


Sleek Box with a Sliding Lid

Clean, versatile design
offers easy access
to what's inside

BY MICHAEL CULLEN



Some years ago I decided to make a box for my wife, Barbara, to hold some of her favorite pens. My design was inspired by the memory of a simple wooden pencil box with a sliding top that I had as a child. To me, boxes are a beautiful expression of what working in wood is all about. Of all the things I make, nothing else holds as much mystery or evokes as much curiosity as a box. I loved making that box, and I've since made many more, in a variety of woods and sizes but all hewing to the same basic design: thin parts, mitered corners with slender splines, and a snug but smoothly sliding lid with a carved fingerhold.

Cut narrow grooves and tiny miters

Because the parts are so thin, I take the utmost care in stock preparation. The lid, in particular, must stay flat over time





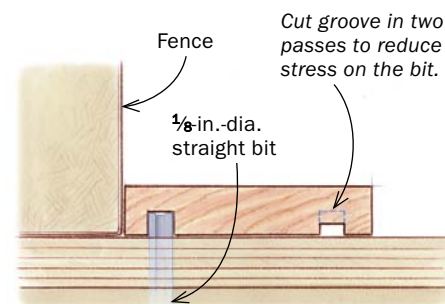
Cut the joinery

Fine miters. After cutting the sides to rough length on the bandsaw, Cullen cuts the miters in two passes with a jig on the tablesaw. The first pass comes within $\frac{1}{16}$ in. of the line, the second skim-cuts to final length.

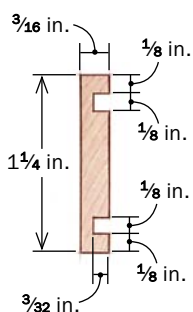


Post-miter surgery. With the miters cut, trim down one end of the box to allow passage of the lid; clean the edge with a block plane. The tab for the lid is cut from an extra piece of end stock that's been mitered to the same length.

Rout grooves for the lid and bottom. Because the parts are so small, it's safest to groove the blanks before cutting them to length. Cut both grooves with the fence at the same setting. Fashion a push block if needed.



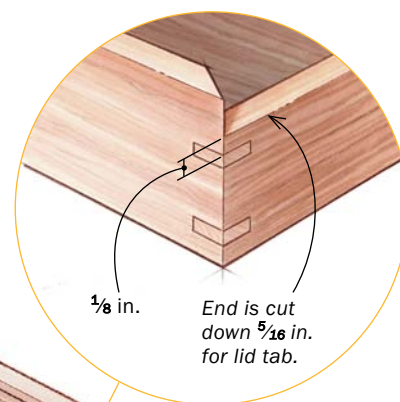
MITERED BOX WITH SPLINES



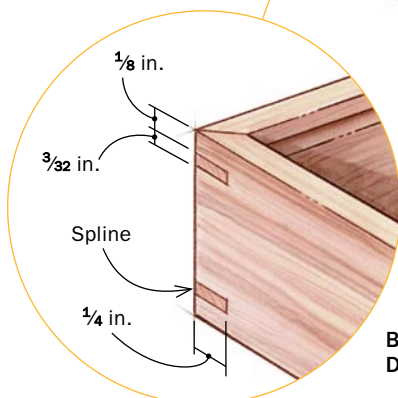
GROOVE DETAIL

End, $\frac{3}{16}$ in. thick by $1\frac{1}{4}$ in. wide by $2\frac{3}{4}$ in. long

Bottom, $\frac{1}{8}$ in. thick



FRONT CORNER DETAIL



BACK CORNER DETAIL

Groove, $\frac{1}{8}$ in. wide by $\frac{1}{8}$ in. deep

Side, $\frac{3}{16}$ in. thick, $1\frac{1}{4}$ in. wide by $9\frac{1}{2}$ in. long

Lid, $\frac{1}{8}$ in. thick

Tab, $\frac{3}{16}$ in. thick by $\frac{5}{16}$ in. wide by $2\frac{3}{4}$ in. long

Assemble the box



Use tape for clamps. Line up the sides of the box end to end and facedown, then stretch painter's tape across the joints. Prior to assembly, coat all the inside faces first with shellac and then with wax, being careful to keep the miters free of finish.

so it will always slide without binding. Double and even triple-milling is critical to prevent any twisting or cupping. It's best to use either riftsawn or quartersawn material, especially for the lid. Because the parts are fairly short, I mill them to final thickness in long strips and cut them to length later.

With the stock thickened and ripped to width, make the grooves in the sides to accept the lid and the bottom. I use a router table with a $\frac{1}{8}$ -in.-dia. straight bit, making each cut in two passes to reduce stress on the bit.

