

# Curved Moldings on the Router Table

Over-arm jig lets you form complex profiles with standard bits



BY W. MICKEY CALLAHAN

Whether it's a gooseneck molding for the top of a tall clock or handsome trim for an arched opening between two rooms, curved molding has long been a challenge to cabinet makers and trim carpenters alike.

If time is no constraint, you can make molding the traditional way: by hand with carving gouges. If money is no object, you can have shaper bits custom-ground to your desired profile. For everyone else, a simple over-arm guide on the router table is the way to go. A small tube acts as an adjustable bearing surface suspended

over the cutter. In turn, you guide a template, which you attach to the workpiece, against the tube. It's basically an upside-down, shopmade version of a commercial pin router. Using off-the-shelf router bits with this jig, you can create almost any curved molding profile.

## Decide on the design, then make a template

Your first task is to create the molding's profile or cross section. If you're making an exact replica, look for router bits that match each section of the profile as closely as possible to

## One jig, many uses

Gooseneck molding is but one use for this over-arm router jig. You can add style to a room with arched doorways and entrances outlined with elaborate molding. Subtle curved profiles also work well on some contemporary pieces. Whether you are starting from scratch or replacing missing moldings, you can use this jig.



PERIOD DETAILS



CLASSIC ARCHITECTURAL ELEMENTS



CONTEMPORARY FURNITURE

To see how to make a master template with parallel curved edges, go to [FineWoodworking.com/extras](http://FineWoodworking.com/extras).

## ACCURATE TEMPLATES ARE THE KEY

One master template can lay out many pieces with the same front profile, but you need to make a separate router template for each piece of curved molding. That said, the back edge of the template can be used to rout straight return moldings.

### MAKE THE ROUTING TEMPLATE

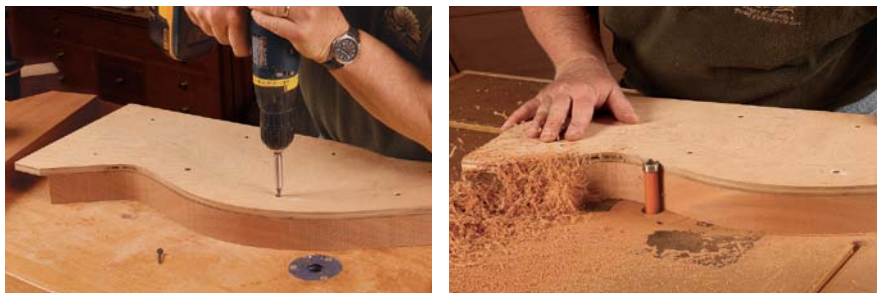


**One template creates two others.** Use the completed master template to create the pair of templates that actually guide the blanks that will form the left- and right-side moldings.

### ATTACH THE MOLDINGS



**Rough out the curved stock.** Before attaching the templates to the blanks, use them to draw the outline of the curved molding (left), and then bandsaw just outside the line (right).

