

TOOLS ON A BUDGET

Gary Webster

CONTENTS:

1. A BRIEF INTRODUCTION TO HANDLE MAKING (A more detailed description of this process is on the club's website OVWG.org, under techniques section-"Shop-made Chatter Tool").
2. A BRIEF DESCRIPTION OF 4 DIFFERENT HOME-MADE LATHE TOOLS. (Photo-depicted).
3. MATERIALS RESOURCES.

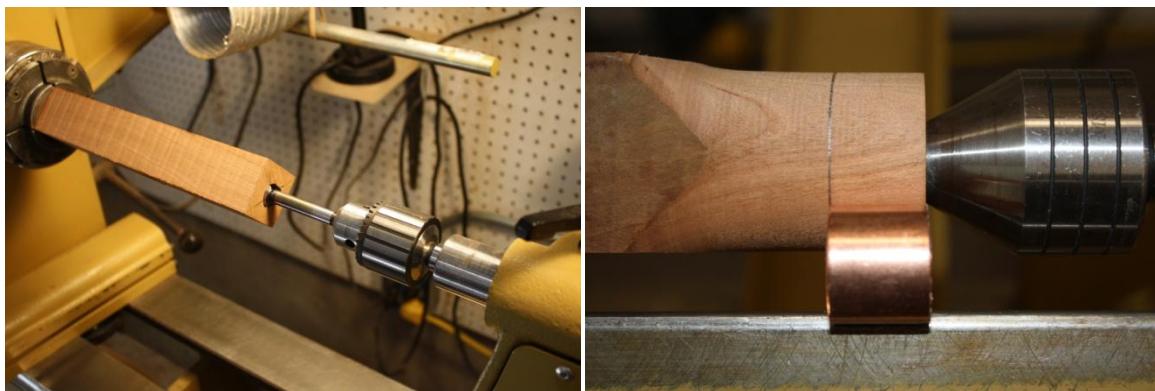
NOTE: USE PROPER PERSONAL SAFETY GEAR, ESPECIALLY "THE GLASSES", WHEN PERFORMING THESE TASKS!

1. INTRO TO HANDLE MAKING.

Lathe tool handles vary in size. Typical rule of thumb is: the larger/longer the tool steel, the larger the handle. (Wood, in this case!) The smallest can be made from 1 ½ inch square stock, with the larger from 1 ¾ to 2 inch square stock. A large bowl gouge may require 16 to 18 inches of length, while a small 5/16 point tool only requires 6 to 7 inches. This is a good contrast. The larger being leverage and vibration absorption, verses the smaller being finesse! A variety of woods can be used for these types of tool handles, although hardwood is preferred for strength. Ash, maple, walnut and cherry make nice handles. Following is a brief summary of this process, photos included.

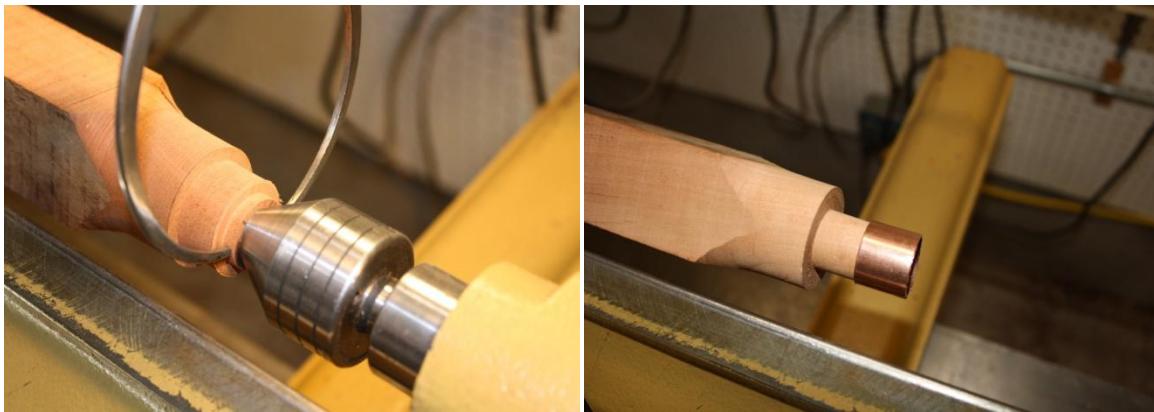
Shown: (Left to right)

