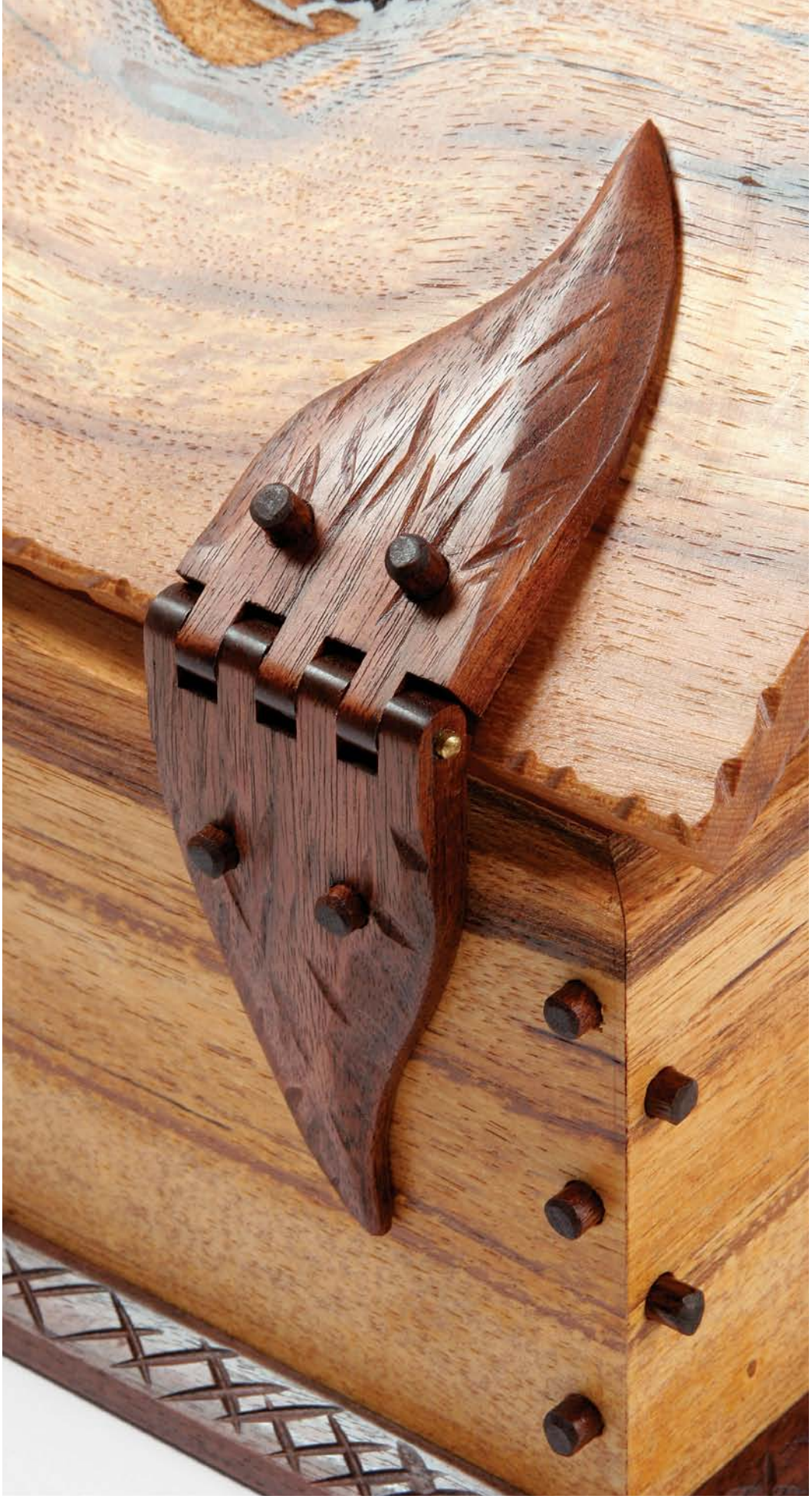
master class

Wooden box hinges

ADD ROUGH-HEWN CHARM TO YOUR CUSTOM BOXES

BY DOUG STOWE



Through the years, I've come to appreciate wooden hinges not only for their rustic beauty, but also because they are truly fun to make. They allow me occasionally to give up my dependence on the hardware store and mail-order catalog, to unhinge my creativity, and to say, "I made all of that, even the hinges." And that's a great feeling for a craftsman, new or old.