After completing the grooves I miter the corners of the box, using a crosscut jig on the tablesaw. This is the most critical step. Only a precise setup will yield joints that go together flawlessly. Use a sharp blade—it's essential for clean and accurate work on small pieces. I attach sacrificial boards to both the base and the fence of the crosscut jig so the parts are supported right to the blade. I test the setup by mitering a pair of long, straight scrap pieces and checking their interior angle for square with an accurate framing square.

Once the setup is dialed in, miter all the box sides. Depending on the species of wood you're cutting, it's sometimes cleanest to make an initial miter cut $\frac{1}{16}$ in. shy of the line, and finish with a skim cut. Don't forget to cut three end pieces for the box—you'll need the extra one to create the tab that will attach to the lid.

Fit and glue the box

The bottom of the box is fully housed in the grooves, and getting a good fit can be tricky. As I'm putting the bottom through the thickness planer, I go slowly and check the fit often. With the thickness established, cut the bottom to size, ripping it a bit narrow to allow for



Delicate brushwork. Flip the parts inside up, then apply glue with a small brush, coating the miters completely but avoiding the grooves.

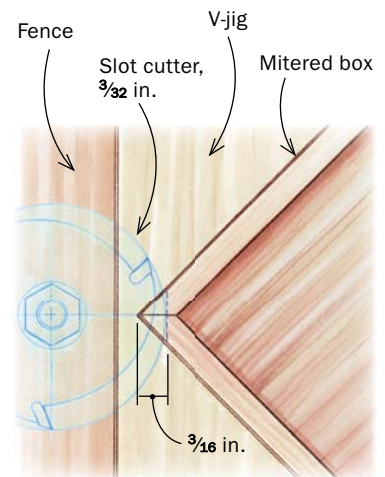


Wrap the bottom. Place the bottom in one long side, then fold the other sides around it (above). Stretch the loose flap of tape to close the last corner tight (left). Then, with fingers on the top edges of the box sides, press down onto the bench to remove any wobble.

Add the splines



Slotting for splines. Use a shopmade V-shaped jig and a slot cutter to cut the spline grooves on the router table.



Tiny splines. Mill a piece of spline stock with two clean, parallel edges, then cut it into triangles at the bandsaw.



seasonal movement. Before glue-up, I finish-sand the entire interior, tape off the miter faces, and apply a very thin coat of shellac, followed by a coat of wax and a good buffing.

Now the parts are ready for assembly. Because they are so small, I use tape instead of clamps. Carefully lay the box sides inside face down and end to end in the correct sequence. Then stretch painter's tape across the joints, flip the whole assembly over to expose the miters, and apply the glue. Coat the miters only, avoiding the grooves. Working quickly, insert the bottom and wrap the sides around it. Set the box aside until the glue is thoroughly dry.



Spline insertion. Use thumb pressure to push the splines home (above). After the glue has dried, Cullen chisels away most of the protruding spline (right), then finishes flushing it to the surface with a block plane.





Make the lid

The fit of the lid is critical. It should slide easily but with almost no play. After milling the lid just oversize, sneak up on a perfect fit by hand-sanding the faces and handplaning the edges.

Cut and fit the splines

I cut the grooves for the miter splines at the router table using a V-shaped jig and a $\frac{3}{32}$ -in. slot cutter. You could make this cut on the tablesaw, but I like the slot cutter because it creates a clean, square-bottomed groove, making for a perfect fit with the spline. I also like the narrowness of the groove; to me, a box this small needs very thin splines. To make the jig, cut a V-shaped notch in a thick scrap. The jig should hold the box 45° to the router table's fence and should back up the cut where the bit exits the corner of the box.

The next step is to make and glue in the triangular splines. I mill a piece of spline stock that's just wider than the deepest part of the spline groove. Then I make the angle cuts on the bandsaw. When gluing them in, be sure the splines bottom out in the joint.



Scoop out a finger pull. Cullen uses an ellipse template to establish the perimeter of the finger pull. Then he carves it out with a gouge, cutting radially from the edge to the center and leaving the facets visible.

Slide in the lid

The action of the lid is a vital part of the user's experience of a box. There should be slight, even friction when opening and closing the lid. You'll want just enough resistance so it will stay shut when the box is picked up. When you rip the lid to width, leave it slightly oversize and achieve the final fit with a handplane.

To make the finger hold, use a gouge to create a depression that has a fine-tooled texture, with the cuts arcing inward from all angles. After completing the carving, size and fit the end tab to the lid so that when the box is closed, the seam between the tab and the side below is virtually invisible. Glue on the tab, finish-sand the entire box, and apply several fine coats of shellac. Even out the sheen with 0000 steel wool, then add a thin coat of wax. □



Press on the tab. After testing it for fit to the miters, glue the tab to the end of the lid with finger pressure.

Michael Cullen has been working wood in Petaluma, Calif., since 1990.