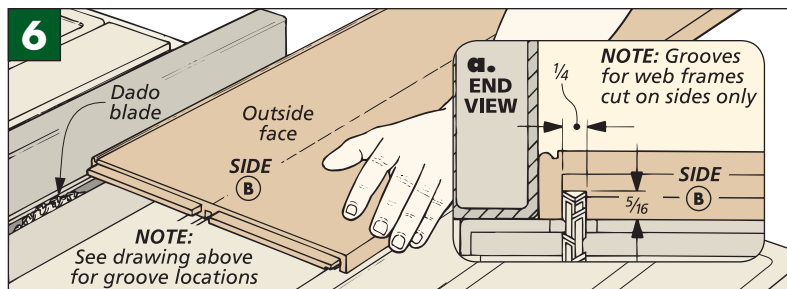Cut notch shallow and complete with chisel

3/4, 1/2

Now, to create two shorter tenons out of this one long tenon, cut a 3/4"-wide notch in the center (Figures 4 and 4a). Using your table saw and dado blade, stand the pieces on end and remove the waste in multiple passes. Just don't raise the blade up all the way to the shoulder to avoid score marks. Instead, cut the notch

5

SIDES & BACK (B)(C)

3/32"-rad. beading bit

a.

END VIEW (B)(C)

Rout bead on bottom, outside face

3/32"-rad. beading bit

just short of the shoulders, and use a chisel to complete the notch.

ROUT BEADS. At this point, the sides and back are rather plain, so I added a small decorative bead on the bottom edge of each, as in Figure 5. (This bead will also be cut on the curved edging pieces that divide the drawers later.) To do this, I used a 3/32"-rad. beading bit (margin photo). It's simply raised to cut a full bead with no shoulder (Figure 5a).

CUT GROOVES. The back is now complete. The sides, on the other hand, need three 1/4"-wide grooves to hold the web frames (Figure 6). The grooves at the top and bottom are located 1/4" from the edges, and the groove in the middle is centered.

6

Dado blade

Outside face

SIDE (B)

NOTE: See drawing above for groove locations

a. END VIEW

1/4

NOTE: Grooves for web frames cut on sides only

SIDE (B)

SIDE (B)

5/16

ASSEMBLE LEGS & SIDES. After cutting the grooves, I glued the side panels between the front and back legs. (When doing this, just be sure the beads will end up on the outside.) As for the back, it'll be glued between the side assemblies a little later.

WEB FRAMES

While the side assemblies dry, begin building the web frames (Figure 7). These are just three hardwood frames that fit around ¼" plywood dust panels. But they're pretty important. The frames strengthen the front of the case, create the drawer openings, and support the drawers.

RAILS & STILES. To accurately determine the final size of the frames, dry assemble the side assemblies and back panel. Then, you can cut the rails and stiles to size (Figure 7).

The rails are cut to fit between the grooves in the sides, so add ½" to the side-to-side dimension. To find the length of the stiles, measure from the inside face of the front legs to the back panel, subtract the width of the rails, and add ½" for the stub tenons.

CUT GROOVES & STUB TENONS. To hold the ¼" plywood panels, I cut a groove centered on the inside edges of the rails and stiles, as in Figure 8. Then, cut mating stub tenons on the ends of the stiles to fit into the grooves that were just cut (Figure 9).

WEB PANEL. The ¼"-thick plywood panel strengthens the frame, and it also keeps dust out of the drawers. The web panel can be cut to fit into the grooves on the frame pieces. Then the frame can be glued together around the panel.
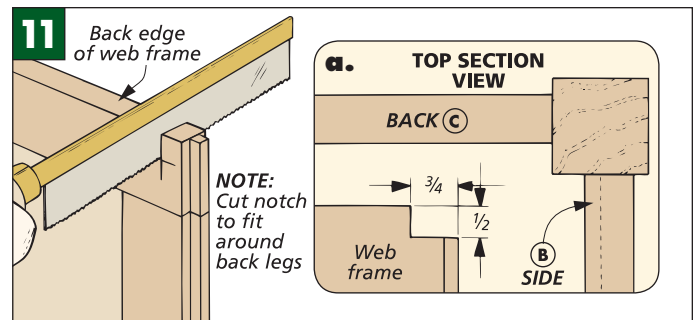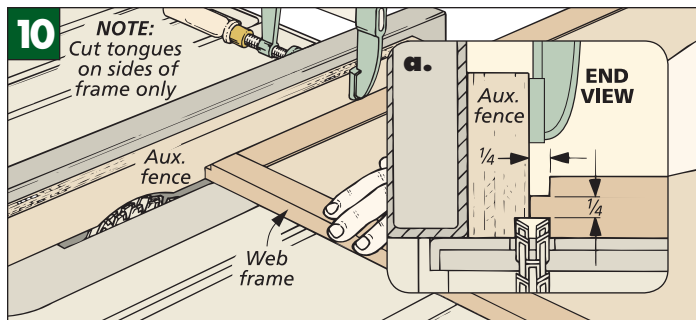
CUT TONGUES & NOTCHES. There are still a few things to do to the frames. First, you need to create centered tongues on both sides of each frame
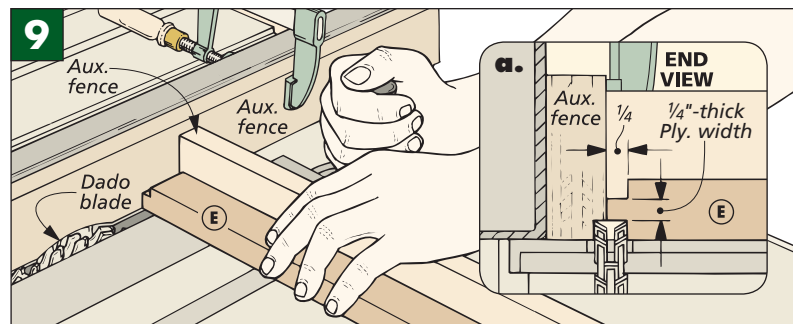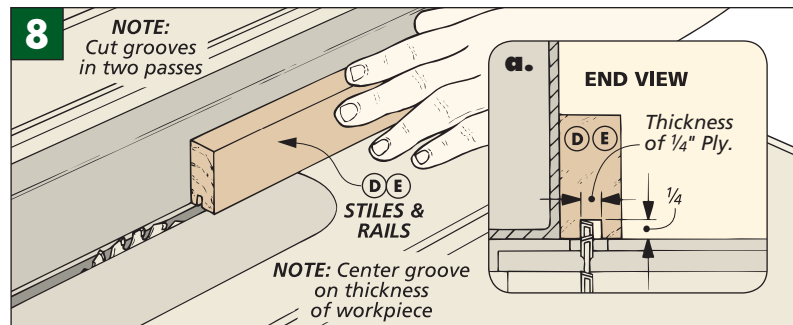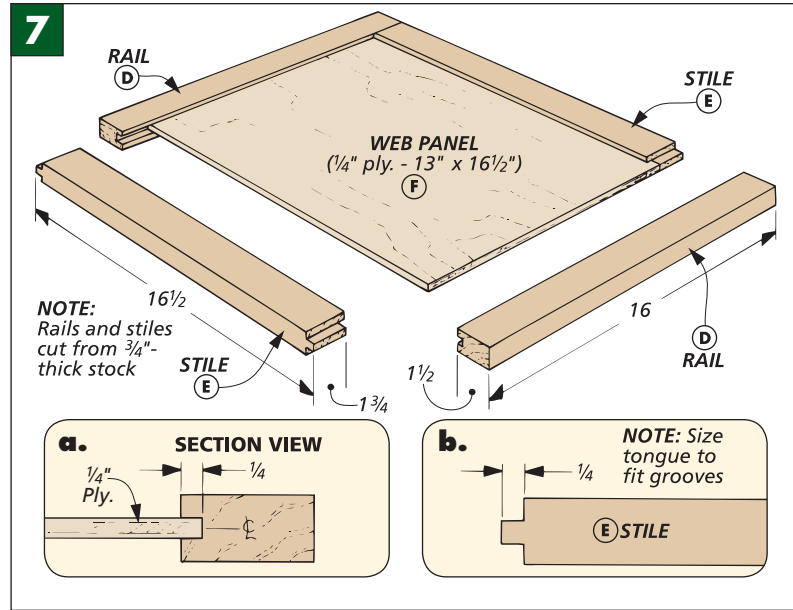
(Figure 10). Size the tongues to fit in the grooves on the side pieces.

