

# A Beveling Tool, version 5

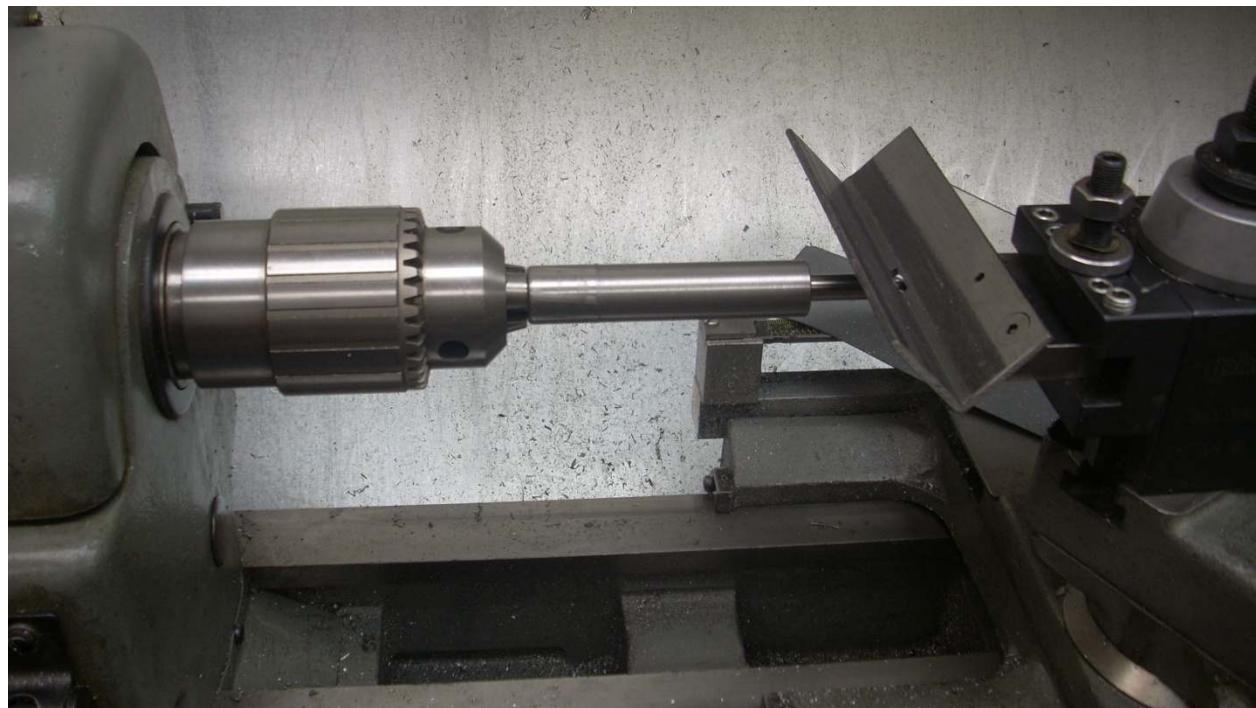
By R. G. Sparber

Copyleft protects this document.<sup>1</sup>

There are times when I want to bevel all edges of a block of metal. In the past I have used either a file or my belt sander. Given enough care, I can file a fairly consistent bevel. But it sure takes time. Using the belt sander is faster but a lot depends on touch and timing. I can over cut an edge very quickly with a belt sander.

So it came as a very nice surprise when I learned about a beveling machine<sup>2</sup> from Brian Lamb of the Valley Metal Club of Phoenix, AZ.

I really like the idea but not the space it takes nor the cost. So here is my answer:



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<sup>1</sup> You are free to copy and distribute this document but not change it.

