4 Steps to a Sweet-Fitting Drawer

How to make drawers that fit as good as they look

BY ROB PORCARO

You don't need to know any mysterious art passed down from a master to fit a drawer successfully. All you need is a logical process. And that's what I'd like to share with you. I've distilled what I've learned through the years into a clear path that guarantees success. The key is that it eliminates—rather than compounds—errors as you move through the steps.

I start with an old cabinetmaker's trick: I taper the width of the drawer pocket slightly. Then I fit the drawer front to its opening. It's easy to take that one board and plane its ends and edges so that it fits perfectly into the opening, even if the opening itself is slightly out of square. I then make the sides and back to match the front. There's nothing new about these steps. But after them, I do one thing that will be new to some of you. Instead of marking and cutting my dovetails so that the pins are proud, I leave the drawer sides slightly proud. That makes gluing the drawer together much easier and takes all the hassle out of fitting it. All you need to do is plane the sides down to the pins and the drawer slides right in.

Function as fine as the form. *It's not enough to have a beautiful drawer front. The drawer must work well, too.*

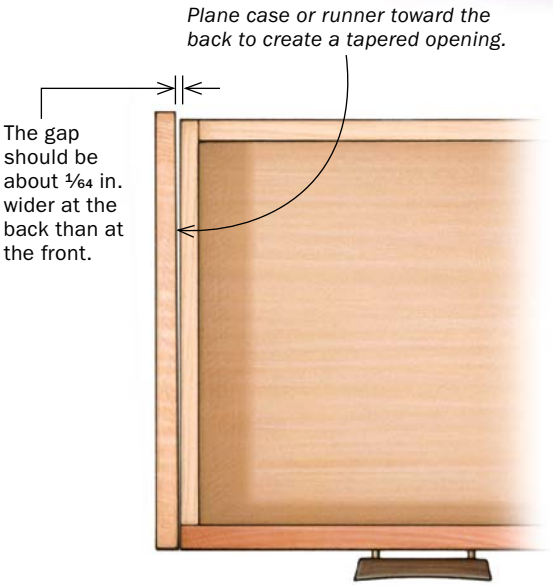
Taper the pocket

A drawer fits into a pocket. And you won't get a truly good fit for the drawer unless you take care when making the pocket. They can be made in variety of ways and from a variety of materials. No matter how you do it, I've got a tip that makes the pocket a perfect partner for the drawer.

The pocket should be slightly wider at the back than at the front—about 1/64 in. How that's accomplished depends upon how the case is made. For a cabinet with solid-wood sides dovetailed into a top and bottom, I assemble the piece dry, use a shopmade bar gauge to measure the front of the pocket, and then slide it to the back to see how wide it is in relation to the front. I then disassemble the case and use a handplane to remove a few shavings, typically from the back. For a plywood cabinet, you would simply make the back panel of the cabinet a hair longer/wider than the face frame. The exact process might vary,

Step 1. Taper the case...

A pocket that's slightly wider at the back helps prevent binding. Porcaro assembles the case dry, checks the width at the front and back, disassembles it, and then uses a plane to widen the pocket.

