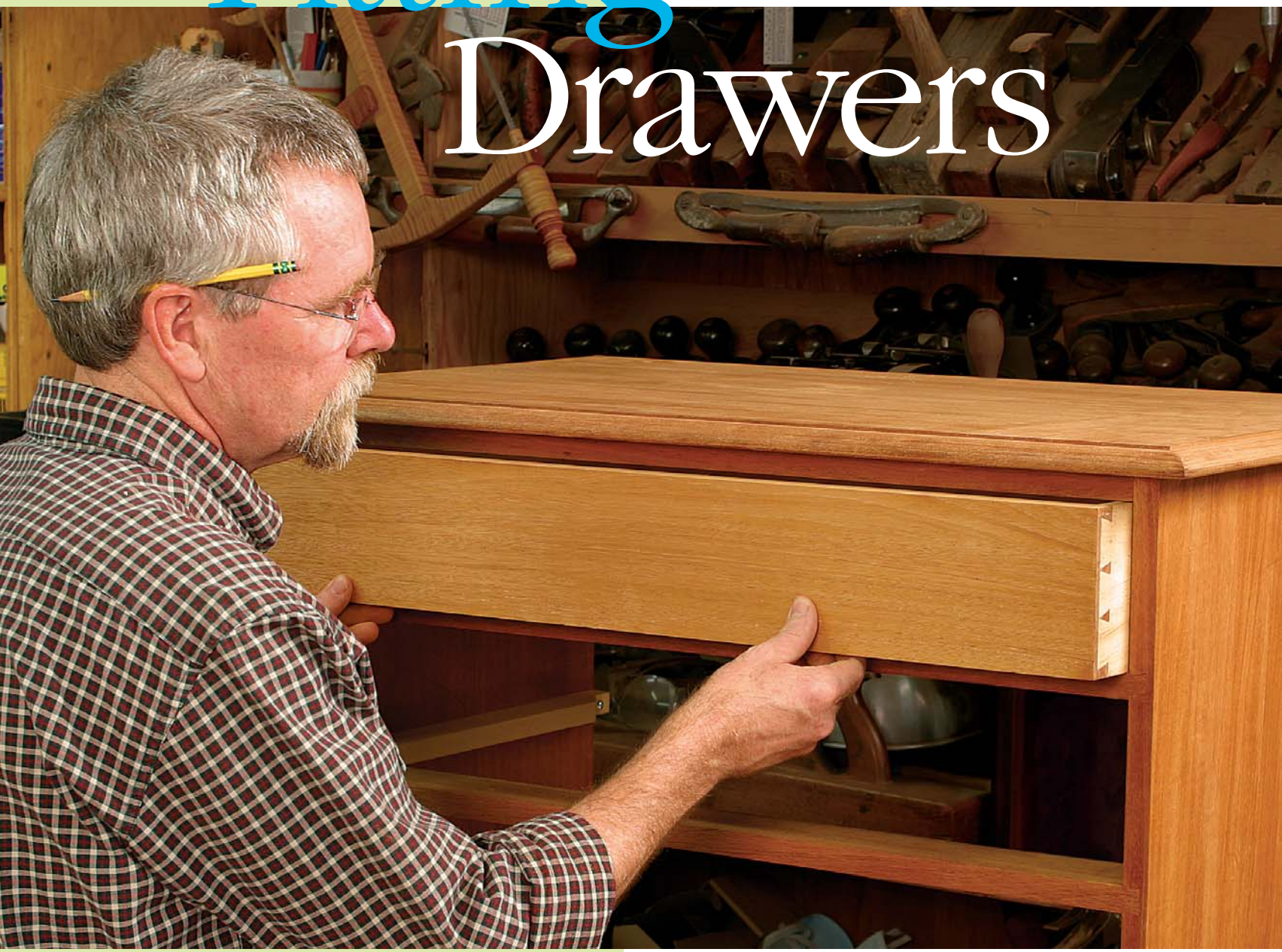
Fitting Drawers



You don't need a perfect drawer or case to get perfect results

BY PHILIP C. LOWE

A well-fitted inset drawer is one of the hallmarks of fine furniture, separating hand-crafted work from factory made. The hands and eyes go naturally to such a drawer, trying its piston fit and appreciating the fine gap around its edges. Articles and books have addressed the fitting of drawers, but most have focused on the best-case scenario, ignoring a common situation: fitting a slightly imperfect drawer into a slightly imperfect opening.

