Traditional Tansu

Pinned finger joints and shopmade copper hardware distinguish this Japanese-style cabinet

BY LEN CULLUM

Tansu have long fascinated me. In fact, a tansu in an antique shop window contributed greatly to my taking up serious woodworking. Something about all of those drawers and doors spoke to me, not only of function but of potential. Like the pages of a brand new sketchbook, it's not the empty drawers that make a tansu compelling, but what you might fill them with. The particular tansu that inspired this build is called a *ko-dansu*, or personal storage chest. What all of the drawers were intended for I have no idea, but the proportions and layout appealed to me. While the original was built from kiri (paulownia), I'll be building this one from Port Orford cedar. Enough talk, let's build a tansu!

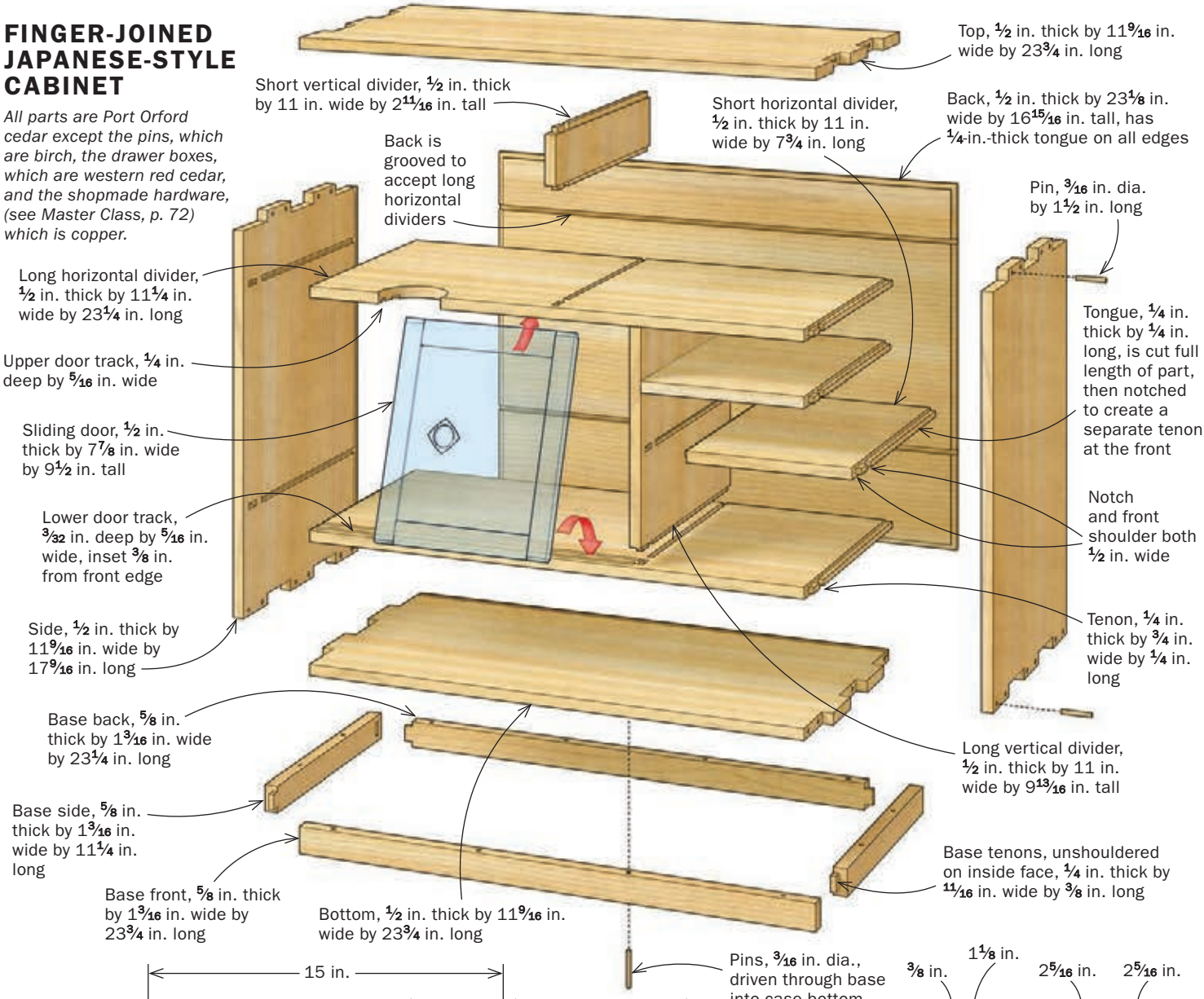
Finger joints

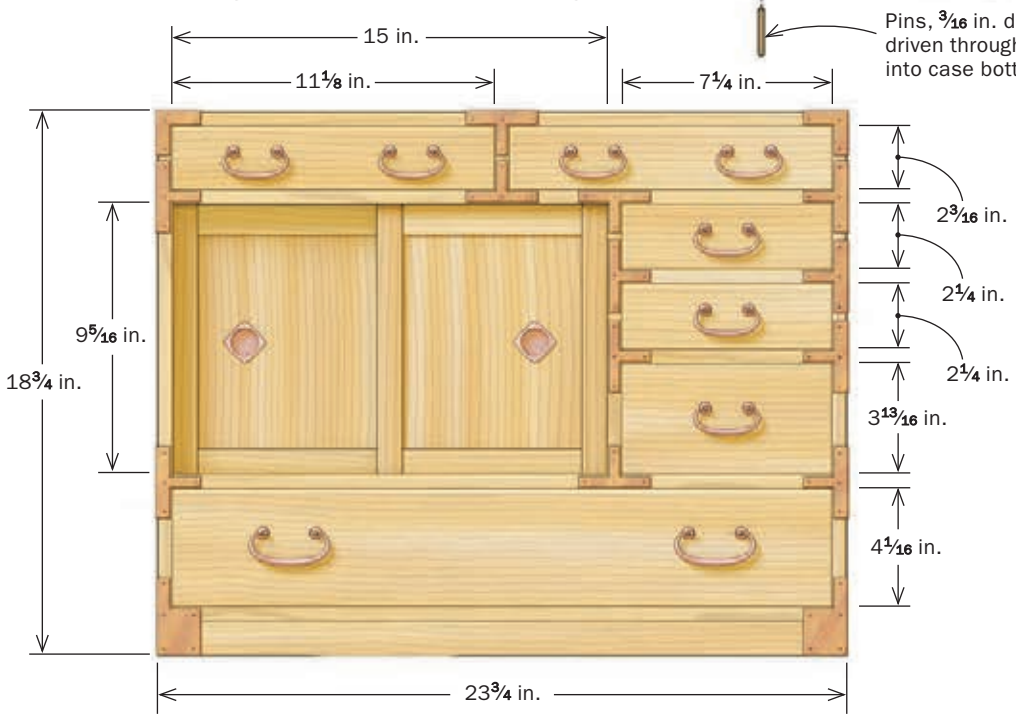