<sup>2</sup> See <http://www.heckind.net/Turbo-Burr.htm>

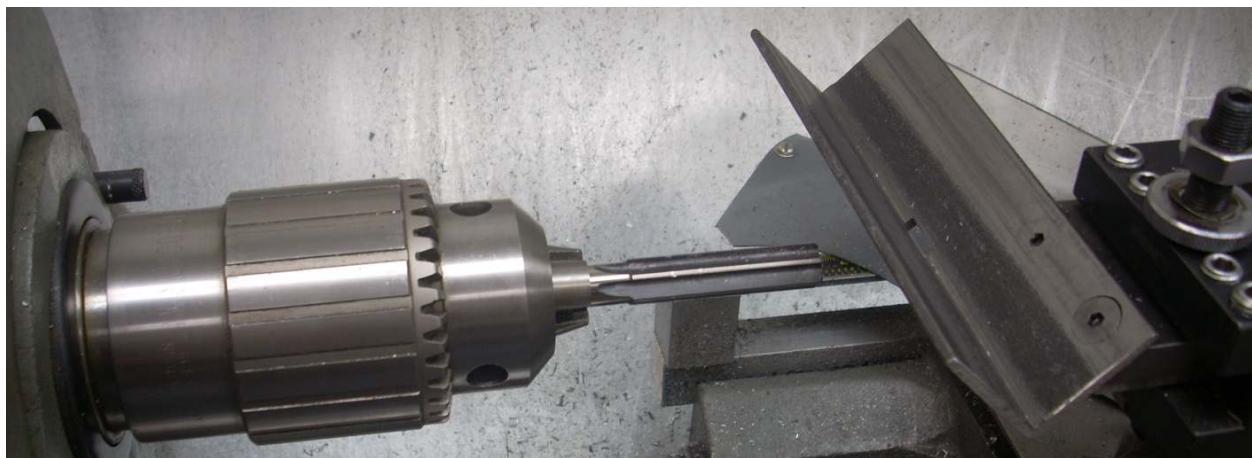


A 1/4" end mill is held in the end mill holder some distance from a Jacobs chuck on my lathe<sup>3</sup>. A piece of angle stock is supported by my quick change tool post. There is a slot in the bottom of the angle stock that permits the end mill to just slightly enter the bottom. I am shooting for about a 0.01" wide flat on the corner of the block being deburred.

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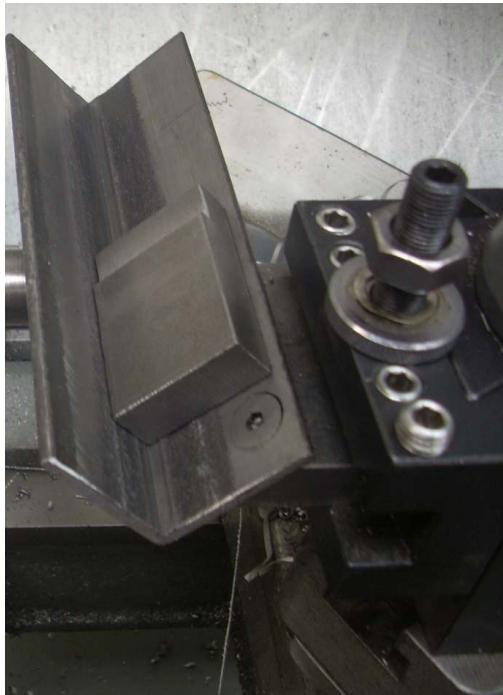
<sup>3</sup> If you have a sharp eye, you will notice that my end mill holder really does not fit into my Jacobs chuck. I have to turn the end down to 1/2" to make it fit.

This arrangement worked well enough so I moved onto another project. Jerry Freeman of the atlas\_craftsman Yahoo group was just getting started. He built the fixture and then proceeded to improve on it. He discovered that a  $\frac{1}{2}$ " reamer did a better job cutting the bevel than an end mill. The reamer has 6 edges while the end mill I used has on 2. With more edges per revolution, you get a smoother finish.



