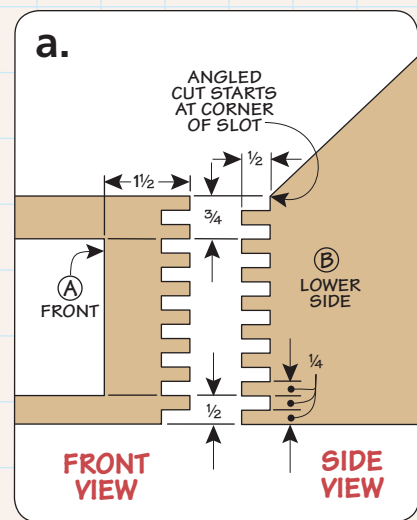
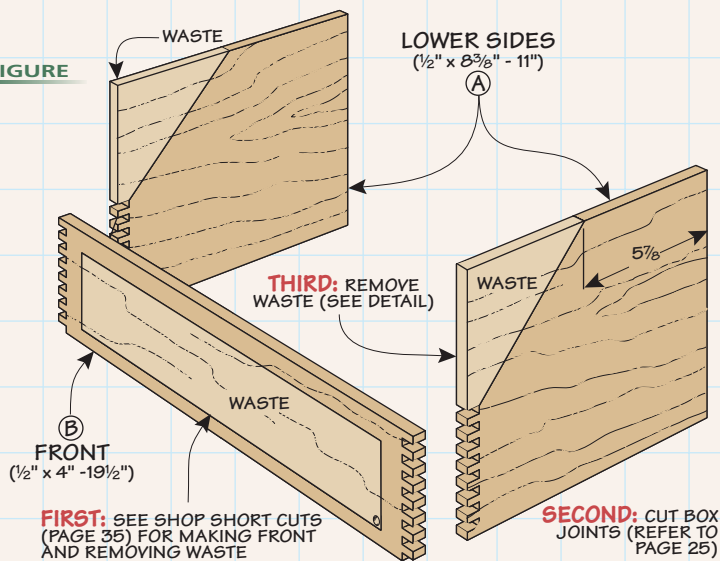


**1** FIGURE



## box-jointed Case

The key to building the tool chest is having an accurate, repeatable setup for cutting box joints. The article on page 25 will help you with this. And there are a few other things I want to point out.

**Accurate Joints.** The first thing I want to mention is that a lot of the dimensions shown on the drawings are based on the size

and spacing of the box joint pins and slots. You can see what I mean in Figure 1a. This means you can use the dimensions shown in the drawings as a guideline, but you'll get the best results if you use the pins and slots as a reference point. Don't worry if your dimensions aren't exact. As long as the box joints fit together, you'll be fine.

And there's another reason for having an accurate setup. Cutting and fitting box joints on narrow workpieces (like the drawers you'll build later) doesn't take a lot

of effort. But on wide workpieces (like the back of the case), things can get tricky. The important thing is to aim for consistency.

The last thing I want to mention is that you may need to switch between blades on your saw to cut a few box joints then to cut a workpiece down to size. So it's important to be able to return to the same setup between operations.

### CASE CONSTRUCTION

With all the preliminaries out of the way, you can get started on the case. You'll notice in Figures 1 and 2 that the sides of the case are glued up in two sections. This makes it easier to cut the angled front and create a reference point for adding the top section later. It's only after adding the top section to the side assemblies that you'll cut the box joints along the back.

**Lower Side Pieces.** To get started, glue up panels for the lower side pieces and trim them to final size to create a rectangular blank, as shown in Figure 1. (You'll cut the angled front after cutting the box joints on the front edge.)

**Front.** The front starts out as an extra-wide workpiece cut to final length. To create an opening for the lower drawer, there's an easy technique I used. Shop Short Cuts on page 35 shows a way to cut the drawer front from the workpiece. This way, the grain and color will match the surrounding frame.

