

Making A Spiral Fluted and Wire Wrapped Dagger Handle

By: Steve Culver, MS

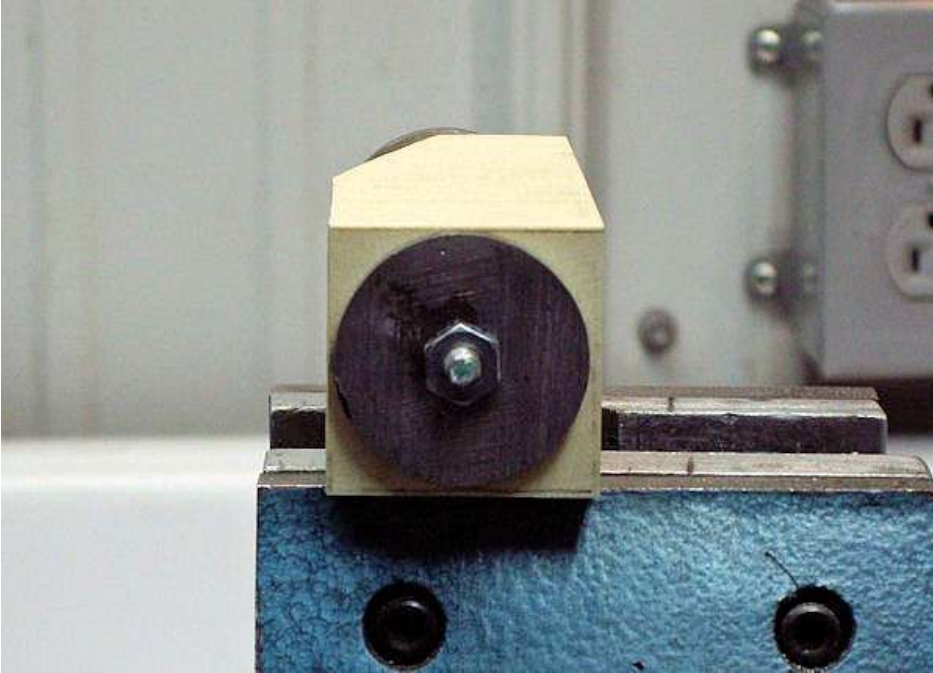
Part 1



Making A Spiral Fluted and Wire Wrapped Dagger Handle

By: Steve Culver, MS

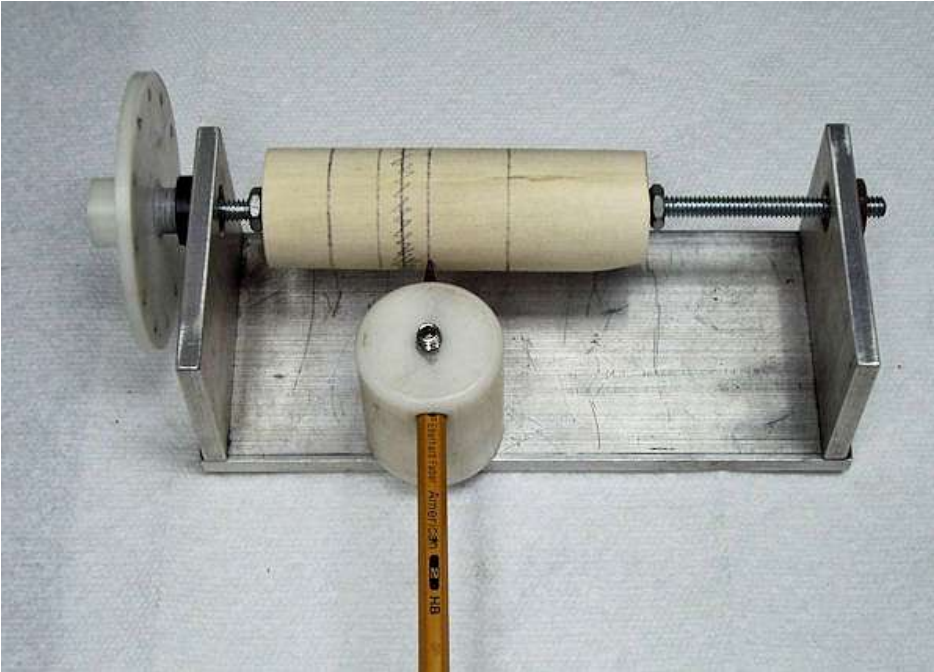
After the rough handle material is drilled through the center, a length of all-thread is passed through the hole. Two turned steel washers are bolted to the ends of the handle material block. These two washers are the same diameter that the finished handle will be at its largest area.