Ideally, a drawer should slide smoothly into place, with a thin, uniform gap all around and the drawer front aligned perfectly with the front of the case. However, there will be times when a case or a drawer box ends up a bit crooked, warped, or twisted. Sometimes fitting becomes problematic because a drawer divider has warped

Photos: Asa Christiana

FIT THE DRAWER PARTS BEFORE CUTTING THE JOINERY

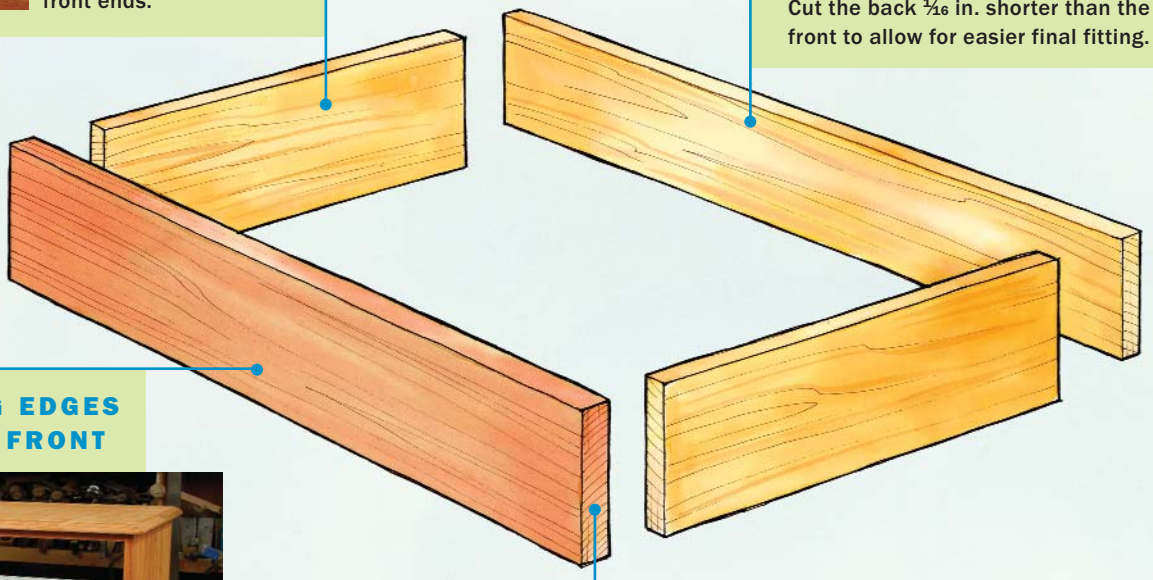
The most important steps in fitting an inset drawer happen before the drawer box is even assembled.

3 FIT THE DRAWER SIDES

Plane the sides to fit the opening. Also, mark and cut them to length, allowing for the half-blind dovetails at the front ends.

4 CUT THE DRAWER BACK TO SIZE

Cut the back 1/16 in. shorter than the front to allow for easier final fitting.



1 PLANE THE LONG EDGES OF THE DRAWER FRONT

Start with stock 1/16 in. too wide. Before planing to fit, check the opening with a straightedge (top). If the dividers or the case is bowed, plane the long edges of the drawer front to match (bottom).

2 FIT THE ENDS OF THE DRAWER FRONT

Plane one end to fit the case (above). Then set the drawer front in the case and mark the other end for length at both the top and bottom edges (right). Aim for a snug fit at this point in the process.