And finally, cut a notch in the back corners of each web frame (Figure 11). These allow the frames to fit around the back legs inside the case. And there's no need to worry about ending up with an air-tight fit. I simply laid out the notches and then cut them with a hand saw.

7
RAIL (D)
STILE (E)
WEB PANEL (¼" ply. - 13" x 16½") (F)
NOTE: Rails and stiles cut from ¾"-thick stock
16½
STILE (E)
1¾
1½
16
(D) RAIL

a. SECTION VIEW
¼" Ply.
¼

b. NOTE: Size tongue to fit grooves
¼
(E) STILE

8 NOTE: Cut grooves in two passes
STILES & RAILS (D)(E)
NOTE: Center groove on thickness of workpiece
a. END VIEW
(D)(E)
Thickness of ¼" Ply.
¼

9
Aux. fence
Dado blade
(E)
a. END VIEW
Aux. fence
¼
¼"-thick Ply. width
(E)

10 NOTE: Cut tongues on sides of frame only
Aux. fence
Web frame
a. END VIEW
Aux. fence
¼
¼

11 Back edge of web frame
NOTE: Cut notch to fit around back legs
a. TOP SECTION VIEW
BACK (C)
¾
½
Web frame
(B)
SIDE

Curved Edging

The most unique feature of this table is obvious — the curves on the front. But at first glance, you might miss the bead profile on the edging between the drawers (drawing and detail 'a'). This profile is created in a simple two-step process. For the first step, you need a beading bit, and for the second, a quick auxiliary fence.
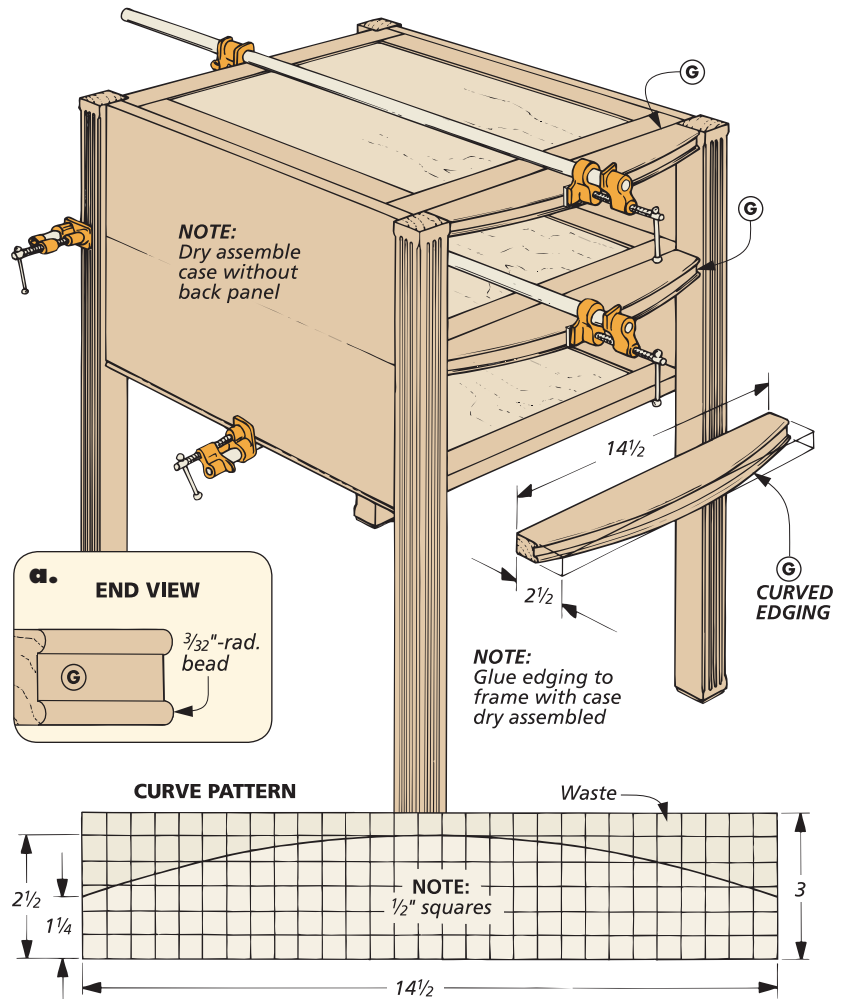
CUT TO SIZE. The first thing to do is to dry assemble the case — without the back, as shown at right. (You'll need access to the back later.) Then with the case clamped together, you can cut three $\frac{3}{4}$"-thick curved edging pieces to fit between the front legs. But keep the edging wide at this point. (It's easier to cut a smooth curve on an extra-wide blank.)

CUT CURVES. With the blanks roughed out, you can begin to lay out the curves. These are the same as the curves that will be cut on the drawers, so I took a little extra time to make a reusable $\frac{1}{4}$" hardboard template (pattern at right).

Now you can use the template to draw the curves on the three blanks. Rough out the curves with a band saw, saving one of the "cutoff" pieces for later. Then, sand to the lines with a drum sander on the drill press.

CREATE PROFILE. With the curves cut, I routed bead profiles on the top and bottom edges, as in Figure 12. (I did this on the router table with the same bit used on the side panels earlier.)

