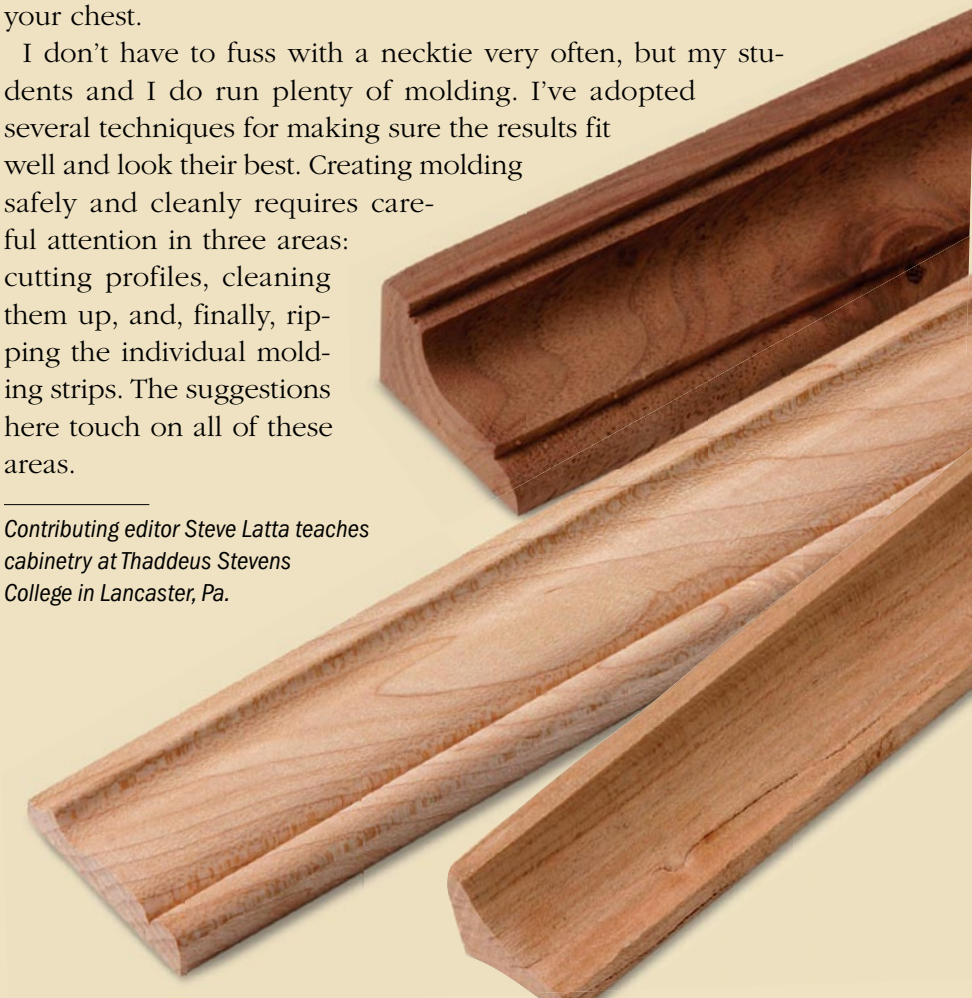
8 Tips for Flawless Moldings

Smart router setup and technique yield crisp profiles and silky surfaces

BY STEVE LATTA

A crisp molding lends the same touch of elegance to a well-made cabinet that a silk tie bestows on a sharp-dressed man. But in order for their magic to work, neckties and moldings both must be treated with care. A molding with torn-out grain or fuzzy edges will spoil the effect—like a soup stain in the middle of your chest.

I don't have to fuss with a necktie very often, but my students and I do run plenty of molding. I've adopted several techniques for making sure the results fit well and look their best. Creating molding safely and cleanly requires careful attention in three areas: cutting profiles, cleaning them up, and, finally, ripping the individual molding strips. The suggestions here touch on all of these areas.



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1 Use a sacrificial fence to tame tearout

To eliminate tearout, I like to bury the bit in a wooden fence, creating a zero-clearance cavity that lets the fence serve as a chipbreaker. There are two types of this fence that I make most often; both start with a good scrap of wide 2x stock with a jointed face and edge.

