# Beautify Your Home with a
# Shaker Built-in

## Build it in place, and the work goes surprisingly quickly

BY CHRISTIAN BECKSVOORT

I've grown used to the pleasure of working solid wood at the workbench, so it takes some persuasion to get me to leave the shop, haul sheets of plywood, and get on my knees to scribe along crooked walls. But in my younger days, I built my fair share of kitchen cabinets, commercial fixtures, and built-ins. And recently, my most discerning client, my wife, convinced me that we needed a built-in. So out of the shop I went.

Early homes tended to lack closets and storage space, so wardrobes and built-ins were common. The Shakers added built-ins wherever possible and turned them into an art form. Most, if not all, the built-ins made by the Shakers were constructed in place. I did the same, except I used plywood partitions and shelves where the Shakers used solid pine (or poplar in the South). I used solid cherry for the face frames, doors, and drawers.

The best part of a built-in is its versatility. You can design it to function for your particular situation. Mine has a middle bottom section for drawers. The right bottom section has a closet rod, while the left bottom section has adjustable shelves.

In our case, the location was under a roof and knee wall next to a doorway. A lot of homes have areas where a slanted ceiling makes the space unsuitable for almost anything else. I started with a rough sketch, consisting of three sections of doors and drawers that would be built in place into a single unit. This built-in navigates the knee wall, but the techniques and order of operations is exactly the same as for a straight built-in. The keys to success are keeping everything plumb and level and having a lot of patience while you go back and forth between the site and the shop.

## Troubleshoot the site

The more sound, plumb, and level the location, the easier your built-in construction and installation will be. The first thing to do is survey the site. Note where the walls aren't plumb and the floors slope. If your walls and floors are old, warped, sloped, and out of square, then make leveling frames to fit the wall and the floor. Anything more than ⅛ in. is too much out of whack and you should correct for it. It takes some time and patience to get things just right, but the effort will be repaid with an easier construction and a straight and square finished product.

Mark the locations of your wall studs and use a level and shims to make sure the frame is plumb and flat. A stack of cedar shingles



**START IN THE SHOP**

*Assemble as much as possible in the shop (above) before moving on site (right). Then install it one piece at a time.*

**BUILD IT IN PLACE**

*Solid-wood face-frame pieces are nailed in place. Then inset doors and dovetailed drawers turn the cabinet into furniture.*
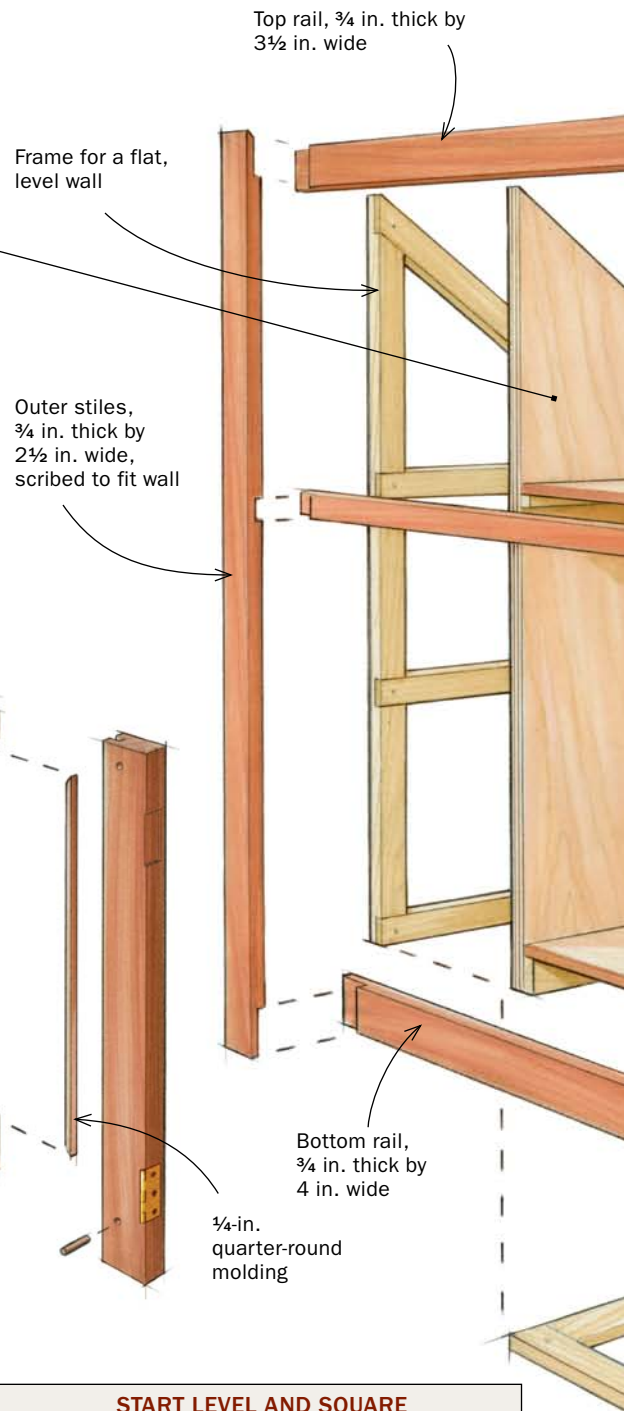
Photos, except where noted: Anissa Kapsales; opposite page: Michael Pekovich