1. Mount handle stock in chuck and center tailstock end with a live center. A tenon is not necessary. Use appropriate size jaws. Using a tailstock chuck and a drill bit to match the tool steel diameter, drill to a depth that is suitable for the tool that is being made. Set lathe to a slow, safe speed of around 150 RPM or less. Occasionally back out bit to clear the wood chips and avoid overheating. Remove drill chuck and replace with a cone center, set into the hole that has just been drilled. Round off 2 to 3 inches of the handle on the tailstock end
2. Using ferrule as a guide, mark length onto the handle material. The ferrule shown here is half of a ¾ inch copper coupling. I prefer the ones with the rolled stop. It is a good indicator of where to cut it exactly in half.

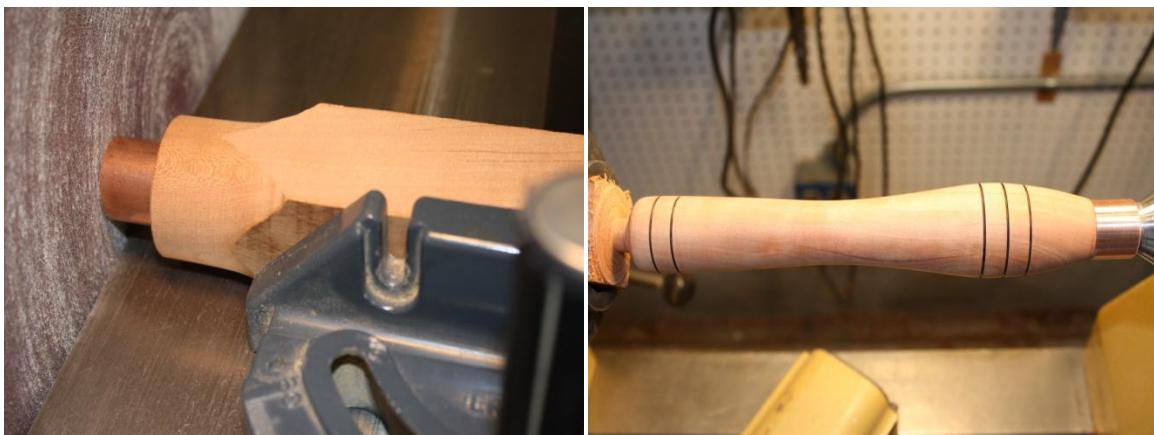


PAGE 2

3. Using properly adjusted calipers, size up a tenon for the ferrule using a parting tool. Avoid overcutting, as a very snug fit is desired. 4. Do an occasional test fit. Once fit has been satisfied, put a small amount of 5 minute epoxy on the tenon and drive the ferrule onto handle with a block of wood and mallet until it seats on the shoulder of tenon.



5. If it is desired to do some finishing work on the ferrule end of the handle for a refined appearance, now is the time to do it. It can be done on the lathe with some degree of success, but I prefer to temporarily remove it from the lathe and place it on a disc sander for this part of the process. That is why I leave the major portion of the handle unturned to this point, so it can be placed against a miter gauge to produce a square end. As I usually make about a dozen handles at a time, this method works best for me. Remount the handle on lathe and turn to desired appearance and comfortable fit in the hand. Leave a bulky portion near the ferrule end to encompass the hidden end of the tool steel for added strength and integrity. Adorn with grooves and wire burning if so desired. Part the handle off and sand smooth the parted end. If the tool involves sharpening on the grinder, first seal the wood with a wood finish or lacquer to avoid metal dust from impregnating the bare wood. It will stain!



