The Importance of Being Shallow

Learn the secrets for carving shallow, incised letters.

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In the remote corner of the sign industry, where signs are carved and gilded, "being shallow" has its advantages. I'm not saying *sign-makers* lack "gravitas" (we know how dignified and solemn we are). This article examines how shallow-carved, gilded letters provide better visibility and save fabrication time.

Light reflected from an overly deep-carved letter scatters in many directions and reduces visibility. A shallow letter reflects light more directly and uniformly back to the observer, thus enhancing visibility (**Fig. 1**).

Besides improving visibility, shallow carving minimizes "stock" removal and carving time. Also, carved letters are typically gilded with 23k goldleaf, and shallow-carved letters require less gold (**Fig. 2**). Increased letter depth corresponds to a larger letter face, which will also require more goldleaf.

You can shallow-carve each letter, whether it's totally straight lines or curved, or a combination of both, by properly using chisels and gouges.

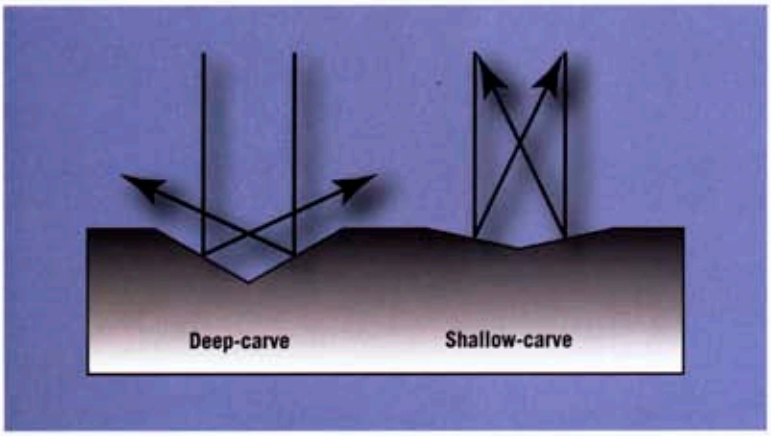


Fig. 1: Shallow carving (*shown on the right half*) exposes more surface area that can reflect light, whereas deep carving scatters light.

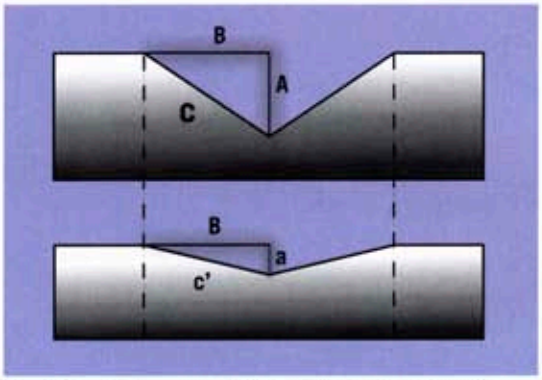


Fig. 2: A shallow-carved letter (*bottom half*) requires less goldleaf than a deep-carved one. The hypotenuse "C" for the deep-carved letter is longer than the hypotenuse "c" for the shallow letter.

Shallow-carving Tools

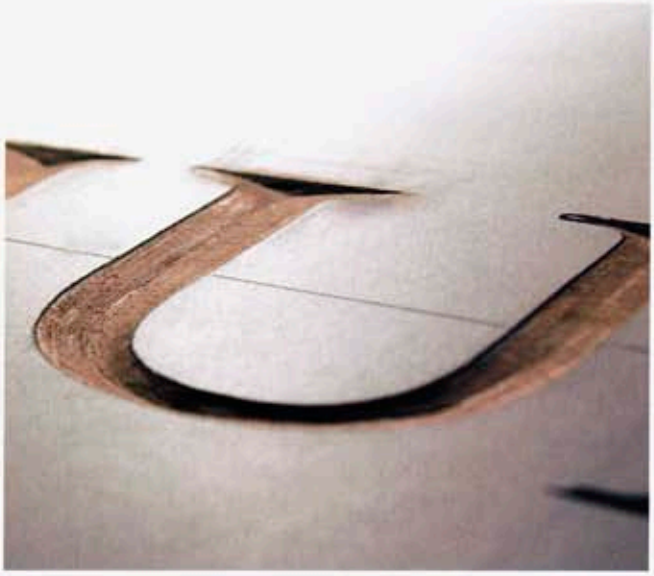
Carving tools come in two forms: the chisel and the gouge. A chisel has a flat-surface, beveled blade similar to the common carpenter's chisel. A gouge is a beveled tool with a "sweep," or curvature. Chisels and bevels are available in various widths and, in the gouge's case, various sweeps.