The carcases of box-style tansu like this one (as opposed to frame-and-panel style) are commonly constructed using wide, pinned finger joints, and almost always have five fingers per corner. The fingers are typically cut in opposition at the top and bottom corners, and because keeping track can get confusing, it's important to mark which fingers will be removed and which will stay.

Photos: Jonathan Binzen; drawings: John Hartman

FINGER-JOINED JAPANESE-STYLE CABINET

All parts are Port Orford cedar except the pins, which are birch, the drawer boxes, which are western red cedar, and the shopmade hardware, (see Master Class, p. 72) which is copper.





FRONT VIEW

SIDE VIEW

Finger joinery

FIRST CUTS

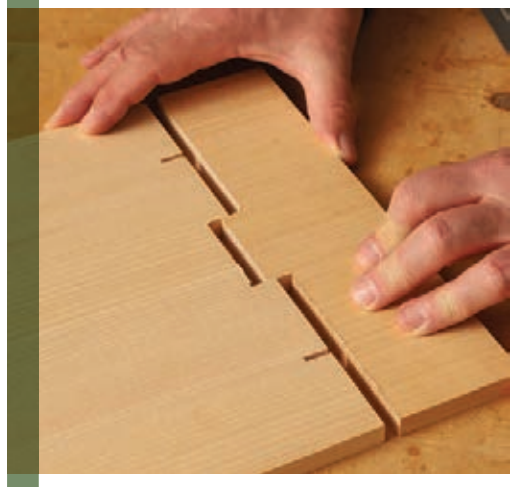
Symmetrical slots. *At the table saw, having set a stop block guided by his layout, Cullum uses a miter gauge to make the initial finger cut on one of the two-fingered joints. To cut the mirroring slot, he'll next rotate the workpiece so the opposite edge is against the stop block.*