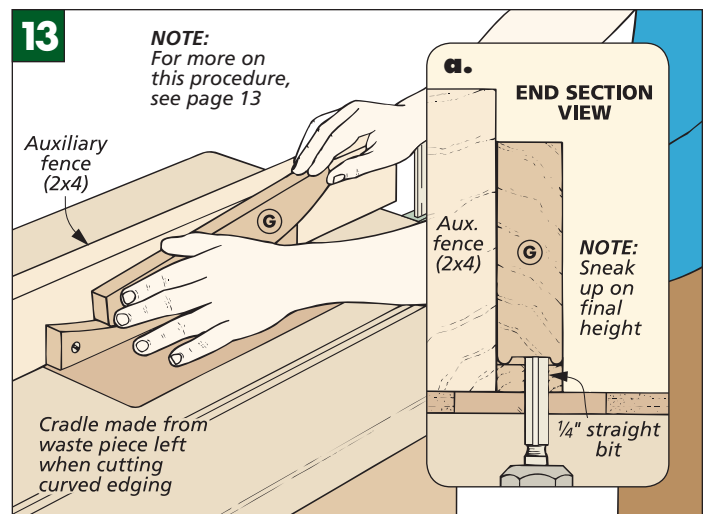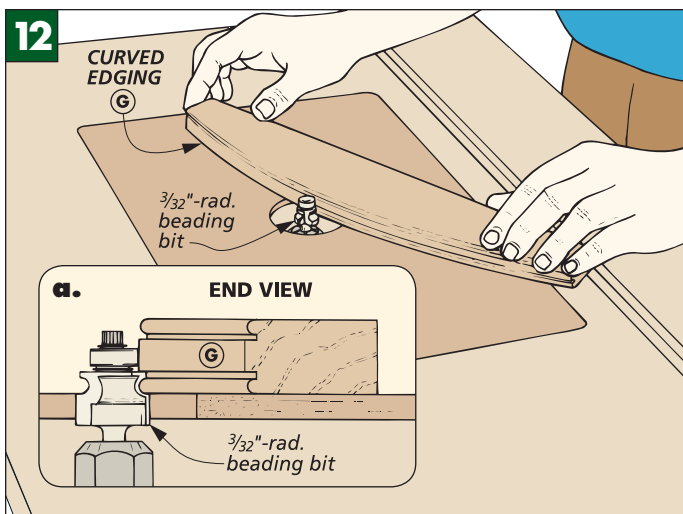Routing the beads is just the first step. I also removed the material between the beads so they would stand out (detail 'a' above). To do this, used a $\frac{1}{4}$" straight bit and a simple cradle made from one of the curved waste pieces, as shown in Figure 13.

GLUE EDGING TO FRAMES. The curved trim pieces are now complete and can be glued to the front edges of the web frames. But to do this, leave the case dry assembled. This way, the legs on the sides will automatically position the edging, as you see above. (Just be careful that you don't glue the edging to the legs at this point.)

MOUNTING HOLES. With the edging glued to the frames, there's one last thing to do before the case can be glued together. The top web frame needs some countersunk shank holes so you can mount the top panel later (details 'a' and 'b,' top of next page.)

NOTE: Dry assemble case without back panel

G

CURVED EDGING

G

14½

2½

NOTE: Glue edging to frame with case dry assembled

a. END VIEW

$\frac{3}{32}$"-rad. bead

G

CURVE PATTERN

Waste

2½

1¼

NOTE: ½" squares

3

14½

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12 **CURVED EDGING**

G

$\frac{3}{32}$"-rad. beading bit

a. END VIEW

G

$\frac{3}{32}$"-rad. beading bit

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13 **NOTE:** For more on this procedure, see page 13

Auxiliary fence (2x4)

G

Cradle made from waste piece left when cutting curved edging

a. END SECTION VIEW

Aux. fence (2x4)

G

NOTE: Sneak up on final height

$\frac{1}{4}$" straight bit

Shop Note: Drill the holes slightly oversized so the top panel can expand and contract freely with seasonal changes in humidity.

ASSEMBLY. Finally, the entire case is ready for final assembly. This means gluing the back panel and the three web frames between the two side assemblies, as shown at right.

TABLE TOP

Like the legs and drawers, the top of this table should also have a few nice details. So the front edge is curved like the curved edging pieces. And I routed the edges with an ogee fillet bit to give it a classic profile.

GLUE UP PANEL. The first thing to do is glue up a panel from ¾"-thick stock (drawing at right). And since the top is the most visible surface on the table, I took extra care to choose and match some nice-looking boards.
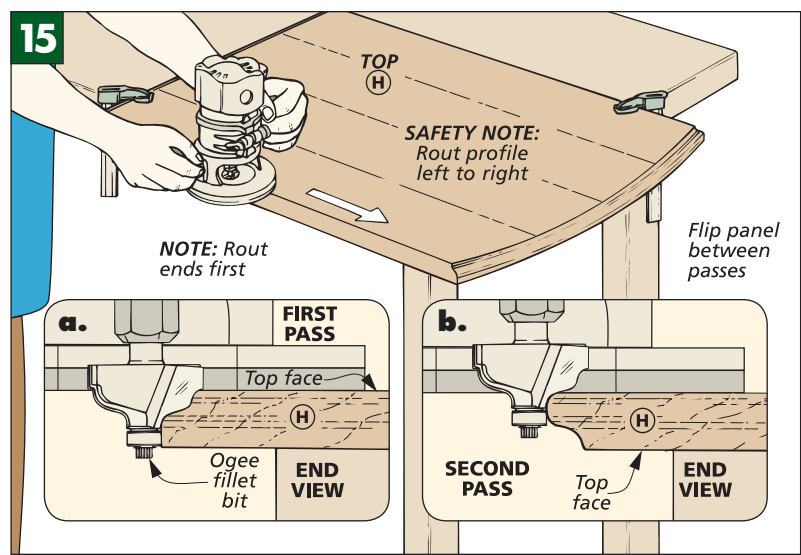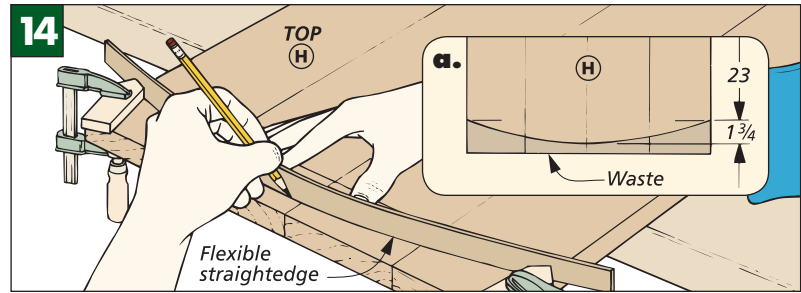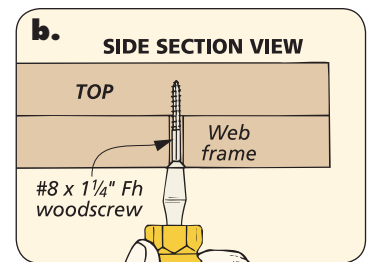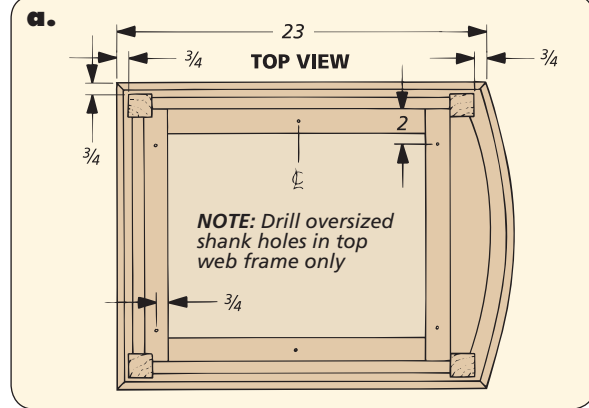
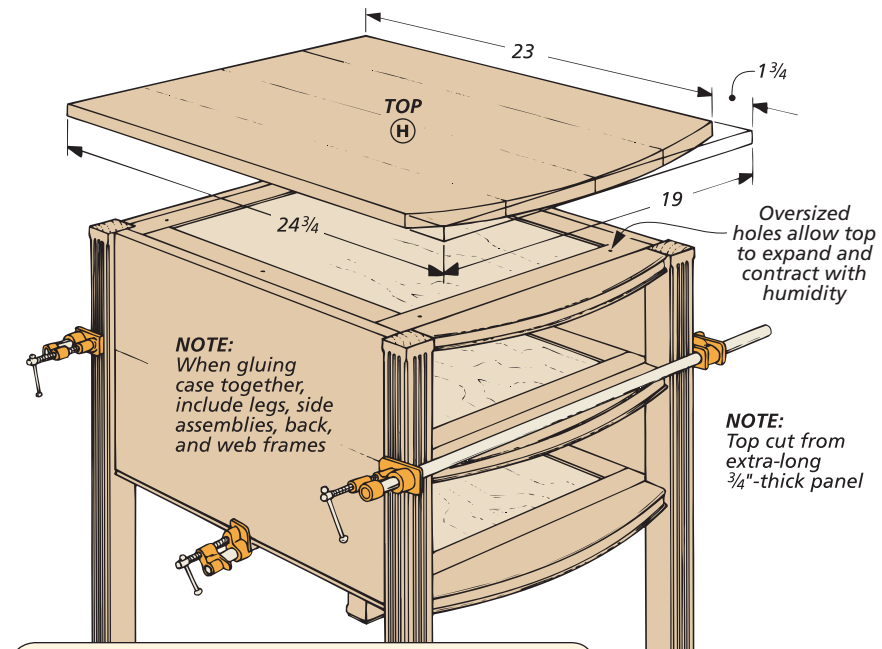Once that dries, cut the top to size (drawing). Simply size the panel to overhang the legs ¾" on all sides (detail 'a'). Then, cut it to final width, but leave it a little long. This will make it easier to get a smooth curve.