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# ANATOMY OF A SHAKER BUILT-IN

Plywood partitions are easy to cut to size and quick to install. Solid-wood face frame pieces are scribed to the wall and ceiling, and then dry-fit to mark their joinery.

Top rail, ¾ in. thick by 3½ in. wide

## PLYWOOD MAKES FOR QUICK CONSTRUCTION

*Vertical dividers are the backbone.* Rip them to width, and then cut the 45° angle at the top using a circular saw and a simple cutting guide (left). Ledger strips are the connectors. Secure them to the same measurement on all the dividers (right).
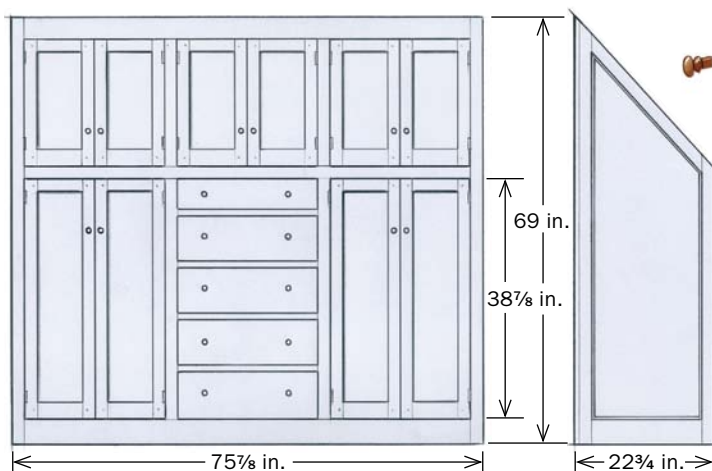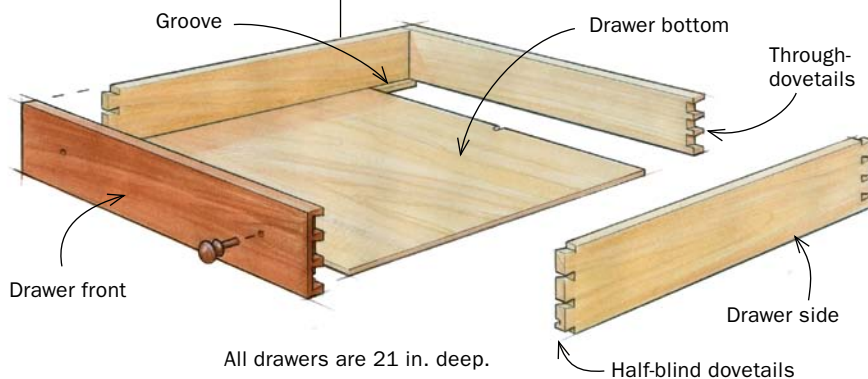
Frame for a flat, level wall

Outer stiles, ¾ in. thick by 2½ in. wide, scribed to fit wall

## DETAIL

All door-frame parts are ¾ in. thick; stiles and top rails are 2 in. wide.