The central issue. *After resetting the stop block, Cullum makes the two center kerfs.*

I lay out all of the fingers with a square. The case sides are ½ in. thick, but because I want a little overhang to plane off later, I make the fingers 9/16 in. deep. At the table saw, I carefully set up stops and make cheek cuts for both ends of the top piece and the bottom ends of the side pieces. Before cutting the cheeks for the mating fingers, I use an offcut the same width as the case pieces to reset the stops. To make shoulder cuts at the edges of the boards, I use a miter gauge at the table saw; for the shoulders between fingers I use the bandsaw followed by hand chiseling.

When all of the joints are cut, I dry-fit the four sides and double check the inside dimensions. I also make reference marks showing the location of the dadoes that house the back panel. These help keep track of inside/outside, front and back on all four parts.

FAUX FINGER



Make it fit like a glove. *Cullum uses a cutoff from one of the case boards to find the stop-block setting for cutting the central finger on the three-fingered side of the joint. Then, having removed waste from the center gap in the two-fingered board, he tests the fit.*

Slotting the case side. *With the stop block's new setting, Cullum cuts the slots on both sides of the central finger.*

FINAL FITTING

Open shoulders. *On the two-fingered joints, where the shoulders are accessible, Cullum cuts them at the table saw with the workpiece on edge.*

Inside job. *For shoulders that can't be table sawn, rough out the waste at the bandsaw. Then pare to the baseline with a wide chisel and a 90° guide block.*

Interlace the case. *With the finger joints complete, Cullum tests their fit.*

Tongues and tenons

The interior case parts are all joined with a Japanese variation on the tongue-and-groove. A continuous tongue is cut first. Then a notch is cut through the tongue creating a ¾-in.-wide tenon that helps with assembly and keeps the parts from drifting over time.

Using a scrap piece and the dado stack on the table saw, I dial in cuts to create a tongue that is ¼ in. long and ¼ in. wide. I cut tongues on the ends of all of the internal parts, and then modify the tongues by cutting a ½-in.-deep front shoulder and then the notch that creates the separated tenon at the front. Once all the parts are cut at the table saw, I finish the notch with a chisel.

I use my trim router with a ¼-in. bit to make all of the dadoes and mortises for these joints. Because I prefer to chisel my dadoes and mortises square instead of rounding the tenons, I stop a little shy of the lines and finish up with a chisel.

To the back

Here I depart from typical tansu construction. Traditionally, the back panel of a tansu is fitted beneath the top and nailed directly to the back edges of the carcase. This causes some wood movement issues, and it's not terribly attractive. Since this tansu will likely be seen from all sides, I chose to cut a tongue around the back and let it into the case.

Next, I dry-assemble the carcase with the back in place. Then I transfer to the back the location of the dadoes in the sides for the long horizontal dividers. Using those marks and a ¼-in. dado

Divider joinery

TONGUES

Tongues to start with. *The interior joinery begins with all the dividers in the case getting tongues cut on their ends. The long horizontal dividers also get tongued along their back edges.*

Tongues become tenons. *A notch cut through the tongue creates a separate tenon at the front of the joint. This aids in accurate assembly and keeps parts from drifting over time.*

GROOVES

Grooving jig. *Cullum's routing box (top) provides a square fence for his trim router to ride along as he cuts grooves for the short horizontal dividers. He routs to his end lines by eye, and lifts and plunges again to cut the in-line mortise at the end of the groove.*

Squaring up. *After chopping the ends of the grooves and mortises square with chisels, Cullum tests the fit.*

stack, I cut dadoes across the back for the horizontal dividers.

Before moving on to make the sliding doors, I cut the tracks for them in the case top and bottom. At the table saw I use a dado stack and the stop-and-drop method to cut them. I cut the tracks just slightly short, and then I fit the vertical divider into place, mark the track ends with a knife, and finish up with a chisel.

The glue-up

I do the glue-up in two stages. First I glue all the interior parts and the right side. When they have cured, I add the rest of the carcase and the back. When clamping the sides, it helps to have full-length clamping cauls to help keep everything flat and prevent the unsupported finger joints from drifting inward.

