Kerbschnitzen

Two-knife Swiss chip carving

by John Hines

It never occurred to me that I could become seriously interested in chip carving—a skill I always associated with primitive folk objects covered with rows of incised squares and triangles repeated in boring symmetry. Then I saw Wayne Barton's work. It was so crisp and lively that it seemed to leap off the table as I walked by his exhibit at a woodworkers' show in San Francisco two years ago.

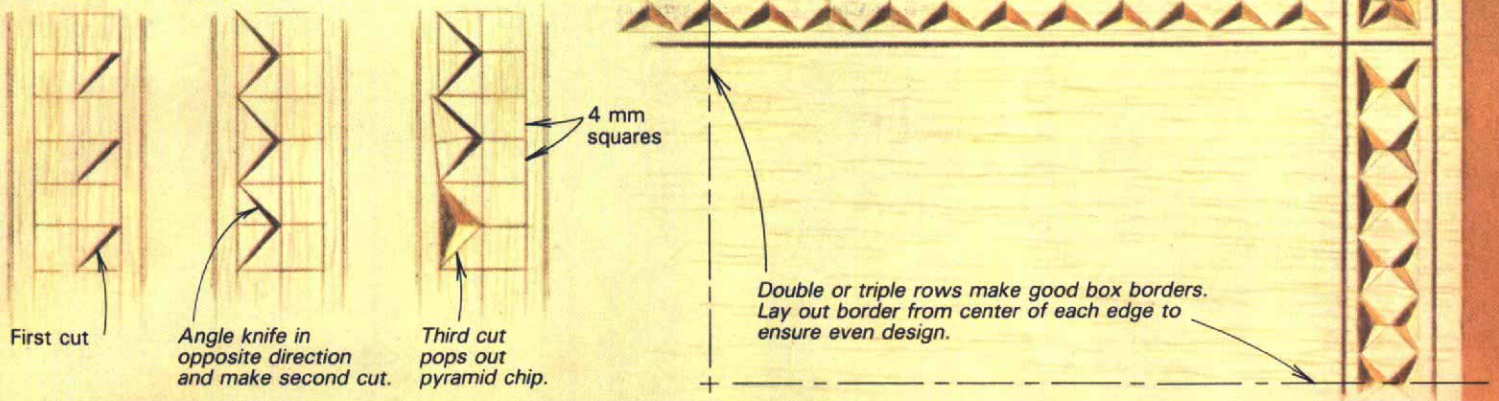
Like beautiful music, the elements of his carvings flow smoothly without breaks from one segment to the next, often creating stunning curvilinear forms. Even though the pattern of each carving is generally geometrical and symmetrical, the cuts—because they are so perfectly executed—have the boldness of a Picasso stroke. And, like all true artistry, his work gives the impression of effortlessness.

Surprisingly, Barton uses only one short-bladed knife to cut nearly all of his intricate designs, most of which are incised on the lids and sides of jewelry boxes. The designs are based on series of pyramids, triangles, many of them elongated, and gracefully flowing sweeps. Each facet of the design is created by making two or more converging knife cuts into the wood and popping out a chip. No matter how intricate the design, Barton cuts each wall of the facets with a single stroke. No trial cuts. No clean-up cuts. Just one bold incision to sever the wood fibers cleanly from one end of the facet to the other.

Barton, a professional carver who learned his art in Switzerland, says that the key to mastering chip carving, which he calls ***kerbschnitzen*** (Swiss for engraving carving), is learning how to hold the knife in an unvarying, cocked-wrist position. This ensures a consistent 65° cutting angle and clean cuts. Then all you have to do is practice until you learn how to make the shallow cuts (seldom more than ⅛-in. deep) meet at precisely the same point at the bottom of each facet.

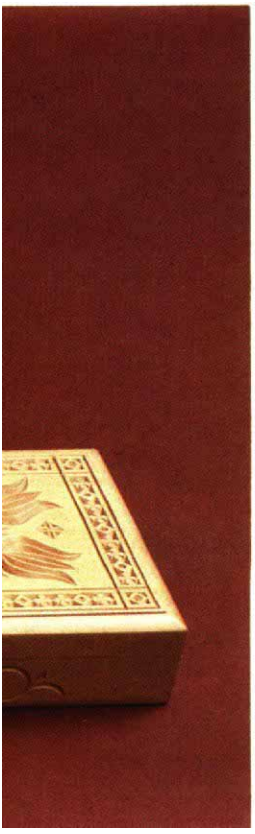
I was dubious as my classmates and I settled down for five days of instruction at Barton's Park Ridge, Ill., home near Chica-