Flat panel

69 in.

38⅞ in.

75⅞ in.

22¾ in.

Bottom rails are 2¾ in. wide.

¼-in. quarter-round molding

Bottom rail, ¾ in. thick by 4 in. wide

## DETAIL

Groove

Drawer bottom

Through-dovetails

Drawer front

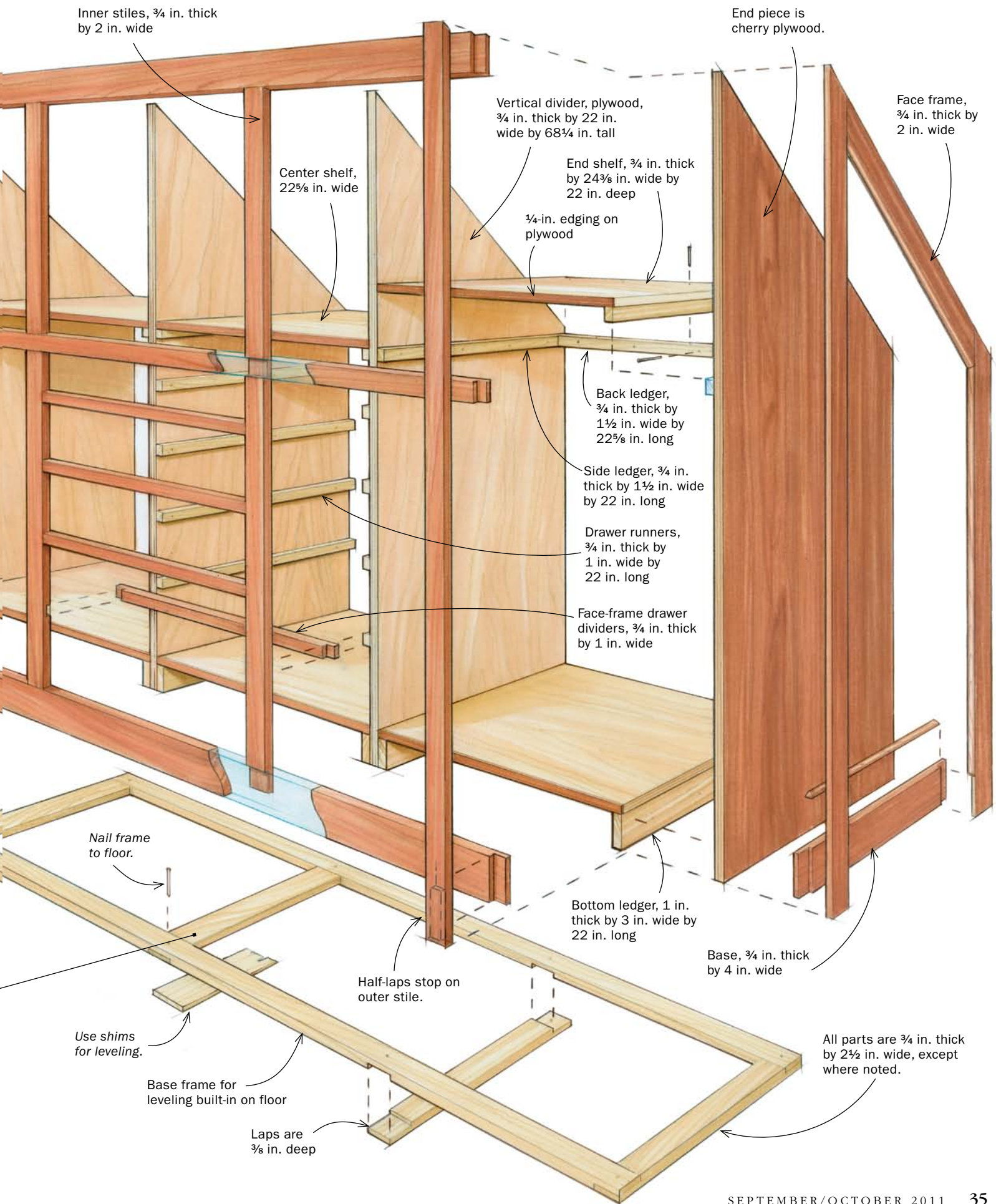All drawers are 21 in. deep.