CREATE CURVE. Since this curve is a couple of inches wider than the curved edging, I couldn't use the same template. Instead, I simply bent a flexible straightedge against a couple of blocks and drew the curve directly on the top (Figure 14 and drawing above). Then cut it out and sand it with a disk or drum sander.

ROUT PROFILE. Next, to give the top a unique profile, I routed around the edges with an ogee fillet bit (Figure 15 and photo in margin). This is a two-step process, but you can use the same bit for both steps.

Rout the first pass full depth, as in Figure 15a. (To avoid chipout, rout the ends first, moving the router left-to-right.) For the second pass, you'll need to adjust the depth of the bit so the bearing will still ride along the flat edge (Figure 15b). This means there will be a little sanding left to do to round the edge completely.

At this point, you can screw the top to the case. But before doing this, I suggest applying a coat of finish to the bottom face of the top so it's less likely to cup, refer to page 10.

23

1 ¾

TOP (H)

24 ¾

19

Oversized holes allow top to expand and contract with humidity

NOTE: When gluing case together, include legs, side assemblies, back, and web frames

NOTE: Top cut from extra-long ¾"-thick panel

a.

23

¾

¾

¾

TOP VIEW

2

¾

℄

NOTE: Drill oversized shank holes in top web frame only

b.

SIDE SECTION VIEW

TOP

Web frame

#8 x 1¼" Fh woodscrew

14

TOP (H)

a.

(H)

23

1 ¾

Waste

Flexible straightedge

15

TOP (H)

SAFETY NOTE: Rout profile left to right

NOTE: Rout ends first

Flip panel between passes

a. **FIRST PASS**

Top face

(H)

Ogee fillet bit

END VIEW

b.

(H)

SECOND PASS

Top face

END VIEW

▲ *The classic profile around the table top is created with an ogee fillet bit.*

Bow-Front Drawers

With this table, the best is saved for last — the bow-front drawers are both the main attraction and a great woodworking challenge.
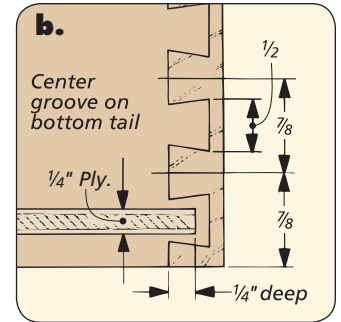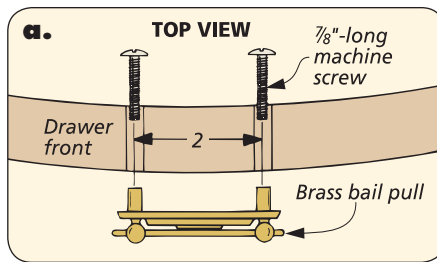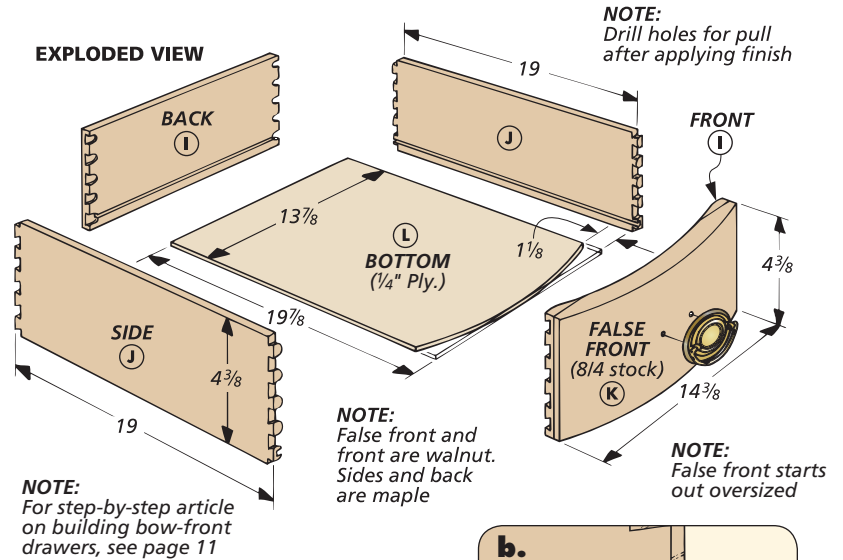
BUILD DRAWERS. To build the drawer, start by making a square drawer with ½"-thick stock and machine-cut dovetails (Exploded View and detail 'b'). I sized the fronts and backs so the drawer would have a ¹⁄₁₆" gap at the top, bottom, and sides. And I cut the sides 19" long. (The drawer ended up about ⅝" short of the back of the case.)

Before assembling the drawer, a thick false front is glued to the front piece. Now the front can be cut to shape and sanded smooth. Finally, a drawer bottom can be added, and the drawers glued together.

FITTING THE DRAWERS. It's a good feeling to have the drawers assembled. But there's still work left to do before they'll slide smoothly in the case.

GUIDES. The first thing I did was add pieces to guide the drawers and center them side-to-side. The ¾"-thick guides are cut to length to fit between the legs, and they're ripped just wide enough to guide the drawer in and out of the case without binding, as shown in Figures 16 and 16a.