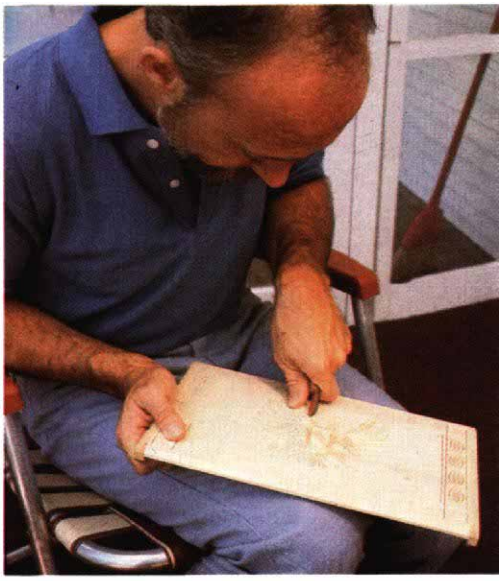
Figure 1: Cutting pyramid chips



go last summer. The four of us marveled at the carvings in the home—boxes, chair backs, kitchen-cabinet panels—as well as dozens of samples he had carved onto small ½-in.-thick basswood blocks. "You will be able to execute all of these carvings by the end of the week," he said, as he gave each of us several basswood blanks, a cutting knife, and a "stab knife" that is used to impress short, wedge-shaped lines into the wood to enhance some designs. Barton prefers basswood because of its softness, tight, even grain and light color, but you can use just about any wood, although it's difficult to cut woods that are very hard or have very pronounced annular rings.

The two Swiss-style knives Barton uses with his students were specifically designed by Alpine craftsmen for chip carving. The short blades are easy to manipulate, take a keen edge, and resist bending and breaking. The rectangular handles are easier to grasp than the round- or oval-handled models sometimes sold as chip carving knives. Besides the $20 knife set, the only equipment needed is a pencil, a compass, a metric ruler and an eraser.





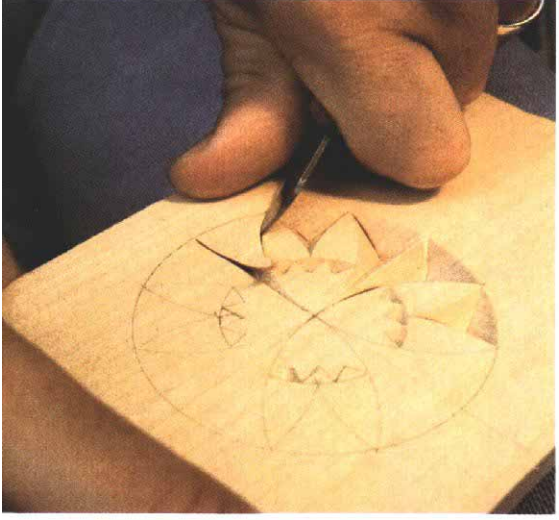
The sides and lids of Barton's jewelry boxes (facing page), show delicate and complex patterns. Barton cuts the curved pattern with his knife held at a 65° angle to the wood. The key to the kerbschnitzen *is to lock your wrist as shown, so your thumb and fingers guide the cut. Hold your elbow close to your body for better leverage and control. Barton works on his lap and rotates the wood to cut in different directions.*

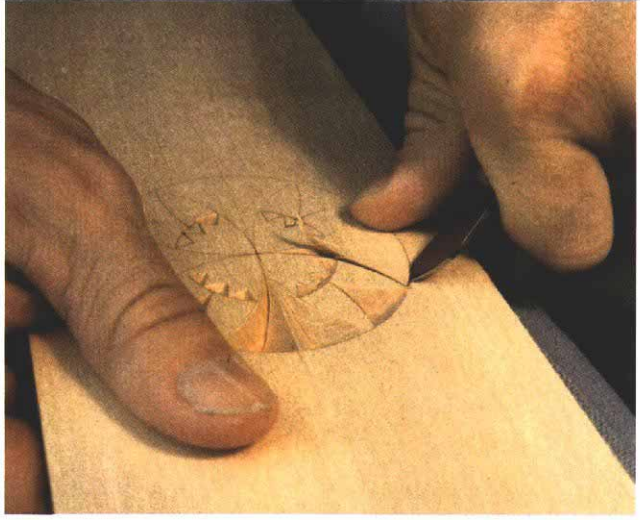
The first thing you must learn is how to hold the knife, as shown in the photo, below. It'll feel awkward, but be persistent. Wrap your fingers around the handle, with the first joint of your thumb riding on the lower end of the handle near the blade. Cock your wrist out until your thumb is in a fairly straight line with your forearm. With your knife in this position, bend your hand down until your thumb tip, index-finger knuckle and the blade tip form a fairly rigid tripod to support your knife and hand as they move over the work, Seen from the side, the edge of the blade resting on the wood should look like a capital V. To make the same cut on the opposite side of the V, roll the knife about 90° and move your thumb to the top ridge of the blade without changing your wrist position. The hand and knife move as a unit—never try to pull the knife toward your thumb, as you would if you were peeling potatoes. Part of your hand or finger must be touching the work as you cut, and keep your elbow close to your body for better leverage and control. If you want to cut long curves, keep turning the wood as you carve, rather than changing your hand position.