The technique I use to make wooden hinges isn't difficult. The two leaves pivot on a knuckle joint and are held together by a brass rod. I'll show you how to drill the hole for the rod and make the knuckles so that the hinge works smoothly. Once you have mastered the mechanics of the joint, you can have fun with the design.

Drill the hinge-pin hole

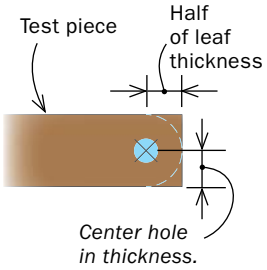
Before you drill the hole, there are two things to know about the hinge leaves. First, for strength, they should be no thinner than ⅜ in. Second, their overall width is directly related to the width of the knuckles. There needs to be an odd number of knuckles on each hinge. I've found that ¼-in.-wide knuckles are a good size for most box hinges. That means the overall width of the leaves needs to be an odd multiple of ¼ in.

Photos: Matt Kenney; drawings: Kelly J. Dunton

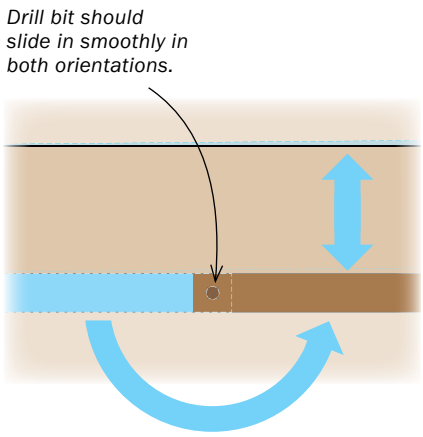
Test piece ensures a perfect pin hole

Using a test piece the same size as the hinge leaf, Stowe sets up the drill-press fence to both center the pin hole and locate it from the end of the leaf. Use a short drill bit, which is less likely to wander than a long one.

CENTER THE HOLE



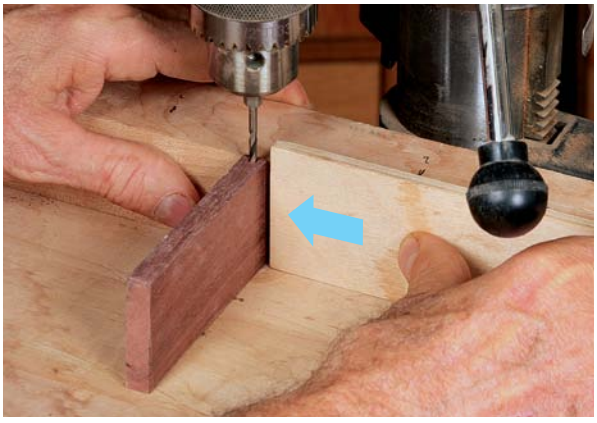
Aim for the center. *Do your best to adjust the fence so that the bit is centered on the leaf's thickness, and drill a shallow hole.*



Drill, then flip test piece end for end to test fence placement.

Check your work. *With the drill press off, flip the piece and lower the bit into the hole. If it enters smoothly, the hole is centered. If not, adjust the fence, cut off the end, and try again.*

THEN LOCATE IT FROM THE END



Stop block steps in. *Insert the bit into the hole, then align the test piece perpendicular to the fence. Clamp a stop block against it. This ensures that the hole is spaced an equal distance from the edge and end of the leaf.*

Drill just past halfway. *Then drill from the other edge. Check that the pin enters smoothly through the completed hole, then drill the real leaves.*

(1¼ in., for example). Mill your leaves to final thickness and width, but leave them a bit long. Also, mill some extra stock to the same dimensions to help with machinery setups.