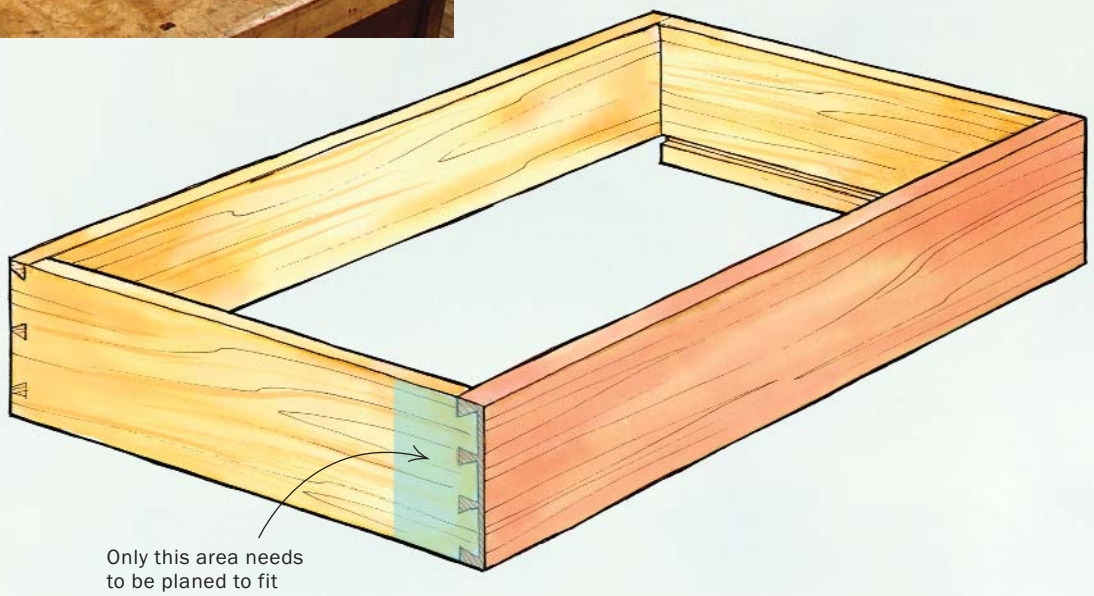
Drawings: Stephen Hutchings

FINE-TUNE THE FIT AFTER GLUING UP THE DRAWER

Provided you cut the drawer back slightly short as recommended and that the glue-up went well, only the front end of the drawer will need to be fitted to the opening.

1 GLUE UP THE DRAWER

Careful assembly is essential. Glue up the drawer box on a flat surface and measure diagonals to ensure that the box goes together square.



Only this area needs to be planed to fit the drawer.

2 CLEAN UP THE JOINTS

Lightly plane the bottom edges flush with each other (top) and then plane the rear dovetails flush (bottom).

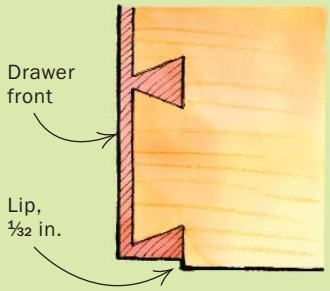
3 FIT THE FRONT OF THE DRAWER BOX

All but the last few inches of the drawer should slide in easily at this point. Level the dovetails at the front of the drawer box and continue planing those areas until you achieve a 1/32-in. gap at each end. Also, touch up the top edge for the same gap.

4

PLANE THE BOTTOM OF THE DRAWER FRONT

Relieve the bottom edge of the drawer front. Use a rabbet plane to create a 1/32-in. lip (left and drawing below). This will create an even gap on all sides of the drawer (below) and prevent the drawer front from catching on the case.



slightly after the case was assembled. Regardless of the cause, it's possible to get perfect-looking results even when a drawer or case is less than perfect.

Fit the drawer front and sides before assembly

The process for fitting a traditional inset drawer begins while the drawer still is in pieces. The drawer front should be trimmed to fit the opening in the case—be it square or ever-so-slightly askew. The drawer front will then determine the shape of the drawer box.

Start by checking the drawer opening to see whether there is any bow to the dividers or case. If the dividers are straight, rip the drawer front 1/16 in. oversize in width. If the dividers are not straight, you may have to leave the drawer front a bit more oversize.

Joint away the saw marks and then fit the drawer front to the height of the opening. If the case or horizontal drawer divider has a bow, start planing this shape from one end of the drawer front to the other. Then plane one end to fit the vertical member it must match (this could be out of square), checking it by sliding just that end into position.

Next, fit the other end of the drawer front. Place most of the front into the opening and use a knife to mark its length at the top and bottom edges. Connect these two marks with a straightedge. After squaring this line around the entire end, make a square crosscut on the tablesaw to the longest length if the scribe line is not square, and then use a handplane to trim the end until it fits into the opening. Aim for a snug fit of the drawer front in the opening. You should be able to slide it into place without pushing very hard.

Once the drawer front fits perfectly, work on the sides and back of the box. Orient the grain of the drawer sides so that it will be easy to plane the outside faces from front to back during final fitting. When fitting the sides, follow this sequence: Joint the bottom edges straight and rip the sides 1/16 in. wider than the opening. Remove the saw marks and plane the pieces evenly until they slide into the opening.