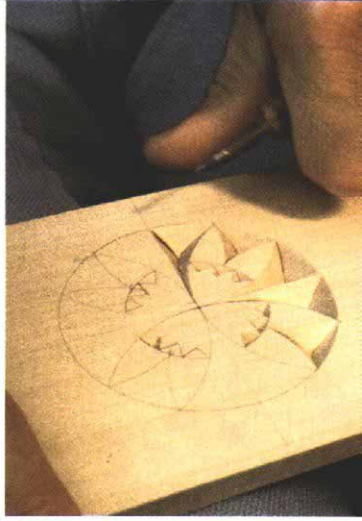
Since you're using only two tools, you can work without a workbench, with its hold-downs and other vises and faults. You can carve just about anywhere, in a comfortable sitting position with the work held in your lap by your non-carving hand. You don't even have to worry about holding the work flat because the position of the hand and knife relative to the work never changes, no matter how many times you shift the work in your lap to find a comfortable position, reach a tight spot or take advantage of the light.

In class we began carving by cutting tiny pyramid chips, probably the most frequently encountered shape in chip carving, as shown in figure 1. "The biggest problem," Barton warned us, "is that unlike chisel carving, once you have committed your blade to the wood, rarely can you alter or cover up a mistake—or a change of heart." You must get each cut right the first time, a tricky operation because the depth of cut varies along the incision. Hold the tip of the knife at the top of the pyramid (the proper 65° cutting angle is guaranteed if you're holding the knife correctly), and stab down to the full depth. Roll the knife to make the same cut from the opposite angle and stab again. Go back to your original knife angle and slice along the triangle to free the chip.

Though getting the correct depth on the first attempt is not easy, it is a skill that comes with practice. As a rule, the wider the chip, the deeper the cut, as shown in figure 2, p. 66. You can see the width of the chip on the pattern you've drawn on the wood. I have found—after cutting quite a few chips—that I now have a pretty reliable feeling for the amount of knife pressure needed

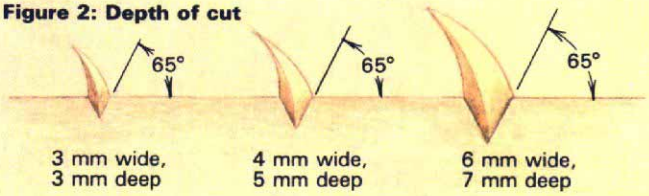






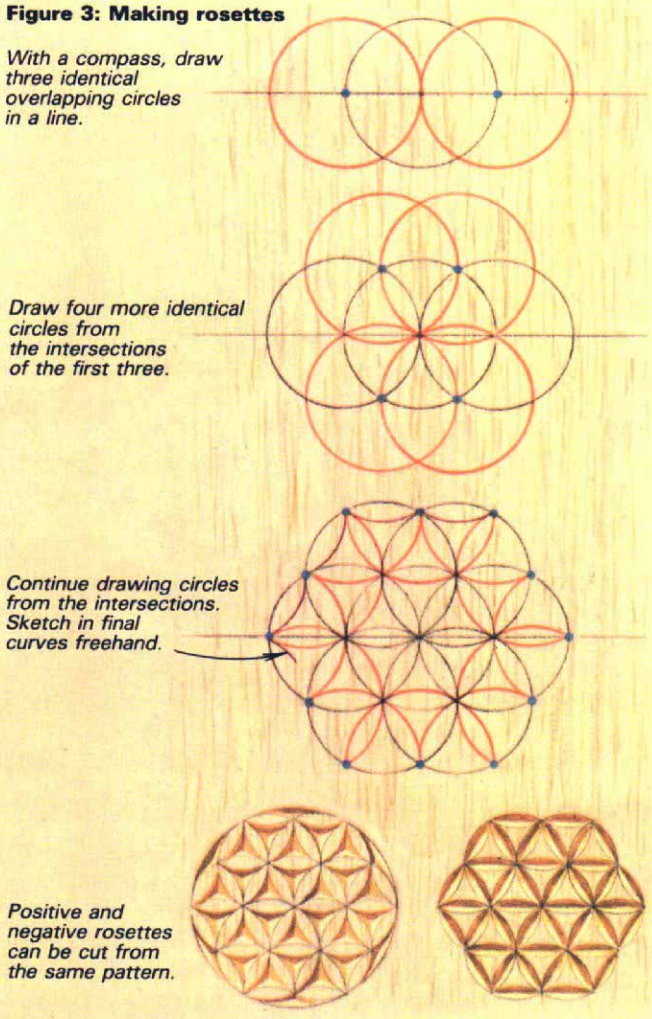
Barton begins his cut at the center of the rosette and pulls his hand and knife as a unit along the pattern line (left). He forces the blade down in a gentle arc to midpoint of the line, then gradually eases it up toward the surface. Then he rotates the piece and cuts along the curved rim (center). A final cut from the rim to the center frees the elongated triangular chip (right).

