

# Simple Frameless Cabinets Built on Site

Combining no-nonsense joinery with Baltic-birch plywood and concealed cup hinges in a contemporary kitchen

BY JOSEPH B. LANZA



**I** have to admit I was a bit slow to catch on to the advantages of frameless cabinets. I had problems with the edgbanding and the European-style cup hinges that inevitably go along with frameless cabinets. When I first tried the hinges, I found them awkward to use. Setup and layout meant deciphering arcane diagrams with odd, unfamiliar dimensions. The much-touted adjustability of the hinges seemed to require an awful lot of adjusting and readjusting. Frustrated, I concluded that this cabinet-hinge combination was best suited for factory production or, at the very least, a shop dedicated to the 32mm cabinet-making system that originated in Europe.

But that was quite a few years ago. Now, after a series of improvements to both the

**Simple floor plan, simple cabinets.** Frameless cabinets in Baltic birch are compatible with the contemporary flavor of this small kitchen. Wall cabinets have no backs, and upper cabinets are open shelves.



hardware and the user, I find myself using these hinges all the time. The clip-style hinge, now made by several manufacturers, is a big improvement over earlier versions. This hinge makes it possible to hang and remove doors quickly, without tedious readjustment every time. I incorporated these hinges into a hybrid system for building face-frame cabinets with inset doors (see *FHB* #126, pp. 64-69).

These hinges were so much better, they encouraged me to give frameless cabinets another try. They have a clean look (photo facing page) that seems especially well suited to a spare architectural style. I looked for a way to build them on site quickly and easily, and the answer was simple: Make cabinet boxes just as I'd been making drawer boxes for years.

### Using Baltic-birch plywood eliminates edgbanding

For the little guy, edgbanding has always been the biggest headache in building frameless cabinets. The commonly available iron-on edgbanding just doesn't cut it for me, and ripping, applying, trimming and sanding thin strips of solid stock is a huge pain in the neck. Because I make most of my drawers from 1/2-in. Baltic-birch plywood with tongue-and-groove corner joints, I realized I could make cabinet boxes the same way with 3/4-in. stock. Unlike ordinary hardwood plywood, Baltic birch is all birch with

no softwood and no voids in the core. It is made up of thin veneers of alternating grain, which makes for a pleasing striped pattern when the edges are sanded or routed. Edgbanding can be avoided entirely.

As with cup hinges, Baltic birch can take a bit of getting used to. It comes in 5-ft. by 5-ft. sheets, so if you don't have long arms, a plastic panel lift will come in handy. Baltic birch tends to warp if left unused and unbraced, so if it looks as if it has been around the lumberyard for a while, you may want to pick from the middle of the stack. It also is, notoriously out of square, so you will want to check for (or make) a straight edge before you rip it. The sheets also tend to vary a bit in thickness. I've never had a problem with sheets from the same lift, but I sometimes run into a mismatch when mixing leftover pieces with a new delivery.

That said, it is great, and I love to work with it. Here in Massachusetts, Baltic birch is stocked in quite a few lumberyards and at nearly all plywood suppliers. Prices for a sheet of 1/2-in. stock are around \$25 and about \$35 for 3/4 in., but you can usually get a substantial price break if you can buy a full lift.

### Lay out cabinets on a story pole, then cut all the parts

My first step in building cabinets always is to make a story pole, which is a piece of stock



**It's safer with a cutoff box.** A table-saw cutoff box ensures that cabinet parts will be square. When working with Baltic birch, don't assume that factory edges are square.

## A SIMPLE JOINT MAKES STRONG CABINETS

Building cabinets on site calls for a strong joint made with minimal tooling. The author chose the rugged tongue-and-groove joint, made with a table saw.



**Leave room for the lights.** Grooving cabinet sides 2 in. from their bottoms creates space to hide over-the-counter lights.



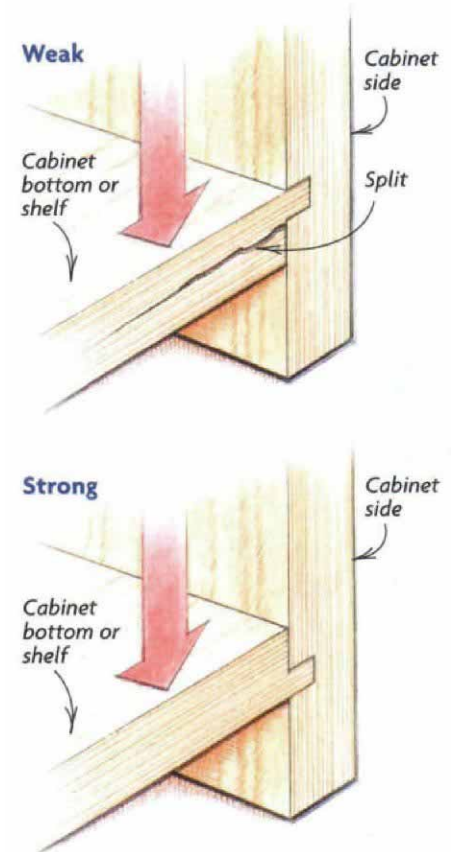
**Cutting the tongues.** A featherboard attached to an auxiliary fence makes the process safer and the tongues more consistent in thickness.

