

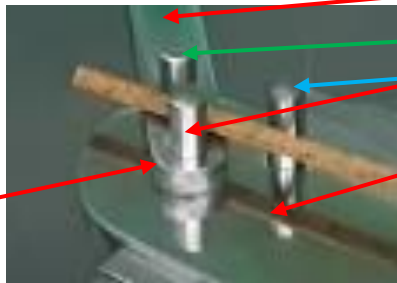
Making Tight Bends with Heavy Gauge Wire, Version 1.0

By R. G. Sparber

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I was particularly inspired by a YouTube video created by “DIY Useful Ideas”:
<https://www.youtube.com/watch?v=NnLZp6ai8YY> which showed how to build a very nice heavy gauge wire bending tool.



You can see the arm, the arm pin, a **left** and **right** base pin, and the base.

Note that the arm pivots around the **left** base pin. The wire is prevented from moving by the **right** base pin, is wrapped around the **left** base pin, and is pushed by the **arm** pin. As viewed from the top, the arm is moved counterclockwise as the wire is bent.

I could have just made one of these tool but that wasn't much of a challenge. So instead, I thought about limitations to his designs and how to overcome them.

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An appealing challenge was to bend some #7 gage wire (0.144" diameter) around a 1/8" diameter dowel pin. The benefit here is that the wire would then have an inside radius of only 1/16th of an inch.

My first attempt used the design presented in the video. I bent the dowel pin which was no big surprise. After all, it is the weaker of the two and I was pushing on the dowel far from where it was secured. So how do I make it stronger?

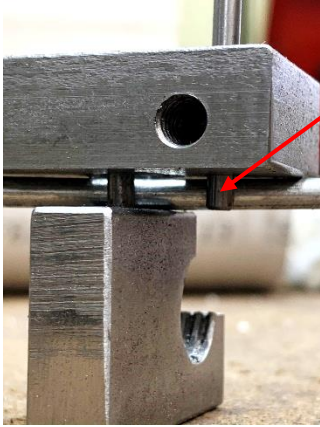
Since I'm in the learning mode, it is more important to "fail fast" than to make it pretty. In other words, throw something together using scrap and learn why it doesn't work. Repeat.



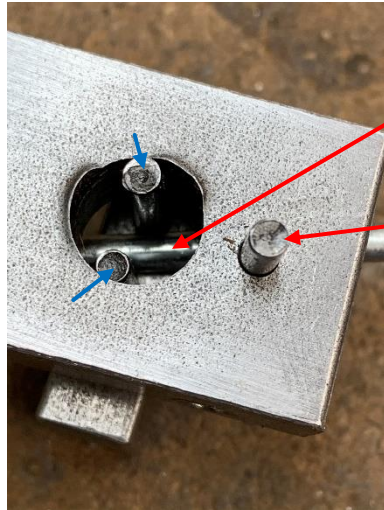
Here you see two dowels spaced a little wider than the diameter of my wire. This leaves no room for the arm that must pivot around one of the pins in order to form the bend. There is a method to my madness.



I drilled a hole in the arm that accepts both pins. In this way my arm pivots around two rather than one pin as it resists the bending force. I also flipped the arm over to insure that the wire pushes on the base of each dowels. That minimizes the bending moment.



I did find that the wire can slip off the arm pin so it is better to let it extend further down. But then the pin struck the base. Not a problem, I just sawed away some of the base.



Here you see the wire passing between the two **base dowels** and touching the arm dowel.



For this experiment I used a large adjustable wrench to turn the arm. The finished design will be made with a long bar of steel. The base is clamped into my bench vise.



Here you can see how the arm pin clears the base due to the cut out. In the finished design, I'll just use a shorter block for the base.

With one hand pushing down on the pivot arm and the other moving the wrench, the bending went smoothly.



As I had hoped,
the bend followed the outside
diameter of the pin.

The idea seems to have merit and is worth committing more time and materials to making the finished tool. *But first, I hope to hear from readers who can suggest improvements. All of us are smarter than any one of us.*

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