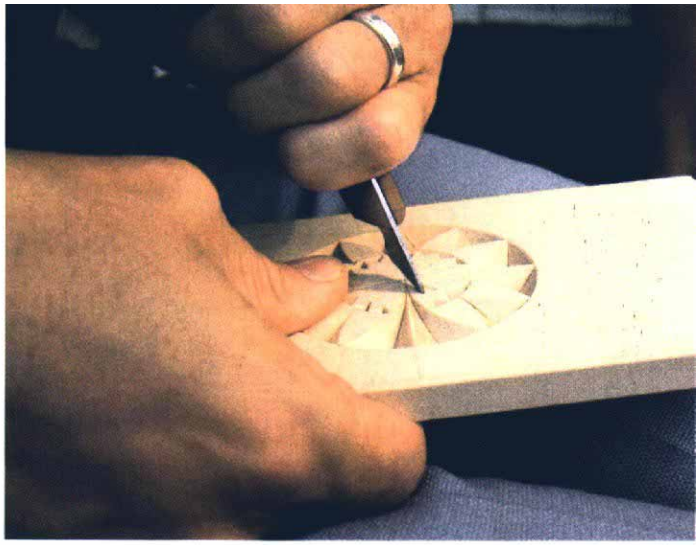
Figure 2: Depth of cut



It takes time to develop the knack of making both cuts meet exactly at the bottom of the V-groove. The depth of cut depends on the width of the V, as indicated by these sample cuts, but the knife angle is always 65°.

Figure 3: Making rosettes





The stab knife's thick edge is ideal for cutting and wedging fibers apart to create decorative indentations.

to achieve the correct depth for various sized chips. If the cuts are too shallow, the chip will not pop out. Then you have to re-enter the incision and try to sever the fibers that were missed the first time. If you don't exactly match the first angle, and you probably won't, you will create a second line on the carved wall which will look like a scar in the finished piece. If you cut too deeply, you create an undercut that robs a work of its crisp look and could weaken the delicate areas.

To remove a crescent, another common design, ease the knife tip below the surface as you pull it along the pattern line. As the blade approaches the other tip of the crescent, reduce the downward pressure and bring the knife tip up so it surfaces precisely at the tip of the crescent. Rotate the piece and cut the wide rim of the crescent. Rotate the piece again and make another cut right next to the first one to free the crescent-shaped chip. If you're cutting a curve with a small radius, you'll have to raise the knife on its tip, leaving a minimum of blade in the wood for a smooth cut. If you want to make a straight trough, cut along the line freehand rather than try to fit your hand and blade along a straightedge. You'll cut amazingly straight if you concentrate on the line right in front of the cutting edge. Your hand will follow your eye.

If you do all of your cuts correctly, there is a special reward: the chip springs from the work like a prisoner released. By the end of the week, we novice carvers were beginning to exclaim "Aha!" with increasing frequency, as the chips began to pop out

Sharpening chip carving knives

by Wayne Barton

You'll never be a top-flight carver until you learn to sharpen your knives to a razor edge. If you already have a method that works for you, use it. If not, here's a simple method of getting a perfectly sharp edge at the correct angle on your chip carving knives. Even a brand new knife, which seems sharp, needs this treatment before it is fit to carve with.

The knives I use are the ones principally used by Swiss carvers. Even on large scale work, like ceilings and walls, these short-bladed knives are the tools used, although sometimes a carver may put the blade in a 2-ft. section of a broomstick so he can use his shoulder for leverage. The blade is designed to strike the work at the correct angle when your hand is held in the position described on p. 65, so don't change the blade's shape when you sharpen.