GUIDE STRIPS. Though the guides direct the drawer, you don't want the drawer to rest directly on the web frame. Eventually the drawer sides would rub through the finish and wear a visible groove in the curved edging. To avoid this, I placed glide strips inside the cabinet for each

▲ When laying out the pilot holes for mounting the pulls, I protected the finish with strips of masking tape.

drawer to ride on, as you see in Figure 16b (Woodcraft.com, item #16L64; LeeValley.com, item #25U04.01). The thickness of these glide strips also helps establish the proper gap at the bottom of the drawer.
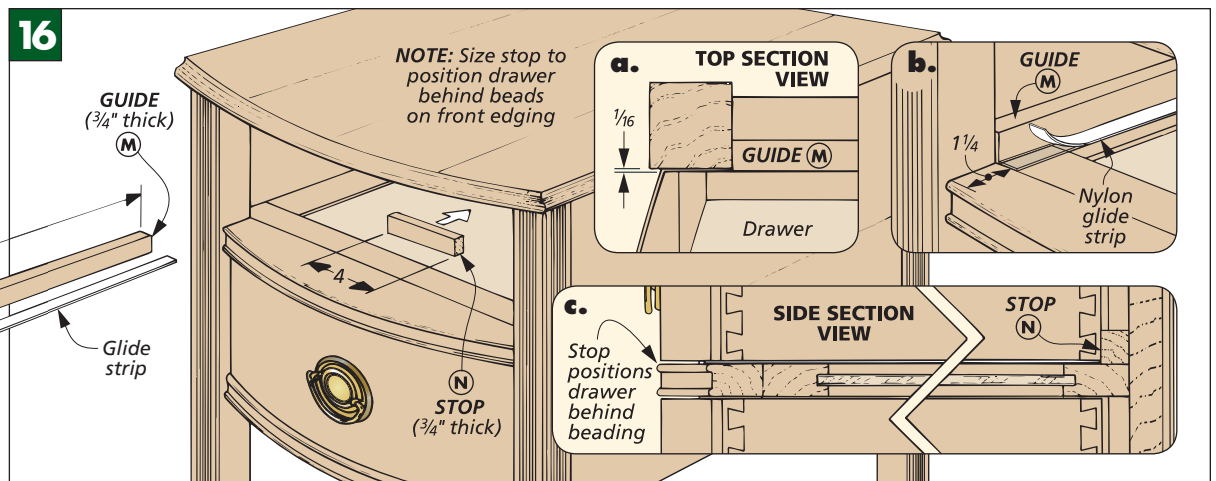
STOPS. The next task is to get each drawer to shut so its front face is set just behind the bead on the curved edging (Figure 16c). To do this, add a short block at the back of the case to act as a drawer stop, as in Figure 16. Sneak up on the final width of this stop. (Mine was ⅝" wide.) Then, simply glue the block to the back of the case with hand pressure.

DRAWER PULLS. All that's left are the bail pulls. I waited to mount the pulls until after the finish had been applied and rubbed out, see the next page.

To avoid scratching the finish and to make it easy to see the layout lines, I applied tape to the front of the drawers and found the centerpoint (margin photo). Then, I laid out and drilled the holes for the posts and screws (detail 'a' above). I drilled these holes slightly oversized since the back plate of each pull will have to "bend" slightly around the drawer. Now all that's left is to carefully remove the tape and screw the pulls in place.

EXPLODED VIEW

NOTE: Drill holes for pull after applying finish

BACK (I)

(J) 19

FRONT (I)

BOTTOM (¼" Ply.) (L) 13⅞ 1⅛

FALSE FRONT (8/4 stock) (K) 4⅜ 14⅜

SIDE (J) 19⅞ 4⅜ 19

NOTE: False front and front are walnut. Sides and back are maple

NOTE: False front starts out oversized

NOTE: For step-by-step article on building bow-front drawers, see page 11

a. TOP VIEW ⅞"-long machine screw

Drawer front 2

Brass bail pull

b. Center groove on bottom tail ½ ⅞ ⅞

¼" Ply. ¼" deep

16

GUIDE (¾" thick) (M)

18½

Glide strip

⁹⁄₁₆

NOTE: Size stop to position drawer behind beads on front edging

4

STOP (¾" thick) (N)

a. TOP SECTION VIEW ¹⁄₁₆ GUIDE (M)

Drawer

b. GUIDE (M) 1¼

Nylon glide strip

c. SIDE SECTION VIEW STOP (N)

Stop positions drawer behind beading

APPLYING VARNISH

There are a number of reasons to use varnish for this end table. First, oil-based varnish gives me the best results I can get without expensive spray equipment. Second, it adds a warm, reddish tint to the walnut without any special stain. And it provides a lot of protection. (I used Behlen's "Rockhard Table Top Varnish.")

PREPARE SURFACE & CLEAN SHOP. I began by sanding the entire end table to 180-grit. Then, I spent some time cleaning my shop. Because varnish takes a long time to dry, your worst enemy is dust. It settles on the wet finish and creates a rough surface.

APPLY VARNISH. With the shop clean, you can begin applying coats of varnish. For the first coat, you may want to thin down the varnish so it flows out a little better, but the technique is the same. I brushed the varnish across the grain first to get the finish on the wood. Then I smoothed out the coat using a light brush stroke *with* the grain. You'll want to apply thin coats, or the finish will run and sag. (If it does, wipe it off immediately with mineral spirits. Or simply sand or scrape it away after it dries.)

Allow the first coat to dry overnight. Once that's done, you'll want to smooth out the surface and remove any dust nibs with 400-grit wet-dry sandpaper and a sanding block. Then, you can add a couple of more coats, sanding between coats.

RUB OUT TOP. One option you might want to consider is to "rub out" the top. This requires more time and elbow grease, but you'll end up with a glass-smooth surface. Basically, "rubbing out" is using finer and finer abrasives to polish the surface. (There are a variety of these abrasives, but I like to use pumice and rottenstone.)

Before you can begin polishing, the finish needs to be "built up" so

▲ *To give this table an heirloom-quality finish, I applied a few coats of oil-based varnish. Then, I "rubbed out" the top until it was as smooth as glass.*

it's thicker. (Just to be safe, I applied three or four additional coats to the top.) That way, you won't "cut" through the finish to bare wood.

Finally, I added a coat of wax to give the table a little more shine. Now you just need to find the perfect place to display your end table.

MATERIALS & SUPPLIES

A Legs (4)	$1\frac{1}{2}$ x $1\frac{1}{2}$ - $23\frac{3}{4}$	**G** Curved Edging (3) $\frac{3}{4}$ x $2\frac{1}{2}$ - $14\frac{1}{2}$ **M** Drawer Guides (4) $\frac{3}{4}$ x $\frac{9}{16}$ - $18\frac{1}{2}$
B Sides (2)	$\frac{3}{4}$ x $11\frac{1}{4}$ - $19\frac{1}{2}$	**H** Top (1) $\frac{3}{4}$ x 19 - $24\frac{3}{4}$ **N** Drawer Stops (2) $\frac{3}{4}$ x $\frac{5}{8}$ - 4
C Back (1)	$\frac{3}{4}$ x $11\frac{1}{4}$ - $15\frac{1}{2}$	**I** Drawer Fronts/Backs (4) $\frac{1}{2}$ x $4\frac{3}{8}$ - $14\frac{3}{8}$ (4) Nylon Glide Strips
D Web Frame Rails (6)	$\frac{3}{4}$ x $1\frac{1}{2}$ - 16	**J** Drawer Sides (4) $\frac{1}{2}$ x $4\frac{3}{8}$ - 19 (2) Bail Pulls (2" bore)
E Web Frame Stiles (6)	$\frac{3}{4}$ x $1\frac{3}{4}$ - $16\frac{1}{2}$	**K** Drawer False Fronts (2) $1\frac{3}{4}$ x $4\frac{3}{8}$ - $14\frac{3}{8}$ (6) #8 x $1\frac{1}{4}$" Fh woodscrews
F Web Frame Panel (3)	$\frac{1}{4}$ ply. - 13 x $16\frac{1}{2}$	**L** Drawer Bottoms (2) $\frac{1}{4}$ ply. - $13\frac{7}{8}$ x $19\frac{7}{8}$

