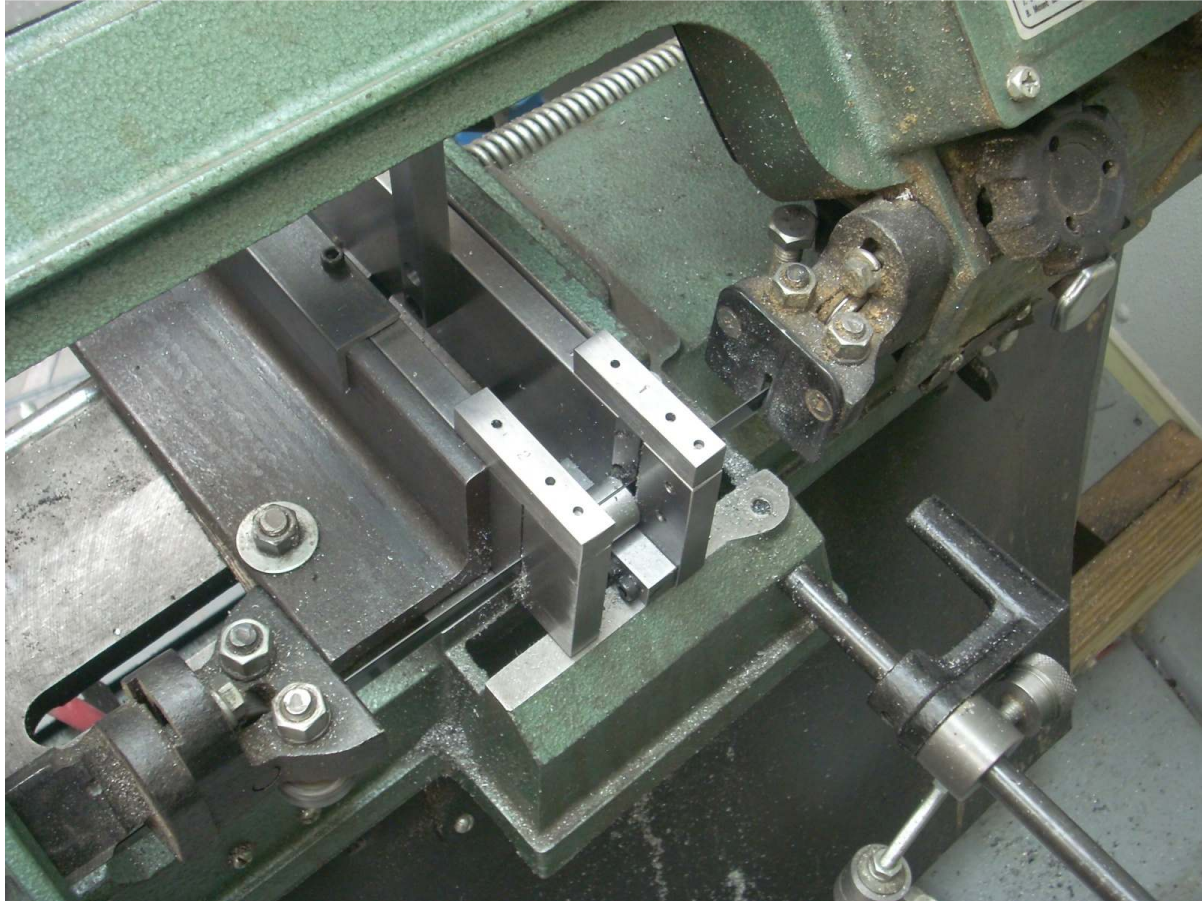


Double V Jaws for a Horizontal/Vertical Bandsaw, version 4.0

By R. G. Sparber

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This attachment to a horizontal/vertical bandsaw lets you cut cylinders along their diameter.