## Materials & Hardware

### CASE

A	Lower Sides (2)	$\frac{1}{2}$ x $8\frac{3}{8}$ - 11
B	Front (1)	$\frac{1}{2}$ x 4 - $19\frac{1}{2}$
C	Upper Sides (2)	$\frac{1}{2}$ x $5\frac{3}{8}$ - $5\frac{7}{8}$
D	Back (1)	$\frac{1}{2}$ x $13\frac{3}{4}$ - $19\frac{1}{2}$
E	Case Dividers (2)	10 x 19 - $\frac{1}{2}$ Ply.
F	Drawer Guides (2)	$\frac{1}{2}$ x 1 - 10
G	Top (1)	$\frac{3}{4}$ x $6\frac{3}{8}$ - 20
H	Cleat (1)	$\frac{3}{4}$ x $\frac{3}{4}$ - $18\frac{1}{2}$
I	Base Front/Back (2)	$\frac{3}{4}$ x $1\frac{1}{2}$ - 20
J	Base Sides (2)	$\frac{3}{4}$ x $1\frac{1}{2}$ - $11\frac{1}{2}$
K	Upper Bay Top (1)	$\frac{1}{2}$ x $4\frac{1}{2}$ - 19
L	Upper Bay Bottom (1)	$\frac{1}{2}$ x $4\frac{1}{2}$ - $18\frac{1}{2}$
M	Drawer Dividers (4)	$\frac{1}{2}$ x $4\frac{1}{2}$ - $1\frac{1}{4}$
N	Drawer Stop (1)	$\frac{1}{4}$ x 1 - $18\frac{1}{2}$
O	Lower Bay Bottom (1)	$\frac{1}{2}$ x $5\frac{1}{16}$ - $18\frac{1}{2}$
P	Lower Bay Ends (2)	$\frac{1}{2}$ x $5\frac{1}{16}$ - $2\frac{1}{4}$

### DRAWERS

Q	Small Drawer Front/Back (4)	$\frac{1}{4}$ x $1\frac{1}{4}$ - $4\frac{3}{4}$
R	Small Drawer Sides (4)	$\frac{1}{4}$ x $1\frac{1}{4}$ - $4\frac{1}{2}$
S	Small Drawer Bottoms (2)	$4\frac{1}{4}$ x $4\frac{1}{2}$ - $\frac{1}{4}$ Ply.
T	Ctr. Drawer Front/Back (2)	$\frac{1}{4}$ x $1\frac{1}{4}$ - 7
U	Center Drawer Sides (2)	$\frac{1}{4}$ x $1\frac{1}{4}$ - $4\frac{1}{2}$

V	Center Drawer Btm. (1)	$4\frac{1}{4}$ x $6\frac{3}{4}$ - $\frac{1}{4}$ Ply.
W	Lg. Drawer Front/Back (2)	$\frac{1}{4}$ x $2\frac{1}{4}$ - $17\frac{1}{2}$
X	Large Drawer Sides (2)	$\frac{1}{4}$ x $2\frac{1}{4}$ - $5\frac{3}{8}$
Y	Large Drawer Bottom (1)	$5\frac{1}{8}$ x $17\frac{1}{4}$ - $\frac{1}{4}$ Ply.
Z	Lwr. Drawer Front/Back (2)	$\frac{1}{2}$ x $2\frac{3}{4}$ - $16\frac{1}{2}$
AA	Lower Drawer Sides (2)	$\frac{1}{2}$ x $2\frac{3}{4}$ - $10\frac{1}{2}$
BB	Lower Drawer Bottom (1)	10 x 16 - $\frac{1}{4}$ Ply.
<b>LID</b>		
CC	Lid Front (1)	$\frac{1}{2}$ x $4\frac{3}{8}$ - $19\frac{1}{2}$
DD	Lid Sides (2)	$\frac{1}{2}$ x $4\frac{3}{8}$ - $5\frac{1}{8}$
EE	Lid Wedges (8)	$\frac{1}{2}$ x $2\frac{1}{4}$ - $5\frac{1}{8}$
FF	Lid Staves (4)	$\frac{1}{2}$ x $2\frac{1}{4}$ - $19\frac{1}{2}$

- (4) #6 x  $\frac{3}{4}$ " Fh Woodscrews
- (19) #6 x 1" Fh Woodscrews
- (4) #6 x  $1\frac{1}{2}$ " Fh Woodscrews
- (10) #8 x 1" Fh Woodscrews
- (3) #8 x  $1\frac{1}{4}$ " Fh Woodscrews
- (1)  $1\frac{1}{16}$ " x 36" Continuous Hinge
- (3)  $\frac{1}{2}$ "-dia. Knobs
- (3)  $\frac{5}{8}$ "-dia. Knobs
- (2)  $\frac{7}{8}$ "-dia. Knobs
- (2) Chest Lifts w/Screws

