

*Rasps and files are the author's choice for shaping wood. There's no tearout on figured woods, and a file can produce a surface very nearly ready to finish.*

# Files, Rasps and Rifflers

*A woodworker's guide to these effective shaping tools*

by Mario Rodriguez

**R**asps and files have all but disappeared from most woodworkers' toolboxes. Why? Well, there are a number of reasons. Routers and drum sanders do a lot of the shaping that rasps and files used to do. Because it's easy to damage files and rasps, many woodworkers consider them more of a pain than they're worth. And it can be hard to figure out what kind of file or rasp you need. What, for instance, is the difference between a second-cut patternmaker's rasp and a bastard-cut mill file?

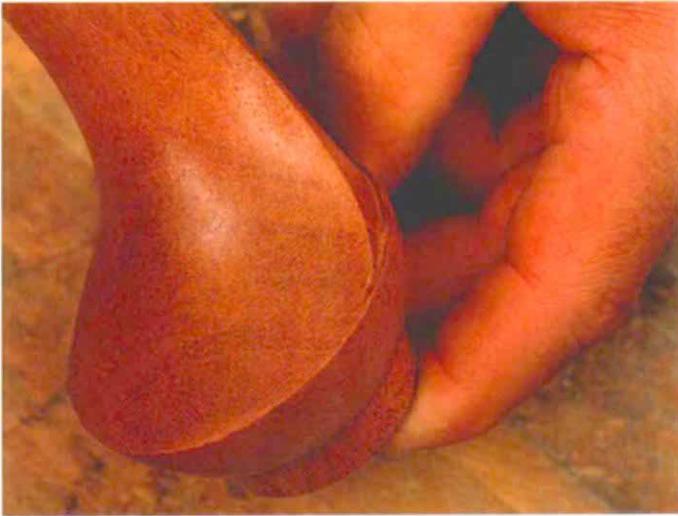
But much is to be gained by adding rasps and files to your tool kit: greater speed and control in shaping curved or sculptural elements and dramatically reduced sanding time. By using a succession of rasps and files, I can start sanding at 180- or 220-grit. And because individual teeth are doing the cutting, rather than a single

blade, there's no danger of tearout. Rasps and files are the fastest, most efficient tools for removing lots of material quickly, for fairing curves and for shaping furniture parts. Using rasps and files may be new to many woodworkers, but once you've started, you sure won't miss all that sanding.

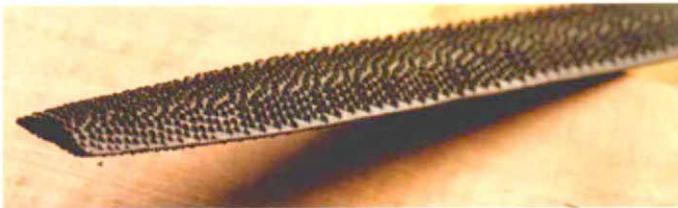
The care and cleaning of these tools isn't complicated, as the story on p. 50 explains. And a basic kit of the most useful files and rasps doesn't have to be expensive and can be assembled gradually (see the story on the facing page).

## **What are rasps used for?**

Rasps actually can be considered a type of file, but unlike files, rasps have individual cone-like teeth, which are made by a punch



**Filed, not sanded.** The author put a coat of shellac on this cabriole leg after shaping it with a file, but without sanding it. Only minor tool marks are still visible.



**Rasp teeth (above) are formed individually** when the steel blank is struck by a punch. The tooth and gullet are formed simultaneously. The two best rasps sold today are the Nicholson #49 and #50. The #49 (right) removes a lot of wood quickly. The #50 leaves a smoother surface.



striking the soft steel blank (see the center photo above). These teeth are large and pointed, with deep gullets that keep the rasp from clogging. Each tooth and its gullet are formed with a single blow from the punch. This process is called stitching.

On some imported rasps, the teeth are hand-stitched, resulting in a slightly random pattern. Some woodworkers claim that these rasps produce a smoother cut with less chatter, but the hand-stitched rasps that I've used were no better than standard rasps that cost substantially less.