When the glue has cured, I remove the clamps and drill for the pins. Each finger gets two 3/16-in.-dia. wooden pegs. While tapered

BACK WORK

Fit and mark. *Having grooved the case parts for the back and rabbeted the back to create a tongue to fit the grooves, Cullum dry-fits the carcase. Then he transfers the groove locations for the two long horizontal dividers onto the back.*

Grooving the back. *Using the marks he just made, Cullum cuts grooves in the back to accept the long horizontal dividers. Locking them into the back makes the case rigid and keeps the long dividers from deflecting.*

wooden nails are preferable, they can be difficult to find; regular birch dowels will suffice. Taking the whole case to the drill press, I drill pin holes 1¼ in. deep. I cut the pins 1½ in. long and, using a pencil sharpener, chamfer one end. While it's tempting to skip this step, it makes the insertion of the pins easier, and lessens the risk of damaging the surrounding surface. After using a toothpick to lightly apply glue inside the hole and to the pin, I tap them in. When all are in on one face, I clean off the glue and cut off the excess before moving to the next side. When everything is cured, I plane the pins and the fingers flush.

I make the base next, and when I glue up the mortise-and-tenon joints connecting the four parts of the base, I use the finished case as a pattern. When those joints have cured, I glue and pin the base to the case, leaving several inches on each side of the back corners unglued to accommodate some movement of the case.

SLIDING-DOOR TRACKS

Careful tracking. *Cullum uses the drop-and-stop technique to cut the stopped grooves for the sliding doors. Achieving precise spacing and depth is critical. The top slots are cut slightly deeper to allow the doors to be lifted up to clear the bottom of the case when they are being inserted or removed.*

Scribing the square end. *Cullum dry-fits the vertical divider to ascertain the exact end point of the door tracks. After scribing, he'll chisel the tracks square.*

Two-stage assembly

1 ***Assembling the innards.*** *In the first stage of assembly (above and at right), Cullum glues up all the interior parts and the right case side.*

2 ***Adding the outside.*** *With the cabinet's interior all glued up, Cullum assembles the finger joints and inserts the back, bringing together the entire case.*

Doing drawers

Tansu drawers are built differently from their western counterparts. They have pinned joinery at the corners, and the bottom of a tansu drawer, instead of being slotted into grooves, is pinned directly to the bottom of the drawer box. In use, the whole bottom is supported by the dust shelf beneath it. This kind of cross-grain attachment can be problematic in wider drawers, so for the three wide drawers, I made bottoms composed of two or more pieces tongue-and-grooved together so they can expand and contract. I also used high ring count, very dry, vertical-grain western red cedar.

The first step is to verify the fit of each drawer front, and determine the orientation. Because I can be a bit of a grain nerd, I try to keep everything oriented in the same direction as it came from the board; that way when light hits it, no piece will reflect differently from the others. The fronts should be snug, but not super tight. (Pro tip: Do not push them all the way flush, as they might be extremely difficult to get back out. Trust me on this.)

Once all of the fronts are oriented and marked, it's back to the table saw for rabbeting. I rabbet both ends and the bottom edge of each drawer front, and then, using a chamfer plane, I cut a 45° chamfer along the inside top edge of the drawer front.

With all the drawer parts made, it's time to drill for pins. Using tape, I assemble each drawer dry, then do all of the pin layout, and drill. For drawer joints, I typically use two pins near the top. This not only strengthens the weakest part of the drawer, but I also think it looks cool. The pins I use are actually 3/32-in.-diameter toothpicks. I cut them in half, so each toothpick yields two pins.

When all of the holes are drilled, it's time to start gluing. Leaving the tape attached to the bottom, I remove the bottom and set it aside (noting its orientation). Next, I release the tape on one joint and open the drawer fairly flat. After applying glue to the joints, I pull the tape tight and drive in pins dragged through glue. When one side is pinned, I cut off the pins, then repeat on the other side. Next I run a bead of glue around the perimeter of the frame, re-tape the bottom, and drive its pins. Because this process takes a little time, I recommend using a glue with an extended open time. Apply clamps and set aside. When all of the glue has cured, pull the tape and plane the drawers to fit.