The first is a very simple fence that I make by using the bit itself to cut the zero-clearance cavity. Clamp one end, bury the bit a little deeper than you need, then bring the fence back to the appropriate setting and clamp the free end. If you are raising the bit into the fence, go only as high as necessary. Creating a cavity taller than your final bit height reduces the chipbreaking effectiveness.

For complex bits or those that can't cut their way into the fence, such as bearing-guided bits, I drill the fence opening with a Forstner bit. This also makes it easier for me to joint the infeed side if I need an offset fence. I also cut a channel in the back of the fence for chip removal.

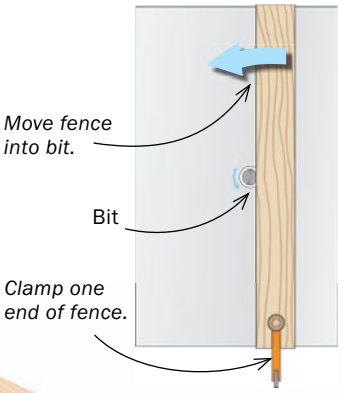
To prevent chipout in heavily figured stock, I reorient this fence so that the bit is literally buried in the infeed side. To do this safely, clamp a straight backer board behind the fence. Loosen the clamps that hold the fence and, with the router running, slide the infeed side of the fence into the bit. The movement is very controlled because the rotation of the bit pushes the fence against the backer board. After setting the fence, reclamp and continue running the molding.

Another advantage of any sacrificial wooden fence: I can quickly screw guards or hold-downs in place.

Of course, a good table and router are also important. Reinforce an MDF top with angle iron or C-channel, if need be, to prevent sag. As for routers, I recommend a fixed-base model with at least a 1½-hp motor. See "Routers for Router Tables" in *FWW* #189.

A SIMPLE FENCE FOR SIMPLE BITS

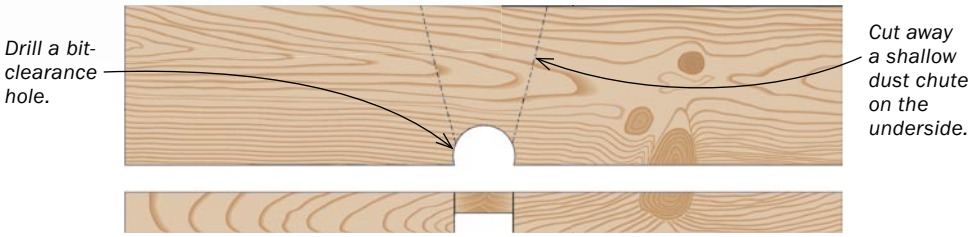
A bit with no bearing or post on top can cut its own deep, zero-clearance cavity. Start with a jointed piece of 2x stock.

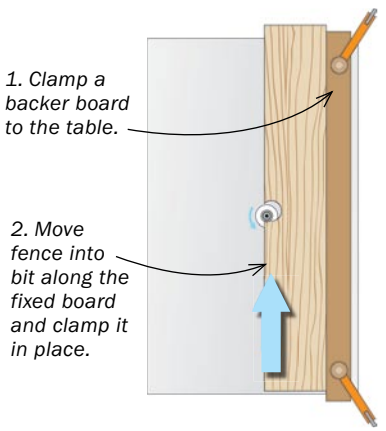


Bury the bit. *Clamp one end of a wooden fence to the router table and, from the other end, carefully pivot the fence into the rotating bit. Then clamp it down.*

A FENCE FOR COMPLEX PROFILES

Drilling the opening is easier for tall, complex profiles. To create zero clearance, bury the bit on the infeed side.

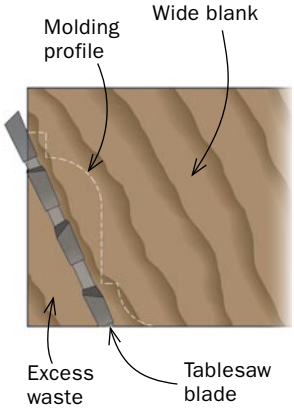




Push the fence into the bit. *The infeed edge of the bit is buried, so the workpiece fibers are fully supported where the bit exits the cut.*

Photos, except where noted: Steve Scott; individual boards: Kelly J. Dunton

2 Use the tablesaw to hog off waste



Saw away the waste. *Doing so saves wear on router, bits—and ears.*

After drawing the profile on the end of a piece, I use the tablesaw to cut away as much waste material as I can, making sure the blade is tilting away from the fence. Roughing away this extra stock allows lighter passes with the router.