A rasp is the best tool for any sculptural shaping. It's designed to remove bandsaw-blade marks or the facets left by a spokeshave, and it's used to produce smooth, fair curves. You should always use the longest rasp that your task will permit. In the same way

## A basic selection of files and rasps

Here are a few of the rasps and files that I use most in my shop. I selected them for their usefulness, versatility, durability and value. Naturally, you can get started with less and add to your kit later. With a few notable exceptions, most of these files can be purchased for \$5 to \$10. The exceptions are Nicholson rasps, which typically run \$30 to \$40 each; the Grobet detailing file (about \$25); and a good set of rifflers, which can cost \$100 or more. Avoid the cheap riffler sets because they wear quickly and perform poorly right from the start.



- 1) **#49 Nicholson patternmaker's rasp:** For heavy cutting and rough shaping of sculptural furniture elements, such as cabriole legs or broadly curved pieces, such as table aprons.
- 2) **#50 Nicholson patternmaker's rasp:** For a finer cut and smoother surface after using the #49. The smoother surface left by the #50 will more readily reveal dips, bumps and other minor imperfections.
- 3) **8-in. bastard-cut round file:** I use this file for shaping and fairing tight inside curves and for shaping replacement molding-plane blades.
- 4) **10-in. bastard-cut mill file:** Will leave a very fine surface on wood, but I use it primarily for truing cabinet scrapers.
- 5) **6-in. second-cut mill file:** Good general-purpose shop file. Excellent for cleaning up exposed end grain. I also use it frequently for deburring metal edges on machines, hand tools or jig and fixture materials.
- 6) **10-in. second-cut, half-round file:** Used for cleaning up after the #50 rasp.
- 7) **8-in. second-cut, half-round file:** I use this for smoothing the surface left by the 10-in. half-round file. Because it's shorter, it leaves a finer surface, even though it's the same grade.
- 8) **Grobet detail file:** All-purpose detail file. This is probably the most-used file in my kit. I use it for all sorts of detail work.
- 9) **Set of file rifflers (one end coarse, the other fine):** For detailed shaping of carved ornaments, such as ball-and-claw feet, for sculptural drawer pulls and for tool handles. —M.R.

## Care and cleaning of rasps and files



*File card cleans rasps and files. Clean rasps and files cut more aggressively. File cards generally have a brush side and a wire side.*

Rasps and files are heat-treated to make them about as hard as a woodworking chisel (Rockwell hardness rating of Rc60 to Rc68). This makes them effective cutting tools on wood, aluminum, brass and other nonferrous metals. And some files even can be used on soft (or annealed) steel. But because they've been hardened, files and rasps must be kept apart to prevent them from rubbing or banging together. Careless treatment might chip or dull the teeth and shorten file life. I store mine on a wall-mounted rack, like chisels. The blades are kept apart, and I can spot the one I need at a glance. I've also seen them stored in drawers, where slots or dividers keep the tools separated.

With use, files and rasps will clog. They can be cleaned with a file card (see the photo above). This is a small, flat, wooden paddle with stiff wire needles on one side and short plastic bristles on the other. Occasionally, when stubborn debris becomes lodged in the teeth, I'll run a wire finishing nail along the teeth. The nail's tip quickly will wear down to conform to the file's teeth and will dislodge any clogged material without damaging the file.

Files don't last forever. When a file starts to slide over your workpiece instead of cutting, it's best to get rid of it, and buy a new one. A dull file will only become a source of frustration as well as a big waste of your time. A sharp file cuts easily and leaves a smooth surface in its wake.

—M.R.

that a plane with a long sole is used to level and flatten a board, a longer rasp does a better job of smoothing dips or bumps in curved work than a shorter one will.

**Rasps are classified by shape, group and cut.** Woodworker's rasps range in length from 6 in. to 14 in. and are flat, half round or round in section, tapering slightly along their length. Half-round rasps are the most common. Rasps may have square, tapered or pointed ends.

Woodworking rasps fall into three main groups (listed in descending order of coarseness): wood rasps, cabinet rasps and patternmaker's rasps. Within these groups, rasps are further categorized, in descending order of coarseness, as bastard cut, second cut and smooth cut. In the United States, the best rasps are made by Nicholson (a division of Cooper Tools, P.O. Box 728, Apex, NC 27502; 919-362-7511). Nicholson's #49 and #50 rasps (the #49 is a second-cut patternmaker's rasp, and the #50 is a smooth-cut rasp) do all the rough-shaping work I expect from a rasp (see the bottom photo on p. 49). For a list of recommended rasps and files, see the box on p. 49.