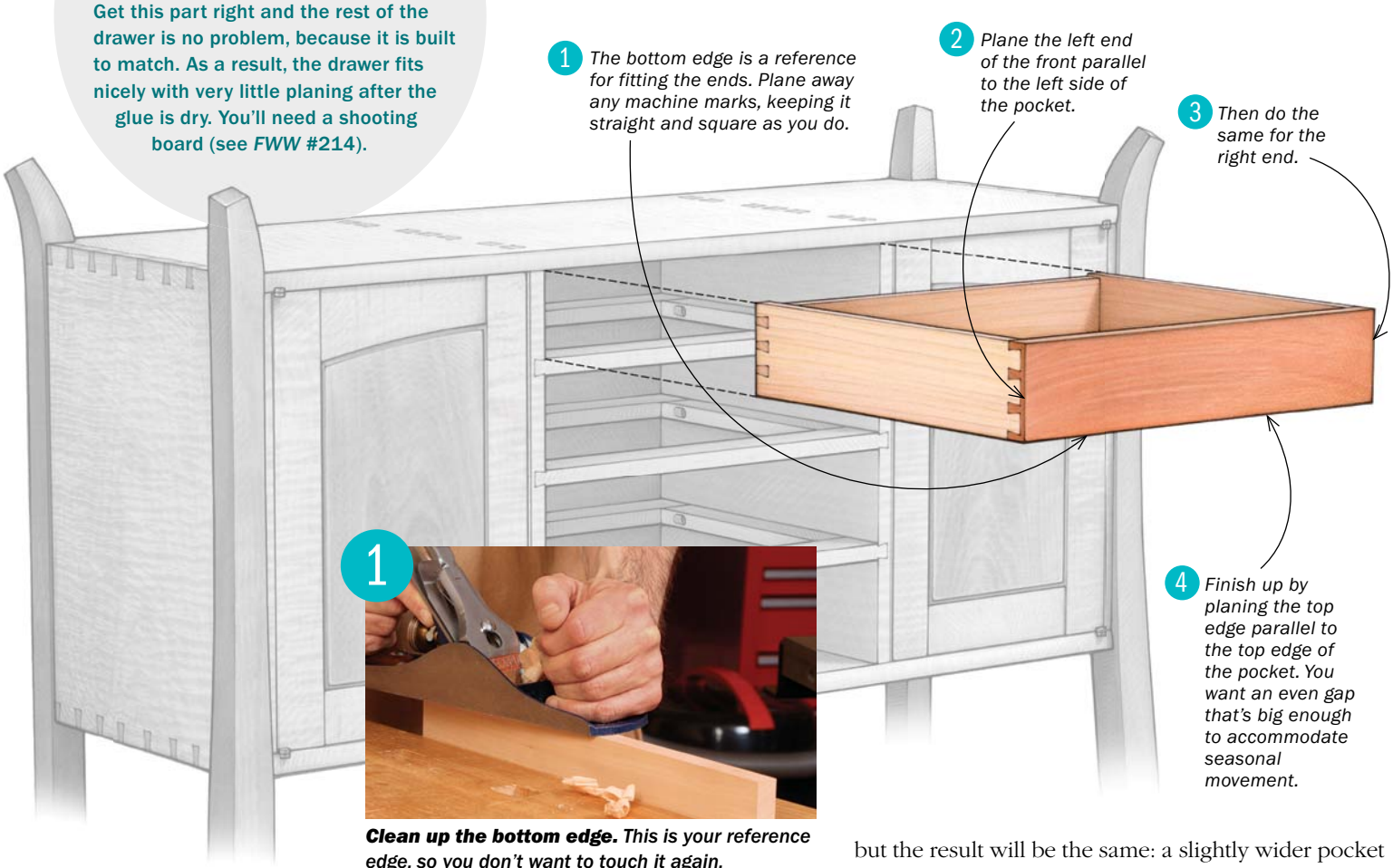


...or the drawer runners

They guide the drawers. *Tapering the runners has the same effect as tapering the case.*

Step 2. Fit the drawer front

Get this part right and the rest of the drawer is no problem, because it is built to match. As a result, the drawer fits nicely with very little planing after the glue is dry. You'll need a shooting board (see *FWW* #214).



Clean up the bottom edge. *This is your reference edge, so you don't want to touch it again.*

Shoot the left end. *Put the bottom edge of the drawer front against the shooting board's fence. Porcaro has shimmed it with a piece of tape because the opening isn't square (above). That brings the end of the drawer front parallel to the side of the pocket (right).*

but the result will be the same: a slightly wider pocket at the back.