3 Cut molding on a wide blank

Choose a piece of stock that is wide enough to run a profile on each edge while leaving a few inches in the middle. A bigger workpiece means less vibration and better results. It also lets you run the molding much more safely, keeping your hands well clear of the spinning bit while controlling the stock. It's also much easier to clean up moldings while they are part of a wider piece that can be clamped easily while the profile is scraped or sanded.

Pay close attention to the feed rate. Too fast leads to chipping; too slow can cause burns. Wax the table and fence to keep resistance to a minimum.

After the molding is done, rip it away on the tablesaw (Tip 8).

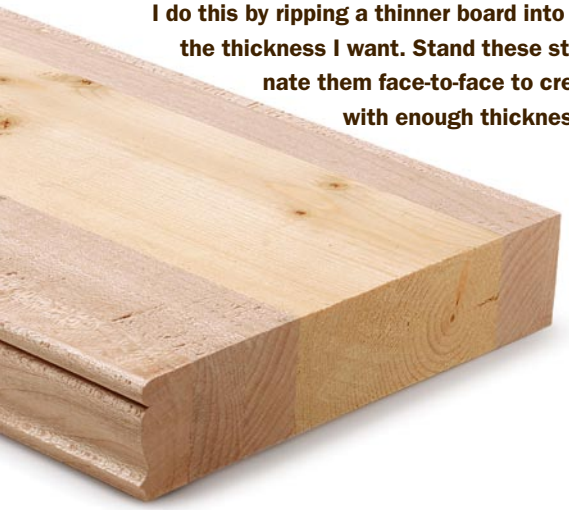
Keep fingers safe. *A wide workpiece can be fed into the cut with hands well clear of the bit.*

4 Glue up your own stock to produce a wide molding

When you want to cut a wide molding in figured wood like bird's-eye maple, you might not find stock thick enough. My solution is to make my own.

I do this by ripping a thinner board into strips a little wider than the thickness I want. Stand these strips on edge and laminate them face-to-face to create a glued-up board with enough thickness for the desired moldings. Glue up the blank with a piece of scrap stock as a backer board. This lets you cut multiple molding strips in the reoriented face grain while keeping your hands safely away from the bit.

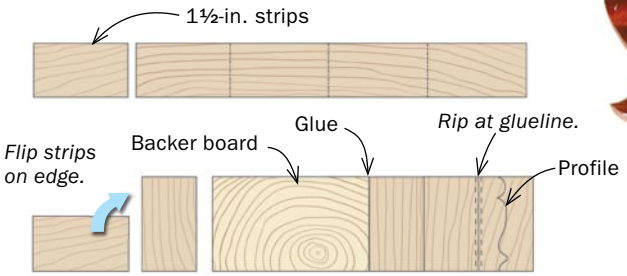
Assemble the blank so that each glue joint falls in a tablesaw kerf when the moldings are ripped. You'll need to account for the kerf width, the amount of stock removed in cutting the profile, and the thickness of the finished molding.



Cut from a wide board. *This keeps your hands safe and, because a wide board is more stable, ensures that the work doesn't chatter as you cut.*

CREATE A THICK BLANK FROM THINNER STOCK

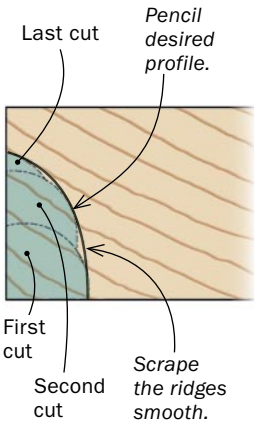
Rip 1½-in. strips from 4/4 stock, flip the strips on edge, and glue them together, face-to-face. Use a scrap of jointed pine as a backer board in the center of the glue-up. After the glue is dry, surface the stock to the necessary thickness.

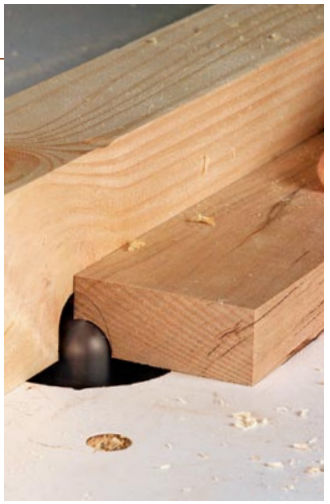


5 Reduce chipout by cutting in the right sequence

SINGLE-BIT PROFILE

Multiple runs with a core-box bit yield a custom cove. Each cut removes tearout from the previous pass.