You can't use your carving tools correctly if your work area isn't properly illuminated. Carvers must rely on shadows to reveal shape, dimensionality and detail. Overhead lighting, which suits most situations, obliterates shadows and hides details. Set up two light sources several feet from the workbench; this can supply incident lighting.

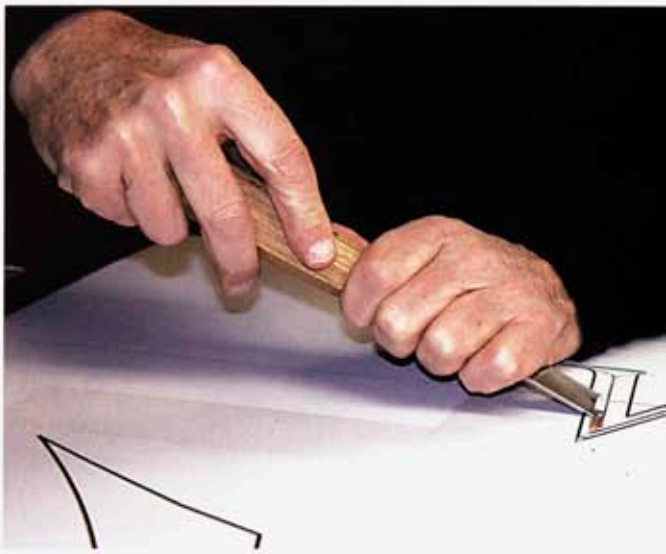
Always hold a carving tool with two hands. One hand firmly grasps the metal shaft, while the arm and elbow are anchored to the bench top or substrate. The other hand pushes the blade forward. Carvers must become ambidextrous to approach the letters at different angles. Whether the left or right hand grasps the metal, anchoring the arm to the substrate helps control the tool.

Pushing the tool through the substrate often requires some assistance. Some carvers use a mallet to tap the tool's wooden handle. However, I use my hand as a mallet because it affords me much more control.

To "soften the blow," I usually wear hand mallet pads or bicycling gloves. Occasionally, to direct the chisel edge in a more controlled fashion, I grasp the chisel like a pencil with my left hand, while the right hand guides the movement.

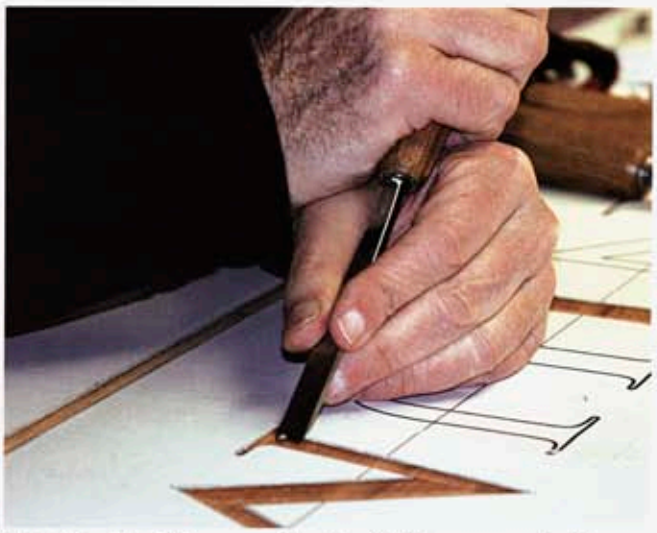


Indirect lighting enhances and reveals carved-letter details.



