

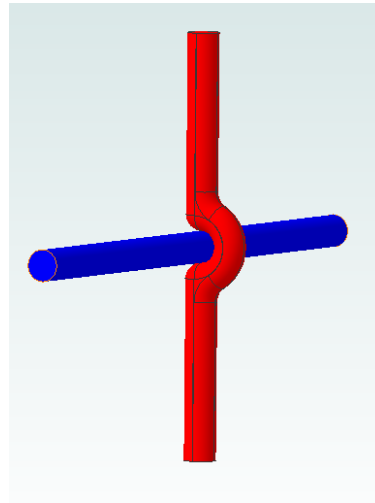
A Wire Forming Tool, Version 1.0

By R. G. Sparber

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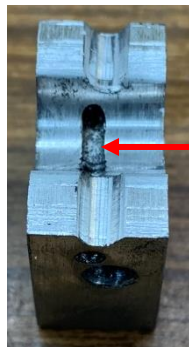
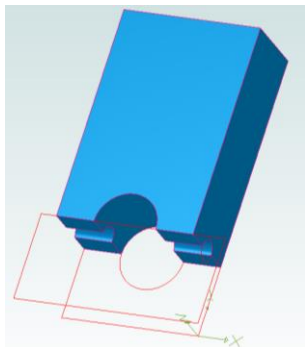


I aim to form the vertical rod to wrap around the horizontal rod.



I'll then silver braze them together.

Given the tight radius and 0.15-inch diameter steel rod, I planned to heat it to cherry red before forming. Cold forming would take a lot of pounding.



A forming tool took a few minutes to fabricate but will make the task easy.

This groove is an artifact of a past project.

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I'll show you how I use the tool and then describe how I designed it.



I'm holding the tool in a ViseGrip, which acts as a handle. A forming rod is lying on my anvil.

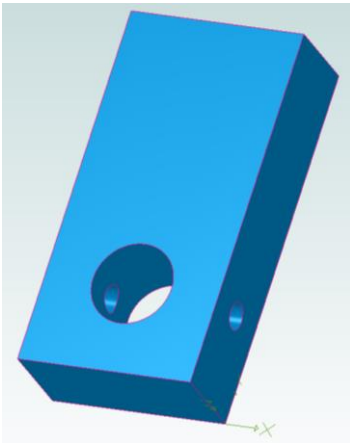


Holding the cross rod in pliers, I heated the center cherry red. Then, I laid it across the forming rod and put the tool on top. After two whacks with the hammer, I heated the rod again and repeated the process. The rod was then almost formed to the contour of the rod and tool.

One more cycle of heating and whacking, and I had a good fit.

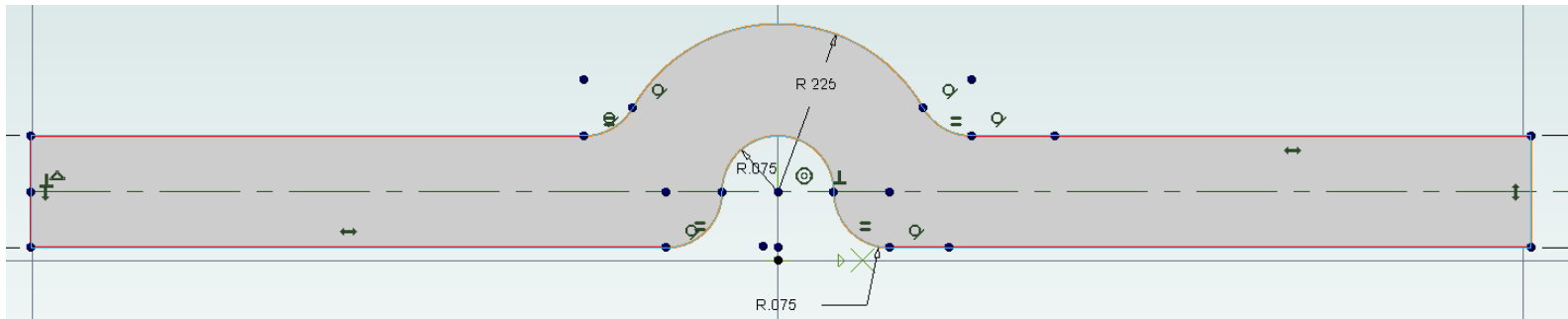


With the two rods closely fitting, I heated them to cherry red along with a speck of Harris Stay-Silv black brazing flux before introducing a small quantity of silver braze. The braze wicks into the tiny gap between rods for a strong joint. Since the contact area is filled with braze, this joint should be stronger than if I welded it.