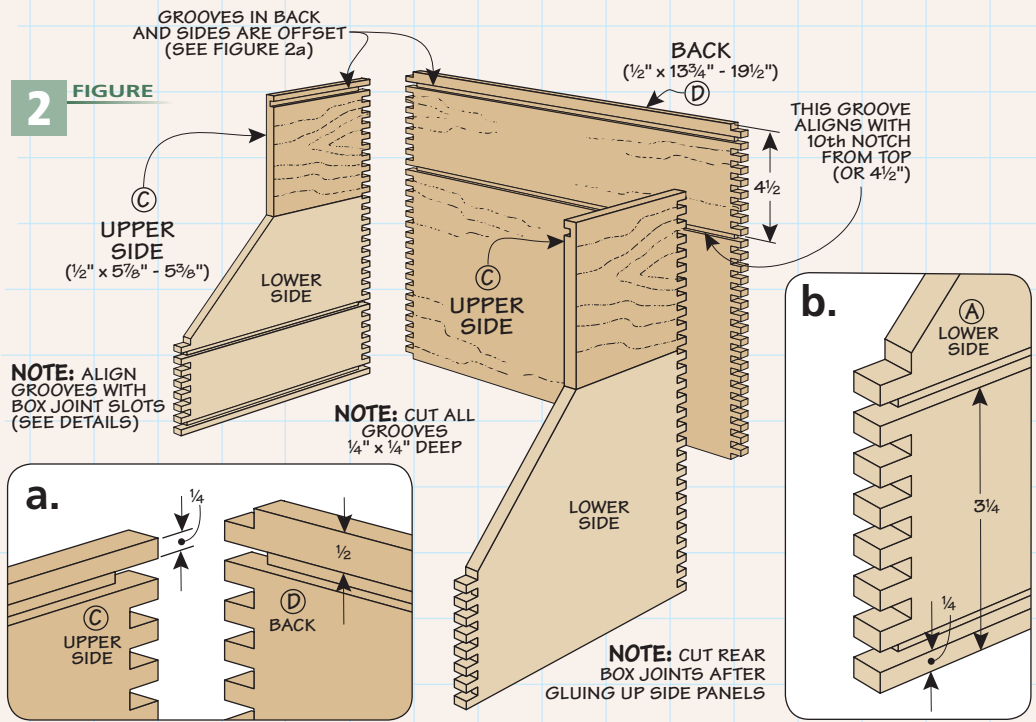
But for my tool chest, I wanted to show a little contrast between the frame and drawer front. So I discarded the center piece and made the drawer front from a different workpiece that was slightly darker. With the case front in hand, you can focus on the joinery.

**Cutting Box Joints.** Now it's time to set up your saw for cutting  $\frac{1}{4}$ "-wide box joints. I started with the side pieces then cut the mating joints on the case front.

**Trimming.** With these box joints complete, rip the case front to final width. Then, with the side pieces in hand, step over to the band saw to cut the angled front edge. Stay outside the line and aim for a smooth, straight edge for a good fit with the lid later on. A little sanding or trimming with a block plane will help with this.

**Upper Side Pieces.** Now you can glue the upper side pieces in place to complete the side assemblies (Figure 2). If needed, trim the back edge of the side assemblies flush and set them aside for now.

**Back Panel.** The back panel is simple. It's just a glued-up blank cut to final size. The important thing here is that the length of the front and back should be the same.



Go ahead and cut the box joints on the side assemblies and rear panel. I started cutting from the bottom edge of the pieces, working my way to the top edge.