Always hold the carving tool with both hands. The hand closest to the work grasps the tool, and the other pushes the blade forward.

Some carvers use a mallet to push to tool through the substrate, but I use my hand and a mallet pad between the palm and the tool.

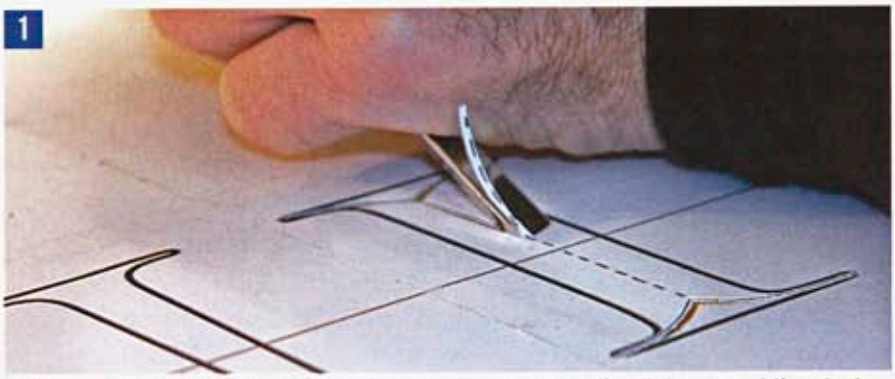


Grasp the chisel like a pencil and guide the movement with your free hand to achieve tighter control.

Incise Carving Step by Step

Carving incised letters begins after the panel is coated with primers and topcoats. A removable vinyl mask, such as GerberMask I, is then applied to the surface. The layout pattern can be cut into the mask, or it can be applied atop the mask. Carving through the mask, topcoats, primers and substrate produces a template, which will eventually be removed after coating, sizing and gilding the carved letters.

1



The key to shallow carving is to begin with a shallow "root line," the central line that's equidistant from the sides of the letter form. A v-parting tool carves the root line. A very deep root line results in a deeply carved letter. Therefore, use a shallow v-parting tool with 3- or 4mm sides; anything larger will produce a deeper, undesirable depth.

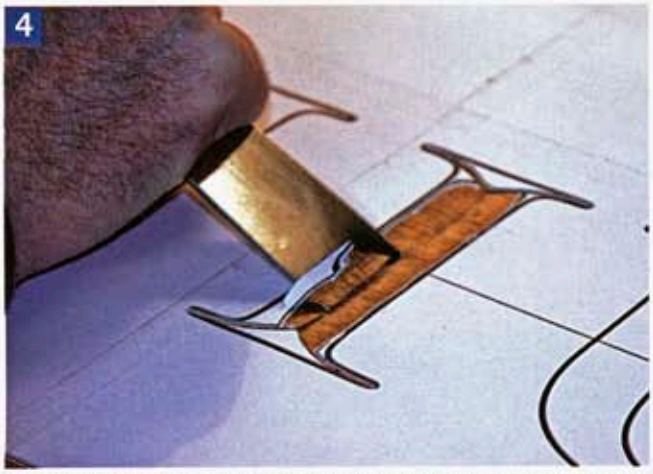
2

We're ready to carve the "stock" — first roughly, then crisply. For a 1-in.-wide letter, start ¼ in. from the root line, using a No. 2 sweep gouge, at a 40 to 45° angle. This steep angle helps the gouge "bite" the material.