Cover your tracks. *When using multiple passes to cut different sections of the same profile, sequence the cuts so that each pass removes any tearout left by the previous cut.*

Sometimes a simple profile requires multiple passes of the same bit. The simple cove shown above is a case in point. Because I don't have a specific bit that cuts the proportions I need, I run this molding with multiple passes using a core-box bit.

In this situation, I find that I can reduce chipout dramatically by making the first pass with the bit set at the point farthest from the fence. I then raise the bit and move the fence toward the workpiece with each successive pass. In this way, the chipout created by each pass is removed by the subsequent passes. For the final run, I make sure the bit is buried in the fence, reducing the likelihood of any chipout.

This technique also helps when cutting complex profiles using a combination of different bits. This is sometimes necessary because many complex-profile bits don't quite fit specific design requirements. By combining cutters, you can match older moldings or create original designs.

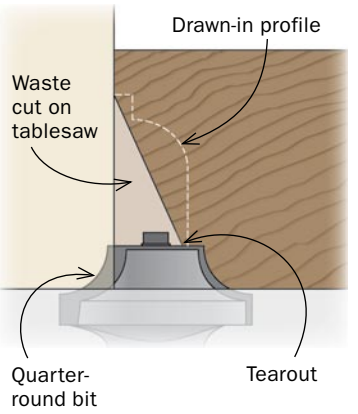
The delicate crown molding at right—for a small chest—is made by combining three cutters: an oversize beading bit from Eagle America (www.eagleamerica.com), a core-box bit, and a straight bit.

Start by cutting a sample section of the profile to use as a setup piece. Creating this piece also brings to light any unforeseen problems in the process. If you create the molding often, hang the sample on the wall for future use.

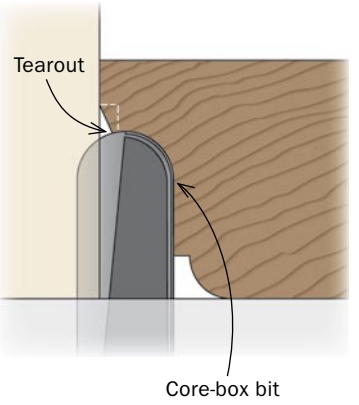
MULTIPLE-BIT PROFILE

Sequence the profiles to remove tearout, starting at the bottom and inside on the molding.

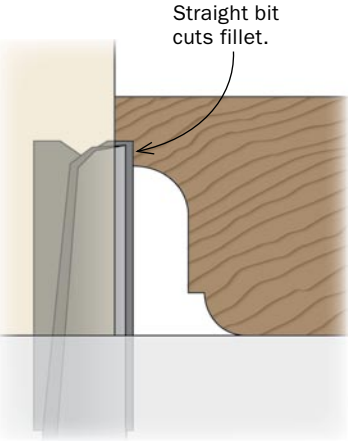
1. START ON THE INSIDE



2. THEN WORK IN THE MIDDLE



3. FINISH AT THE OUTERMOST PORTION OF THE MOLDING



Start with the lower quarter-round. *Running this bit first will cause some tearout at its top edge. This line of tearout will be removed when the core-box bit establishes the cove.*

Run the cove in multiple passes. *Raise the bit a little each time. Any chipout along the outside edge will be removed when the fillet is cut.*

Finish with the fillet. *Use a straight bit buried in a fresh fence to prevent tearout.*

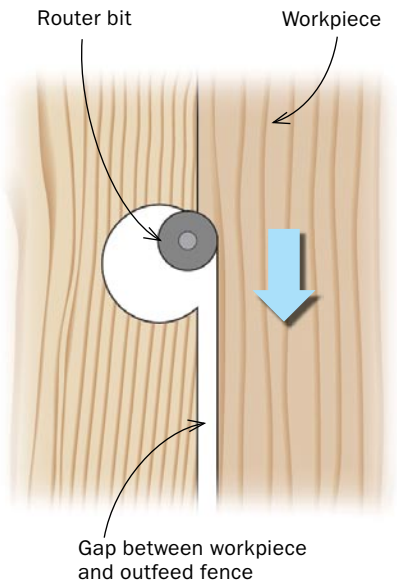
Photo, facing page (bottom right): Mark Schofield; drawings: Kelly J. Dunton