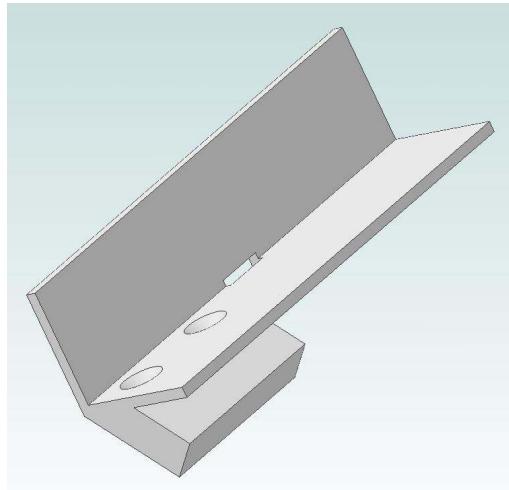


I did have to mill out the corner of the angle stock to remove the inside fillet. But otherwise, there really isn't much to the design. In hindsight, I wish I had set the support block lower because large blocks to be beveled hit the tool holder as they slide near it. Not a big problem since I just lean them towards the headstock.



To bevel a block of metal, just slide the edge along the bottom of the channel with the lathe running at the proper speed for this diameter end mill. It might take a few passes to get the edge cleaned up nicely.

The width of the bevel is controlled by the height of the tool holder on the quick change tool post. I place a beveled block on the V and move the tool holder up and down until the block just starts to lift. Then I have set the same bevel.