3

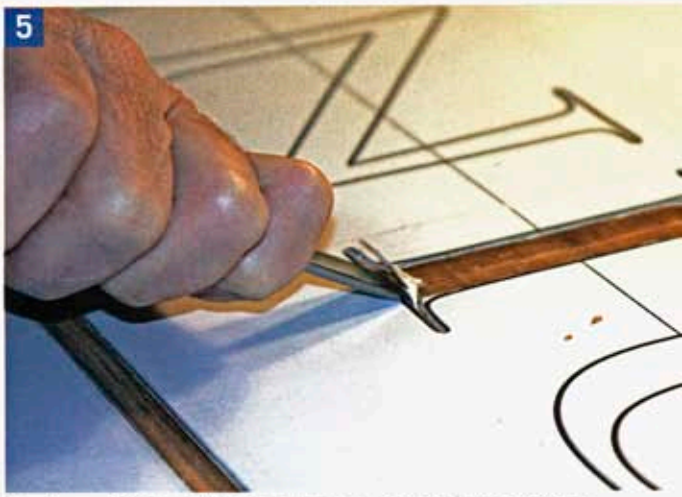
After the initial cut into the substrate, push or tap the gouge forward, toward the root line, but at a lesser angle, such as 20°. What looks like a two-step process is actually completed in one seamless action, which is called "riding the bevel." If you continued the steep "bite" angle with a mallet, the gouge would arrive well below the root line, and the inevitable result would be a deep-carved letter.

4

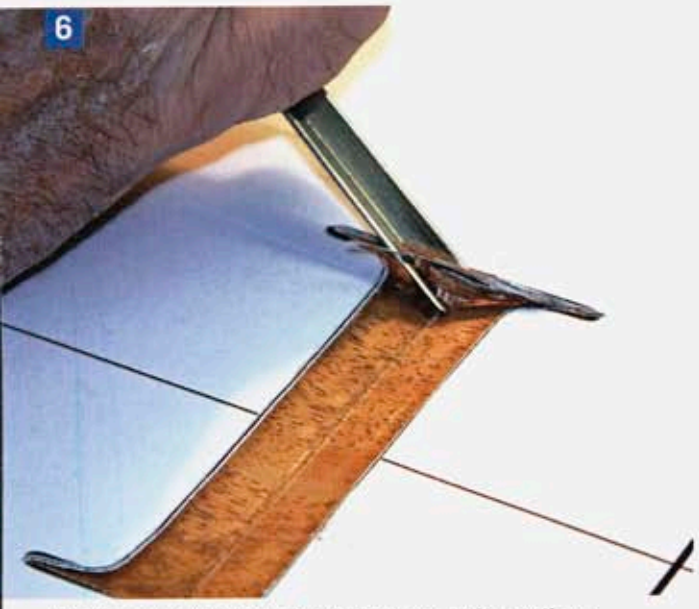


The remainder of the letter is carved "riding the bevel," in quarter-inch segments. Note how the hand position has changed. In carving letters, ambidexterity is as desirable as shallowness.

