Segmented Ring Sanding Jig

When flatting segmented rings less than 6” in diameter with the Performax 16-32, I found the rings have a tendency to pop up and get caught between the rollers and sanding drum. To avoid this problem, I developed this jig.

The jig, Figure 1, works by gripping the ring between two sharp edges to prevent the ring from flipping up and with one of the edges stationary prevents the ring from slipping back as it is sanded.

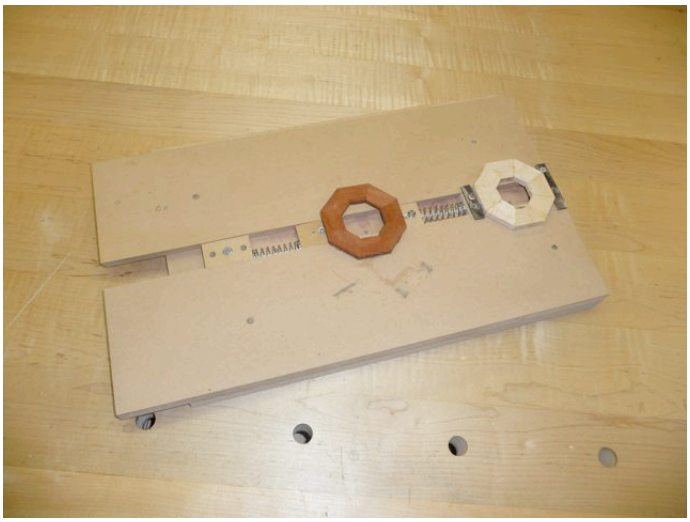

Fig 1

Drawings make it easier to visualize the parts and functions. The jig, shown in Fig 2, consists of a base and two sides all made of ¾” MDF. The base has 17/64” holes down the center spaced 1” apart. The sides, with one edge cut at 15^0, are mounted on the base to form a dovetail groove. Four blocks, with three 17/64” holes, slide in this groove.
To hold the rings in place, I originally used two strips of 1/8” steel with one edge sharpened. One mounts at one end of the jig and the other mounts on one of the sliding blocks. Subsequently, I found flathead ¼” bolts with sharpened top edges hold the segments also. Both approaches are shown in Figure 2.
The first ring’s trailing edge is placed against the steel strap and the sliding block with the corresponding steel strap is brought against it. The sharpened edges bit into the segmented ring just enough to prevent the ring being lifted. Pressure is maintained by a spring that is between the first and second sliding block. I use a 5/8” spring 3” long made of .045”

wire. Found them at the local hardware store. The second block is held in place by a flathead bolt that goes through the sliding block into the base. This bolt head is also used to hold the trailing edge of the second ring. The second ring's leading edge is held in place by the third sliding block with pressure maintained by the spring between the third and fourth sliding block. The fourth sliding block is held in place by the bolt that goes through the block into the base.