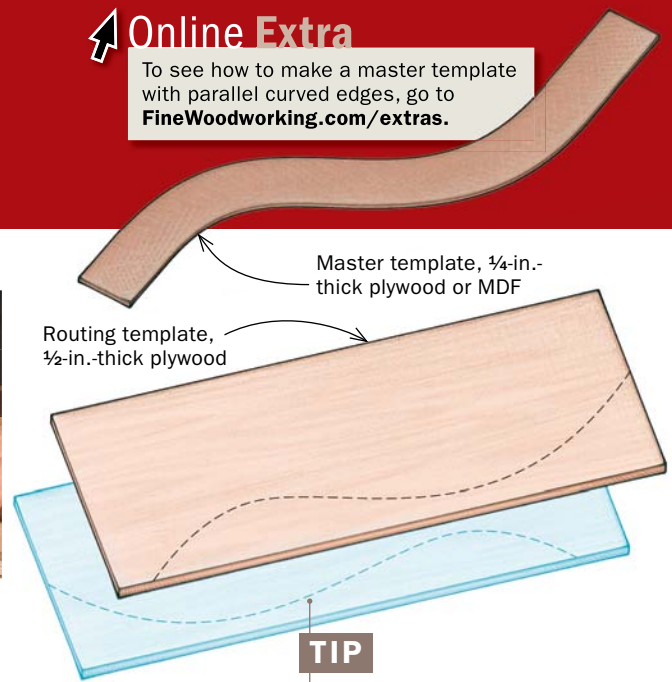


**Flush-cut the curve.** Screw the template to the blanks (left), then use a flush-trimming bit to bring the blank even with the template (right). The over-arm jig won't work accurately unless this is done.

minimize cleanup scraping. If you create your own design, feel free to adjust it closer to bits you already own. For the gooseneck molding on my Philadelphia-style secretary, I chose a commonly used crown profile: a large cove flanked by an ogee at the top and a thumbnail at the base.

With the cross-section profile drawn, you need to determine the molding's front profile—its length and the radii of its curves. Create a full-size master template out of 1/4-in.-thick plywood or MDF. Extend the template a few inches at each end and ensure that the edges are smooth, square, and parallel over its entire length.

You now need to create the routing templates that will attach to the workpieces and guide them. For a gooseneck



### TIP

If you have mirror-image moldings, keep the template in the correct orientation.

Routing template

Straight back edge guides return molding.

Curved front edge guides curved molding.

Use master template to mark upper edge.

Flush-cut this edge.