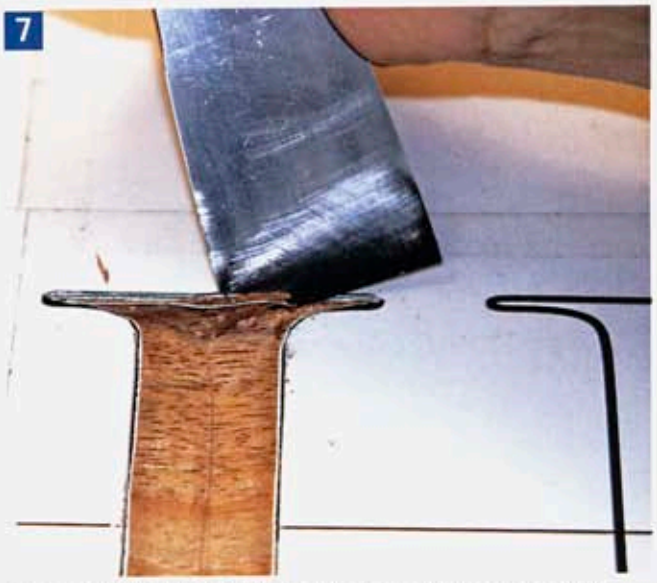
5



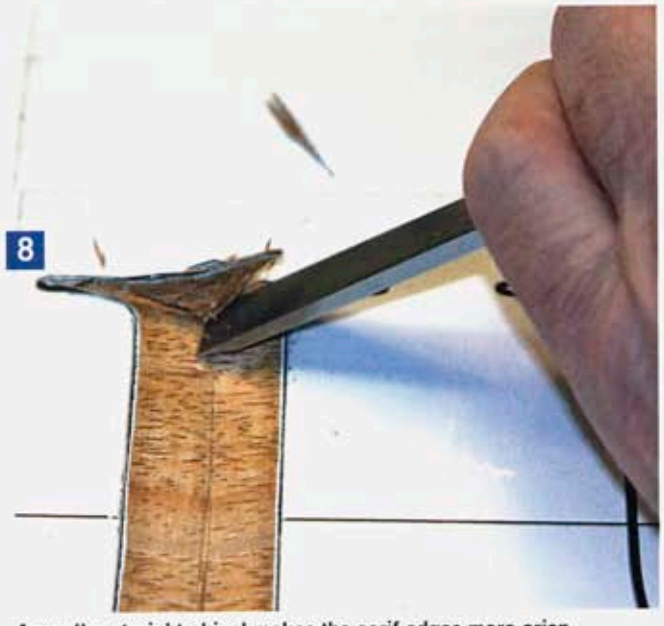
Carving serifs is similarly completed. Remove stock with a smaller size, No. 2 sweep gouge.



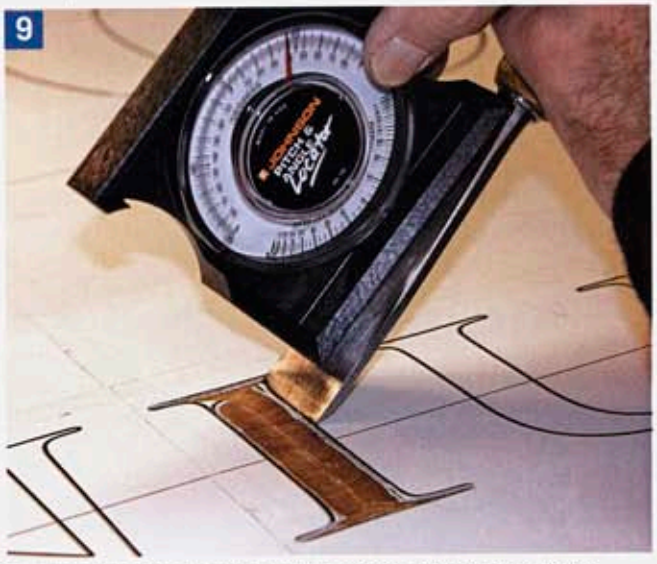
With the v-parting tool, re-establish the serif root lines.



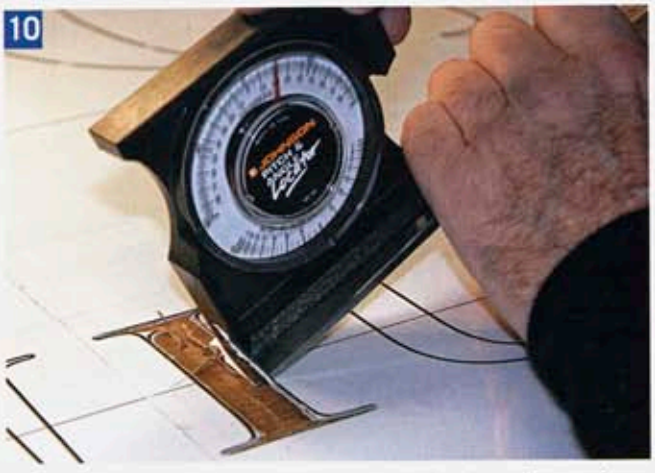
Use a straight chisel to produce a clean, crisp surface for the serif top.



