ELLSWORTH TOOL for HIGH SHOULDER HOLLOW FORMS

I have designed this bent tool specifically for getting into those hard to reach, high shouldered hollow forms through a small opening. However, because of the extreme angle of the bend, it is very important to; a) open up the cavity so that there is plenty of room for this tool to operate, and b) before beginning the cut, rotate the shaft counterclockwise so that the cutting edge is approximately 5 degrees below horizontal. With the wood now moving slightly away from the edge, this will allow you to 'feel' the contour of the surface before deciding where to make the cut without getting a catch. Then bring the tip back to horizontal to actually make the cut. It's always best to start with larger openings to get used to the tools, and then work up to smaller openings.

Sharpening - To help extend tip life, lightly 'dress' or 'touch-up' the edges instead of 'grinding' them. In fact, you hardly have to touch the wheel to sharpen them. To sharpen the left side of the tip, glide it over the right corner of the wheel. To sharpen the right side, glide it off the left corner. (I dress these corners to a slight radius with the wheel dresser). Avoid sharpening on the face of the wheel, as this will produce a flat spot on the tips. Tip shape should be a round, fingernail shape with edges sharpened about 1/8" to 1/4" up both sides from the end. Use 100-grit or finer aluminum oxide (white, pink or gray) wheels, if possible. Maintain with a diamond hone. Angle of the bevel at the tip (end) should be 15-20 degrees, 5-10 degrees on the sides. Steeper angles produce a sharper edge, but are much more difficult to control, wear down faster, and will chatter on denser woods.

Replacing Tips - Simply heat end of bar with a propane (shop) torch until the tip loosens. Then clean excess glue from hole, cool, and glue new tip in place with "Hot Stuff - Super T" (medium density super glue) along with "Hot Shot" Hardener. Be sure new tip is positioned horizontally in the shaft. Caution: DO NOT breathe the smoke or fumes from the heat of the torch melting the glue!

Handles - For best leverage and control, handles can be made from dry hardwood approximately 15" – 18" long and 1 ¼" diameter. It's best to leave a rough-turned, unsanded surface for better traction to prevent over-gripping - a possible cause of carpal tunnel syndrome. Drill hole for shaft 3/8" diameter and 1 1/4" deep. A metal ferrule can be added, or simply make a ferrule by wrapping the end of the handle with nylon cord and then smearing Super-Glue over the cord to keep it from slipping.

For extra hand comfort and control, you may wish to turn an oval shape on the back end of the handle about 6" up from the end, as described in the "T" video on tools. This area also acts as a reference to the palm of the hand so you'll always know when the cutting tip is horizontal. Just be sure to grip this area on the handle so that it is comfortable to your hand when gluing the shaft to handle:

> Turn the handle to approximately 1 1/4" diameter, then off-set the center point at the back end of the handle by 1/4". Turn off excess until the oval shape fits your hand. Return to original center for drilling hole for the shaft (Tip: place Jacobs

chuck and drill in the headstock for drilling). Glue shaft into handle using either Epoxy or gap filling Super Glue. A black line (magic marker) can then be drawn on top surface of handle to give you a reference for when the cutting tip is horizontal.

Chatter: If chatter occurs using either tool: a) sharpen the tip; b) remove shavings from interior of work piece; c) be sure tool rest is at a height so that tool tip is in the CENTER of the work piece when tool is horizontal. Most of all, try to *cut tangent to the fibers* rather than into the end grain, then lighten the pressure of the cut against the wood and make slooooooooooow cuts that are under control.

CAUTION...CAUTION...CAUTION...CAUTION...CAUTION

Do NOT use bent tool in bottom-center of a bowl for removing the 'nubbin': Tip will slip off to the right of center and engage the upward-rotating surface, flip to the left and lift the shaft off the tool rest. When it comes down...BANG!!! Instead, use the straight tool.

Do NOT use the straight tool for finishing cuts on interior SIDE walls of thin vessels, only in the bottom-center of the form: The energy of the cut is so well supported by the straight shaft; the tip may tear the thin wall of the form. Instead, use the bent tool.

ALWAYS keep heel of hand in contact with tool rest (fingers over the shaft) to give maximum control and prevent tool from wandering during the cut!!!

ALWAYS try to keep back end of handle in contact with your hip or side. This helps provide extra support and control to the cut. Clear out the shavings frequently from interior of work piece: A build-up of shavings on the tool tip can cause it to jam!!!

TAKE YOUR TIME...!!! ENJOY...!!! These are not gouges. A slow, well-supported, controlled cut is far more successful than any aggressive cut.

Sincerely,

David Ellsworth