



# Inlay a compass rose

SIMPLE TECHNIQUE FOR A CLASSIC MOTIF

BY MICHAEL FITZPATRICK



I learned how to inlay a compass rose in 2006 while at North Bennet Street School in Boston. Longtime instructor Lance Patterson studied and taught this pattern from a secretary desk that lives at the Museum of Fine Arts in Boston and is attributed to a Massachusetts furniture maker.

This popular inlay was derived from the nautical heritage of New England during the furniture-making boom of the 1700s. The original compass rose was done in holly and rosewood. I like using ebony and holly for a more stark contrast, but any contrasting woods will work.

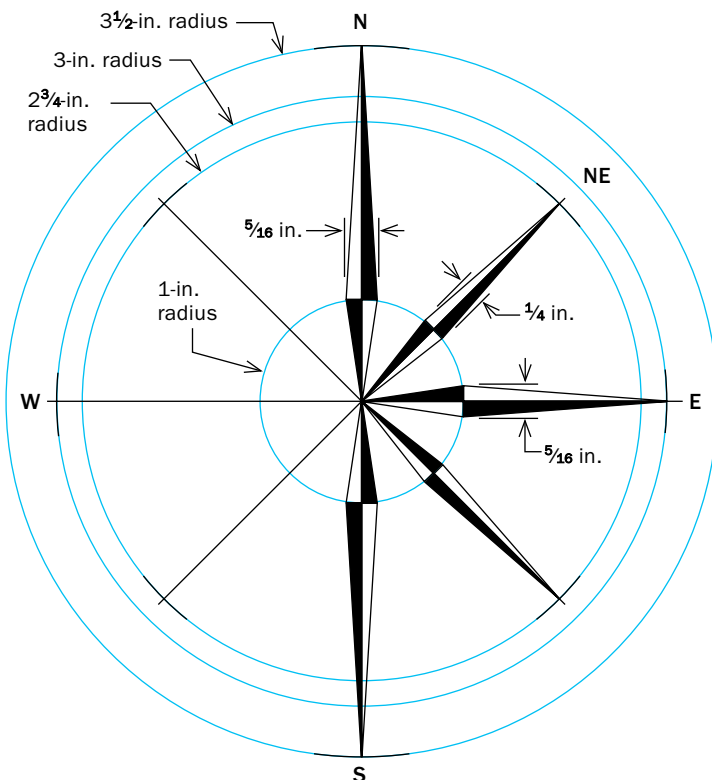
I first used the compass rose in the top of a small mahogany jewelry box. Since then, several other clients have requested

the rose, in all different sizes—in cases, tabletops, and drawer fronts—all scaled from the same pattern presented here.

The rose can be inlaid in solid wood as well as in veneered panels, but if you are doing it in a solid panel in the summer, make the fit of the pieces a little bit looser. That way, when the substrate shrinks in winter, the pieces won't press together too hard and possibly lift. In time there may be subtle gaps, but those can easily be filled with colored wax.

## PERFECT PROPORTIONS

These proportions work well for compass roses big and small. Scale the dimensions as needed for the project at hand. Note that the pointers are three different lengths and two different widths.



**Divide a circle and connect the dots.** Draw the largest diameter and mark the east/west layout lines. Then use dividers to mark out eight equal divisions. After drawing the small circle, connect the dots to indicate each pointer.

# Make triangles

Each pointer is made of two holly-and-ebony triangles. There are a number of different sizes needed.



**Chop the sides.** For these small pieces, a wide chisel works fine. For bigger ones, a bandsaw works better. Use the layout lines and centerline as your guide, but leave the triangles a little fat.



**Shave to the line.** Rub the parts on a block plane or sanding block to trim them to the layout marks and a sharp point. Place them on the workpiece to be sure all of the fat ends match.

sanding board to bring them down to the marks at the fat end and a sharp point at the other, without changing the length.

## Scribe, excavate, and install

I start with the longer, outer triangle when inlaying each pointer, as I find that the inner triangles are easier to fine-tune and drop in last. Get as much light on the work as you can, and use magnifier glasses if you need them.

The pieces don't tend to shift as I mark around them. There are penciled centerlines to guide me, and I scribe lightly, giving myself a precise line to finish to.

When chiseling to the line, you are better off ending up a little shy than going over. You can always trim the parts to fit.



**Slice up a two-color blank.** Start by gluing up an ebony and holly sandwich using epoxy. After squaring two faces on the jointer, Fitzpatrick saws off  $\frac{1}{8}$ -in.-thick slices, using a thin-kerf blade to minimize waste.

**Mark the triangles.** After cutting the slices to length, Fitzpatrick uses a simple layout board to mark the fat ends at their two possible widths.



