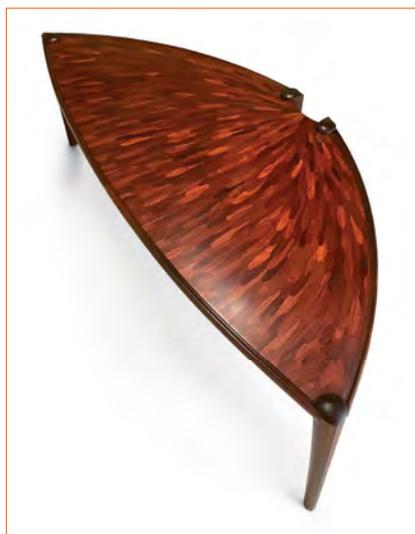




# High-Flying Feather Veneer

This intricate-looking pattern uses a simple, repetitive method

BY BRIAN NEWELL



The process I use to make this feather veneer evolved out of necessity and the need for efficiency. For years I made abstract marquetry patterns for small tabletops, including a feather pattern. A scrollsaw served the purpose perfectly. I used the double-bevel cutting method to piece together the entire sheet of veneer, and I was able to cover a whole surface using the smallest of scrap veneers.

However, the overall size of the surface sheet is limited by the throat depth of the scrollsaw, because to bevel cut a single

feather into an ever-larger sheet, the sheet must be rotated 180° during the cut. And swinging around a fragile sheet of veneer is a risky operation anyway.

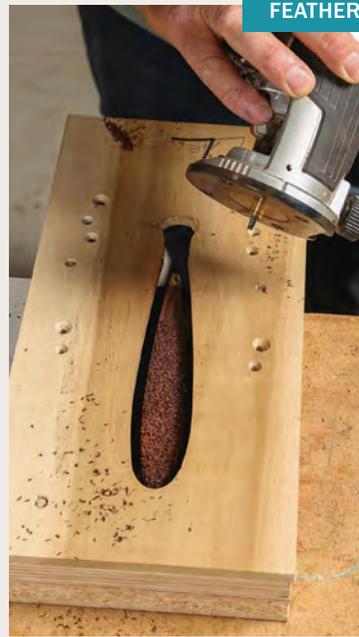
In making a dining table with the feather pattern, I had to rule out using the scrollsaw because the top was to be 3 ft. by 6 ft. I needed to find another way, so I came up with this router-template jig. My technique works with any shape. Once I made the jig, I had a lot of meditative, repetitive work ahead of me, but the final product was worth the effort.



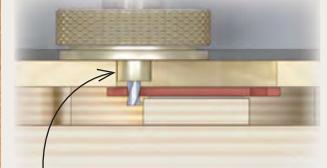
## Simple method, stunning results

All that's required is a trim router with a straight bit, a guide bushing with a removable collar, and a shopmade template-routing jig. You will need a lot of feathers. Making them is a simple process that you will repeat endlessly, but the result is worth it. Routing the recesses for the feathers is done with the same template.

### FEATHER PRODUCTION, NO COLLAR

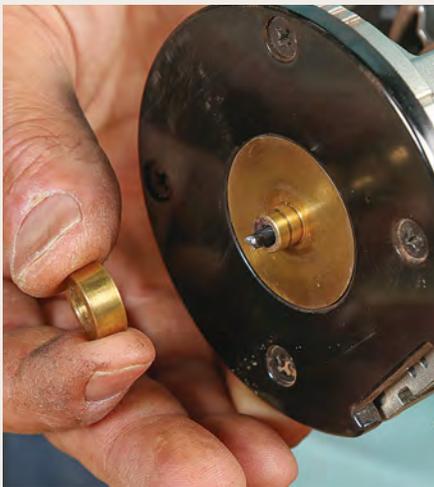


To cut the feathers out of the blank, use a trim router with an inlay bushing and bit, without the removable collar installed. Mount the feather blank in the routing template jig, rout, and remove.