I use ⅛-in.-dia. brass rod for the hinge pin. For a wooden hinge to work without binding, the holes for the pin must be straight and they must align with one another. To ensure accuracy, drill the hole before cutting the knuckles. Use a short brad-point bit, slightly longer than half of the hinge's width, and drill in from both

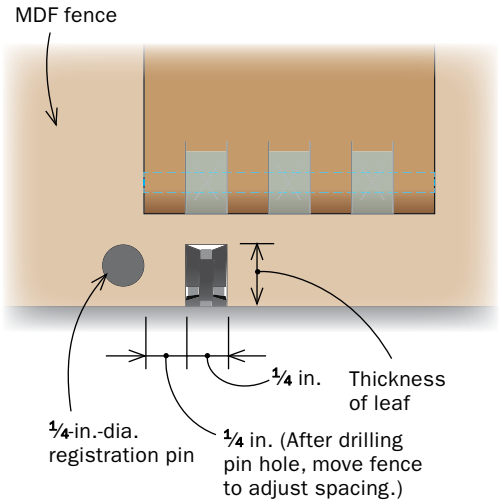
TIP

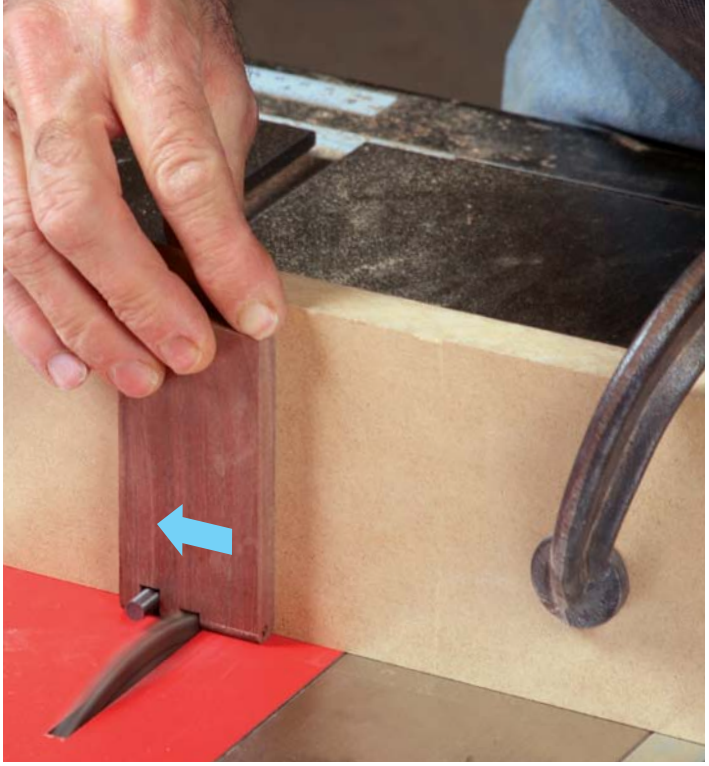
ROUND ENDS BEFORE CUTTING HINGE KNUCKLES

Routing the end grain after cutting the finger joints would result in tearout. Use a bit with a radius equal to half of the leaf's thickness.

Knuckles are finger joints

To cut the knuckles, Stowe uses a simple finger-joint jig clamped to the tablesaw miter gauge. He sets it up using test pieces.





The first leaf has a knuckle on both edges. *Stand the leaf against the registration pin for the first cut (left). It straddles the pin for the rest of the cuts (right), one notch aligning the leaf for the next one. Hold the top end of the leaf against the jig to keep it from moving.*

edges of the leaf. The short bit is less likely to wander than a longer one. You can find short drill bits at woodworking-supply retailers.

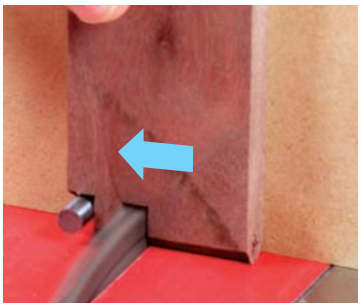
Adjust the drill-press fence so that the bit is centered on the stock's thickness (see photos, p. 81). Use a piece of extra leaf stock to set up the fence. Drill the hole in all of the leaves (four, if you are making a pair of hinges).