CUTTING DIAGRAM

$\frac{3}{4}$" x 6" - 96" Walnut (Two Boards @ 4 Bd. Ft. Each)

| H | H | B | B | |

$\frac{3}{4}$" x $6\frac{1}{2}$" - 72" Walnut (Two Boards @ 3.25 Bd. Ft. Each)
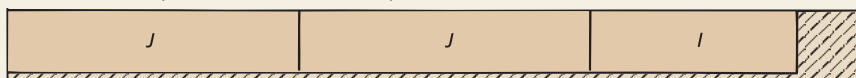
| C | E / E / E | D / D / D | G / G | |

M   N

ALSO NEEDED:
48" x 48" piece of $\frac{1}{4}$"-thick maple plywood

$1\frac{3}{4}$" x 5" - 96" Walnut (6.6 Bd. Ft.)

| K | K | A / A | A / A | |
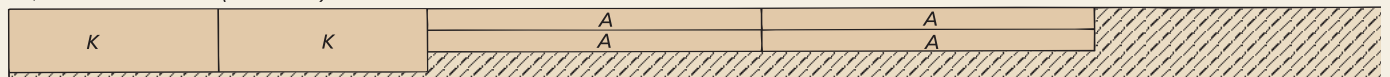
$\frac{1}{2}$" x 5" - 60" Maple (Two Boards @ 2.1 Sq. Ft. Each)

| J | J | I | |

$\frac{1}{2}$" x 5" - 30" Walnut (1 Sq. Ft.)

| I | I |

BOW-FRONT DRAWERS

Shaping a "bowed" drawer front was pretty straightforward. It was joining the front piece to the drawer sides that "threw me a few curves."

▲ *The dovetails are routed first (top). Then add a thick blank (bottom), and cut the front to shape.*

Though it may sound difficult, there isn't any trick to "bowing" a drawer front. Simply start with a thick blank, cut the curves on a band saw, and sand them smooth. It's that simple.

However, the *curved* front has to be connected with two *straight* sides. And the traditional way to do this is with half-blind dovetails.

So how do you go about cutting dovetails on a curved piece? You don't. For the end table, I built "square" drawers with dovetails first and then "bowed" the front pieces later.

BUILD DRAWER. This drawer starts out like most — the ½"-thick pieces are cut to size (Exploded View). To highlight the dovetails, the drawer fronts are walnut and the sides are maple (bottom photo on page 12).

Note: When cutting the sides to length, make sure the drawer doesn't end up too deep. Take into account that a thick blank glued to the front later will add 1½" to the depth of the drawer. (I cut my sides 19"-long, which left about ⅝" between the back of the drawer and the case.)

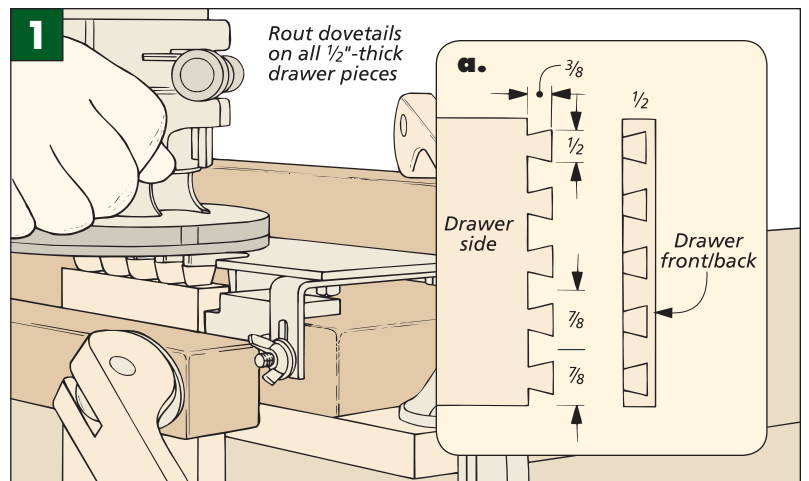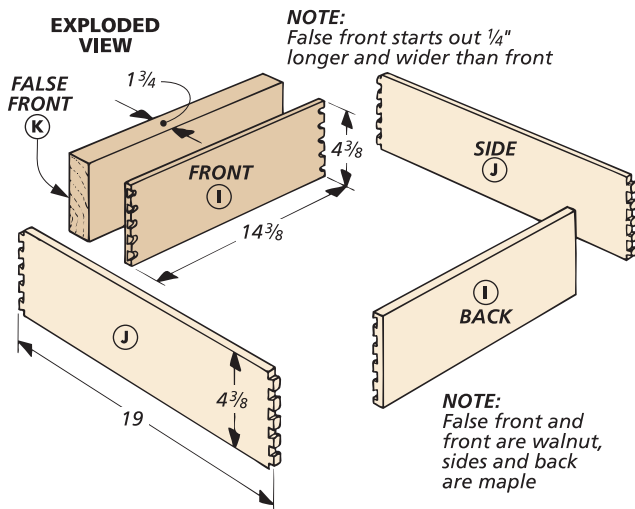To connect these pieces, I routed ½" dovetails with a hand-held router and a dovetail jig (Figures 1 and 1a). Then I set the sides and back aside for the time being. It's time now to work on the drawer front.

OVERSIZED BLANK. To build up the thickness of the drawer front, I added a 1¾"-thick blank (Exploded View and margin photos at left). And to accentuate the curves cut later, I chose a board with a grain pattern shaped like a "bulls-eye" (photo above). I cut this blank slightly oversized and then glued it to the front of the front piece. The blank will be trimmed flush on the table saw later.

At this point, the front looks massive. But don't worry. The curve gets cut on the inside and outside faces, so the final thickness of the drawer front will only be about ⅞".

EXPLODED VIEW

FALSE FRONT (K)

1¾

FRONT (I)

14⅜

4⅜

SIDE (J)

BACK (I)

J

19

4⅜

NOTE:
False front starts out ¼" longer and wider than front

NOTE:
False front and front are walnut, sides and back are maple

1

Rout dovetails on all ½"-thick drawer pieces

a.

Drawer side

Drawer front/back

3/8

½

½

⅞

⅞

TRIM OVERSIZED BLANK. After the glue is dry, the oversized blank can be trimmed to match the ½"-thick piece. I did this on the table saw, but the problem is that the oversized piece gets in the way. The solution is to use a thin auxiliary fence that the ½"-thick piece can ride against (Figure 2). I used a piece of ¼" hardboard.

To trim the oversized blank, lower the blade and position the rip fence and auxiliary fence so the ½"-thick piece is flush with the blade. Then clamp the auxiliary fence down, raise the blade, and trim the oversized blank, as in Figures 2 and 2a.

With the long edges of the blank flush, you can quickly trim the ends of the drawer front using the miter gauge and an auxiliary fence.