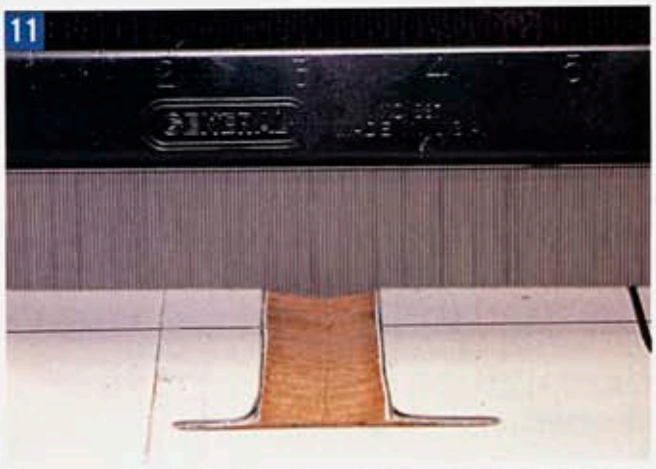
A smaller straight chisel makes the serif edges more crisp.



To smoothly and cleanly carve the letter edges, use a large, straight chisel with the familiar "bite angle" and "riding the bevel." Successive chisel slices should overlap previous cuts.



The chisel is pushed downward as well as "backward" over the previously cut surface to preclude a "step-work" of cuts. In effect, each cut serves as a template for successive cuts.



To measure the depth of our carved letter, we can employ a contour device. This measurement reveals a root line that's slightly more than ⅛ in. deep.

Carving Curved Letters Step by Step

Carving letters that contain curvature, especially in wood, requires some additional techniques. In wood, we must know the grain and "honor" it. To explain this, we will employ an analogy as shown in **Fig. 3**.

Think of water flowing from either side toward a raised letter "O". The water flow-lines show the directions the water will take. These flowlines also represent the direction that the carving must take. On the inside of the letter, the different flowlines show the directions the carving must take.

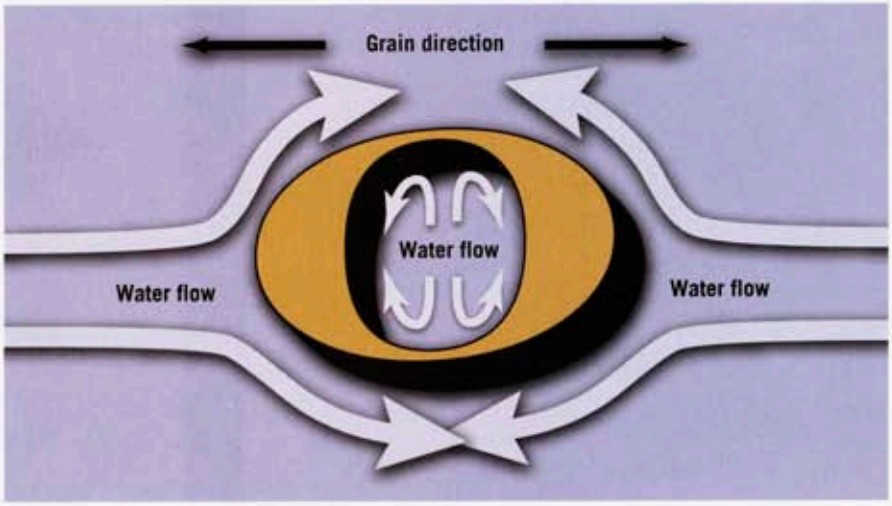
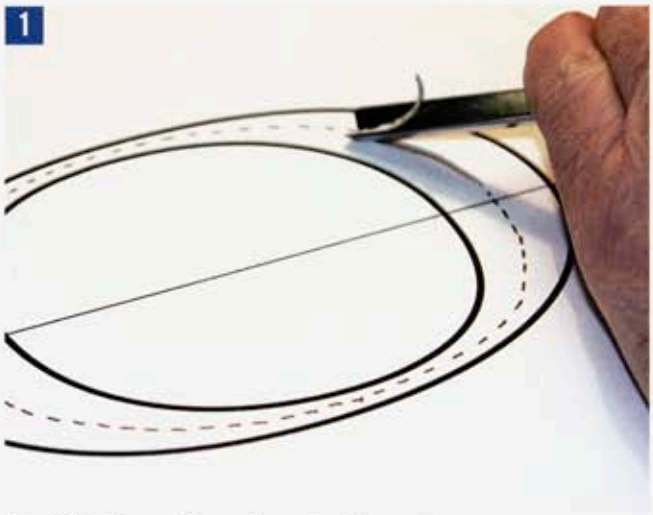
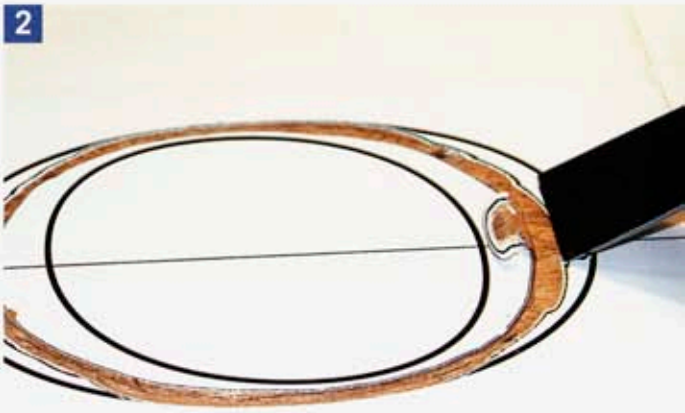


