Small Spoke Shave

Using Hock #SP044 Blade, by Mark Kowalski

List of Materials

- Hardwood block, ¾" x 1.25" x 11".
- Hock #SP044 spoke shave blade.
- (2) Set screws, #6x32, ½" long.
- 1/16" Hex wrench (or whatever to fit the set screws)
- Drill bits – 1/8", 9/64".
- Sandpaper - #120 and #220.
- Finish of choice.

Tools

- Band saw, bow saw, or fret saw.
- Carcass saw or other fine (14ppi) crosscut saw.
- Router with 1/8" straight bit.
- Drill press.
- 12" rasp, 8" or 10" bastard cut file.
- Optional – plane maker's and cabinetmaker's floats.
- Ruler (1/64th markings at the finest)
- Small square.
- Marking pencil and/or scribe.

Time Required

- Approximately 6-8 hours.

Procedure

1. Square up the block of wood reasonably well. The grain should run along the long dimension. The smallest of the dimensions is the thickness – the dimension which is normally vertical in use.

   A fine grained, very hard wood, such as rock maple, is best for this project.

2. Mark the center of the length (11" dimension) across the width (the 1.25" dimension) on the side which you choose to be the bottom of the shave. Mark this line with an arrow to indicate your choice for the front bottom edge of the shave. Then, mark a line 3/8" in from rear edge. The holes for the blade tangs will be drilled on this line. (See Figure 1).

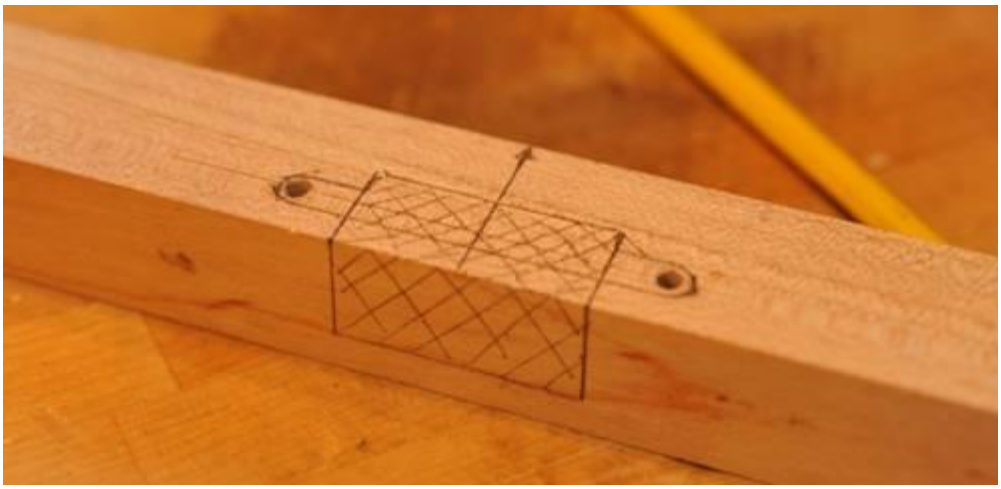

Figure 1: Center line, 3/8" line, blade outline, throat definition.

3. Measure the center to center width of the tangs. Nominally, Hock #SP044 is 2.25 OC, but the centering on your blade may be +/- 1/32". Divide that measurement in half and mark that distance from the centerline for the tang holes.

4. Verify that the drill press table is square to the drill bit. Center the drill bit on the hole mark, then clamp the wood to the table. Use a 9/64" bit to drill the tang holes (a 1/8" bit will work but you will need to enlarge the hole a little by holding the piece by hand and letting the bit rotate loosely in the hole).

5. Insert the blade into the shave from the bottom (bevel to the front), then trace around it in pencil. Remove the blade.

6. Define the throat of the shave using the blade outline just marked. Extend a line along the width from the front of the blade outline to the rear edge (Figure 1). Do the same for the other end of the blade outline. Bring these lines over onto the rear side to 1/8" from the top edge. Connect the ends of these lines along the length of the rear side. The triangular prism defined by these lines is waste and will be removed.

7. Using a fine saw, cut down on each end of the prism until the saw blade just touches the intersections of the cross-width lines with the along-length lines. Make 5 or 6 more cuts on the interior of the waste and then knock out the waste with a chisel. Use rasps, files, and/or floats to smooth the throat (see Figure 2).

Figure 2 Throat cut away and smoothed.

8. To bed the ears of the blade, I prefer using a router with a 1/8" straight bit and routing by hand. The router is pretty much guaranteed to provide a flat bed for the ears and it is not difficult to control where material is removed. . An exact fit of the ears into these mortises is not required – a reasonably good fit will be just fine.