CUT CURVES. After trimming the front, it's time to create the curves on the inside and outside faces by cutting away most of the blank.
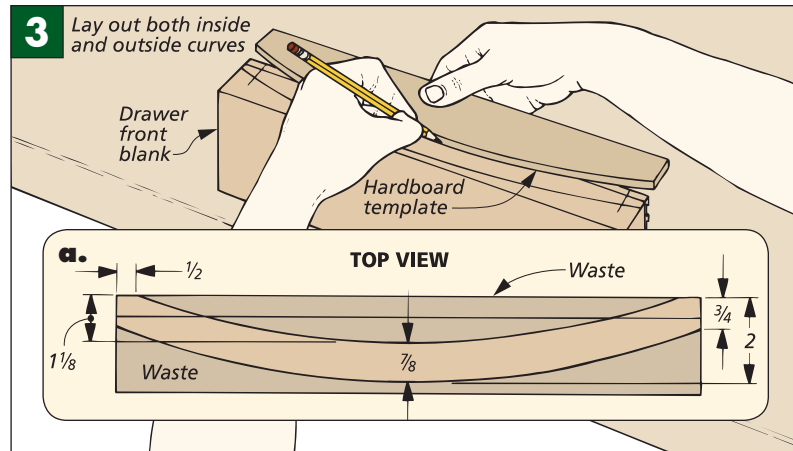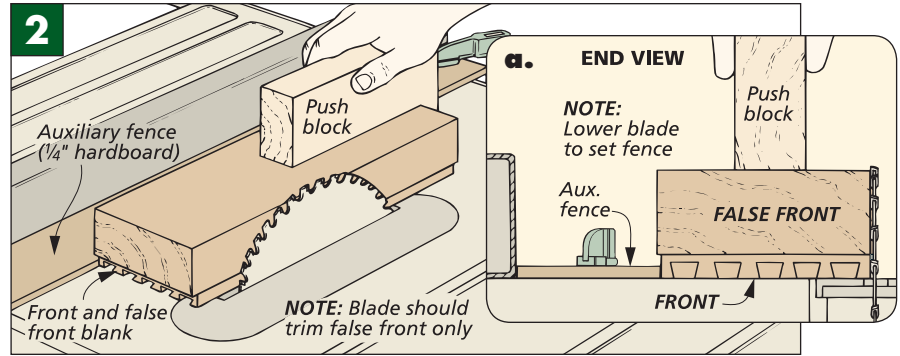
Laying out the curves was easy. I used the same template that I used to make the curved edging (Figure 3 and pattern on page 7). Lay out the starting points on the ends and inside face of the blank (Figure 3a). Then simply line up the template with the marks and draw the curves.

To cut the curves, I used the band saw, feeding the blank as smoothly as possible. Just be sure to stay to the waste side of the lines because you'll need to do some sanding later.
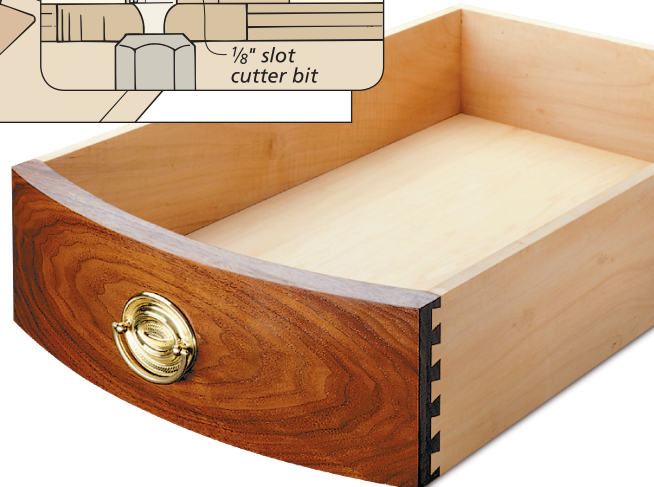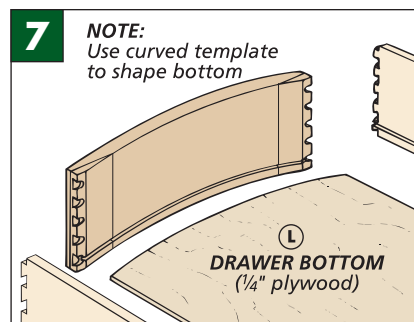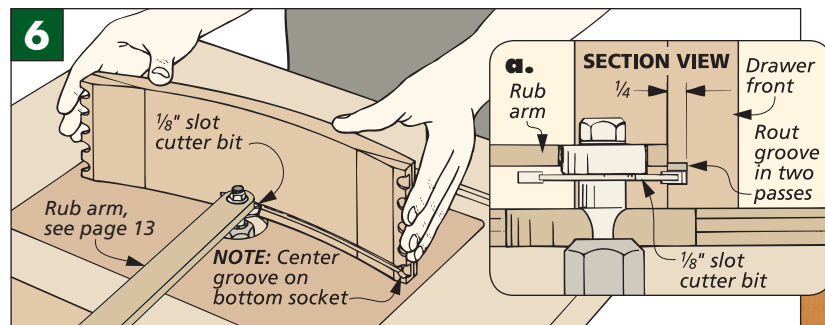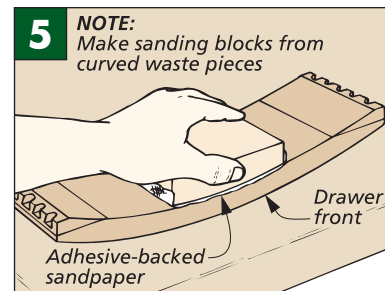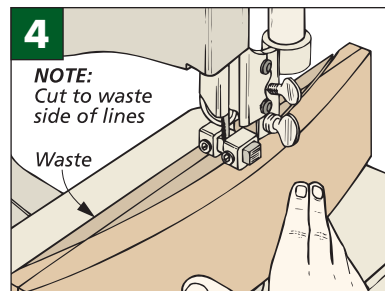
SAND CURVES. To smooth the curves, I used a little elbow grease, sanding the pieces by hand. And to make the job a bit easier, I used curved sanding blocks (Figure 5). Simply add adhesive-backed sandpaper to the cutoffs created at the band saw.

GROOVE FOR BOTTOM. With the drawer front smooth, grooves can be cut on all the pieces for the ¼" plywood bottom. To do this on the curved fronts, I used a slot cutter bit with a rub arm (so it would cut a ¼"-deep groove), as in Figure 6 and the margin photo.

With the grooves routed, I cut out the drawer bottom (Figure 7). Here again, I used the curved template to lay out the front edge before cutting it to shape. Then the pieces can be glued together just as you would with an ordinary square drawer.

2
Auxiliary fence (¼" hardboard)
Push block
Front and false front blank
NOTE: Blade should trim false front only

a. END VIEW
NOTE: Lower blade to set fence
Push block
Aux. fence
FALSE FRONT
FRONT

3 Lay out both inside and outside curves
Drawer front blank
Hardboard template

a. TOP VIEW
½
1⅛
Waste
⅞
Waste
¾
2

▲ *To cut a ¼"-deep groove on the drawer front, I used a slot cutter bit and a shop-made rub arm, as described in Shop Notes on page 13.*

4
NOTE: Cut to waste side of lines
Waste

5 NOTE: Make sanding blocks from curved waste pieces
Drawer front
Adhesive-backed sandpaper

6
⅛" slot cutter bit
Rub arm, see page 13
NOTE: Center groove on bottom socket

a. SECTION VIEW
Rub arm
¼
Drawer front
Rout groove in two passes
⅛" slot cutter bit

7 NOTE: Use curved template to shape bottom
L
DRAWER BOTTOM (¼" plywood)

SHOP NOTES

Routing Curves

The end table has curved edging pieces that create the drawer openings in the case. What's unique about these pieces (besides the curves) is the bead profile that's routed on both the top and bottom edges.