To sharpen the knives, you need two stones, a medium-grade India and a hard, smooth-as-glass honing stone. A hard Arkansas is good. In recent years I've substituted a ceramic block for the hard Arkansas. The block doesn't need to be lubricated with water or oil the way some stones do, so it's great for honing knives wherever you go. I often carve and hone my knives while traveling, if I can get a friend to do the driving.

The stones must be flat. Test them by putting a straightedge across the length and width of the stone. You shouldn't be able to see any light under the straightedge. If the stone isn't flat, replace it or flatten it on a steel plate covered with a little oil and carborundum powder. If you use a stone that isn't flat, you'll round the tip of the knife, changing the cutting angle. You'll also find it easier to maintain a smooth, straight edge if you use a stone that's large enough to sharpen the entire knife edge at once. Unlike many carvers, I never use a leather strop on my knife. It's too easy to use a strop wrong, which will round over the knife edge and tip, decreasing the cutting efficiency. My advice is to stick with the edge you get off the stone.

To sharpen the cutting knife, drop a little oil on your India stone, hold the blade flat on the stone, then raise its back edge about 10°, as shown at right. Don't sharpen at a greater angle or you'll create a thick, obvious bevel that makes the knife drag as you pull it through the wood. Move the knife back and forth on the stone, first one side then the other, using the same pressure and number of strokes on each side. Concentrating the pressure on the heel of the blade helps avoid rounding the tip.

A burr may develop as you sharpen the blade. You can feel it if you run your finger along the flat of the blade, from the back toward the cutting edge. Once you raise a burr along the edge, continue sharpening in the same manner, but use less pressure. Work one side of the knife, then the other, until the burr falls off. If the edge is sharp, it won't reflect any light when you rock the blade slightly under a strong light as you look at the edge from a 45° angle.

Hone your blade on the hard Arkansas just as you sharpened it on the medium stone. Continue until you have a mirror finish that will let the knife slice smoothly through the wood. Be careful to hone each side of the blade equally. You don't want to raise a burr that will drag through the wood, possibly tearing the fibers.

When the blade looks and feels right, cut diagonally across a piece of wood. If the knife drags, check for a burr, a bevel behind the edge, or a dull light-reflecting edge. You can often eliminate the problem with the honing stone, but if you've really been careless, it's best to go back to the India stone. If the knife cuts smoothly, you're ready to start carving.

Once you're knife is sharp, never let the blade get dull. Hone the blade on the hard Arkansas or ceramic block as soon as you feel it dragging and have to use more pressure to make the cut.

The stab knife is sharpened the same way as the cutting knife but at a 30° angle on each side. You want a definite bevel here. The stab knife doesn't cut—its thick edge should indent the wood by wedging the fibers apart. Even though the stab knife isn't used nearly as much as the cutting knife, it does add a nice decorative touch to your work. You'll be surprised at how much you can do with those little indentations. For a start, use your cutting knife to cut a flowing flower stem, then stab around the end of the stem to suggest a billowing flower. *—W.B.*

Sharpen the cutting knife at a 10° angle to the stone, as shown above. For a straight, smooth edge, always work on a stone that is large enough to hone the entire blade at once.

of their basswood prisons. Those crisp cuts are too good to hide under a heavy finish, so Barton just sprays his carvings with dull polyurethane after erasing any remaining pattern lines and lightly sanding the surface.

As the week went on, we advanced from borders to grids, then on to challenging and beautiful rosettes. They're easy to lay out with a compass once you get the knack of it, as shown in figure 3, facing page. You can create your own designs, or use the ones in Barton's book. If you develop your own designs, you will probably find that it is much easier to work with chip carving's two-plane perspective than three-dimensional, in-the-round-carving.

We wrapped up the week with a session on free-form carving and lettering. Barton was right. We *could* carve just about any design. But it would take many practice cuts before we could produce first-class work. Like beginning piano students who could plunk out a melody by Mozart, we were not quite ready for Carnegie Hall.

If you like objects with a hand-made look and feel, you'll like chip carving. Machines are often used for in-the-round carving, but *kerbschnitzen* is unique—perhaps the only technique in the woodworker's repertoire that a machine can't duplicate. □

John Hines is a furniture designer and builder in Weatherford, Texas. Barton's school is Alpine School of Woodcarving, 225 Vine Ave., Park Ridge, Ill. 60068, (312) 692-2822. For more about kerbschnitzen, *see* Chip Carving Techniques & Patterns, *by Wayne Barton, Sterling Publishing Co., Inc., 2 Park Ave., New York, N. Y. 10016, 1984. Chip carving knives and ceramic sharpening blocks are available from the Alpine School and several mail-order tool supply houses. Taunton Press is planning a video tape next year featuring Wayne Barton's techniques.*