Fit the drawer front to its opening

After you have the cabinet assembled, mill the drawer front to near final thickness and rip it to width. It should be just narrow enough to fit the height of the opening. Then crosscut it about 1/32 in. larger than the opening's width. Now turn off the machines and get out your shooting board and handplane. They offer a level of precision and control that let you easily sneak up on the perfect fit. That's important because this is incremental work. The way to get a perfect fit is to remove a shaving at a time. And a shooting board lets you angle the drawer front a bit so that you can plane the end to match a pocket that's slightly out of square.

Plane the bottom edge of the drawer front to remove milling marks and to ensure that it is straight and square. Next, register it against your shooting board's fence and plane the left end of the drawer front. It should be parallel to the left side of the drawer pocket. If the opening is out of square, place a shim between the shooting board's fence and the drawer front. Check your progress frequently.

After the left end has been fitted, it's time to get really careful. Fitting the right end is a critical step. If you take too much off or the end isn't parallel to the side of the opening, the fit will be sloppy and you'll need to start over. As you did with the left

Photos: Matt Kenney; drawings: Christopher Mills

Now fit for length. *Trim the right end just like the left, parallel to the opening. At this point, the fit should be tight.*

end, shoot the right end until it's parallel to the right side of the pocket and the front barely makes it into the opening. The fit should be very snug at this point.

Now it's time to plane the top edge, keeping it parallel to the top of the opening. Don't worry if it's no longer parallel to the bottom edge. It doesn't need to be. As for the size of the gap at the top, it needs to be large enough to accommodate seasonal movement, but don't guess at how much movement to expect. Rather, consult something like the Lee Valley Wood Movement Reference Guide (leevalley.com, No. 50K24.01) or an online wood-movement calculator to determine it precisely.

Prep the other parts and cut the dovetails

The drawer sides and back are next. I prefer straight-grained, quartersawn stock for the sides and back, because it is more stable than flatsawn. I typically make the sides slightly greater than half the thickness of the front, but I make the back just a bit thinner than the front for stronger joints and to help balance the drawer as you pull it out. It also is a good idea to orient the grain on the sides so that they can be planed cleanly from front to back after assembly. If you plane the sides from back to front, you might blow out the end grain on the drawer front.

Rip both sides so that they are as tall as their mating ends on the drawer front. Now crosscut them a bit longer than final length. Head back to the shooting board and square up both ends (bring them to their final length in the process), registering the bottom edge against the fence. Rip the back slightly wider than its final

Plane the top edge, too. *Porcaro uses his shooting board to ensure that the edge stays square.*

Mind the gap. *What's important is an even gap along the top, so don't worry if the top and bottom edges aren't parallel. The exact size of that gap depends on what time of year you're fitting the drawer. Make it smaller in summer than you would in winter.*

Step 3. Leave the sides proud when dovetailing

The front already fits the opening snugly. To avoid removing too much from the pins when cleaning up the joint after assembly, leave the sides proud and plane them flush.

Leave the pins a little short. *Set your gauge about 1/64 in. shy of the side's thickness, and use it to mark the tails' depth on the drawer front.*

dimension, and then crosscut it a bit long. Shoot its ends to match those of the front, making it the same length or a hair longer, but never shorter.

I use dovetails to join the parts: half-blinds up front, and through in the back. This article isn't about cutting dovetails, so I'll spare you a detailed explanation. However, there is one step that is critical to my fitting process. When laying out the pins, set your marking gauge just a hair shallower than the thickness of the tails. The sides will be proud after assembly, but you'll plane them flush to ends of the drawer front.

Now, glue together the drawer. That couldn't be easier. Because the sides are proud of the front and back, no clamping cauls are needed if you're using parallel jaw clamps. If you're not using them, use a straight caul—no need to shape it to fit around the pins—to spread pressure across the entire joint.