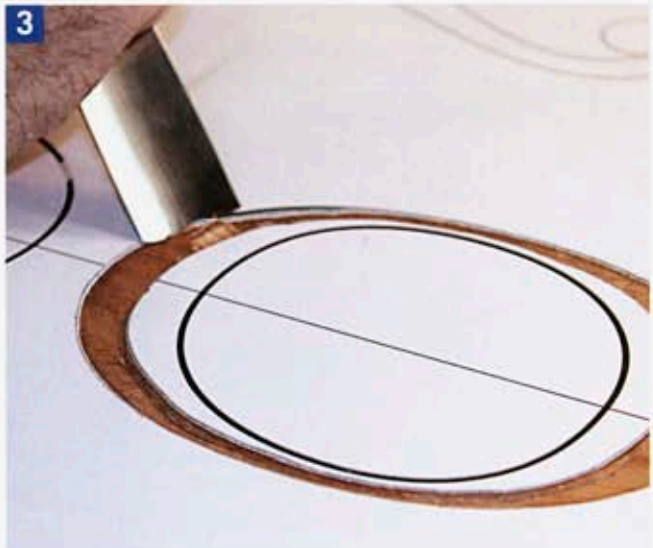
Fig. 3: Flowlines show the direction the carving must take.



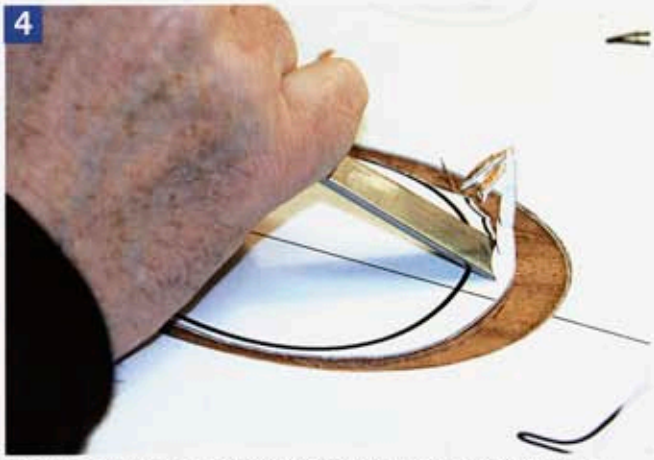
Establish the root line using a No. 3 sweep gouge.



After you have established the root line, use a No. 3 sweep gouge to carve quarter-inch passes that follow the directions given by the water analogy.