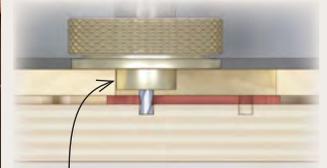


Guide bushing

### FEATHER RECESSES, ADD THE COLLAR



To create the recesses for the feathers, add the collar to the bushing, position the same routing template used to make the feather blank on the inlay sheet you are creating, and rout the recess.



Collar

### FEATHER INSTALLATION



Dot some CA gel glue around the edge of the feather, position it in the recess, and press it into place, holding it for 20 seconds to set.

# One template does double duty

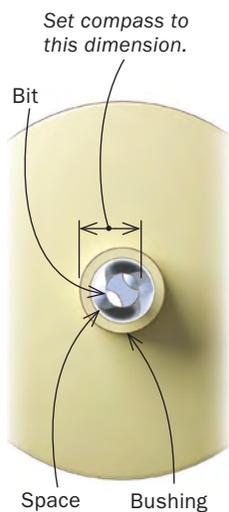
You will use the same template to create the feathers and cut the recesses that hold them. What makes the difference, and the perfect fit, is the guide bushing's removable collar. Without the collar, you cut the feather; with the collar, you cut the recess. If you want different-size feathers, you make multiple templates. Newell uses three to four different templates for each design.



**Paper first.** To lay out the opening in the router template, start by drawing your feather shape on a piece of thick paper, and then cut out that shape.

## Relationship between bit and guide bushing.

When you lay out the opening in the router template, you'll need to add an offset to your paper feather template so the router without the collar cuts the feather to the exact size. To find the offset, measure the distance from the outside of the bit to the outside of the bushing. Transfer that distance to a compass.



**Small scale scribing.** Lay the paper feather template on the blank for the router template, and scribe around the feather with the compass set to the dimension of the bit to the bushing.

**Scrollsaw and smooth.** At the scrollsaw, carefully cut the shape out. Then smooth it with sandpaper. Newell glues sandpaper to a small scrap for more control.

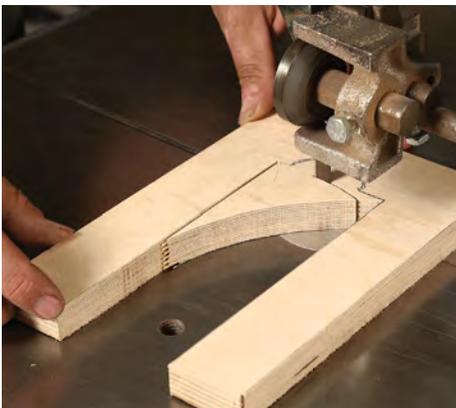
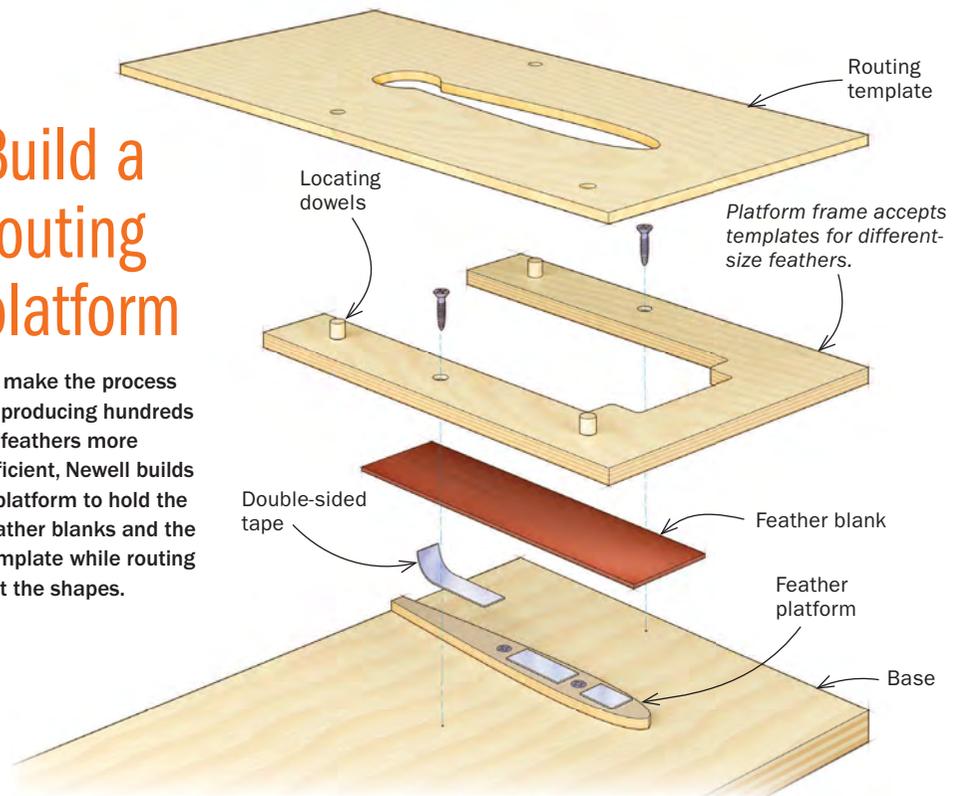
## How it works

