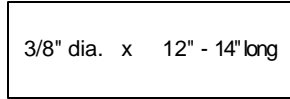


Hook Tool

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Winter '17

1. Material Selection



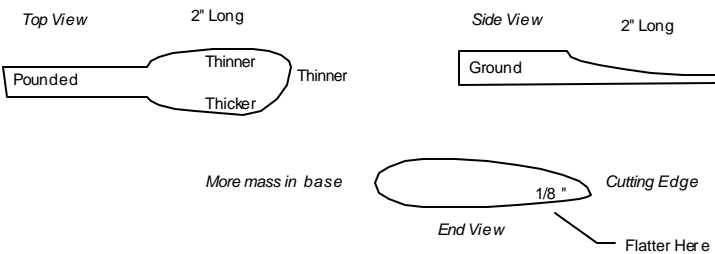
- Tool Steel (non-hss drill rod, shock absorber rod, reamers, etc.). HSS is too difficult to bend in normal shops.
- 3/8" diameter is best for most work but 1/2" works for larger / deeper hollowing.
- 12" - 14" long is plenty with 2" handle sock-in. Can be longer but use thicker stock to reduce vibration.

2. Material Preparation

- For Tool Steel, if it's not already annealed or if you don't know if it has been annealed, do this first. It makes it easier to do the initial shaping and grinding.
- To anneal, heat the area of steel to cherry red and let cool slowly to room temperature. It may take hours.
- A small forge is quickest, MAPP gas is good, Propane torch is fine too but takes awhile to heat up as much.

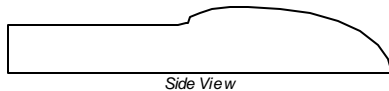
3. Making a Flat

- Pound or grind a flat area on one end of the rod that is about 1.5" to 2" long.
- The flat area should taper down to about 1/8" at the very end.
- There should be a taper on one edge of the flat to a sharp edge. This edge will be the cutting edge.



4. Rough Shaping on Grinder

- Grind a "Butterknife" shape to the flat area.

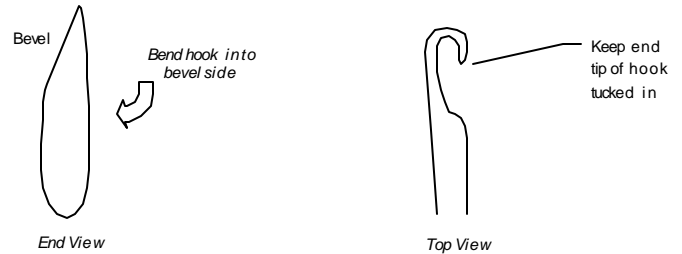


- Grind the flute.

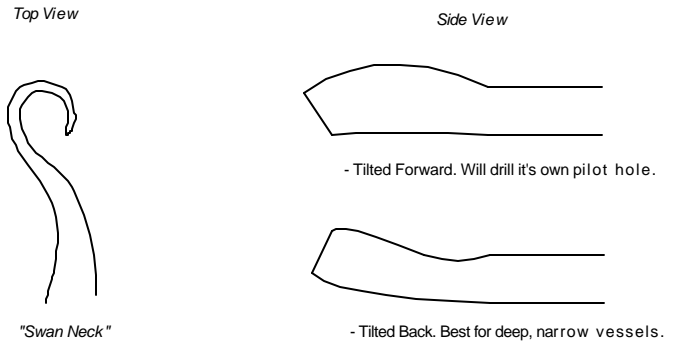


5. Form the hook

- Heat the tool to red in order to soften it.
- Needle nose pliers may work for smaller hooks.
- For larger and more consistent hooks, clamp a large nail in a vise as the hook form and use smooth-jawed tongs or pliers to form the metal around the nail.
- The bevel we ground should be on the inside of the hook. The outside should be flat or slightly convex.



6. Alternative Profiles



7. Heat Treat

- The tool needs to be hardened so it'll stay sharp longer. Heat the hook part to cherry red and then quickly quench in appropriate medium (water, oil, air) until cold.
- Sand and clean off tool so you can see raw steel.
- The tool is now very hard and brittle. Temper it to make it just a little softer. Gently (Propane better here) heat to light straw color very carefully and slowly. Quench again.

8. Refine & Sharpen Edges

- The outside of the hook must be absolutely smooth and polished. This is what rides on the wood. The smoother you make this, the smoother the finish you get on the wood!
- Use a small rotary tool (Dremel, etc.) to refine the bevel. This is where all sharpening will take place. NOT the outside of the hook tool.
- A small diamond cone can be used to hone the bevel.