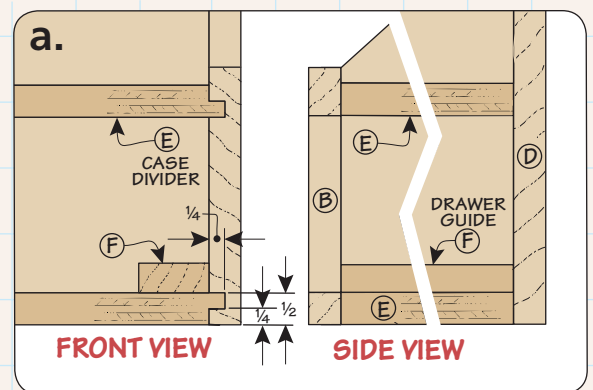
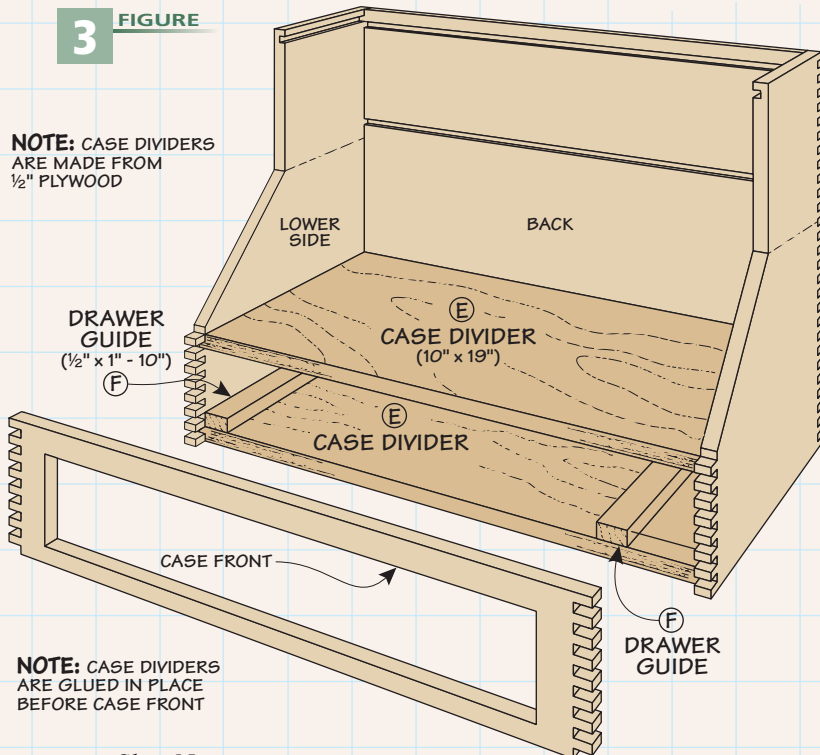
Now, I'll admit that cutting this long run of box joints can be intimidating. But if you take your time and work on being consistent with every cut, you shouldn't have any problems getting them to fit.

**Grooves.** To hold the case dividers and drawer bays you'll build

later, there are quite a few grooves you'll need to cut in the sides and back. The key here is to align the grooves with the box joint slots, as shown above in Figures 2a and 2b. This keeps the grooves hidden after the case is assembled.

**Dividers and Drawer Guides.** The last things to do on the case are to cut the dividers to fit the grooves in the case and add the drawer guides. After dry-fitting the assembly, I glued up the sides and back first, using the dividers and front piece to keep things square as the glue dried. Then you can add the dividers and front piece to complete the assembly.

Finally, the drawer guides are simply cut to size and glued to the bottom divider. The next things to work on are the drawer bays that fit inside the case.



# adding the top, base, & Drawer Bays

Now that you've completed the shell of the case, you can start to work on the top and base frame. After that, you'll add the two internal bays that will hold the drawers. The first thing you'll work on here is the top for the tool chest.

**Top and Cleat.** In Figure 4, you can see how the top is attached to the case. There's a cleat screwed to the underside with a tongue that fits into the groove in the back panel. Figure 4a provides the dimensions you need to locate the cleat. You'll be fastening the top at the front with screws to the upper drawer bay later. So, to allow the top to move with seasonal changes in humidity, the tongue on the cleat floats within the groove.

I cut the rabbet on the cleat at the table saw and then fastened the cleat to the top. You can set this



▲ **Attaching the Top.** Access holes in the upper drawer bay let you screw the top in place.



▲ **Lower Bay.** A few screws in the sides fasten the lower drawer bay inside the case.

assembly aside for now. This makes it easier to install the drawer bays later. Once those are in place, then you'll be able to attach the top.

**Base Frame.** At this point, you can turn your attention to the base. It's a simple, mitered frame, as shown in Figure 4b. I started with long stock, then mitered pieces to length to create the frame. Once the frame is glued together, you

can rout the roundover on the top edge. A little glue and a few screws are all you need to attach the base frame to the bottom of the case. With that done, you can set the case upright and start on the internal components.