A guide bushing with a removable collar is the little thing that makes this all happen, along with a trim router, preferably one with a standard sub-base hole of  $1\frac{3}{16}$  in., which will fit the inlay jig without modification. The jig requires a  $\frac{1}{8}$ -in. spiral router bit. The diameter of the bit and the thickness of the collar need to be the same. The  $\frac{1}{8}$ -in. bit and the guide bushing with a removable  $\frac{1}{8}$ -in.-thick collar are often sold as an inlay kit. You can get them online or at woodworking-supply stores. (Item no. 27593 at rockler.com is one example.)

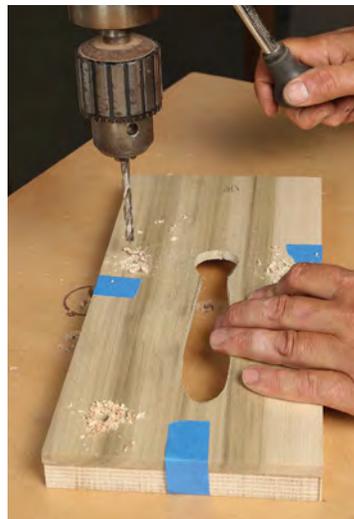
The system is designed to do true inlay, which involves excavating a recess in a solid background and then inserting inlay veneer. Both the recess and the inlay are cut using the same shopmade template. My method is a variation on this technique. I use all veneer, but rather than inlaying

## Build a routing platform

To make the process of producing hundreds of feathers more efficient, Newell builds a platform to hold the feather blanks and the template while routing out the shapes.



**Bandsaw the platform frame.** A simple U-shaped frame that's the same overall size as the routing template surrounds the feather platform and holds the template in place.



**Dowels locate template to frame.** Tape the template to the frame, and drill dowel holes in both. Then glue and tap dowels into the frame. The dowels hold the template still during routing, but it's easy to pop the template on and off.



**Feather platform.** Trace the paper template you started with onto a scrap of wood, and cut the shape on the bandsaw to make the platform that holds the feather blank while routing. Finally, drill and screw it and the frame to a piece of plywood or other sheet good.