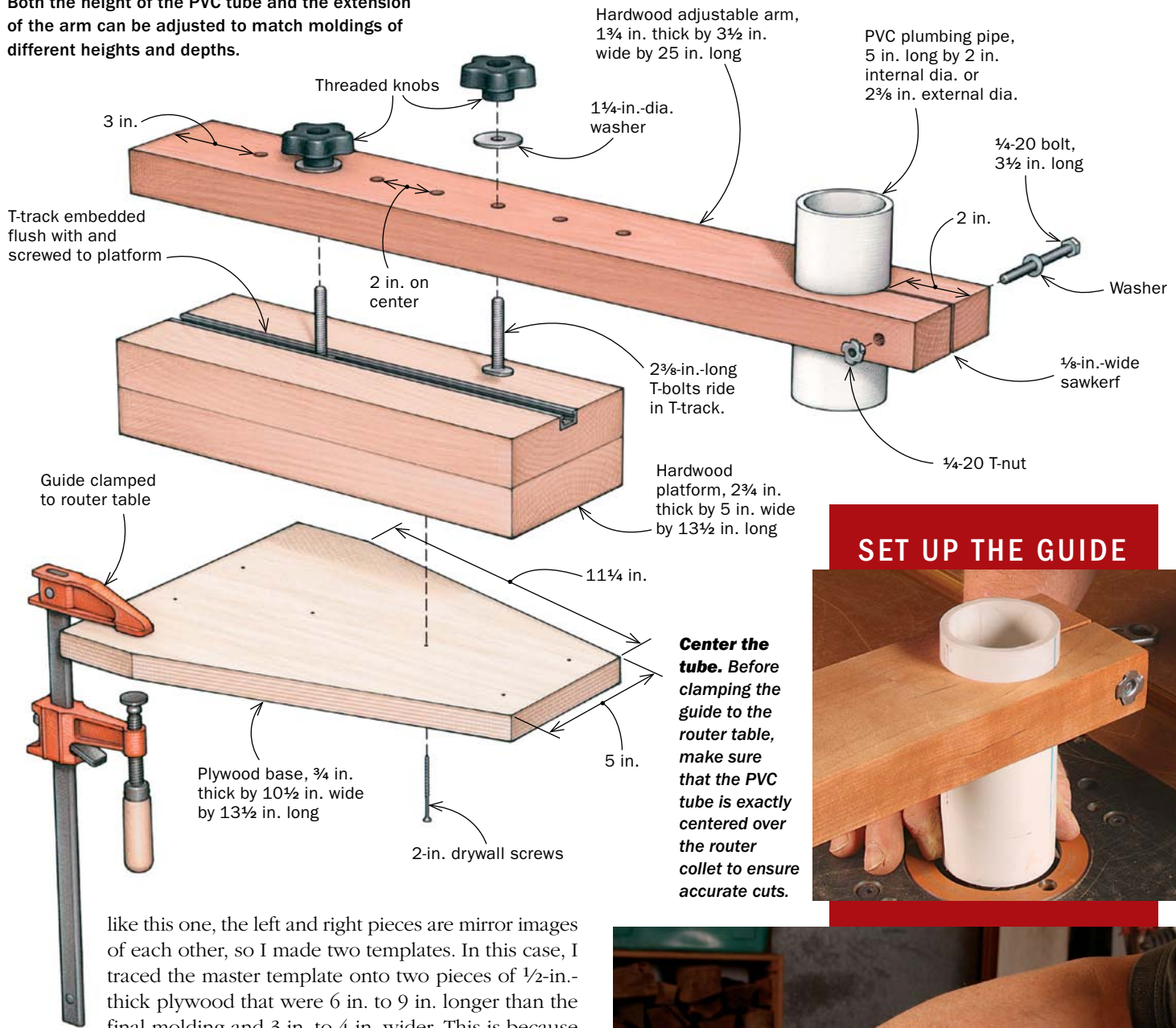
Return molding



**Mark the upper edge.** But don't cut along this line yet. A wide blank will be more stable on the router table.

## ADJUSTABLE OVER-ARM ROUTER GUIDE

Both the height of the PVC tube and the extension of the arm can be adjusted to match moldings of different heights and depths.



like this one, the left and right pieces are mirror images of each other, so I made two templates. In this case, I traced the master template onto two pieces of 1/2-in.-thick plywood that were 6 in. to 9 in. longer than the final molding and 3 in. to 4 in. wider. This is because the routing template was also used to create the return molding that attaches to the lower end of the gooseneck molding.

Bandsaw 1/32 in. outside the traced line. Now mount the master template on the plywood with either brads or double-sided tape, being careful to line up the template on the traced line. Use a pattern or flush-cutting bit with the bearing riding along the master template's edge to cleanly flush-cut the routing template's edges.

### Prepare the stock and attach it to the templates

The stock needs to be wide enough to accommodate the curve, thick enough to accommodate the profile, a few inches over in length, and with the grain running parallel to the central section of the curve. In this case, I also needed stock for the return moldings.

For long architectural molding, you will need to join pieces of wood together end-to-end. You can do this before the shaping using splines or bricklaying the piece, or you can simply shape

**Center the tube.** Before clamping the guide to the router table, make sure that the PVC tube is exactly centered over the router collet to ensure accurate cuts.



**Bite-size cuts.** Adjust the height of the tube until the bottom is just above the lower edge of the template. Then slide in the adjustable arm as shown to set up a manageable cut.

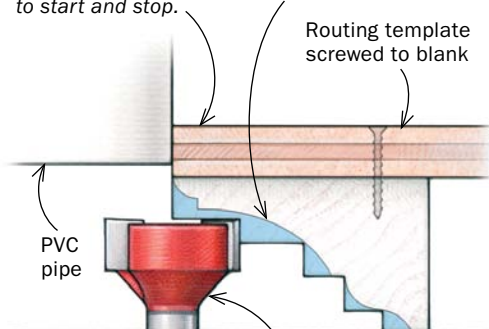
# SNEAK UP ON THE PROFILE WITH A VARIETY OF BITS

## 1 ROUGH IT IN

The blanks should be extra-long, giving you a place to start and stop.