These methods will suffice for any tool handle, the only difference being in size/length and the diameter and depth of hole drilled to accept the tool steel material.

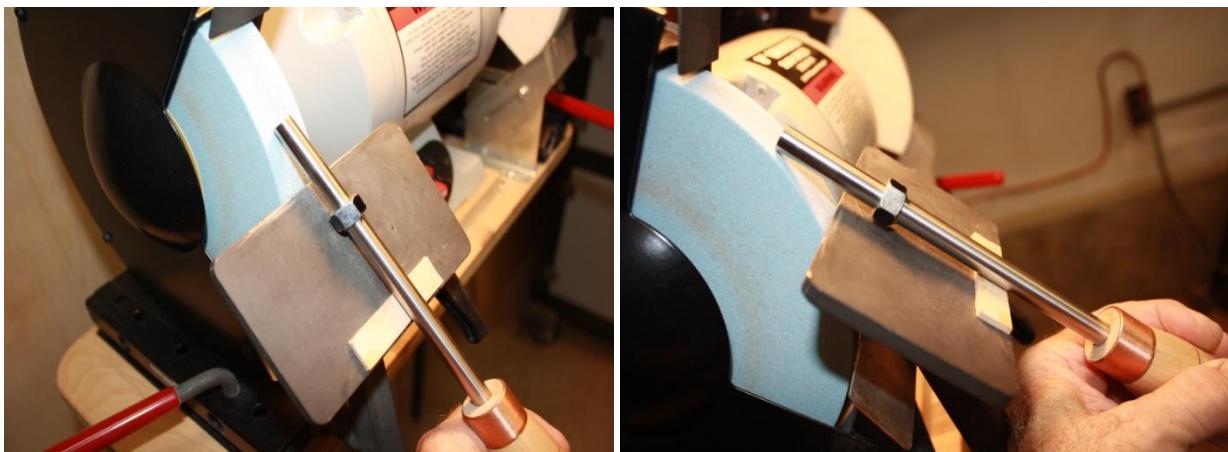
2. "THE TOOLS"

A. THE POINT TOOL

The point tool is the easiest and simplest to make of the 4 tools presented here. It is merely a High Speed Steel rod of specified diameter and length and the handle. Sometimes called a pyramid tool or 3-Point tool (why 3 point, I don't know. It only has 1 point!), it replaces the skew in safely making v-grooves and beads and other minor detail work without the catches of the traditional skew. I have made a variety of these tools, ranging from $\frac{1}{4}$ inch (bottom) to $\frac{1}{2}$ inch (second from top) and a long one for reaching over the tool rest to do fine detail work in deeper forms (top). (Close-up of grind at right).



Follow the previous instructions for making the handle and drill the hole according to the rod size. Mount the rod into the handle with 5 minute epoxy. Remember to seal the wood first before grinding. Take a nut that has just a slightly smaller inside diameter than the rod and ream it out to the same size as the rod. Mount the nut onto the rod about $1\frac{1}{2}$ inches or slightly more from the end with a couple of drops of medium CA glue. Use a small squirt of accelerator for fast set. This is a grinding aid. Mount a small strip of wood onto bottom side of tool rest (with CA glue) for a parallel approach to the grinding wheel. Mark every other facet of nut with a black marker for quick reference. Grinding takes place on the 3 marked facets, keeping tool parallel to rest and not raising or lowering the heel of handle during the process. Give each of the 3 sides equal grinding time, keeping steel cool with an occasional dip in water. Excessive heat will deactivate the CA glue and the symmetrical grind will be lost! Get the point?



B. THE CHATTER TOOL

The chatter tool is an end-grain enhancement device. It is relatively ineffective on side grain. Texturing tools have better effect on side grain. I have made many of these tools for club members and friends. They are very effective for the most part, and the possibilities are endless.