Clamp the body in a vise so the bottom is available to rest the router on and the router base does not interfere with any part of the work surface. Set the initial depth of cut to 3/32" (the thickness of the blade) and perhaps an additional 1/64". *You may have to repeat this step if you relieve the leading edge of the body a little too much and need additional inset of the blade.* Trial fit the blade to the body after routing; you may need to clean up the mortise corners to get the blade seated properly.

Set the router aside but leave all its settings unchanged. You may need to use it again.

9. If you've selected a fine-grained, hard wood, you shouldn't need to provide any wear apron on the leading edge. If you did not, this is when you should cut the mortise for the wear plate, glue it in, and lap it down even to the base of the body.

10. You have a choice on whether to make your shave's depth of cut be constant or adjustable. If you choose constant, you must get the mortise depth exactly right now and for all time; your shave will always cut whatever thickness of shaving you end up with.

    To me, this is not very useful. I prefer to make the depth adjustable; it can even have two different depths of cuts at the same time! To do this, you drill two more holes to

the inside of the tang holes that will accept #6-32 set screws.

Needless to say, centering another hole between the tang hole and the throat requires you to have your drill press squared up precisely and the work piece clamped down securely. It can be done, and quickly, if you are in the habit of maintaining your press in top condition.

A #6-32 set screw will hold well in a 1/8" hole; it will also not be so tight as to cause the wood to split out (another vote for rock maple as the material of choice!). (Figure 3).

After you've drilled the holes, insert the set screws and thread them down until the bitter end just meets the mortise surface flush.

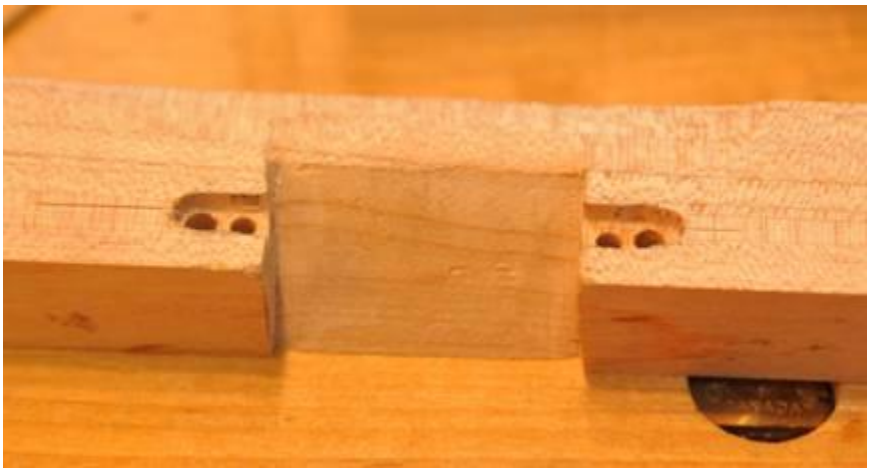

Figure 3 Showing set screw holes

11. Now, relieve the leading edge of the bottom in front of the blade about 2°. That's not much relief, you say, in a bare ½" of space from the front of the throat to the edge, is it? You will do OK, though, if you line up a straight edge on the front vertical face, parallel to the edge with the bottom, and leave enough space to just get a pencil line drawn with the barest amount of white space showing along the edge. Close enough!

    Use rasp and file to carefully remove the waste between this pencil line on the front face and the front of the throat. If you remove too much, you'll need to deepen the mortises for the blade's ears; if you remove too little, your shave won't work as well as it could.

12. Try it out! Insert the blade, finger-tighten the knurled nuts on the top of the tang posts, and try to shave some wood. If you get no blade bite at all, loosen up the nuts a little and turn down the set screws. Repeat until you get a reasonably fine shaving all across the blade. If you get very thick shavings, back out the set screws and try again. Still have way-too-thick shavings and the set screws are backed out all the way? You'll have to go back to the router and deepen the mortises. Not a big deal, it will only take a couple minutes; ***just remember to not run the router bit into the set screws!!!***

13. Shape, sand, and finish! Some suggestions on shaping (see photos on last page):
    a. The leading edge is where your fingers grip and this is normally where a shave is cut back into the classic shave handle shape.
    b. The bottom of the handles is cut back to provide some clearance of your finger tips from the work piece.
    c. Thumb indentations on the trailing edge provide some extra purchase.

    You can cut back the top of the throat to provide extra space for fingers to clear shavings (and also for visual clearance into the throat).

    I shape first on the band saw and then finish with rasps, files, and 120 to 220 grit sandpapers. My finishes of choice are Watco Danish Oil to enhance any figure in the wood and 6 to 8 top-coats of Qualasole. Some paste wax will help the leading edge to glide over the work.

    Here is the finished shave:

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See also: http://www.hocktools.com/teachshave/TEACHSHAVE.HTM