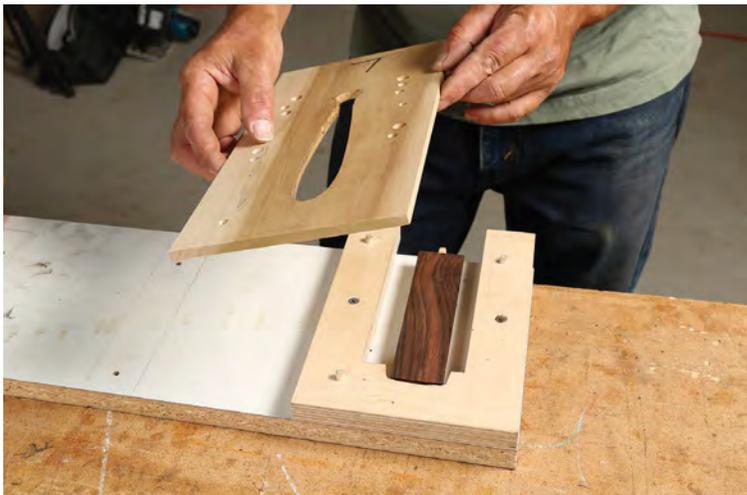
# Batches of feathers

The first step is to make lots of feathers. Newell makes templates for feathers of different sizes, and he cuts all the feathers for a project before starting to put them together.

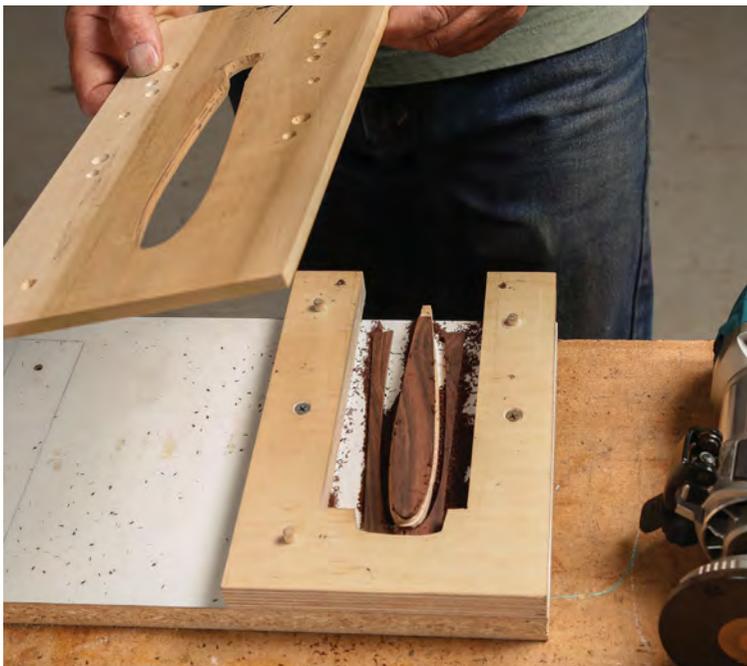
**Double-sided tape holds the blank.** Intertape, with the crepe backing paper, works well for this task because it is strong and isn't flexible. Put a few small pieces down the length of the platform, and press your blank onto it. You'll have to change the tape every few blanks when the stickiness wears off.



**Ready to template-rout.** Place the routing template over the blank and onto the locating dowels. Using the trim router with the bushing but not the collar, rout around the template.



**One down, dozens more to go.** After routing around the perimeter of the template opening, remove the template, gently pry the newly cut feather off the platform, vacuum the dust and debris, and then do it all again 100 or more times.



into a solid background, I create the background as I go along, excavating and rebuilding on itself as I move outward. I inlay a full feather and then rout away about half of it for the next feather, repeating until I have a sheet of veneer.

## Get going with a starter row

To begin, I need a row of small pieces that I cut and edge-glue to make the first stretch of background into which the feathers will be inlaid.

Then I cut a whole bunch of rectangular feather blanks and move on to the inlay process, which begins with the scroll-saw because the parts are small and thin; more importantly, there is barely any kerf to think about, and the fine teeth make very clean cuts. Using small scraps of shop-sawn veneer ( $\frac{1}{32}$  to  $\frac{3}{64}$  in. thick), I glue one

# Create the sheet

Putting the feathers together creates a sheet of veneer that will get glued to the substrate. First, as shown here, establish a starter row; once that's complete, move on to inlaying the feathers.



**Work in pairs.** After attaching two slightly overlapped blanks with a few dots of CA gel glue, draw a freehand curve along the overlap. With a scrollsaw, cut through both pieces at once along the curved line.