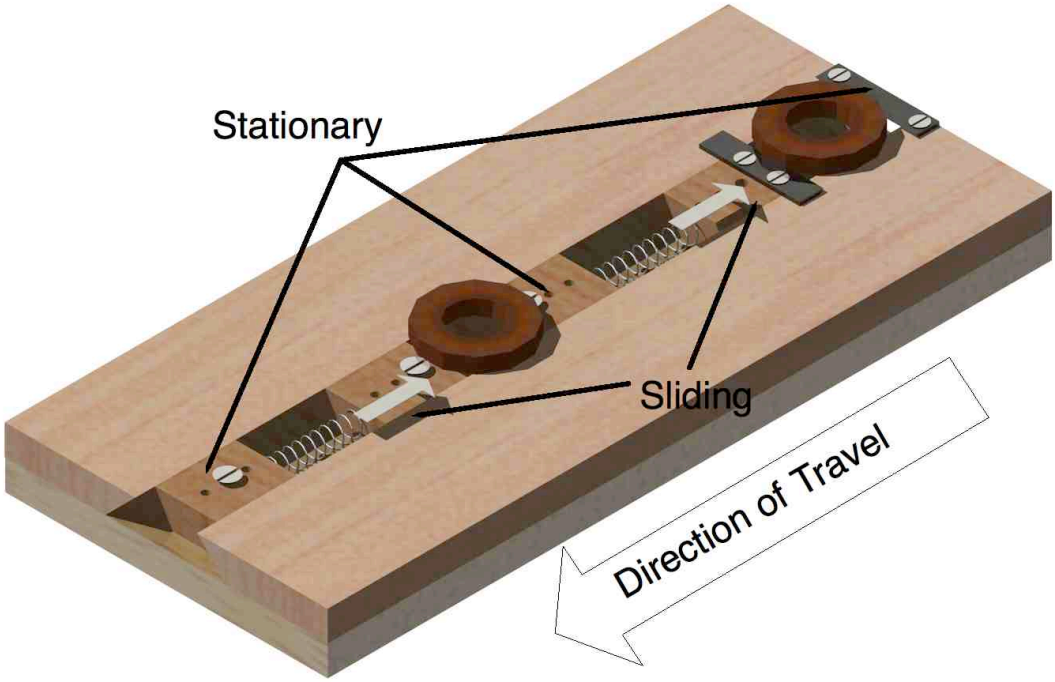

Figure 2

Construction of the jig is straight forward. The jig parts are shown in Figure 3. My jig is about 18" long and 12" wide. I intend to make it narrower in the next iteration. The blocks are 2" long and the dovetail groove is about 1 1/2" at the bottom.
I found the third hole in the sliding blocks gives options for positioning the blocks to maintain spring pressure on the ring.

The ¼” flatheads bolts extend above the sides by about 1/8”. I have sanded the bolt tops on occasion – doesn’t help the paper. This height and the thickness of the steel straps sets the ring’s minimum thickness.

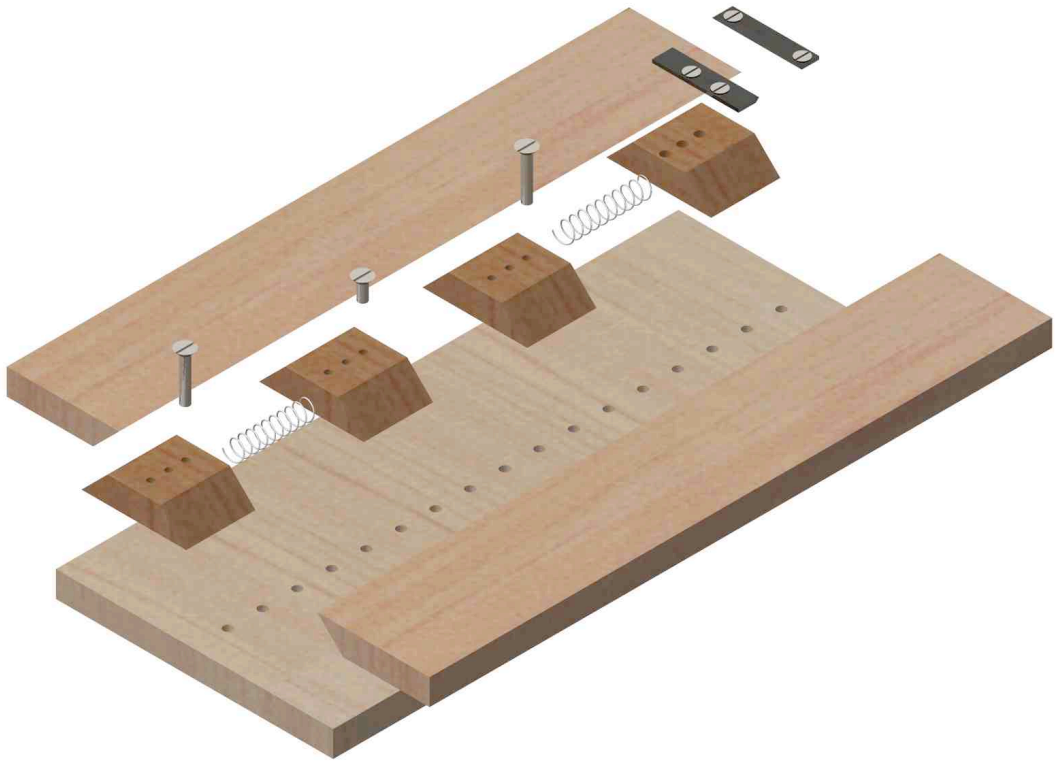

Figure 3

Notes;
- Using 17/64” hole in the base and sliding blocks made inserting the ¼” bolts easier.
- MDF was used because it is cheap, available, and flat. Over time the ¼” holes in the base will elongate from the pressure of the springs, but the jig doesn’t get that much use that this is a near term problem. Plywood might be a better choice for the bottom but not the sides.
- MDF blocks sliding against MDF sides, again not the optimal arrangement. They have a relatively loose fit and the sides are sprayed with lacquer to make them slide better. They work OK. Hardwood might be a better choice for the blocks.

-The combined thickness of the base and sides (1 ½”), limits the thickness of the rings to about ¾” on my sander. Making the base and sides of thinner material would increase this limit – however the sides have to be thick enough so the springs don’t stick above the sides.
- I use 120 grit sandpaper taking light cuts, quarter turn maximum. I have not tried the jig using coarser paper and heavy cuts. I expect that heavy cuts may pop the rings loose.

I have found the jig useful - taking the rings off to check thickness and changing sizes is easy and quick.

I’m sure there are liability disclaimers that I should make here – all I can say is that is works for me and try it at your own risk.