

handwork

Cut better dovetails with shopmade tools

USE A LAYOUT GUIDE AND SMALL CHISELS FOR IMPROVED ACCURACY AND REFINED LOOKS

BY CLARK KELLOGG



For years, I cut dovetails using common layout tools and chisels, usually with what could generously be called lackluster results. Eventually, I figured out that I had two problems. First, I was not able to scribe and transfer layout lines accurately. Second, the chisels I was using, although great for chopping mortises and paring big joints, were too cumbersome for cutting delicate dovetails.

I didn't find a solution until I was a student at the College of the Redwoods, where I learned that the best tool for a task is often one made specifically for it. So, I made a set of chisels and a dovetail marker that enable me to achieve a level of precision and control nearly impossible with "one size fits all" tools.

The dovetail marker lets me lay out

both angled and straight lines without moving it. And there are five chisels in my dovetail kit: a 1/16-in.-wide chisel used to remove waste between tails, a 3/4-in.-wide chisel for paring pins and tails, a pair of skew chisels, and a detail chisel that's triangular in cross-section to get into tight corners. All but one of the chisels are made from Hock marking knives, so you won't need to do any heat treating. You can make the entire kit in about one day with a bench grinder, a rotary tool like a Dremel, and a hacksaw.

Sources of Supply

BRASS ANGLE STOCK
onlinemetals.com

No. 385 H02, \$9 for 12 in.

MARKING KNIVES FOR CHISEL BLADES
hocktools.com

Small chisel, skew chisels:
No. MK025, \$28 each;
paring chisel:
No. MK075, \$31 each

Start with a tool for efficient and accurate layout

Regardless of whether you cut your dovetails the right way (pins first!) or some "other" way, laying out dovetails requires marking a line down the face of the board and then extending that line across the end grain. It's common to use two tools to do this: a bevel gauge and a square. But switching layout tools is

Photos: Matt Kenney; drawings: John Tetreault



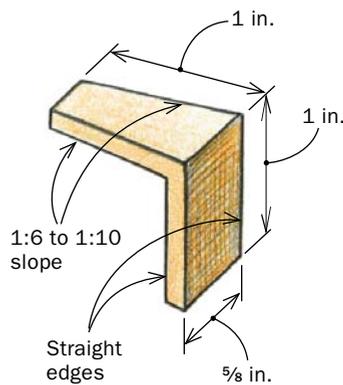
Dovetail marker for accurate and easy layout

This handy tool does the work of a bevel gauge and square, letting you mark the end grain and face grain with perfect alignment.



inefficient and opens the door to error. Instead, I use a dovetail marker that allows me to mark both the face and end grain in one shot, which improves accuracy and saves time.

The gauge is made from a piece of 1/8-in.-thick brass angle bar (see Sources of Supply, facing page) that has 1-in.-wide legs. I buy a piece long enough to make several markers—hardwoods and softwoods require different slopes (1:6 is typical for softwoods, while 1:8 is common for hardwoods). I work primarily in hardwoods and use a 1:10 slope because I think it looks even better.



Cut layout lines into the brass. An etching needle or scratch awl is the right tool.

One leg of the brass is marked with two sloped lines, and the other has two straight lines. Mark them, and then rough-cut the gauge from the angle stock.

I use a disk sander to smooth the brass down to the layout lines, but you could use a file. To set up a disk sander for the job, angle the bed to match the slope used on the marker. Then clamp a 2-in.-square hardwood fence to the bed of the sander perpendicular to the disk. Because you are making a layout tool, take your time to ensure that everything is set up just right. Also, put a fresh disk on before sanding the brass. A worn or clogged disk will heat up small workpieces and burn your fingers.

Now set the rough-cut brass on one side of the fence, sanding the rough edge. To sand both sides, you'll need to use both sides of the fence.

After sanding to your layout lines, touch up the edges with a small file to remove any sharp burrs. Finally, sand the two outside faces with 400-grit paper, and buff everything with 0000 steel wool and brass polish to bring out the natural beauty of the brass. (Who doesn't like a great-looking tool?)



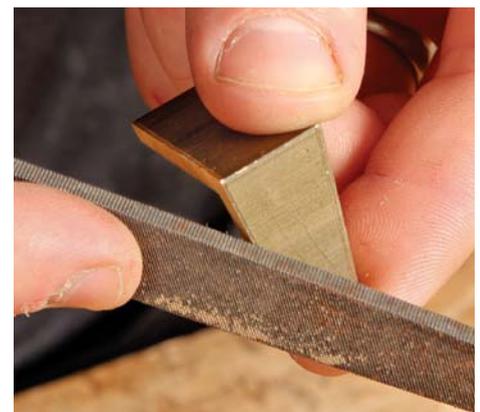
Cut the marker free. Use a hacksaw and stay outside the layout lines.



Fine-tune it on a disk sander. Use a bevel gauge to transfer the slope to the table.



Sand the marker's edges. Clamp on a simple fence, square to the disk, for the marker to ride on.



Remove the burrs. A small file quickly removes them. Smooth the edges on sandpaper.



Small chisel gets between the tails

Kellogg likes the elegant look of very thin pins, so he needs a chisel that is thin enough to fit in and clear away the waste between the tails. He makes this custom chisel from a Hock marking knife.