Creating the beads is no problem. The curve rides easily against the bearing of a beading bit that's mounted in the router table, as you can see in Figure 12 on page 7.

However, I wanted to make the two beads "stand proud," so I had to remove the material between the beads (margin photo). Had the pieces been straight, this wouldn't have been any trouble. But how do you guide a curved piece over a $\frac{1}{4}$"-dia. straight bit safely and consistently?

The solution was to use one of the waste pieces left from cutting the curves on the edging pieces. I sanded this waste piece and drilled a $\frac{1}{2}$"-dia. clearance hole in the center. And to provide support to the edging piece,
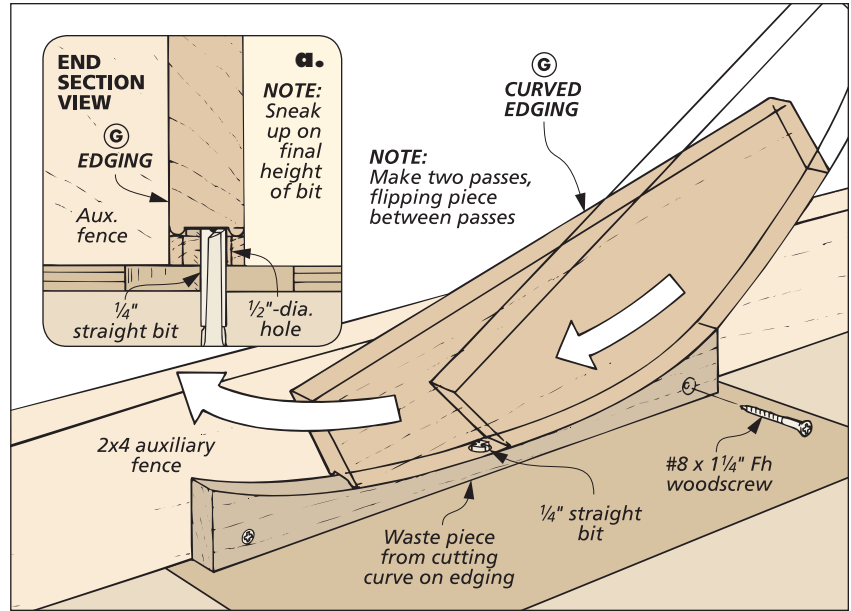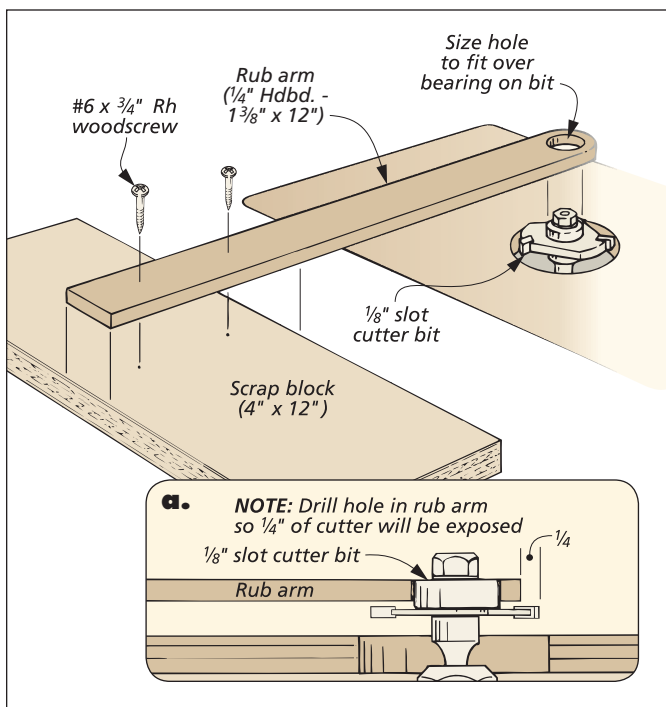
▲ *The unique profile on the curved edging is created in two steps. First, the beads are routed. Then the wood between the beads is removed with a straight bit.*

I screwed the waste piece to a scrap 2x4 and clamped them to the router table, as shown in the drawing.

When routing, sneak up on the height of the bit until it's flush with the bottom of the beads (detail 'a').

And since the $\frac{1}{4}$" bit is a hair narrow, make two passes at each height setting, flipping the edging piece between passes. After the final pass, there may be some tiny ridges, but these can be quickly sanded away.

END SECTION VIEW
G EDGING
Aux. fence
$\frac{1}{4}$" straight bit
a.
NOTE: Sneak up on final height of bit
$\frac{1}{2}$"-dia. hole

G CURVED EDGING
NOTE: Make two passes, flipping piece between passes

2x4 auxiliary fence
Waste piece from cutting curve on edging
$\frac{1}{4}$" straight bit
#8 x 1$\frac{1}{4}$" Fh woodscrew

Rub Arm

On most drawers, I cut the grooves for the bottom panel on the table saw. But the drawer fronts on the end table "threw me a curve." To cut the grooves on a curved piece, I had to rout them with a slot cutter bit (right photo).

However, my slot cutter was designed to rout a $\frac{1}{2}$"-deep slot — too deep for the $\frac{1}{2}$"-thick drawer pieces. And I didn't have a larger bearing that would reduce the depth of the slot. So instead, I made a simple rub arm that fits over the bearing (drawing).

My rub arm looks like a giant tongue depressor cut from $\frac{1}{4}$" hardboard. The round end has a clearance hole sized to fit over the bearing on the bit. Drill this hole so that when it
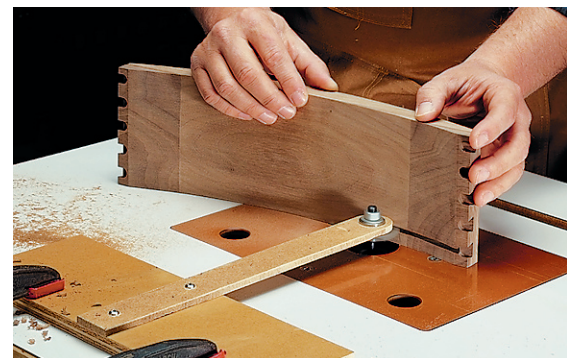
fits over the bearing, only $\frac{1}{4}$" of the cutter is exposed (detail 'a').

To position the arm at the right height (above the bit's cutter), I screwed it to a support block. Now you can clamp the block to the table and rout the grooves with the pieces riding against the rub arm. (I did this in two passes with a $\frac{1}{8}$" bit, raising the bit between passes.)

#6 x $\frac{3}{4}$" Rh woodscrew
Size hole to fit over bearing on bit
Rub arm ($\frac{1}{4}$" Hdbd. - 1$\frac{3}{8}$" x 12")
$\frac{1}{8}$" slot cutter bit
Scrap block (4" x 12")

a.
NOTE: Drill hole in rub arm so $\frac{1}{4}$" of cutter will be exposed
$\frac{1}{8}$" slot cutter bit
Rub arm
$\frac{1}{4}$