**Nails secure cabinet boxes while the glue dries.** Check for square by comparing diagonal measurements before the glue sets.



## Strengthening a tongue-and-groove joint

Orienting a cabinet bottom or shelf incorrectly (top) makes a weak joint. The shelf is susceptible to splitting and will behave as if it were the thickness of the tongue. Putting the joint together with the thick part of the shelf facing up (bottom) is the stronger option.



about 2 in. wide and as long as the longest dimension in the kitchen. I lay out everything on the pole. This procedure gives me a chance to make my mistakes at full scale and to check my measurements on site before building the cabinets. I mark all cabinet sides, tops and bottoms, and joints directly on the sticks. I make a cutlist from the stick, then rip and crosscut all the cabinet parts (photo p. 109) on a table saw.

Because there is no face frame to add strength and stiffness to the carcasses, the corner joints have to be solid. There are a number of methods that work well—biscuits, screws, knockdown fasteners—but I like the tongue-and-groove joint. It is easy to

set up on a table saw with a dado head, quick to cut and easy to assemble, and it gives lots of gluing surface. I make the cabinet sides full length and then cut the grooves in them, being sure to orient the groove so that the joint will have maximum strength (drawing facing page). The cabinet tops and bottoms get the tongues.

The groove is  $\frac{1}{4}$  in. wide and a strong  $\frac{3}{8}$  in. deep. I set up and cut all the grooves for the base cabinets at the same time. Then I move the fence 2 in. away from the dado head and run the wall cabinet sides, which have a 2-in. gap at top and bottom (top photo, facing page). These gaps lower the top shelf, allowing the cabinet sides to rise above it as a

curb. This gap also makes room for the bottom rails that conceal the recessed lights.

The dado setup for the tongues is the same for all cabinets, so after I get a good fit on a test piece, I cut all of them (center photo, facing page). To be strong, the joint must fit together snugly. Base cabinets don't have solid tops, just spreaders. To make them, I cut the tongue on a piece of scrap 6 in. to 7 in. wide (it's not critical), then rip that in half. These pieces go at the front and back of the cabinet to hold the sides together and to provide some support for the countertop. The cabinet bottom is, of course, solid. If the cabinets have backs, I cut them next (the cabinets in the photographs don't have

**Light cabinets mean easy installation.** After marking stud locations, the author hangs upper cabinets. Without backs and doors, these boxes are light enough for one person to hold in place as they are screwed to wall framing.



## TWO STEPS FOR BASE CABINETS



**Set the bases first.** To make leveling them easier, the author installs the bases separately from the cabinets. With the bases secured, he then sets the cabinet boxes in place and screws them to the wall.



backs). I make the cabinet rails from leftover 3/4-in. stock.

### Assembly is speedy with screws or air-driven nails

I assemble the cabinets with glue and, depending on what will be exposed, either screws or air-driven nails (bottom photo, p. 110). Because these base cabinets later received end panels, I used 16-ga. nails to assemble them and didn't worry about the holes. For the exposed sides of the wall cabinets, I used screws with integral washers. I used the same fasteners for the end panels and the exposed back of the kitchen island (photo p. 108). I also used these fasteners to attach aluminum trim throughout the rest of the house.

Cabinets without backs are checked for square after they are assembled, then laid on the floor until the glue sets. Before installing any of these cabinets, I ran a router with a 1/8-in. roundover bit around the inside and outside edges of the fronts. This little profile also fools the eye if the cabinets don't quite line up when they are installed.

I hung the wall cabinets first (photo p. 111) while they were easy to reach, then set the bases. Building cabinets in a lot of old, out-of-level, out-of-square houses has gotten me in the habit of building bases separate from the cabinets. I level the bases first (inset photo, facing page), then set the cabinets on them. I like to spray the exposed toe kicks with black paint before the bases are installed. Then I set the cabinets (photo facing page) and attach finished ends and backs.

I made drawers like cabinet boxes and installed them before cutting parts for the doors and drawer fronts. Both the drawer fronts and doors are slabs of 3/4-in. Baltic birch.