The material is ground down to the washers and is now a cylinder of uniform diameter.



A jig is used to mark grind lines on the handle material cylinder. At this time, two smaller diameter washers are bolted to the ends of the material cylinder. These smaller washers are the diameter that the finished handle will be on each end.



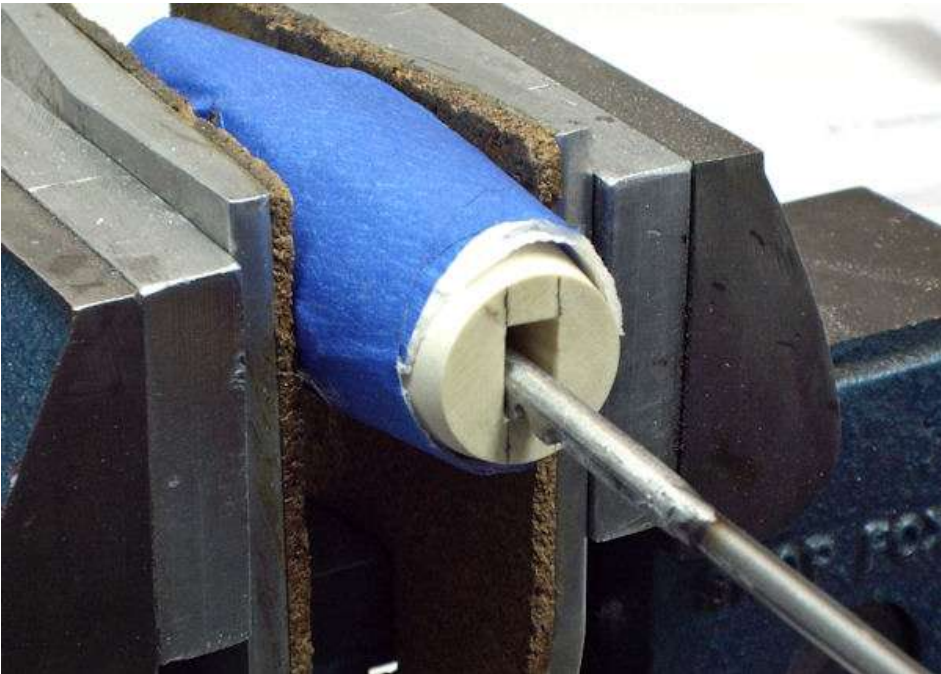
The handle material is rough ground between the washers and the pencil marked grind lines. The rough grinding is then smoothed and blended with a slack belt.



The shaped handle material.



The drilled hole in the handle is opened to fit the tang, using a scraper made from a keyway broach.



The scraper tool and a file that was used to shape the tang opening in the handle material.

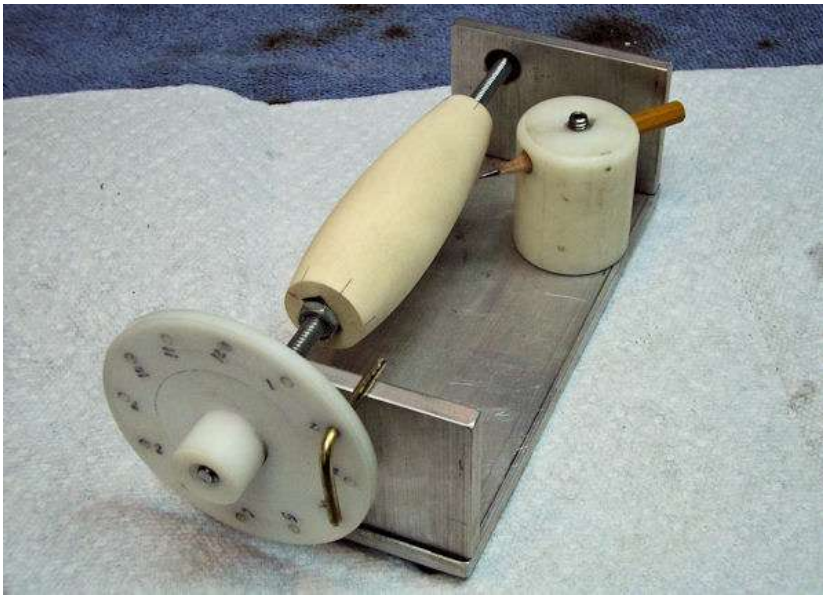


The tang slot in the handle.