Now, resting the sides against the bottom of the drawer opening, slide them into place. Use the front edge of the case to mark the length of the sides, adjusting for joinery that will be at the front corners. If you're using half-blind dovetails, stop them at least 3/16 in. from the face of the drawer front. This allows plenty of room for planing this face flush with the case later, especially if the drawer ends up slightly twisted or crooked. For that reason, I usually start with an extrathick drawer front, say 13/16 in. or 7/8 in.

As for the back of the drawer, a tried-and-true method is to

Fitting problem drawers

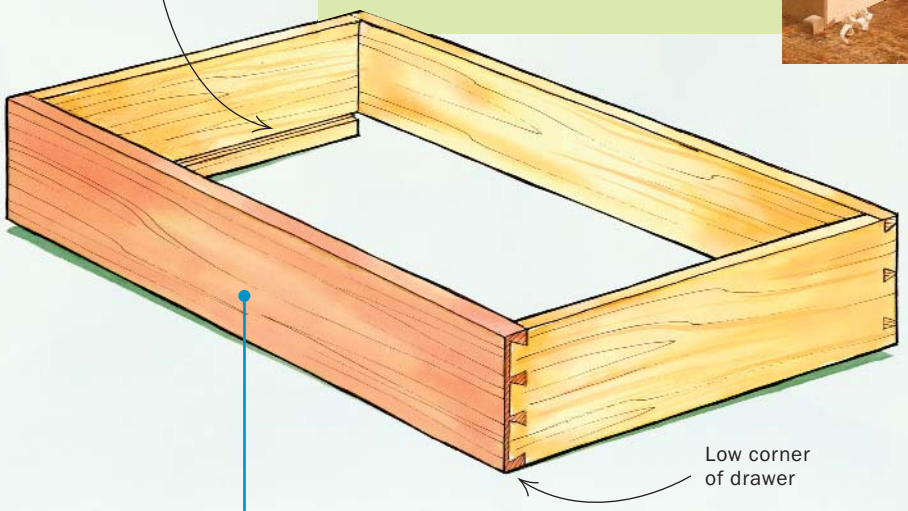
TWISTED DRAWERS

A twisted drawer is easy to spot. Place it on a flat surface (below) and look for a gap under one of the corners. It is best to remove as much of the twist as possible from the bottom of one drawer side before the final-fitting stage. Plane from the front of the drawer to the back, tapering the drawer side until the entire drawer sits flat. Then continue with the fitting process as usual.

If the twist is more than slight, the situation gets more complicated. As you plane the bottom of one drawer side, the drawer front becomes tilted in the opening. To correct this problem, you may have to plane the front of the drawer surface to line it up with the opening.

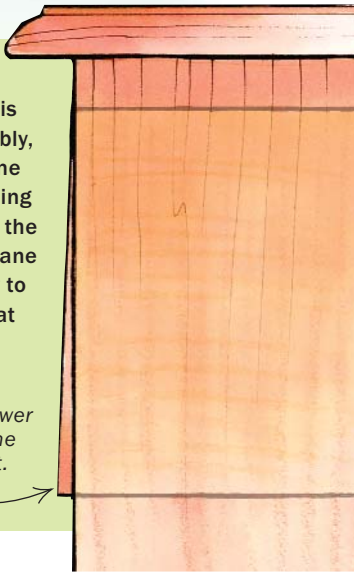
1 PLANE THE DRAWER SIDE TO REMOVE THE TWIST

Locate the low corner of the drawer and relieve the opposite corner. Try to maintain a straight edge as you plane it, continuing until the drawer sits flat.



2 PLANE THE FRONT, IF NEEDED

If the drawer is tilted noticeably, you must plane the face to bring it plumb with the case front. Plane very carefully to maintain a flat face.



cut the back ⅛ in. shorter than the width of the opening. By cutting the back shorter, you intentionally make the drawer box a slight trapezoid, which makes for easier fitting. The slight play at the back also will allow you to adjust a crooked drawer in the opening so that its face ends up flush.

At this point, dovetail the drawer parts together and glue them up as square and as flat as possible.

Fine-tune the fit after assembly

Once the drawer has been glued up and the clamps have been removed, the final fitting begins. You should be able to handle most problems at this point, ending up with a great fit. However, there will be times when a drawer ends up so twisted or crooked that it must be scrapped altogether.