I designed the tool to fit 0.15-inch diameter steel wire. Since this is a one-off project, I used aluminum. CRS would hold up better after repeated strikes with the hammer.

I started with a scrap piece of aluminum about 2 inches long, 1 inch wide, and ½ inch thick. I marked a point on the centerline ½ inch from one end.



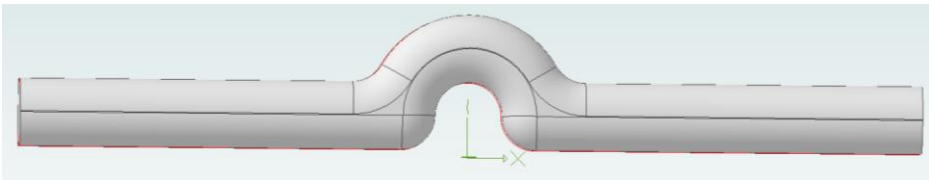
Looking at a cross-section of the bent cross rod, I want the inside of the curve to fit the rod such that the bottom of the cross rod is tangent to the bottom of the forming rod. The outside of the cross rod must have a radius equal to the radius of the forming rod plus the diameter of the cross rod ($0.075 + 0.15 = 0.225$ inches), which is a diameter of 0.45 inches. I went with a $29/64^{\text{th}}$ drill with a diameter of 0.453 inches.

My cross hole equals the diameter of the rod plus a few thou for clearance. A #24 drill at 0.152 inches fits the bill. I drilled it into the edge ½ inch from the end.

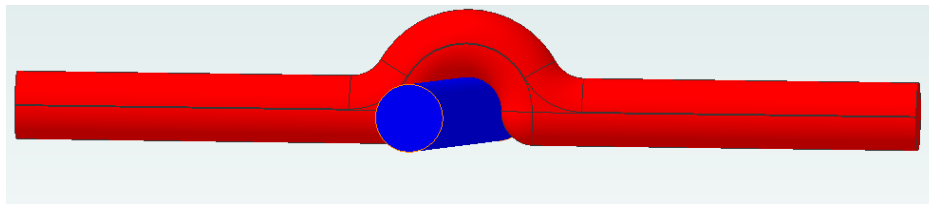


After drilling the two holes, I sawed off the lower part of the stock, so I was left with the center of each hole in the tool.

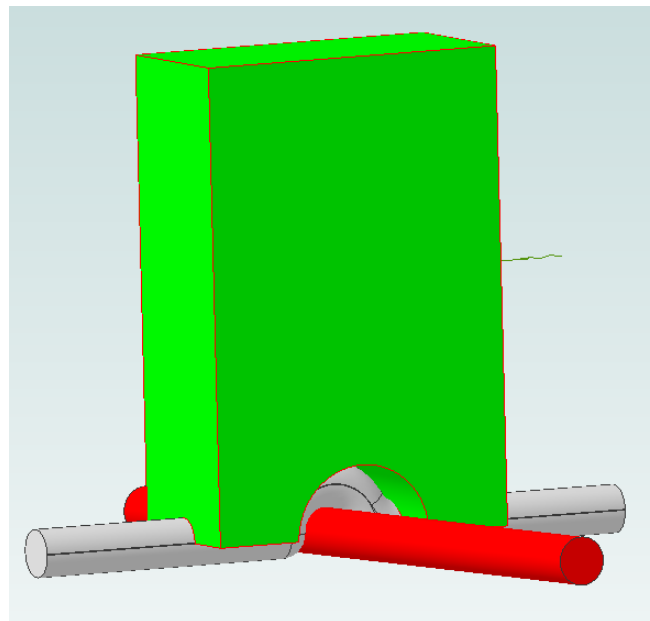
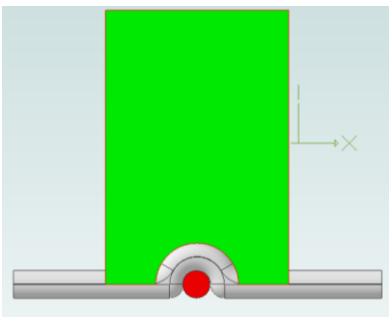
The saw cut was smooth after a few seconds on my belt sander.



The formed cross rod



is a tight fit to the forming rod.



You can see how the tool centers on the cross rod during the forming operation.

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