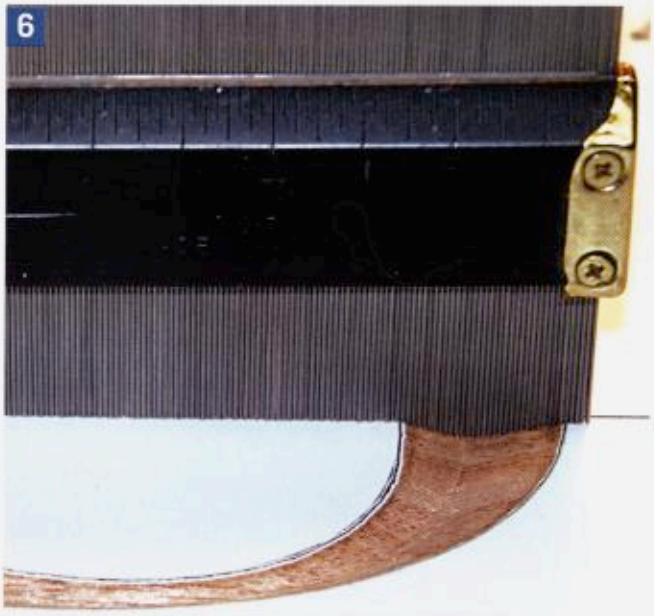
Having completed the rough cuts, proceed to the fine, crisp cuts.



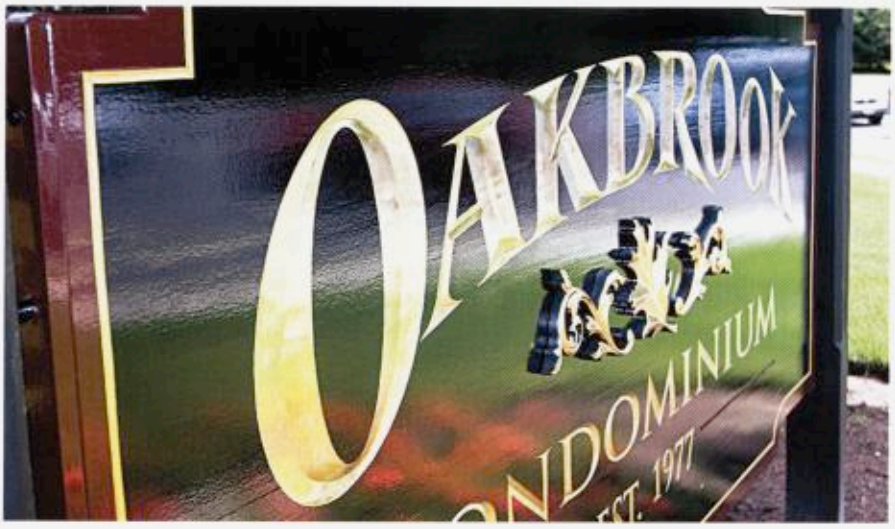
Maintain the proper direction of cuts. Overlapping the cuts precludes "step cuts" and ensures a clean, smooth surface.

Use different tools to carve the O's inner concave curvature. Following the water-flowline analogy, start with a No. 2 sweep gouge. After two rough passes of ¼-in. widths, the fine cuts can be made.

Counterintuitively, we use a straight chisel to produce a smooth, concave curve. (Remember, in calculus, any curve can be represented by infinitesimally small, straight lines.) Here's the rule: Curved gouges produce convex curves; straight chisels produce concave curves. Here, the chisel works from the bottom of the inner curve to the center.



To see how well the shallow carving was done, apply the profile device and determine the depth (approximately ⅛ in.).



Carved vs. painted

After having mastered the art of shallow-letter carving, you're left with this question: Do I finish the lettering with paint or with gold-leaf? The answer is simple: (Almost) always gild letters that have been carved.

If you paint carved lettering, observers can't discern the letters were carved. Although the stop sign (*left*) is carved, passersby wouldn't notice the effect. So, why carve in the first place? In some situations, such as indoor signage, painted, carved letters are recognizable when closely examined.

But, generally, especially for exterior signage, maximize the opportunity for light to interact with the gold. Let the radiant reflectivity of gold heighten your carving experience. Gold is the fitting crown for your laboriously produced, handcarved lettering. ■

— Francis Lestingi, a former physics professor, has operated Signs of Gold (Williamsville, NY) for 12 years. The shop fabricates handcarved, gilded, wood signs.