Specialized chisels take you from accurate layout to beautiful joints

Except for the triangular detail chisel, I use Hock marking knives for all of these chisels. I've found that their carbon steel holds up extremely well under the light use these chisels see. The detail chisel is made from a triangular needle file (available at home centers and hardware stores), and its steel has done well, too. Because the knives and the file are already heat-treated, there is no need for you to do it. Just take care not to overheat them when grinding the bevels. The best way to do that is to dip them frequently into water while grinding.

For the chisels made from Hock marking knives, start by clamping the knife in a vise and cutting off the spear point with a rotary tool and cutoff wheel—a hacksaw would simply skip over the hardened steel. When you cut the knife for the narrow “between-tails” chisel, rough out the chisel's bevel at the same time, cutting at 30°. For the triangular detail chisel, just grind away the narrow taper at the tip of the file.

Next, flatten and polish the chisel's back. I do this by first using P200- and P400-grit sandpaper right on top of my bench, and then work through 1,000-, 4,000-, and 8,000-grit waterstones. Remove the file's teeth the same way.

At this point, the various chisels require different steps to finish them. Because the paring knife has no handle, just use the grinder to form its bevel, and round over its edges. Then hone the bevel.

The remaining chisels do have handles, and now is a good time to attach them,



Rough-cut the bevel. As is, the marking knife is too long. Use the back end for the chisel. Define the bevel (30°) with a small cutoff wheel.



Flatten and polish the back. Done freehand, the chisel can roll, but the wide jaws of a wood-hand screw keep it flat on the sandpaper.



Homemade handle. Use a drill-press vise or hand screw to hold the blank so that the hole is parallel to the sides of the handle.



Split a dowel. Its diameter matches the hole. The bandsaw kerf is nearly as thick as the chisel, so the two halves wedge the chisel in place.



Glue it in. Kellogg has had good results with cyanoacrylate glue. Put it in the hole and on the dowel pieces.



Grind the bevel. It's easier to hold with the handle on. Draw the bevel on the blade and grind to the line. Hone it like a normal chisel.



Paring chisel hugs the line

This chisel comes from another Hock knife. You'll need to use an unusual technique (more like whittling than paring) to use it, but its extremely low angle (about 5°) works great both across and with the grain.



Grind up and down.

Because of its low angle, the bevel is long and you won't get it done by going side to side. Because you can't use the tool support, keep the blade on the top half of the wheel.

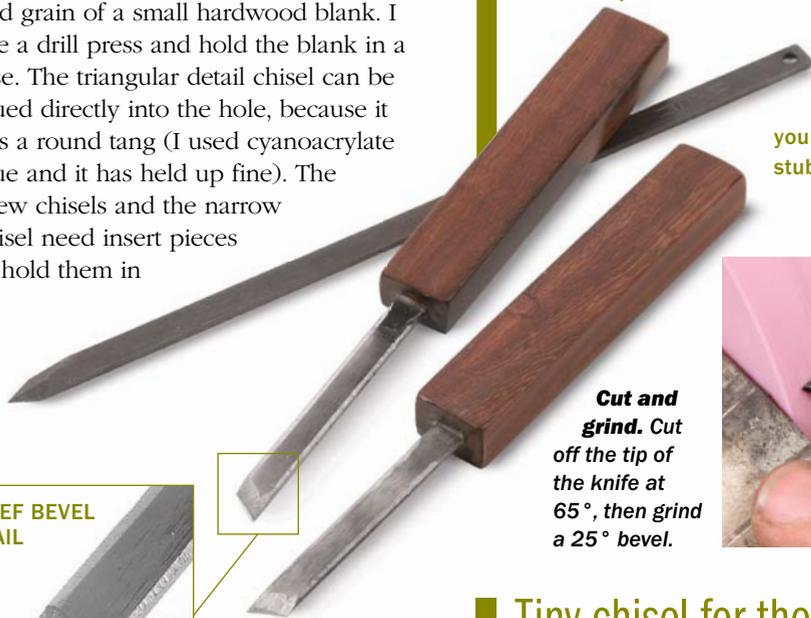


because it is safer and easier to grind their bevels with the handles on.

Start by drilling a 1/4-in.-dia. hole in the end grain of a small hardwood blank. I use a drill press and hold the blank in a vise. The triangular detail chisel can be glued directly into the hole, because it has a round tang (I used cyanoacrylate glue and it has held up fine). The skew chisels and the narrow chisel need insert pieces to hold them in

A new angle on skew chisels

Two skew angles are better than one. This pair of chisels provides more clearance to get into the tight corners in half-blind dovetails, and the pointed tips let you cut off those last stubborn fibers.



Cut and grind. Cut off the tip of the knife at 65°, then grind a 25° bevel.



Then grind a relief bevel. It gives fibers a place to go as you pare them.

RELIEF BEVEL DETAIL



place. I make them by sawing a dowel down

the middle. The pieces are sandwiched around the chisel and glued into the handle. Make a handle for the narrow "between-tails" chisel and glue it together. Then head over to the grinder and refine the bevel roughed out when the spearpoint was cut off. Do the same for the triangular detail file. And then put handles on the skew chisels. Grind their bevels and the primary and relief skews. Finally, hone all of the chisels. □

Clark Kellogg designs and makes furniture in Houston, Texas.

Tiny chisel for the hardest place to pare

On half-blind dovetails, there is a sharp little corner where the tail meets the shoulder. The truly triangular cross-section of this chisel (its corners are not rounded at all) gets in there with no problems. Make it from a triangular detail file.



Grind a 30° bevel. The cutting edge of a shallower bevel wouldn't hold up as well. Dip the file in water frequently to keep from overheating it.