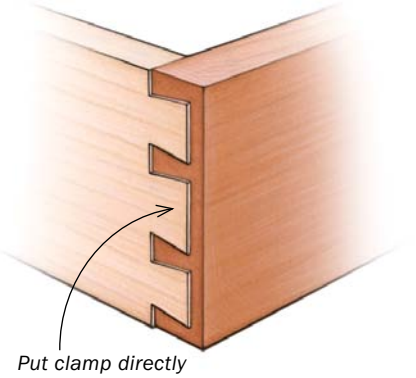
TIP **HOW TO BEAT SQUEEZE-OUT**

To catch the squeeze-out in the inside corner, put a piece of blue tape on both parts of the joint. As soon as the glue sets, pull up the tape, leaving a clean corner.

A few quick shavings and the drawer slides in like a piston

After the glue has dried, take off the clamps and get your handplane ready for action. Planing drawer sides can be tricky, because vises don't hold assembled drawers very well. So, I use a simple jig made from a piece of ¾-in.-thick MDF. It has notches cut deep enough to hold the widest drawer and spaced so that you can plane the sides and front. I clamp the jig between benchdogs and then slide the drawer into the notches. (If you don't have benchdogs, just use a piece of MDF wide enough to be clamped down at the back of the bench.) The side is supported by the MDF, so you have a good flat surface for planing. But the drawer isn't clamped in, so you can quickly move from one drawer side to the other, and from one drawer to the next.

Another benefit of proud sides. *Because the sides are proud of the pins, you don't need any special cauls, and that makes the glue-up less stressful.*



Step 4. Plane for a perfect fit

Here's when you see the big payoff for fitting the drawer front first. After planing the sides down to the pins, it takes just a few more shavings for the drawer to fit nicely into the pocket.

Do the sides first. *This simple jig holds the drawer box much better than a vise can for this job. It's a piece of ¾-in.-thick MDF clamped between the benchdogs. The slots are spaced so the sides and the front and back can be planed. And you don't need to clamp the drawer in place.*

Plane down the sides until they are level with the ends of the front. At this point, the drawer will barely fit inside the pocket, because the front was already fit snugly to it (and the back was made to match). You'll probably need to take another shaving or two to fine-tune the fit. Before doing that, put the drawer on a flat surface, such as your tablesaw, and check that it sits flat, without any twist. Plane any high spots until it does. Now you are ready to fine-tune the drawer's fit. Slide it into the pocket to get a sense of how tight it is. Pull it out and take a few conservative shavings from both sides. That should be enough for the drawer to gently swish back into its opening, but keep in mind the season in which you're working. If it's winter, which can be quite dry, you should take a few extra shavings from the sides. Experience has taught me that the sides can get slightly thicker in more humid weather, which is enough to bind the drawer.

Now it's on to the bottom. You might not think that making the bottom is part of fitting the drawer, but if you get it wrong it could fall out in the winter or push the drawer front out of the pocket in the summer. Quartersawn stock is best here, too, because it moves less and resists cupping better than flatsawn. Unless you are working on the driest day of the year, the bottom should extend beyond the back of the drawer to accommodate shrinkage. I lightly glue the front of the bottom into its groove, forcing all of the seasonal movement to the back. But I do use hide glue, so that I can reverse and remove the bottom should it need repair. At the back, I cut opened slots in the bottom. A screw goes through the slot and into the drawer back. I use washer-head screws, but you can cut a counter-sunk slot and use a flat-head screw, too. □

Rob Porcaro, an avid woodworker for more than 30 years, lives in Medfield, Mass.

Plane front to back. *Porcaro uses a jack plane (a smoother works, too), which is long enough to maintain a flat side. Because there is so little material to remove (inset), he sets it for a light shaving.*

Clean up the top edge. *After planing the sides, take a few shavings from the top edge of the drawer front. Then plane the sides to match.*

This is a must on a solid-wood drawer bottom, so when it expands, it doesn't push out the sides, locking the drawer into the pocket or worse, breaking the joints.