Draw the desired profile on the end grain.

Routing template screwed to blank



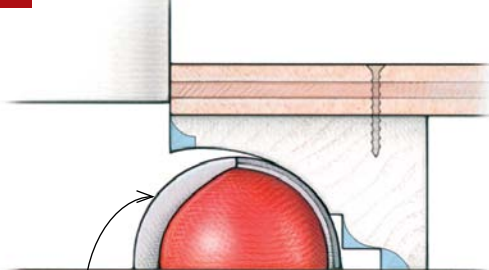
1 1/4-in.-dia. mortising bit; Freud No. 16-108



Whether you are reproducing an existing profile or designing a profile to match your router bits, you'll need to draw the profile on the end grain and sneak up on it by moving the arm and changing router bits.

**Rough out the waste in steps.** Don't try to remove too much at once. Make a series of passes to rough in the profile.

## 2 COMPLETE THE COVE

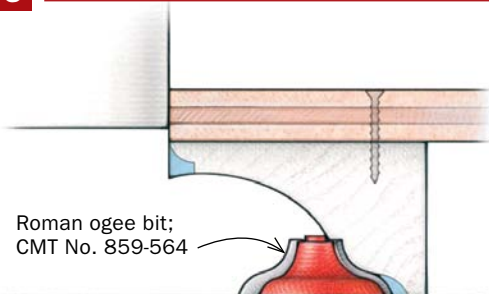


2-in.-dia. core-box bit; Freud No. 18-138



**Big and fast.** A large core-box bit is fast and clean. A small bit will take more passes and leave more irregularities to be scraped.

## 3 NEXT SECTION

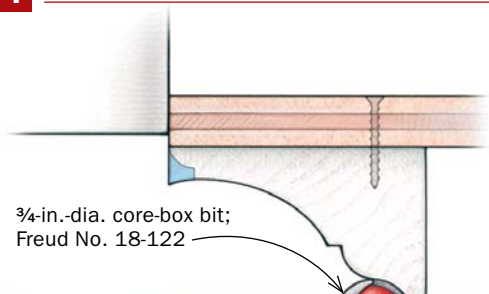


Roman ogee bit; CMT No. 859-564



**Modify the bit.** Callahan used a Roman ogee bit with the bearing and stem removed.

## 4 EXTEND THE OGEE



3/4-in.-dia. core-box bit; Freud No. 18-122

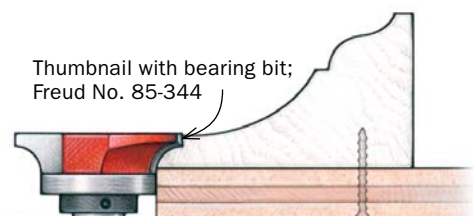


**Refine the shape.** You can use a 3/4-in.-dia. core-box bit to extend the ogee profile.



## 5 FINAL FEATURE

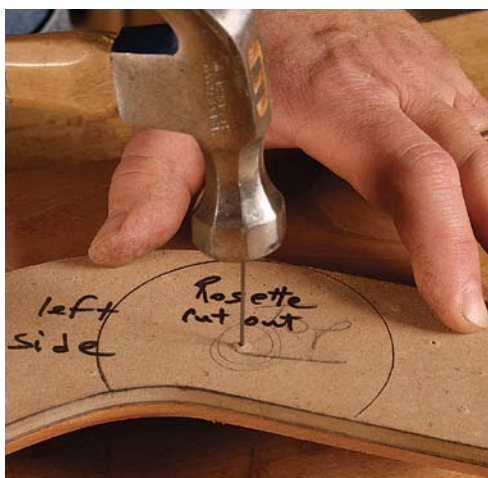
**Complete the profile.** Callahan flipped the workpiece over so that the template was riding the bearing of the bit when cutting the thumbnail profile.