With the drawers complete, I move on to the mortise-and-tenon, frame-and-panel doors. To make the mortising of these small parts safer and the glue-up easier, I leave the stiles an inch or more over length on both ends until after assembly. Because these are light doors, be conservative with the amount of glue you use. A very light wetting on the tenon and a light coat in the mortise is plenty. If squeeze-out can be avoided, it should be. I insert two rails into one stile, slide in the panel dry, then carefully tap on

Pin the fingers

Drilling for the pins. *When the glue has dried, Cullum takes the cabinet to the drill press to bore holes for the finger pins.*

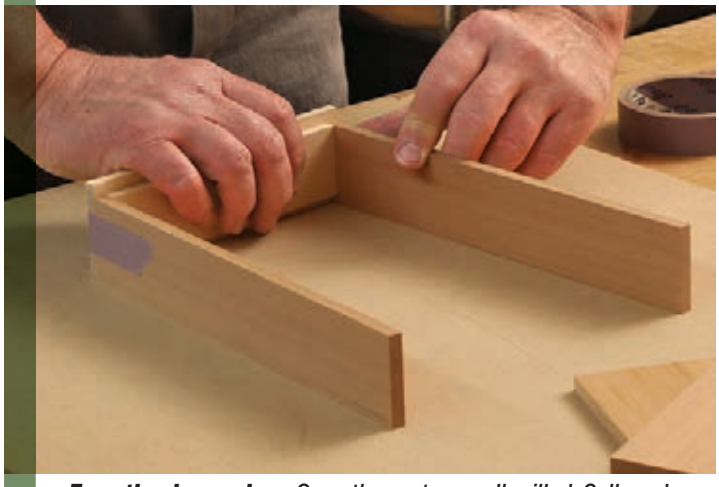
Good point. *Cullum chamfers one end of each pin using a pencil sharpener. With 40 pins it's a lot of sharpening, but the chamfers make insertion easier and prevent damage to the surrounding wood.*

Sufficient pins. *Although ideally Cullum would prefer to use tapered Japanese wooden pins, they are hard to source; in their absence, he says, "birch dowels will suffice." When the glue is dry, Cullum flushes the pins and the fingers to the surface of the case.*

Doing drawers

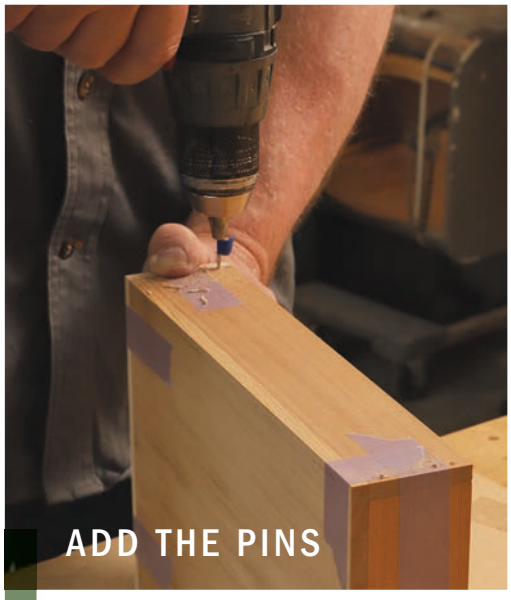
MAKE THE BOX

Rabbet the fronts. *To make clean rabbets on the ends and bottom inside edge of the drawer front, Cullum first makes passes with the workpiece riding flat on the table saw, then completes the rabbets with passes made with the part riding on edge against the fence.*



Tape the drawer box. *Once the parts are all milled, Cullum dry-assembles the drawer box, clamping the corners with tape.*

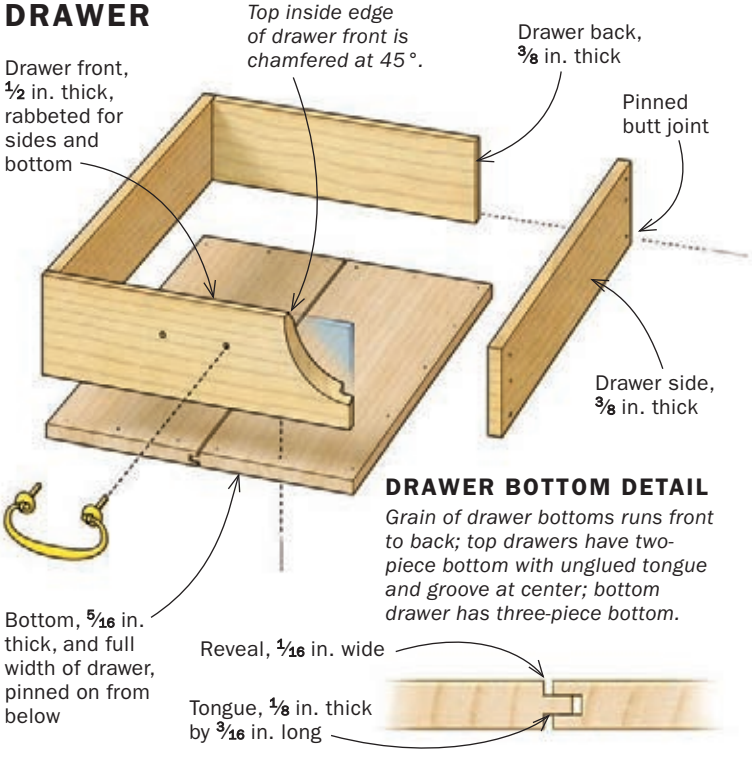
Adding the bottom. *The full-width bottom, which nestles into a rabbet on the drawer front, is taped on next.*