The jig in this photo is the "Flournoy Fluting Fixture". This tool was designed by Master Smith Joe Flournoy. The fixture can be purchased from Al Lawrence (Uncle Al) of Riverside Machine Shop. The device has a wheel with 12 evenly spaced holes drilled through it to accept a pin. The pin stops on the frame of the fixture to locate the handle material. A pencil holder is provided to mark lines on the handle material. The intended use of the fixture is to mark evenly spaced lines lengthwise on the handle material. Then, evenly spaced lines are marked around the circumference of the material by spinning the material against the pencil. This creates a grid of squares on the material. Drawing a lines across the corners of the squares creates spiral lines around the handle material. This fixture is handy to use for laying out simple spirals, and is almost essential for laying out gain fluting.

Since not everyone has this fixture and perhaps does not want to purchase one, an alternate method of laying out the lines for spirals is demonstrated here. The fixture is being used just to place evenly spaced marks on the ends of the handle material. This handle will have six flutes, so each end of the material gets six, evenly spaced marks. Without the fixture, this can be accomplished by inserting a piece of all-thread through the material and threading hex nuts against the ends of the material. The points of the hex nuts are used as a reference to mark the lines for the fluting.



A small notch is made on the edge of the handle material with a three corner file. These notches are made on both ends of the material at each of the reference marks.



The filing jig shown below, is made from three pieces of angle iron. A 1 x 1 piece of angle iron is used to make the jig's base. Two pieces of 2 x 2 angle iron form the uprights. The 2 x 2 angle iron pieces are drilled to allow for a length of all-thread to pass through. Nuts on the all-thread are used to locate the handle material in the jig. Nuts on either side of the uprights can be tightened to create resistance to the material spinning in the jig. The angle iron base makes it easy to clamp the jig in a vice.

The material is placed in the filing jig and a string is used to lay out the spirals. The string is held by the small notches that have been filed into the ends of the handle material. The type of string isn't too important. It can be dental floss, monofilament fishing line, etc; it just needs to be fairly strong so it can be pulled tight without breaking it. In this photo, a couple of strands pulled from some leather stitching thread is being used. On this handle, the spirals will make 1/2 turn around the handle, so the string is placed accordingly. One of the problems with this method is that it is difficult to get the string wrapped around the handle material evenly for each of the spiral lines. This issue will need to be corrected later. So, just do the best you can at pulling the string across the material and into position. Holding the thread tightly, use a mechanical pencil with soft lead to draw a line against the side of the string. Try not to move the string as you draw the line. Once all of the lines have been marked, it is time to correct any misalignment. Measure between the lines to check the spacing between them and redraw any lines that are out of place. Take your time to make sure that all of the lines look correct.



The soft lead lines are easily smeared and/or rubbed off, so a small three corner file is used to cut them into the handle material. These file cuts will also help with the next step in the process.

This three corner file is actually made for pointing up gun checkering. The bent tip makes for a nice small contact area and also helps to sight down the pencil line while cutting.



Here's where you have a choice to make; do you cut the flutes in first, or the wire grooves? Some makers like to cut in the flutes and then center the wire grooves on the land area left between the flutes. Shown here is how to cut the wire grooves first and then cut the flutes between them.

The tool below, is used to cut the wire grooves. It is a file handle, that has a shortened Exacto Knife handle inserted into it. A piece of hacksaw blade is ground to be held by the Exacto Knife chuck. The hacksaw blade has been thinned to cut a groove the appropriate width for the wire. The blade is ground to be slightly thinner than the groove needed to fit the wire. It is difficult to not wobble around and saw a groove wider than the blade. You don't want the wire to be sloppy in the groove. If you actually cut the groove too narrow, it is easy to fix that later.

.020" diameter wire will be used on this handle. After twisting the wire, the diameter will be .040". The hacksaw blade has been ground to .036" for use on this handle.

To control the depth of the cut, steel plates have been Super-glued to each side of the hacksaw blade. The plates were ground to be shorter than the height of the blade. The blade is placed with the teeth up on a flat surface. The plates are affixed to the blade in this position.

The twisted wire is to have one half of its diameter set into the handle material (.020"). This tool has .025" of the teeth exposed on the blade. There will later be some finishing done to the surface of the handle material, so the depth of the wire cuts will be reduced by that process.