6 Use an offset fence when molding an entire edge

Profiling an entire edge is very much like jointing the edge of a board: all of the original surface is removed to create the profile. With a standard setup, this means the profiled workpiece won't ride against the outfeed fence. For proper support, the outfeed fence should be set flush with the cutter while the infeed fence steps in about 1/32 in. Make passes on a scrap piece to dial in the offset.

Although this might sound a little complicated, it's actually quite simple to set up. Take a jointed piece of 2x stock and drill an opening for the bit. Set the jointer to a 1/32 in. depth of cut and joint the edge of the fence just to the cutout. Lift it off the table and ... shazam! You have an offset fence.

THE PROBLEM:
NO OUTFEED SUPPORT



No fence support. *When the bit removes the entire bearing surface, a standard fence can't support the outfeed side.*

7 Clean up before ripping

Moldings generally need some cleanup, especially if the profile was generated by a combination of bits. Still, if the milling was executed properly, that cleanup should require minimal effort.

A variety of tools come into play for taking off tearout, tool marks, chatter, or burn marks. The list includes scrapers, a shoulder plane, files, and various sanding blocks.

Scrape first, using scrapers fashioned to a variety of profiles to fit the need. Shape cutoffs from card scrapers into an assortment of beads and rounds. For moldings like bracket feet, grind a scraper close to the profile. Don't go for an exact match because you'll need to attack from various angles.

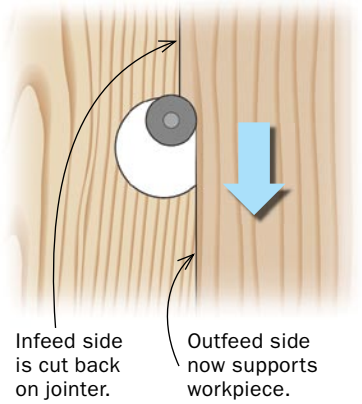
Detail files work well for small radii and leave marks small enough to be removed quickly with sandpaper. Sanding, however, should always be kept to the essential minimum. I tell my students that after just a few minutes of sanding, the only thing they are really sanding away is their grade.

I tend to use aluminum-oxide paper ranging in grit from P150 to P220. Most times, I use a sanding block or a piece of dowel stock for an appropriate curve. Contour sanding grips are available, but these seem like one more thing I don't really need to accomplish a basic task.

This should be light duty. *With proper cutting technique, moldings should need only minimal cleanup. Latta grinds custom shapes in card scraper stock.*

THE SOLUTION:
MAKE AN OFFSET FENCE

An offset fence in one easy step. *Simply joint the infeed edge, stopping at the bit cutout.*



Running smoothly. *The offset fence supports the work on the outfeed side and makes for a smooth cut.*

Use a shoulder plane for flats and fillets. *The Stanley No. 92 works great at getting into corners.*

Sand sparingly. *Dowels of different diameters work well for coves and other hollows. Be careful to avoid rolling the dowel over any hard edges. Doing so takes away essential detail.*

8 Rip between the blade and fence for consistency

Rip to a consistent width. *When ripping thin strips like this, a notch in the end of the stock provides a secure grip for a narrow push stick (right).*

When cutting molding from a blank, standard safety practice calls for setting the tablesaw fence so that the ripped molding falls to the outside of the blade. The fence is then reset and the process repeated for the molding on the other edge. But repeatedly resetting the fence can lead to variations in the thickness of the different pieces. This problem can make it harder to install the molding properly.

To avoid this, I rip off the molding between the blade and the fence. The distance between the fence and the blade never changes, so the thicknesses are far more consistent. And because you're not resetting the fence after each cut, the work also goes more quickly.

But this method demands extra precautions. Use a splitter to prevent the molding from curling into the back of the blade and causing kickback. Stub splitters stay out of the way but get the job done. Push sticks and hold-downs are also important. A small bandsaw cut in the end of the molding stock lets you hook a narrow push stick into it. A hold-down clamped to the fence keeps the stock from lifting off the table.