Also, keep in mind that a shorter rasp will produce a finer finish than a longer rasp of the same cut. That's because the tooth spacing on rasps is proportional to the tool's length, closer together on shorter rasps, farther apart on longer rasps. An 8-in. second-cut rasp will leave a smoother surface than a 10-in. second-cut rasp. This rule of thumb is true for files as well (see the top left photo on the facing page).

**Using a rasp**—It takes practice to learn how to use a rasp properly. First, put a handle on your new rasp. I don't believe that tale about someone jamming the tang through his palm, but a handle does make a rasp easier and more comfortable to use. A handle also provides the necessary length and grip for you to develop a smooth, rhythmic stroke.

The way to hold a rasp or file is with one hand on the handle and the other on the tip of the rasp between thumb and forefinger (see the photo below). If holding the tip is uncomfortable for you,



*For best control, use two hands. Grasp the file or rasp handle with one hand, and hold the steel tip between thumb and forefinger of the other hand.*

wrap masking tape around it to provide a cushion.

Angle the rasp about 30° to the workpiece and push forward, applying light pressure. Lift the rasp off the workpiece on the return stroke. Remember, you're shaping wood, not grating cheese. If you want to remove stock more aggressively, apply more pressure. If you want a finer surface, lighten up, or switch to a finer rasp or a file. This stroke will produce the best results in the shortest time with the least wear and tear on the tool.

## Files

Although rasps cut quickly, even the finest will leave a rough surface. The next step in shaping is filing, which can leave a surface that's nearly ready for finishing (see the top photo on p. 49).

**Files are classified by size, shape and cut.** Files range in length from 4 in. to 16 in. and come in a variety of shapes and cross sections, each designed to perform a different task. There are square, flat, half-round, triangular and round files. Half-round files,

**Tooth spacing is proportional to size.** Both of these files are bastard cuts, but the teeth on the thinner, 8-in. file on the left are closer than on the 10-in. file on the right.



**Double-cut (left) and single-cut files.** All grades of files are available as single or double cut. Double-cut files require more pressure, but they'll cut faster than single-cut files.



which are rounded on one side and flat on the other, are probably the most useful to woodworkers. Both sides have teeth, so you can use the flat side for convex and flat surfaces and the half-round side for concave work. Flat files also are useful for shaping long sections with curved profiles, such as cabriole legs. Round files are handy for shaping tight, inside curves.

All files are either single cut or double cut (see the bottom left photo above). Single-cut files have a single set of parallel teeth, extending the length of the file. Double-cut files have two sets of intersecting teeth, creating diamond-shaped teeth, which leave smoother finishes than single-cut files. A single-cut file with a rectangular profile is called a mill file. A double-cut file with the same profile is called a fiat file.

There are three grades of coarseness for files, and they are the

**Grobet detailing file is indispensable.** Its half-round profile provides a flat side for flat and convex work and a gently curved side for concave work.



same as for rasps: bastard cut, second cut and smooth cut. And like a rasp, a file's length affects the coarseness of cut. Theoretically, each of these grades is available both single cut and double cut, but the double cut is more common. Most of the files I use are double cut.

One file that I use all the time doesn't fit neatly into any category. It's called a detailing file and is made by Grobet, a Swiss company. It's a double-ended (no tang), half-round file with a bastard cut at one end and a second cut on the other (see the photo above). This file costs about \$25 and is available from Woodcraft (210 Wood County Industrial Park, P.O. Box 1686, Parkersburg, WV 26102-1686; 800-535-4482). Although it's technically a double-cut file (the rows of teeth intersect), each row of teeth is made up of short sections, offset slightly, to minimize clogging.

## Rifflers

Rifflers are slender S-shaped tools with rectangular, oval, triangular and pointed heads. They can be either rasps or files (both are available) and are used primarily for small-scale detail carving. Both ends have teeth, and the most useful offer a coarse end and a fine end on the same tool. Rifflers are usually about 7 in. long and often come in sets of around eight. I use them all the time to remove tool marks and to sharpen carving details.

**Hold a riffler like a pencil.** If you want more control or a heavier cut, press on the end of the head.



**Using rifflers**—Rifflers are held in one hand like a pencil (see the photo above). Sometimes the forefinger of the other hand applies light pressure to help control the cutting action.

The heads on rifflers are so small and the teeth so fine that it's almost impossible not to use a short back-and-forth stroke when cutting with them, but you should use the longest stroke you can to take full advantage of the length of the head. □

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