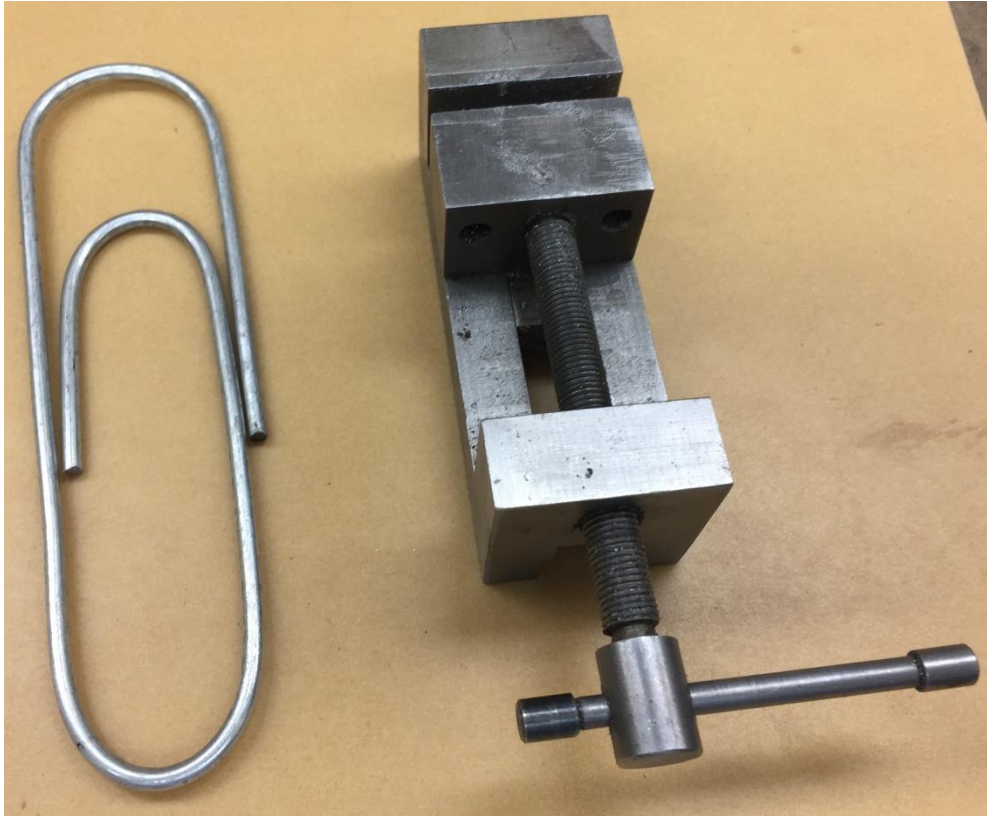


Making Miniature Tools, Version 1.1

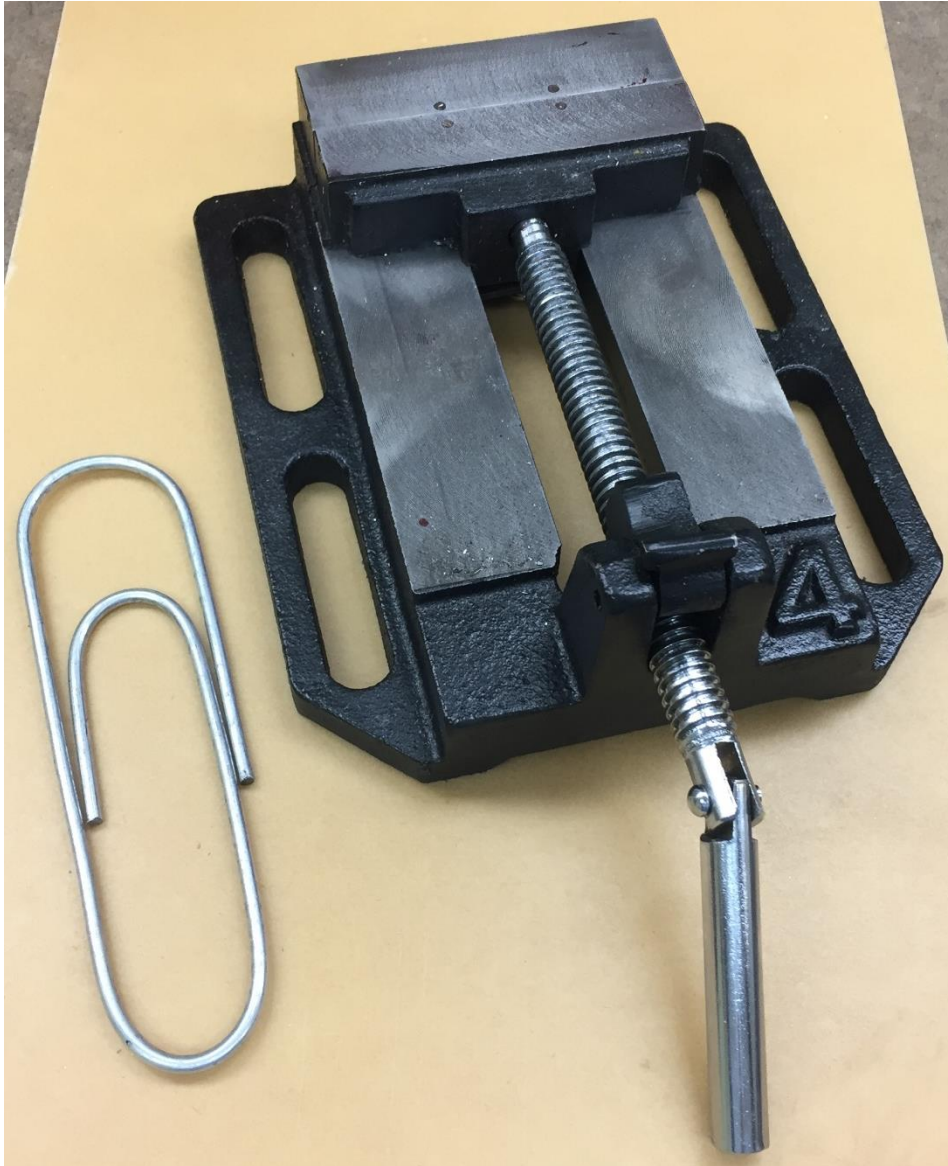
By R. G. Sparber

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There is a long tradition of making machine tools in miniature.

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Casting and machining a miniature drill press vise is hard.



Making a miniature Irwin bolt cutter is even more challenging.

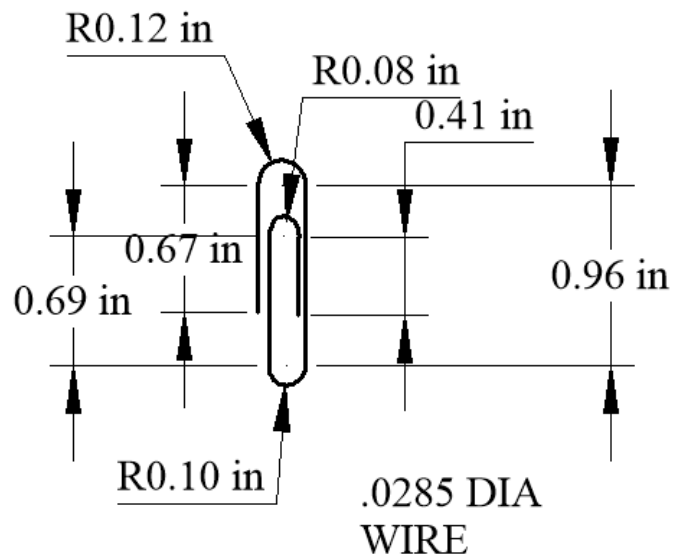
Notice the amazing detail!

On the other hand, making a giant paperclip is easy! Problem solved.



The challenge was to scale the paperclip properly. I started by measuring a real one. The wire was 0.0285 inches in diameter. All radii were taken from the inside of each curve.

I believe I did make at least one error in my measurements because the drawing and finished giant paperclip were a little off. Since this is a farce, I figured it was good enough.



I then measured some galvanized wire I bought at Home Depot. It was 0.144 inches in diameter. Therefore, my scale factor is

$$\frac{0.144 \text{ inches}}{0.0285 \text{ inches}} = 5.05$$

I then multiplied all straight and curved sections by this factor. For example, the first length is 0.67 inches on the real paperclip. My big copy ran $0.67 \times 5.05 = 3.4$ inches. Next is a half-circle of radius 0.12 inches so of diameter 0.24 inches. Scale up by 5.05 and I got 1.21 inches. I used a 1 ¼ inch piece of bar stock to form the curve.

Since your wire may not be 0.144 inches in diameter, I'll let you calculate your dimensions. I think ¼ inch rod would be very impressive.

I welcome your comments and questions.

Acknowledgements

Thanks to Gerald Feldman for spotting the grain of the wood in a previous picture. Thanks to Marv Klotz for pointing out that the cut ends of the paperclip were not square. I have fixed these error in all but the last picture.

If you wish to be contacted each time I publish an article, email me with just "Article Alias" in the subject line.

Rick Sparber

Rgsparber.ha@gmail.com

Rick.Sparber.org