Drawer side

Half-blind dovetails

## START LEVEL AND SQUARE

*Create a foundation.* To correct for wavy walls or crooked floors, make quick and easy frames out of cheap 1x3 furring strips. Shim behind or under the frames to create flat, level, and plumb surfaces for the built-in.

Drawings: Bob La Pointe

Inner stiles, ¾ in. thick
by 2 in. wide

End piece is
cherry plywood.

Vertical divider, plywood,
¾ in. thick by 22 in.
wide by 68¼ in. tall

Face frame,
¾ in. thick by
2 in. wide

Center shelf,
22⅝ in. wide

End shelf, ¾ in. thick
by 24⅜ in. wide by
22 in. deep

¼-in. edging on
plywood

Back ledger,
¾ in. thick by
1½ in. wide by
22⅝ in. long

Side ledger, ¾ in.
thick by 1½ in. wide
by 22 in. long

Drawer runners,
¾ in. thick by
1 in. wide by
22 in. long

Face-frame drawer
dividers, ¾ in. thick
by 1 in. wide

*Nail frame
to floor.*

Bottom ledger, 1 in.
thick by 3 in. wide by
22 in. long

Base, ¾ in. thick
by 4 in. wide

Half-laps stop on
outer stile.

*Use shims
for leveling.*

All parts are ¾ in. thick
by 2½ in. wide, except
where noted.

Base frame for
leveling built-in on floor

Laps are
⅜ in. deep

# Build in place

This smart, easy installation method allows you to cut separate pieces in the shop and lock them into place on site. No need to lug cumbersome plywood boxes to and fro.

## ❶ ASSEMBLE AND INSTALL THE FIRST BOX

## ❷ ADD THE DIVIDERS

**Add a divider to create the next box.** *Again, nail the shelves to the ledger strips to hold it all together. As with the first box, the final step is to toenail through the bottom ledger strip into the floor.*

**Lock together two vertical dividers.** *Create the first box by nailing the upper and lower shelves to their ledger strips (above). Set this box in place, nailing it to the side wall through the plywood divider. Finish by toenailing through the bottom ledger strip into the floor (right).*

**Repeat the process.** *Work your way out, attaching the upper and lower shelves to each divider, and nailing it in the same way (above). Then secure the whole thing to the back wall by nailing through the ledger strips under the upper shelf. As always, predrill before nailing to prevent splitting (inset).*

**Spacer keeps them aligned.** *Rest the drawer runners on a simple spacing template as you nail them in place.*

and a box of screws will allow you to shim those areas not making contact with the frame, all the while checking with the level. The same applies to the frame on the floor: It needs to be flat, level, and at 90° to the wall. Again, shim and screw as needed. Remember, as you build the case you'll be toenailing the vertical dividers into the floor or floor frame, so you should strategically place the frame members to anticipate the locations of the dividers.

It's somewhat unconventional, but I installed my built-in over the carpeting. I prefer this to cutting out the carpet and padding under the built-in because cutting out a section and leaving the edges without a carpet strip holding them down could lead to buckling over time. The built-in is secured to the walls as well as the floor and the thin, firm carpet is a non-issue.

## Get started on the vertical dividers

From my drawings, I knew I needed three sheets of ¾-in. birch plywood for the three walls, fixed shelves, bottoms, and sliding shelves, and one sheet of cherry plywood for the visible exterior wall on the right. This wall will blend with all the solid-cherry door frames and the solid-cherry face frames.

I measured the height of the knee wall, located the wall studs, laid out the locations of the dividers, and drew the profile of the divider on the far left wall. With this information in hand, I returned to the shop and ripped the sheets of plywood in half. I cut one of the cherry and three of the birch half-sheets at 45° to make the two dividers and two end pieces.