ADD THE PINS

Pin holes. *With the drawer fully dry-assembled and taped, Cullum drills holes for the pins at the corner joints and around the bottom.*

Toothpick tenons. *Cut in half, toothpicks make good pins for light tansu drawers like these.*



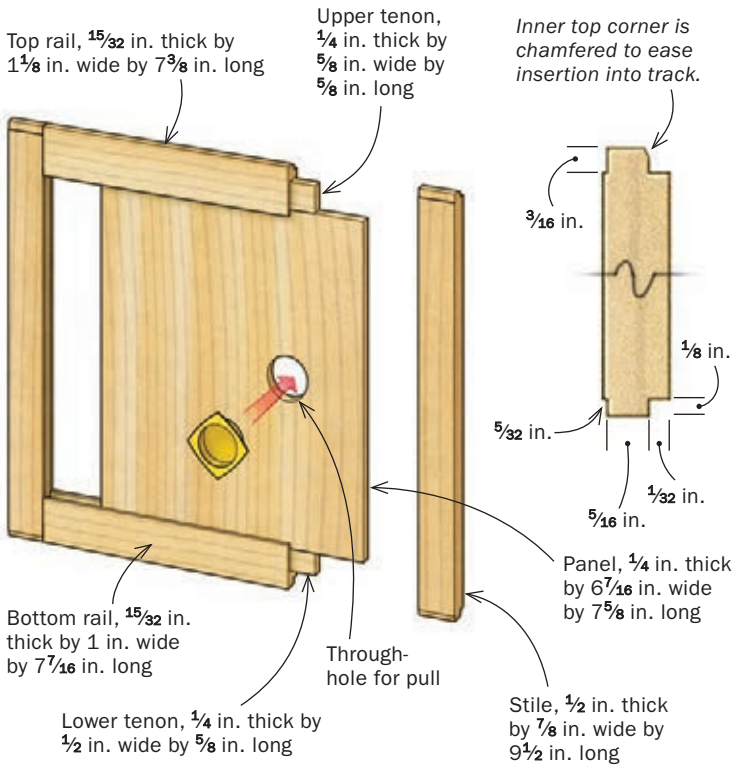
Assemble the sliding doors

Too long is very good. *Cullum makes the door stiles over length, which prevents problems when cutting mortises near the end of a part, and is also convenient at glue-up. He'll trim them after assembly.*

Trim the stiles. *Before assembly, the door rails are rabbeted to fit the tracks. Here, post-assembly, after sawing the stiles to length, Cullum notches the stiles to match the rabbets on the rail.*

Chisel follow-up. *Some judicious chopping and paring cleans up the sawn rabbets on the stiles.*

Longer tongue. *The door's upper end gets similar treatment, with stiles notched to match the rabbet in the top rail. The rabbet is wider here, however, making it possible to lift the door into the upper track and drop it down into the lower one.*



the other stile, making sure the panel edge doesn't bind. Then I clamp, measure for square, and let cure. When the glue has dried, I saw away the extra material on the stiles and cut rabbets at the top and bottom of each stile to match the rabbets on the rails. Last, using a rabbet plane, I adjust the fit of the doors until they slide freely (a little wax in the grooves helps a lot). □

Len Cullum works wood in Seattle, Wash.

Back bevel. *The tolerances are tight on these doors, and to make them easier to insert and remove, Cullum chamfers the upper inside edge of the top tongue.*