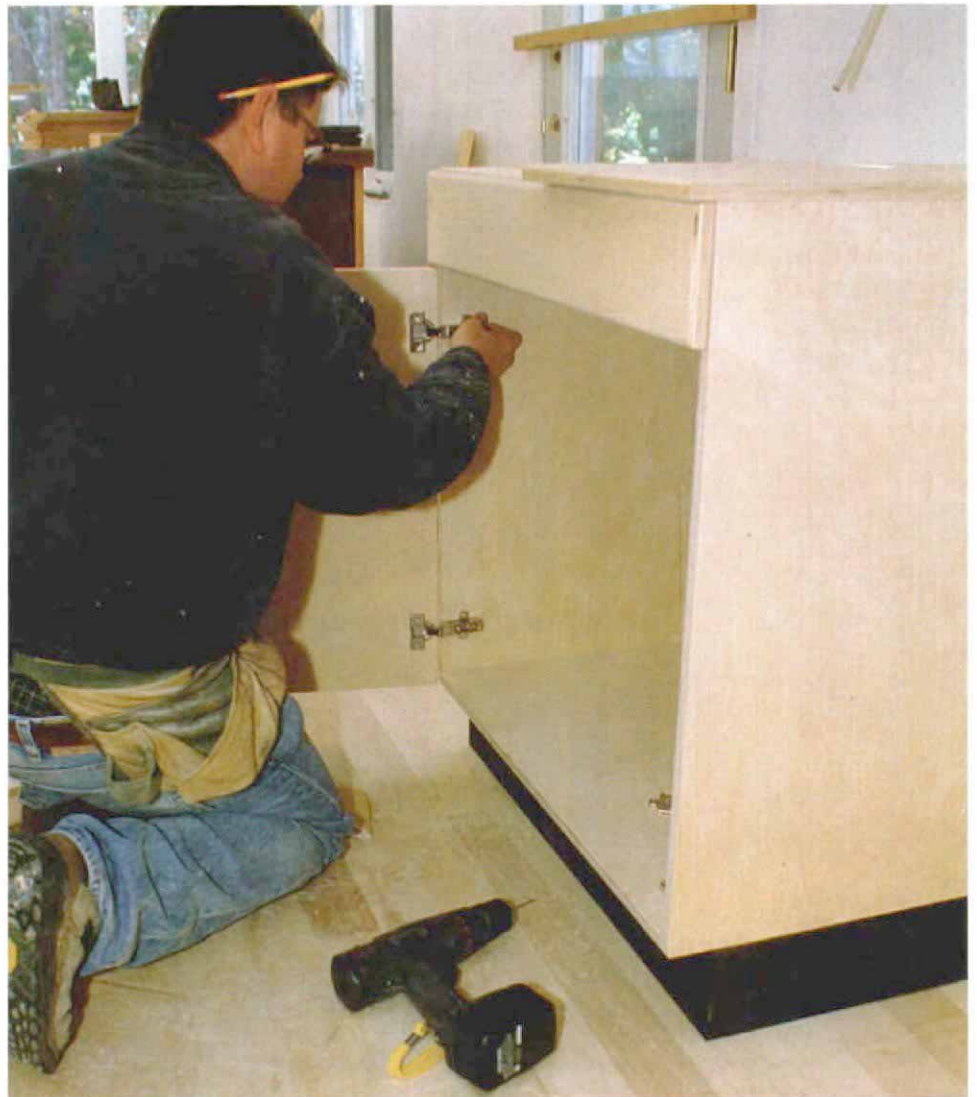
When it was time to drill big cup-hinge holes on the back sides of the doors, I set up a fence on my portable drill press. Pencil marks at 3 1/2 in. on both sides of the bit space out the hinges equally (photo top left). I can drill one hole, slide the door across the fence until the edge reaches the other mark and drill the second hinge-cup hole. Before boring out a stack of doors, it is always a good idea to mock up a hinge on scrap stock to make sure that the layout is correct.

Before hanging doors, I ease the backs with a 1/8-in. roundover bit and the fronts with the 3/8-in. roundover to expose the edges of the birch plies. To hang doors, I made a plywood jig to drill holes for the hinge base plates (photo top right). When laid out correctly, the hinges snap easily together (photo right). □

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**Hanging doors starts with a drill press.** After testing the layout on scrap, the author drills 32mm holes in the backs of cabinet doors (above left). Pencil marks on the drill-press fence indicate the door-edge alignment. A jig locates screw holes for hinge plates inside the lower cabinets (above right).



**Pop on the doors.** If holes have been drilled correctly, hinges installed on cabinet doors should snap easily into place on the base plates. These hinges allow the author to fine-tune the fit of the door.