Thumbnail with bearing bit; Freud No. 85-344



**Blend and smooth with a scraper.** A gooseneck scraper is ideal for cleaning up the different parts of the profile.



**Period details.** This traditional gooseneck molding gets a few more touches. Use the master template and a nail (above) to mark the location of the rosette at the top, and bore the hole using a Forstner bit whose diameter matches the rosette (right).



**Cut out the molding.** Bandsaw just outside the line that you drew before cutting the profile (see p. 75).

smaller, more manageable pieces and splice them together later. Curved stair railings are a good example. Either way, avoid any short-grain or cross-grain stock that can weaken the structure.

Keeping in mind that there would be right and left moldings, I traced the curved outline of each routing template onto the stock, making sure to label the templates and stock accordingly. Once you've done this, bandsaw the stock to within  $\frac{1}{32}$  in. of the traced lines, and screw them to the routing templates with their bandsawn edges slightly overhanging the templates' edges. Make sure the screws are placed to avoid being hit later by a router bit.

Before you screw on the return stock, paint the end that will enter the router bit white, and when dry, trace the outline of the molding's profile onto it. This outline allows you to position the guide arm and the router bit very accurately for each cut.

The return pieces stabilize the template on the router table. If you don't need return pieces, attach support blocks the same height as the curved stock.

With a flush-trimming bit, trim the curved edges of the stock flush. On the back side of the gooseneck pieces, align and trace the outside or upper edge of the master template. This determines the finished width of the molding.

### Set up the guide and cut

Clamp the over-arm guide jig to the router table, and extend the arm until the PVC tube is centered over the collet. The face of the tube acts as a bearing surface for the template. It is imperative that you keep the same contact spot on the tube throughout the cut and not pivot the jig around that



**Trim the top edge.** Attach the master template to the top edge of the molding and use it to guide a flush-trimming bit to clean up the top edge. Raise the bit to finish the job.

spot. Ideally, this spot should be at the point of the tube farthest from the back of the router table.

Using a 1-in.-dia. mortising or straight bit, I removed stock inside the molding's cove profile, as shown on p. 77. You can create a series of step-cuts by adjusting the height of the bit and the in/out position of the arm guide. Make sure all four blanks are cut before changing the height of the bit or the arm guide's position. You can also establish the fillet between the cove and ogee using this bit. Next, I installed a cove or core-box bit. Ideally the bit should have a cutting radius close to the curvature of the cove, but you can use a smaller bit and make several overlapping cuts. You can come back later and fine-tune the coved surface with a curved cabinet scraper or sandpaper.

I created the ogee profile in the same manner. Again, you can use smaller radius bits if you can't locate a single bit that matches the desired shape.

### Final shaping and assembly

With the pieces still attached to the templates for stability, use a gooseneck scraper to refine the curves. If you use sandpaper, be careful not to round over the profile.

Remove all the sections from the templates, and set aside the return pieces. If your gooseneck molding terminates in a rosette, (see Master Class: "Carve a rosette," *FWW* #194), cut away the tip of the molding on the drill press with a bit whose diameter matches that of the rosette.

To create the top edge of the molding, bandsaw close to the traced line you drew earlier, and then attach the master template and use it to guide a flush-trimming bit. By making the moldings overlong as recommended, you now have plenty of excess stock on which to practice cutting the miters. While the bottom miter is usually close to 45°, the upper miter (if there is no rosette) is usually a compound angle that requires some trial and error.

Now that curved moldings hold no fear, go ahead with that highboy, build that classical entryway, and trim that arched built-in. □

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## Mitering a curved molding



**Mark the corner.** With the curved part of the molding clamped in place, mark a 45° line from the cabinet corner.



**Cut the miter.** Clamp both ends of the molding to the chop-saw's fence and then cut the miter. The left clamp is behind the author's hand.



**A fussy fit.** Sometimes the miter joint fits right the first time. If not, you may need to trim the cuts or modify the profile until the corner comes together.

### ATTACHING THE MOLDING