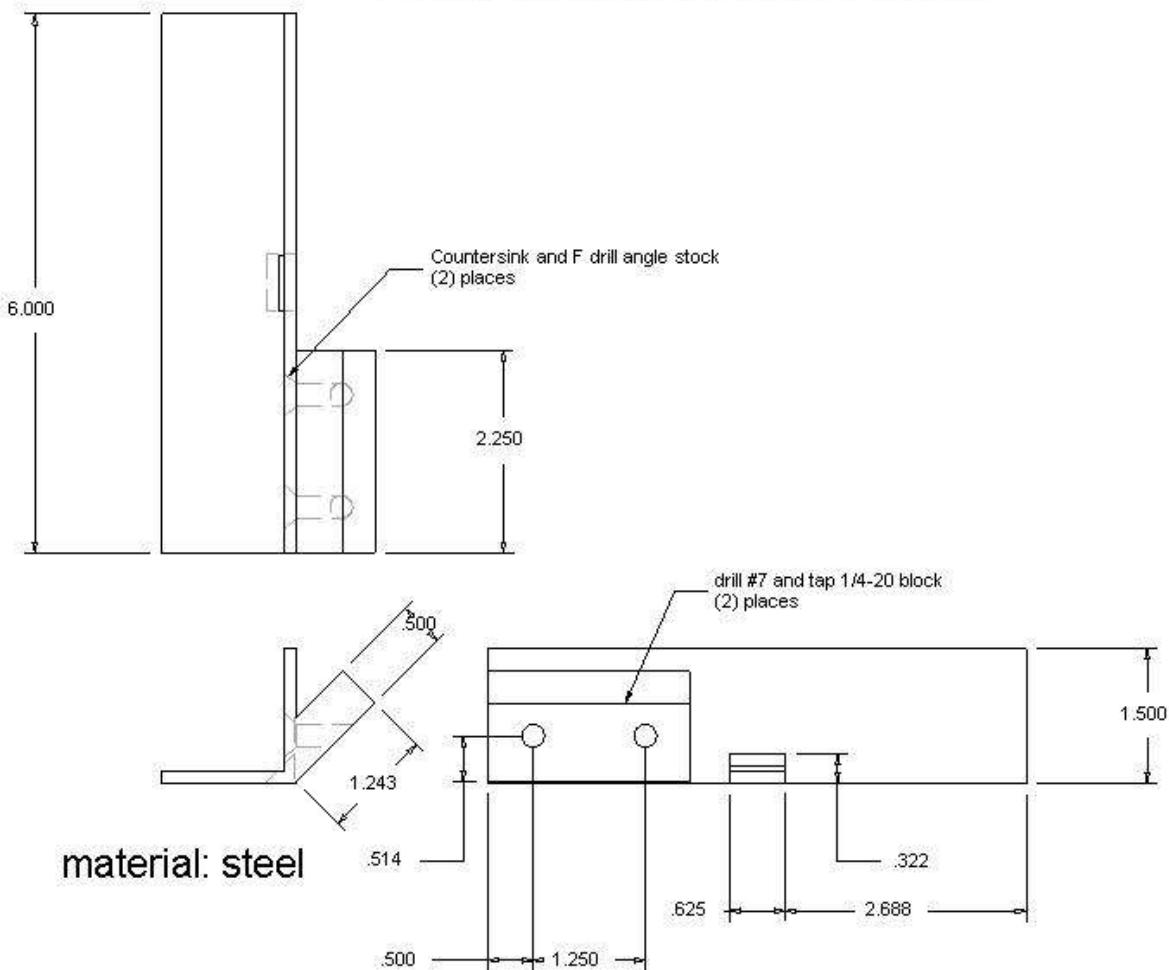


The tool is made from a piece of 1/8" thick 1.5" x 6" angle plus a piece of 0.5" x 1.5" x 2" bar. I chose to bolt them together but welding would have been faster. None of the dimensions are critical.

I first milled the support block and then drilled the two holes with my #7 drill. Then I match drilled the first hole through the angle. The angle was countersunk and the block tapped  $\frac{1}{4}$ -20. Some of the countersink is in the block.

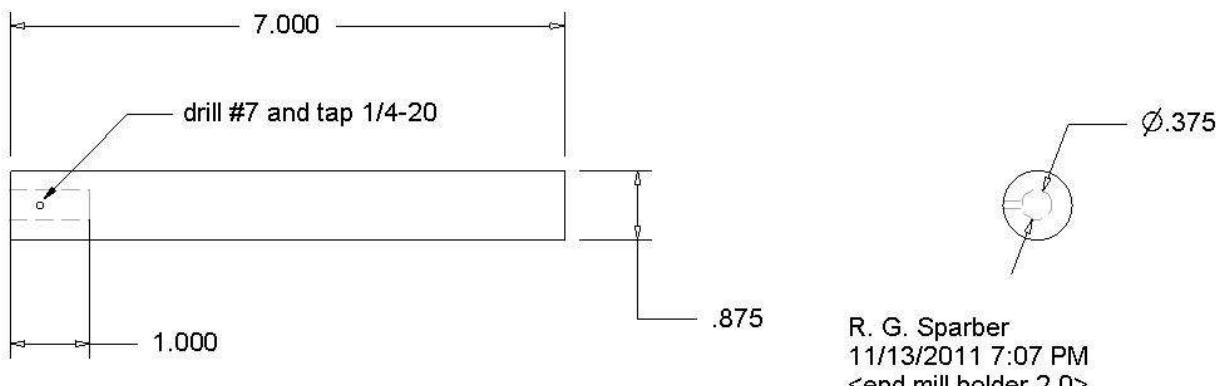
With the block aligned and secured with a screw, I match drilled the second hole and countersunk through both the angle and block. Then I threaded the second hole.

## Lathe Mounted Bevel Fixture



R.G. Sparber  
11/13/2011 3:18 PM  
<lathe mounted bevel fixture>

## End Mill Holder



R. G. Sparber  
11/13/2011 7:07 PM  
<end mill holder 2.0>

Although I have the tool mounted on a lathe, it could be put on a small grinding wheel or maybe a small radius belt sander. The original idea was to put it on a Dremel Tool but it really does not have the power or bearings for much side cutting.

If mounted on a 4" angle grinder, you might have yourself a nice portable bevel tool to prep surfaces for welding.

## Acknowledgement

Thanks to Brian Lamb of Valley Metal Club, Phoenix, AZ for suggesting such a tool plus subsequent modifications to improve safety and performance. Special thanks to Jerry Freeman of atlas\_craftsman for suggesting the use of a Jacobs chuck rather than a 3 jaw chuck to hold the end mill holder plus his discovery that a  $\frac{1}{2}$ " reamer works better than an end mill.

I welcome your comments and questions.

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