Materials required:

1. Wood for handle
2. 3/8 x 6" pipe nipple (galvanized looks better!)
3. Ferrule material
4. 2 inch strip of 1/2 hardwood dowel, ripped into half with 1/4 inch groove machined into flat side
5. 10-32 thread studded knob
6. Blade material. (A good stiff jigsaw blade with teeth ground off, a heavy gauge leaf rake tine or other suitable metal with tensile strength and some flexibility.

Drill an 11/16ths inch hole 2 1/2 inches deep in handle to accept pipe. Follow prior instructions for this process. Cut the threads off of one end of the pipe and file the area smooth. Make an indentation in pipe about 1/2 inch from this end. Secure pipe with clamp on a v-grooved board onto drill press. Drill a 5/32 inch hole at indentation that evenly splits pipe diameter. Thread the hole with a 10-32 tap. Clean inside of pipe from all oil and debris so half-dowel can be glued directly opposite tapped hole.



CHATTER TOOL CONTINUED



Mix some 5 minute epoxy and spread some around the inside of the hole in handle and immediately place un-cut end of pipe inside the hole until it bottoms out. Glue the half-dowel inside the pipe with the same epoxy. Place the blade immediately into the groove in dowel, screw the knob into pipe and tighten against the blade. This will help hold the dowel into place while the epoxy cures.

C. THE HOLLOWING TOOLS

These will be discussed during the demo. These small tools work great on small items such as ornaments. (NOT INTENDED FOR LARGER VESSELS) Simple to make with 3/8 cold rolled steel, 3/16 square HSS cutter bits, handles, $\frac{3}{4}$ inch copper ferrules and a little epoxy. Special note: the cutter tip on the hooked version must be on center-line with the main shaft of the tool. Depicted in photo on right. ↓



Close up view of 3/16 square HSS cutter bits. They can be purchased in $2\frac{1}{2}$ inch lengths or 4 inch lengths. A $2\frac{1}{2}$ inch piece can yield 3 bits that are substantial enough for use when evenly divided. They can be scored with an abrasive disc on a Dremel or other similar rotary tool and then broken apart. About 1/3 of the

bit will need to be rounded off forming a shank so proper fit can be obtained to place the bit into the 3/16 hole that will need to be drilled into the end of the steel rod. The bit can be secured with medium CA glue and released by applying heat from a torch to the area. WEAR SAFETY GLASSES WHEN PERFORMING THESE TASKS.

D. TEXTURING TOOL: Used for side grain enhancement.

A little more difficult to make than the hollowing tools. This will be discussed during the demo also. Besides the obvious handle, it requires a piece of 5/8 cold rolled steel, one hardened steel wheel from a grinding wheel dresser, a $\frac{1}{4} \times 28$ grade 8 bolt and a few thin washers for spacers.



TEXTURING TOOL COMPONENTS PICTORIAL



3. MATERIALS RESOURCES:

Copper ferrules: local hardware store

3/8 x 6 inch pipe nipples or cut to length pipe: local hardware

10-32 studded knob: local hardware; various online suppliers; some hobby shops

3/8 & 5/8 inch cold-rolled steel rods & grade 8 bolts: local hardware

Hardened star dresser wheels: local hardware; <http://www.florencehardware.com> sku: 335612

Square HSS cutter bits: <http://www.use-enco.com>; <http://www.wholesaletool.com> (search: tool bits)

Round HSS rods: <http://www.wholesaletool.com> (search: tool bits)

DISCLAIMER: The information contained in this file is intended to be educational in nature, assisting those who may wish to make their own tools. It is by no means conclusive. The OVWG and I assume no responsibility for any manner in which this information or the tool may be used or for the welfare/well-being and safety of the user. It is the responsibility of any and everyone who may use this information to observe all safety guidelines in regard to equipment use for production thereof and in the actual use of the tool itself. PERSONAL PROTECTIVE GEAR should be used at all times when making and using any tool!