## DRAWER BAYS

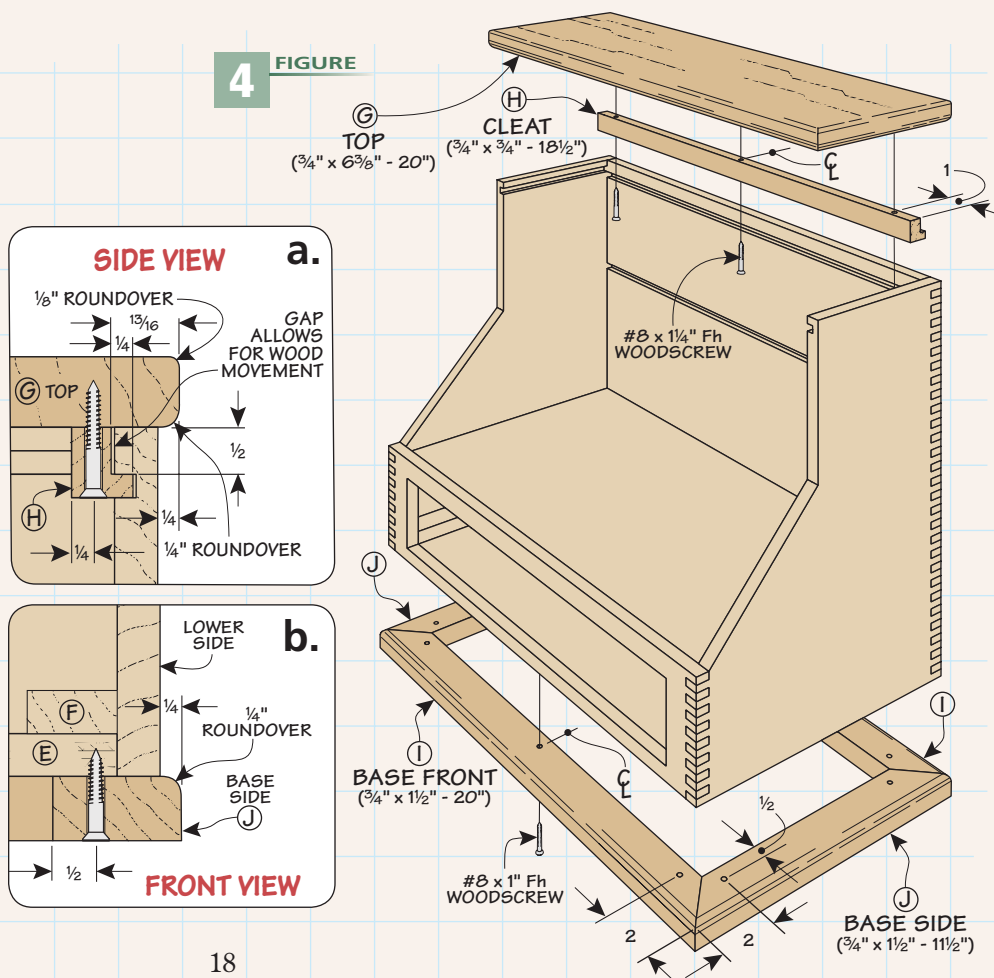
The next thing to work on is the drawer bays. The upper bay holds the three smaller drawers. The lower bay holds a single, large drawer. Both bays are assembled first, then slipped into the case. You'll start by building the upper bay and installing it. Then you'll be able to attach the top and complete the lower drawer bay.

**Upper Bay.** Figure 5 gives you all the information you need to cut and assemble the upper bay. It consists of a top and bottom piece with dividers and ends. And there's a thin strip on the back side that acts as a drawer stop.

There's nothing difficult about cutting and assembling the bay. But one thing I want to point out is that the top is longer than the bottom. This way, you can form tongues on the ends that slide into the grooves on the case sides. You can see what I mean in Figure 5b.

**Dividers and Ends.** The dividers that separate the three small drawers are the same size as the ends of the upper drawer bay. And, to keep things simple, I used butt joints for assembly. The screws

4 FIGURE



will be hidden after the drawers are built and slid into place.