## Ledger strips keep it all together

Ledger strips make the construction straightforward, serving dual purposes: They give me a place to secure the bottoms and shelves, while locking everything together. The bottom ledgers rest on the



**Scribe, fit, and glue it in place.** *To correct the small gaps on the end cap, Becksvoort runs a compass along the surface of the ceiling (above), transferring the undulations to the frame stock. Then he uses a block plane to shape the frame to that line (left).*



**Fit the front edge too.** *Once the wall side of the frame is profiled, set it in place and use the plywood divider to run a line along the back side of the end cap. Cutting to this line will make sure the front is perfectly flush with the edge of the plywood, which is crucial because the face frame has to land there.*

There are a lot of intersecting pieces to keep track of in this phase of the project. Becksvoort tacks all the pieces in place, marks them for location and joinery, cuts the joints, and then nails them on.

### FIT AND MARK FOR THE JOINTS

*After beveling the edge of the top rail, set the rail in place, making sure it is level. With a pencil on a block of wood, scribe along the ceiling onto the rail, and then trim to that line with a scrub plane or drawknife.*





**Work your way down.** *Starting with the top rail, tack the parts in place with brads as you go. Move on to the frame stiles and drawer dividers. Tack the stiles on top of the rails. The far right stile is flush with the end cap. The center two are flush with the inside walls of the center box, and the far left stile is flush with the wall and may need scribing. Slide the drawer dividers behind the stiles and clamp them to the drawer runners.*

floor or leveling frame and support the bottoms of the cabinets, while the upper ones hold the fixed shelf at the top of the knee wall. You'll nail through the bottom ledgers and leveling frame to lock the built-in to the floor.

From the leftover plywood, I cut three bottoms and three fixed shelves. All six pieces got ¼-in. cherry face strips glued to the front edge. On the undersides of the back of the three shelves, I glued and screwed ledger strips, allowing exactly ⅞ in. on both sides of the strip to leave room for the intersecting ledgers on the vertical dividers.

### The installation begins with two types of frames

Although this is one large unit, I divided it in thirds and worked left to right, creating the first box and adding the shelf dividers to the box, then repeating the process for the next two sections.

With the entire unit firmly anchored to the floor and back wall, I moved on to the face frames, but only after installing the drawer runners, which are just strips of solid wood. I used a plywood spacer block to make sure they are level and even on both sides.

It's the cherry exterior and solid-wood face frames, doors, and drawer faces that give this large plywood box its beauty and handcrafted look. The face frames are scribed to fit exactly into position, they also blend the transition from the walls, floor, and ceilings to the built-in. The right side of my built-in is exposed, so I needed to build a face frame and apply it to the plywood there. I also needed face frames around the front of the boxes. These cover the plywood and frame the doors and drawers.

**An end cap on the end panel**—Back in the shop, I made a cherry frame to go on the outside of the cherry end panel. The back and top portions of the frame are ¼ in. wider, with a back bevel, to be scribed to the ceiling and knee wall. To mimic the moldings on the doors, the interior edges of the end frame have ¼-in. quarter-round cherry moldings applied. While making up that molding, I routed and cut quarter-round moldings for all 10





**Mark all the intersections.** *Use a square and a marking knife to mark the intersections where you'll cut the lap joints. On ending intersections there will be four tick marks, and on crossings there will be eight tick marks.*