**Put the pieces back together.** Use a chisel to gently remove waste. Then with a few dots of CA gel glue along the curve, attach the mating pieces. A horizontal line helps with location. Starting with a line of gentle curves mimics the shape of the feathers to come.

piece on top of the other. With rosewood at least, this glue sets instantly and holds very firm. The cyanoacrylate (CA) gel glue I use may not work on all woods. It doesn't stick well to oak, which may be because of the tannins, but I haven't had trouble with any other species.

With a fine scrollsaw blade, I cut along the line and then split off the waste. The scrollsaw table is at 90° because this is not beveled inlay. What's left is a joint that fits nicely. I edge-glue the two pieces together and move on to the next.

## Making the feathers

Since I am working with a precious wood, I love making use of scraps that are only slightly larger than the feather itself. To make the process somewhat efficient—since for this table there may end up being a thousand individual inlays—I make a platform onto which I can tape the feather blank for cutting. The router template itself is registered with dowels on the U-shaped



**Join the pairs.** Once you have a bunch of pairs glued together, begin joining the pairs using the same process you used to join singles together.

# Rout recesses

Working one recess at a time, rout for and place one feather after another. When you've routed a recess and placed the feather in it, you'll next be routing out part of the work you just completed.



**Trace first.** Look at the pieces already in place, and determine by eye where you want the next feather to land. Trace its location on the sheet of veneer that's forming.



**Place the template.** Again by eye, center the template over the outline you just traced, and use a couple of screws to gently fasten it down in an area that isn't part of the veneer.

**Install the collar, and rout.** Adding the collar to the guide bushing adjusts the spacing so the recess is exactly the size of the feather. Using the template to guide the router, cut the recess. Work with a sacrificial sheet of plywood underneath; the bit will cut into it over and over.



**Clean it up.** Remove the waste piece, and vacuum out the dust and debris.

platform frame and can be removed easily for taping on the feather blank. The process is simple: Tape the blank on the feather platform, put the template in place, rout the feather without the collar on the guide bushing, remove the template, pop off the feather, repeat forever.

For this table I used three sizes of feather. Visually, it's nice that the feathers get smaller as they move toward the focal point. Mentally, it's difficult to accept that the closer you get to done, the smaller the pieces are. At times you believe you will never arrive. But you do, and the crowd goes wild.

## Routing recesses

The recess procedure is similar to the feather-making process. I use the same

template to cut the recesses for the feathers. With the sheet on sacrificial plywood, I position the template just right and screw it down to the plywood so it won't move. I install the collar on the guide bushing and rout the recess. Then I slide waxed paper under the recess and glue in the feather. After that, I move on to the next recess and repeat it all again.

## In the end

This is where the excitement stops. Once you create a large-enough veneer sheet of feathers, you revert back to typical woodworking practices for gluing the sheet of veneer to the substrate and applying finish. □

*Brian Newell builds furniture in Fort Bragg, Calif.*

## Gluing the feathers in place

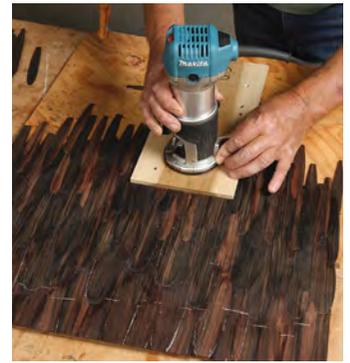
As you glue more and more feathers to the starter row, you create a sheet of custom veneer.



**Set the feather in place.** Mark a line on both sides of the feather as a stopping point for glue. You don't want glue on the feather past the end of the recess.



**Glue the edges.** Run a thin line of glue around the edge of the feather, stopping at the lines you marked. Set the feather in its recess, and then tap and smooth it down with a small hammer. When gluing, make sure to shimmy some wax paper under the recess so you don't glue the veneer to the work surface below.



**Create visual interest as you go.** Newell uses different-size feathers and a random pattern, gradually decreasing the feather size as he works down the panel.



**Trimming.** Once you have the sheet of feather veneer to the size you need, trim it close to the substrate size, keeping it slightly large. Then you are ready to glue the sheet to the substrate just as you would any other veneer.