## Layout leads the way

Layout begins by determining the locations and the sizes of the pieces. Bear in mind that each pointer is made up of two triangles, which meet at their fat ends.

The first step is deciding how long the biggest pointers will be. I use that and some simple ratio math to scale my original pattern up or down.

Each pointer is inlaid in two steps, one triangle at a time, which makes fitting much easier. The first step is joining blocks of ebony and holly, and taking slices off those to create the 16 black-and-white inlay blanks, plus a few extra to allow for errors.

The glued-up blocks will be sawn into  $\frac{1}{8}$ -in.-thick slices, and the bond needs to hold while you trim and tap the pieces into place. I find that 5-minute epoxy works best. The ebony is very dense and oily, so I give it a quick wipe with acetone before applying the epoxy, to remove any surface oil.

The next step is turning the slices of ebony and holly into inlay triangles. First, it's important to cut them to precise length. I do that on the chopsaw with a zero-clearance backer board. Then you can make tick marks at the fat end of the triangle, and connect those with the centerline at the other end. For large pointers, I draw in their edges and use a bandsaw to cut them to shape. If they are smaller, as they are in this case, no further layout is needed. I just use a 2-in. chisel to chop the angled edges in one shot. In either case, stay a little away from the final dimensions, and rub the pieces on a block plane or

## Plant the rose

Complete one pointer at a time. Inlay the long, outer triangle first, then add the short inner one.

The pointers usually don't need much fitting. Slide the point end into the recess and see how far it will go, checking the fit along the sides. As you fine-tune the sides, try not to change the width at the fat end, where the two triangles will meet. If you have to trim the fat end, make sure you take the same amount off both sides, and do the same to the inner triangle piece afterward. When planing the tip, take the same amount off both sides so the ebony/holly joint stays centered.

The goal is for the piece to press-fit into place with a little pressure, with the fat end landing in the right spot.

On a compass rose this small, it doesn't make sense to hold the inner triangles in place for scribing. Instead I simply use my ruler and marking knife to connect the center of the layout with the fat end of the outer triangle, which is already in place. That ensures that the two triangles are the same width. Then I fit, trim, and inlay the small inner piece the same way I did the longer, outer one.

When I am finished with the entire rose, I use a long block and sandpaper to level the final bit of protrusion. The sandpaper doesn't care which way the grain in the inlay is running as long as you sand in the direction of the grain of the workpiece and work all the way up to 320 grit for a film finish, or 400 to 600 grit for oil and wax.

After sanding, I use compressed air to blow the black-and-white dust out of the pores of the surrounding wood. There inevitably will be small voids and joints that will need to be filled. I use dental tools and epoxy (or cyanoacrylate glue for the smallest of pin holes) to fill the voids. If there is a need to add color to the epoxy, I add a drop of TransTint dye. Take the time to test the color on some sample pieces. Sand the epoxy filler the same way you sand the compass rose. □

*Michael Fitzpatrick builds furniture and restores houses in Westboro, Mass.*

### FIT

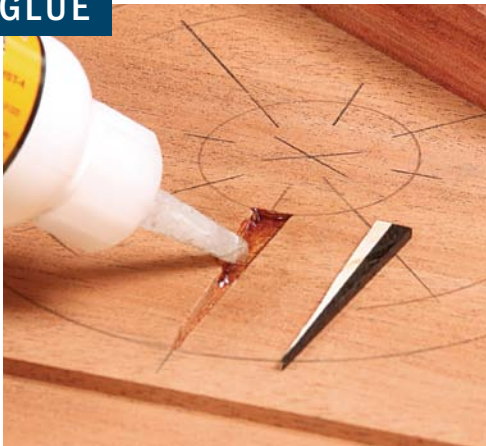


**Align and scribe.** Use the centerline of the triangle to align it. Then hold it in place and knife gently around it.



**Cut the recess.** For small pieces like these, it is all chisel work (plus an X-Acto knife). For larger pieces, start with a trim router and a small bit. The goal is to leave the inlay a little proud, so it can be leveled later.

### GLUE



**Cyanoacrylate works best.** Use medium-viscosity glue, and spread it in the entire recess.



**Press it down and zap it with activator.** Fitzpatrick uses the flat side of a stick to press the inlay down, and then the rounded end to be sure it is fully seated. The activator spray cures the CA glue instantly, letting you move on just as fast.

### REPEAT



**Now do it 15 more times.** The reason for doing each pointer one at a time is so the fragile grain at the center of the panel is always supported on all sides. A long sanding block, used in the direction of the panel's grain, levels the inlay and preps the panel.