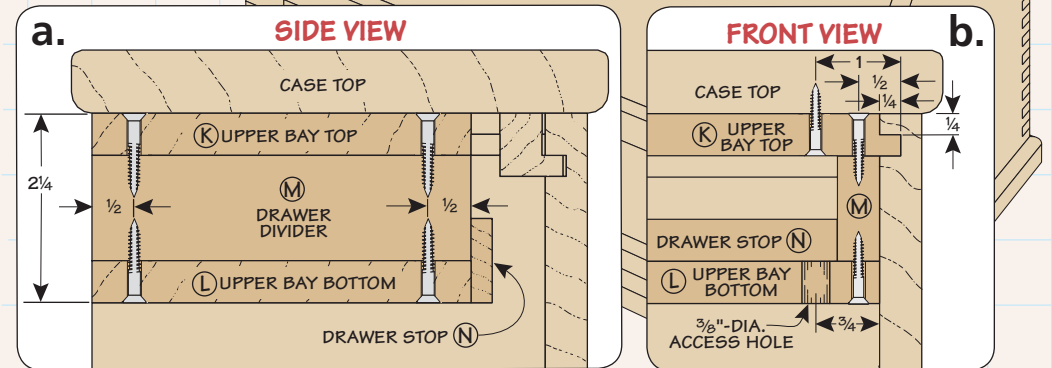
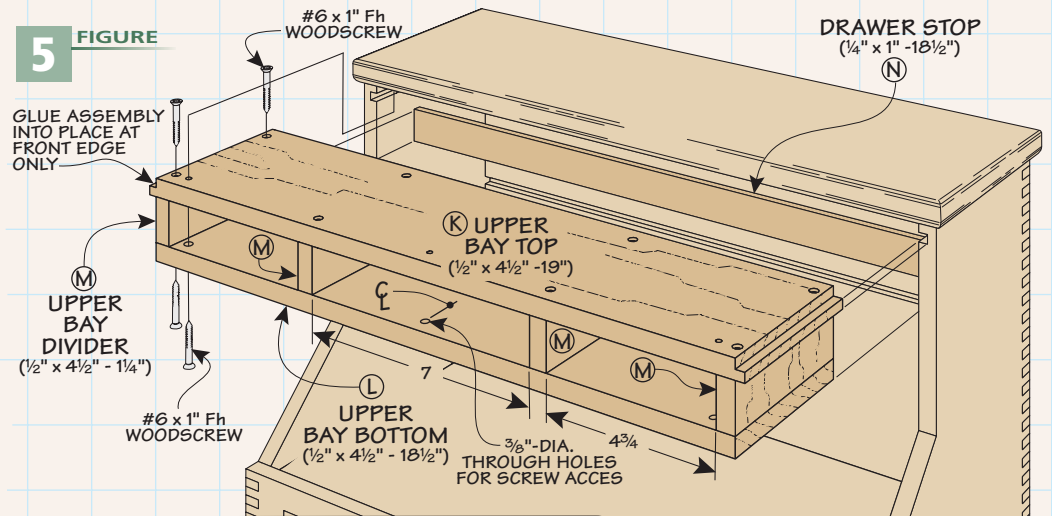
After the drawer bay is assembled, step over to the drill press. Drill the three pilot holes in the top and access holes directly below them in the bottom. This will make it easier to fit a screwdriver up through the bottom to tighten the screws used to fasten the top in place. The final step in the assembly is to glue the drawer stop onto the back side.

**Installation.** Now you're ready to slip the assembly into the case. I just used a dab of glue at the front to allow the bay assembly to move freely with changes in humidity.

**Attach the Top.** With the upper bay in place, you can attach the top. To do this, drop the cleat behind the drawer bay and slide the top assembly back. The tongue in the cleat should engage the groove in the back panel.

I slid the top back until it was tight, then pulled it forward about  $\frac{1}{16}$ ". This leaves a slight gap to allow for movement, like you see in Figure 5a. All you need to do now is fasten it down at the front edge with two screws (left photo on opposite page).

**Lower Drawer Bay.** Compared to the upper drawer bay, the lower bay is really simple. The main difference is you'll need to form a tongue on the back edge of the



bottom piece. This tongue fits in the groove on the back panel (Figure 6b). Two ends complete the U-shaped tray to hold the large drawer. Here again, simple butt joints do the trick and make assembly quick and easy.

To install the lower bay assembly, no glue is needed. Just make sure the tongue on the back slips into the groove on the back panel.

A few screws in the end pieces at the front edge are all you need to lock it in place (Figure 6 shows you where to place them.)

Now that both drawer bays are complete, you can get started setting up your table saw to make the box joints on all the drawers.

6 FIGURE