After drilling the holes, rout the knuckles to create the rounded shape they need for the hinge to open and close. If you were to do this after cutting the knuckles, you'd surely get tearout on every one. Put a backer block behind the leaf to guide it through the cut, keep it square to the fence, and prevent tearout.

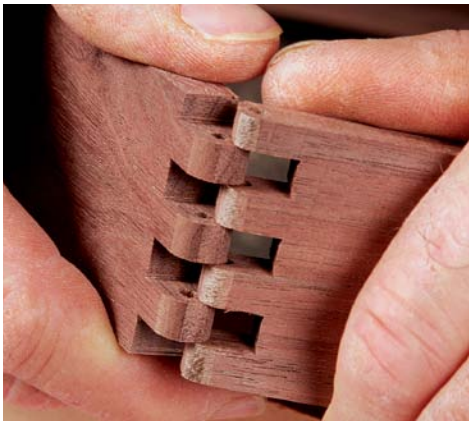
Cut the knuckles with a finger-joint jig

Now you're ready to cut the knuckles, which are really just finger joints. I cut them at the tablesaw with a shopmade jig (see drawing, above) and a box-joint blade that cuts a flat-bottomed ¼-in.-wide kerf.

The jig is easy to make. Drill a ¼-in.-dia. hole near the bottom edge of a long, narrow piece of ¾-in. MDF. Put a registration pin in the hole. I use a ¼-in.-dia. straight router bit for the pin. Next,



The second leaf is notched on both ends. *Use the first leaf as a stop (left). Its edge will align precisely with the edge of the blade's teeth, so the notch you cut is exactly ¼ in. wide. With the first notch over the pin, the leaf is properly aligned to cut the second one (above).*



Knuckle sandwich. *The knuckles should come together with a bit of resistance, but you should still be able to move the leaves easily.*

Knock in the pin. *Put the hinge on a small scrap of plywood with a hole in it. Drive the pin through and a bit proud of the other side.*

Glue and peg the hinge to the box

Start by notching the back of the box lid, and glue the hinges onto the lid first.

Attach the lower leaves second. *Don't put glue where the leaf overlaps the lid or you'll glue the parts together.*

Business card prevents binding. *Use three cards, one each for the back and sides. Check the lid's overhang on both sides before clamping.*

Add pegs for strength. *On a rustic box like this, Stowe leaves the pegs proud of the surface.*

clamp the MDF to your miter gauge so that there is a ¼-in. space between the pin and blade. To set that space precisely, I use a second ¼-in.-dia. straight bit.

Now you're ready to make a test joint. The first leaf has knuckles on both edges, so make the first cut with the leaf's edge against the pin. Put the first notch over the pin to cut the second notch. Repeat until you've cut all of the notches. The second leaf has a notch on both ends. Use the first leaf as a stop to cut the first notch (see photo, opposite page), and then put that notch over the pin to cut the second notch, and so on.

After cutting all of the notches, put the joint together to test the fit. If it's too tight, adjust the fence so that the pin is closer to the blade. If it's too loose, move the pin away from the blade. When you have it dialed in perfectly, cut the knuckles on the actual hinge leaves.

Now put the leaves together and drive the hinge pin into place. It should be tight enough to stay in place on its own but able to be removed in the future. I attach the hinge to the box and lid with glue, but I reinforce these glue joints with pegs. □

Doug Stowe is a professional furniture- and box-maker in Eureka Springs, Ark.

Let your designs run wild

Because wood isn't as strong as metal, wooden hinges necessarily are chunkier than those made from brass and other metals. I used to see that as a weakness, but then I learned to embrace their stature, shaping the leaves to emphasize their robust, organic, and rustic look. I gave up subtlety and got bold. That's why I styled the hinge leaves on this box to look like … well … leaves. Here's how I did it. After the hinge is assembled, rough out the leaf profile (1). Then soften the edges. I use a grinder with a 100-grit sanding disk to form a gentle organic transition from the top to the edge (2). Be sure to clamp the leaves securely. Finally, to add some texture, I used the wheel's narrow edge (3) to cut shallow "veins" in the leaf's surface.