First, check the drawer for twist. You can do this using winding sticks, or you can place the drawer on a flat surface, such as a saw table, to see whether it rocks. Sometimes I use the top surface of the cabinet or chest I am working on, if I know it is flat.

If the drawer is flat, the task of fitting it should be straightforward. The first steps are merely to clean up the joinery. Begin by taking a couple of consistent plane shavings to clean up the dovetails at the back corners. Also, lightly plane the bottom

CROOKED DRAWERS

Another problem that can occur at glue-up is a drawer box slipping out of square (forming a parallelogram in a top view). If the drawer front does not line up across the opening, you have a few options. If the misalignment is minimal, there might be enough play at the back of the drawer to correct the alignment by simply adjusting the drawer stops.

If the drawer can't be pushed into alignment, you will have to plane some material from the back corner, allowing the drawer box to pivot sideways and the drawer front to come back into alignment. Again, you will have to align the drawer stops to bring the drawer front square when it is pushed in.

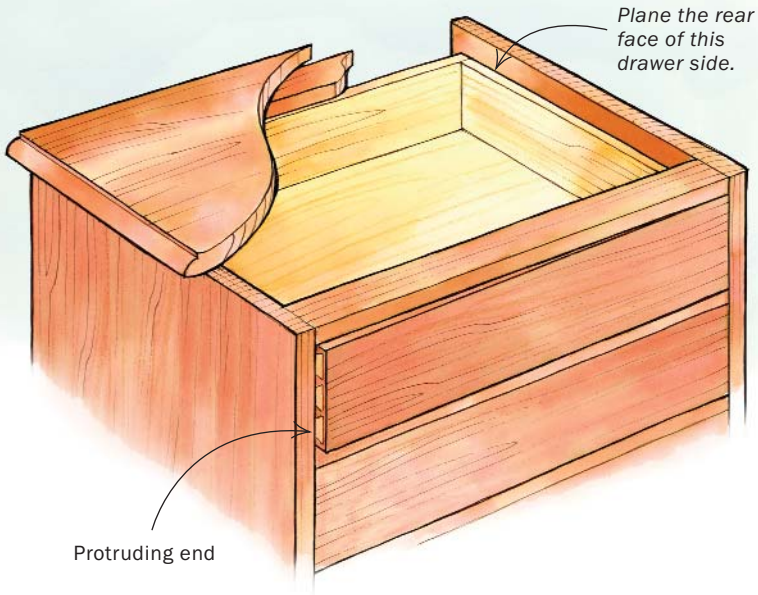
Beware: If you have to remove too much material from a drawer side, it can become too thin at the groove or rabbet that was cut to house the drawer bottom, weakening the construction. If you feel this happening, stop removing material from the back corner and begin planing the drawer face where it protrudes from the case.

I've also used a tight-fitting drawer bottom to push a crooked box back toward square, or tapered the drawer guide (when there was one). A last resort is to plane a taper into the actual case side, which can be a nightmarish task.

1

PLANE THE REAR CORNER

Locate the protruding end of the drawer. Then plane the back corner of the opposite side to allow the drawer box to pivot so that the front is flush with the case front.



2

ADJUST THE STOP BLOCKS

Glue stop blocks to the front divider so they stop the drawer front when it is flush with the case.

edges of the drawer sides flush with the bottom edge of the drawer front.

Because the back is shorter across than the front, the box should go into the opening almost all of the way. Then, with two or three passes of the plane at the ends of the drawer front, take off an even thickness. Maintain the angles of the ends as they were fitted to the opening, and the drawer should slide home.

If you push the drawer into its opening and notice that the front is not parallel with the dividers, see "Crooked drawers" (above). If not, continue planing to create a consistent, fine gap—1/32 in. or less—at each end of the drawer.

With the ends finished, work on the long edges. Plane away a consistent amount from the top of the drawer. Finally, use a rabbet plane to relieve the bottom edge of the drawer front. Take three or four shavings, leaving the drawer sides resting on the drawer runners but creating a consistent, fine gap all around the drawer front. The lip created by the plane also prevents the bottom edge of the drawer front from catching when the drawer is slid shut. □

Philip C. Lowe is a furniture maker and teacher in Beverly, Mass., where he runs The Furniture Institute of Massachusetts. For information on classes, go to www.furnituremakingclasses.com.