A Horizontal/Vertical Bandsaw Roll Around Wheel Brake, Version 1.0

By R. G. Sparber

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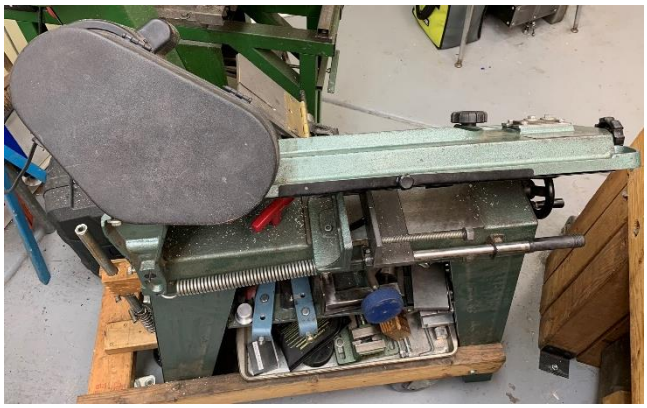


My good friend, John Herrmann, inspired me to put wheels on my horizontal/vertical bandsaw that do not retract. Having this mobility is wonderful in my tiny 150 square foot shop and is not a problem when sawing in the horizontal position. But I have found that in the vertical position, the saw tends to roll away from me.

The need was clear: don't roll while in the vertical position but do roll in the horizontal position.

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My proof of concept, and possibly my final embodiment, is shown here. When the saw's arm is raised to the vertical position, it pushes down on a length of electrical conduit.

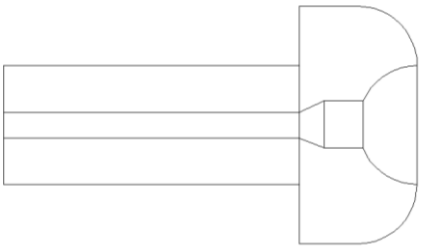
A hockey puck is attached to the end of the conduit and pushes on the floor just enough to stop any movement but not enough to fully raise the rear wheels.

I could have just run a loose screw through the hockey puck and into the conduit but wanted to try out another idea: having a ball and socket joint.

My first step was to chuck up a scrap hockey puck in my lathe. I first drilled it through with a 3/16 inch drill. Then I used a ½ inch ball end mill to drill in about 5/16 of an inch. Then I pressed in a ½ inch diameter ball bearing. It snapped tightly in place. If I had to remove it, I can drive it out through that 3/16 hole.

The other part of the ball joint was also turned on my lathe. Using a piece of 5/8 inch diameter scrap aluminum, I first turned the OD for a length of about ½ inch to be a snug fit to the inside of the conduit. Then I sawed off the part leaving about 1/8 inch beyond the reduced diameter.

Cross-section view:



Chucking the part by the smaller diameter end, I drilled through with my 3/16 inch drill. Then I used my ½ inch ball end mill to drill down about 1/8 inch. This was followed by my "F" drill (0.257 inch) down about 1/8 inch in the bottom. Nothing precise here.

I then trimmed the outer lip so it was rounded. This helps give me more range of motion.

After deburring and degreasing, I used hot glue to secure a 1/8 inch thick, ¼ inch diameter neodymium magnet into the pocket cut by the F drill. These magnets have a diameter of 0.250 +/- 0.004 inches and are very fragile. If pressed into a hole that is too tight, they will shatter. That F drill gives me an extra 0.003 inches of safety margin.

Final alignment of the magnet was performed by dropping a ½ inch diameter ball bearing into the socket. Then I heated up the part with a hot air gun until the glue started to flow. Next, I pushed the socket down on my bench with the ball bearing on the bottom. This set the magnet in contact with the ball and ball in contact with the socket.

I thought heat glue would hold the socket into the conduit but it did not distribute very well so I drilled and tapped for a 6-32 screw.

With the conduit roughly vertical, the hockey puck is free to adjust a few degrees and come into full contact with the floor. The magnet is strong enough to hold the hockey puck yet it easily releases if I want to inspect the bottom face. I suspect that swarf will embed itself into the puck and will have to be periodically cleaned.

The top of the conduit was intentionally cut about 1 inch short. This let me drop a length of threaded lamp rod with a nut into the top.

With the arm in the vertical position, I turned the nut until the lamp rod contacted the arm casting. Then, with the arm horizontal, I turned the nut so the lamp rod was about 0.05 inches higher. In this way, the puck will compress into the floor but not raise the rear wheels.

The ball joint permits the bottom face of the puck to be flat on the floor even if the conduit is not perfectly vertical. This let me slap together guides for the conduit from two wood blocks.

A hose clamp near the bottom of the top block limits the vertical rise of the conduit. If it rose too much, the puck would hit the bottom of the sheet metal base and fall off.

A spring between the top of the lower block and a hose clamp lifts up the hockey puck when the arm is not vertical.

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