**Saw and rout the lap joints.** Beacksvoort cuts the shoulders with a handsaw, and then uses a router to waste away the rest of the joint, working right up to the handsaw lines.
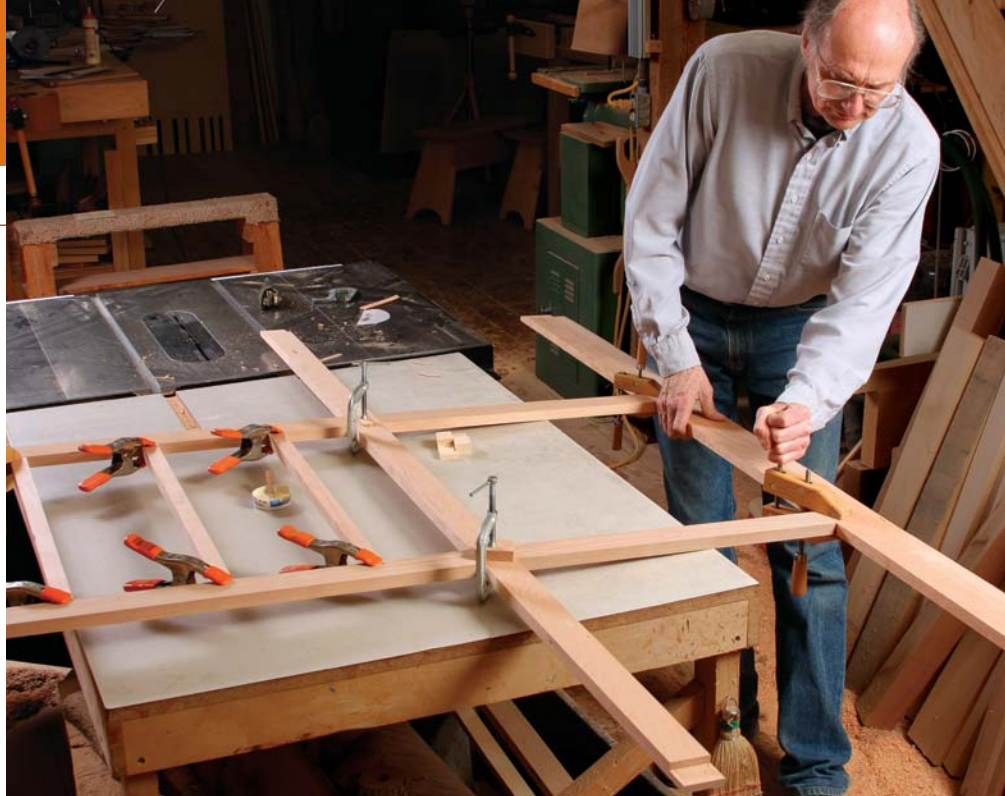


**Assemble as much as possible in the shop.** If you can move the frame to its location fully assembled, that's the best bet. But if low ceilings, staircases, and turning corridors prohibit that, assemble as much as you can in the shop and add the rest on site.

doors (see "Frame-and-Panel Doors Made Easier, *FWW* #218) yet to be built. When this end cap was built and scribed and planed to fit, I attached it. I glued the frame onto the end panel.

**A real frame on the front—**When the glue was dry on the end cap, I started on the face frames on the front edges of the built-in. These were milled to width and depth in the shop but left long. On site, I tacked them in place and marked them. The trick to a successful face frame is the order of operations and staying organized. Once everything is tacked in place, I make sure to mark the position of everything so I won't lose track of it.

With everything tacked in place, I used a sharp knife to make a tick mark where each member intersects, on both pieces. These tick marks indicate the locations of the lap joints. Then I took them back to the shop and cut the lap joints.

## A versatile interior

After the built-in was constructed and before I finished it, I used a simple plywood jig to locate holes for shelf pegs, and drilled them with a cordless drill.

The last step is to make and fit the 10 doors and five drawers (see "Shaker Chest of Drawers," *FWW* #206). I make traditional dovetailed drawers and run them on wooden runners, not commercial slides. I kept the face frames flush to the sides of the middle section with the drawers so I wouldn't have to block out for the drawers. The frame-and-panel doors are mounted with standard butt hinges, but I mortised them into the doors only. The hinges are surface-mounted to the frames.

Once the drawers are made and fitted and the doors are made, fitted and hung, the entire piece can be finished. I used a mixture of Tried & True Varnish oil and spar varnish. □

*Christian Beacksvoort is a contributing editor.*





**Nail the face frame in place.** Reuse the nail holes from when you tacked up the frames. Start with any preassembled sections, and then add the individual pieces. Beacksvoort fills the nail holes with a commercial putty (Wunderfil medium brown).