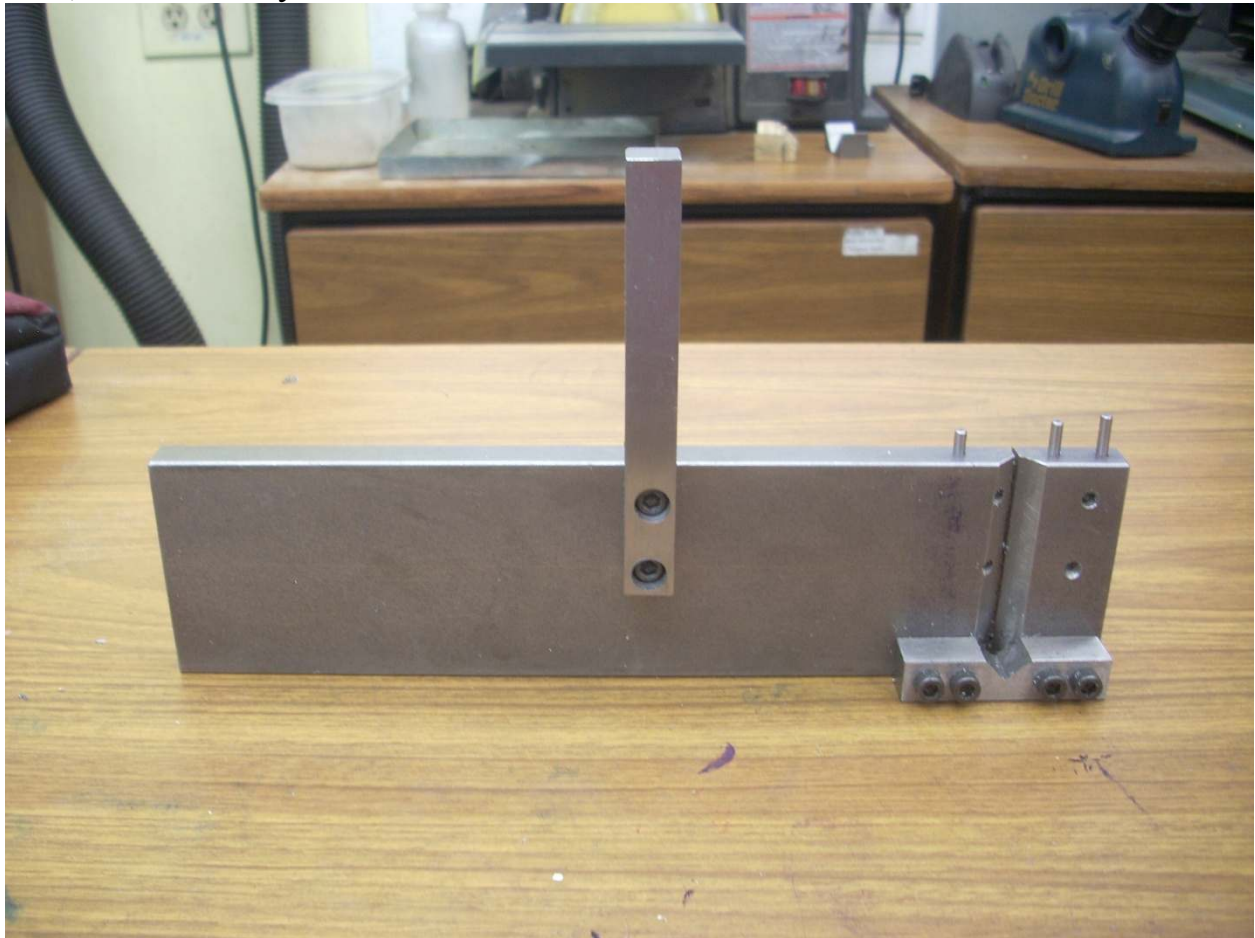


It can also cut the diagonal on a part with a square cross section and spheres.

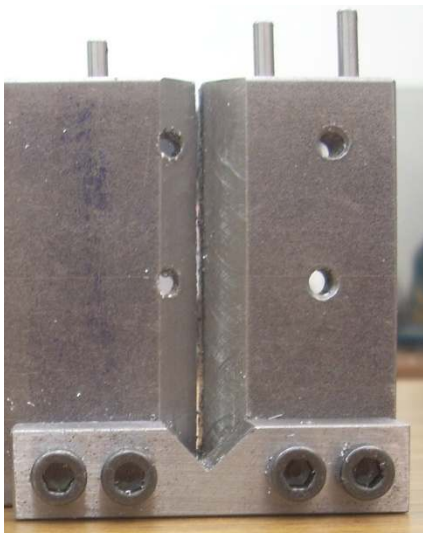


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First, let me show you how it works.



This is the fixed jaw attachment. On the right side is a vertical V groove. It has a cut in it that goes from the top all the way down to $\frac{1}{4}$ " from the bottom. At the bottom is a second V grooved block bolted to the main plate.

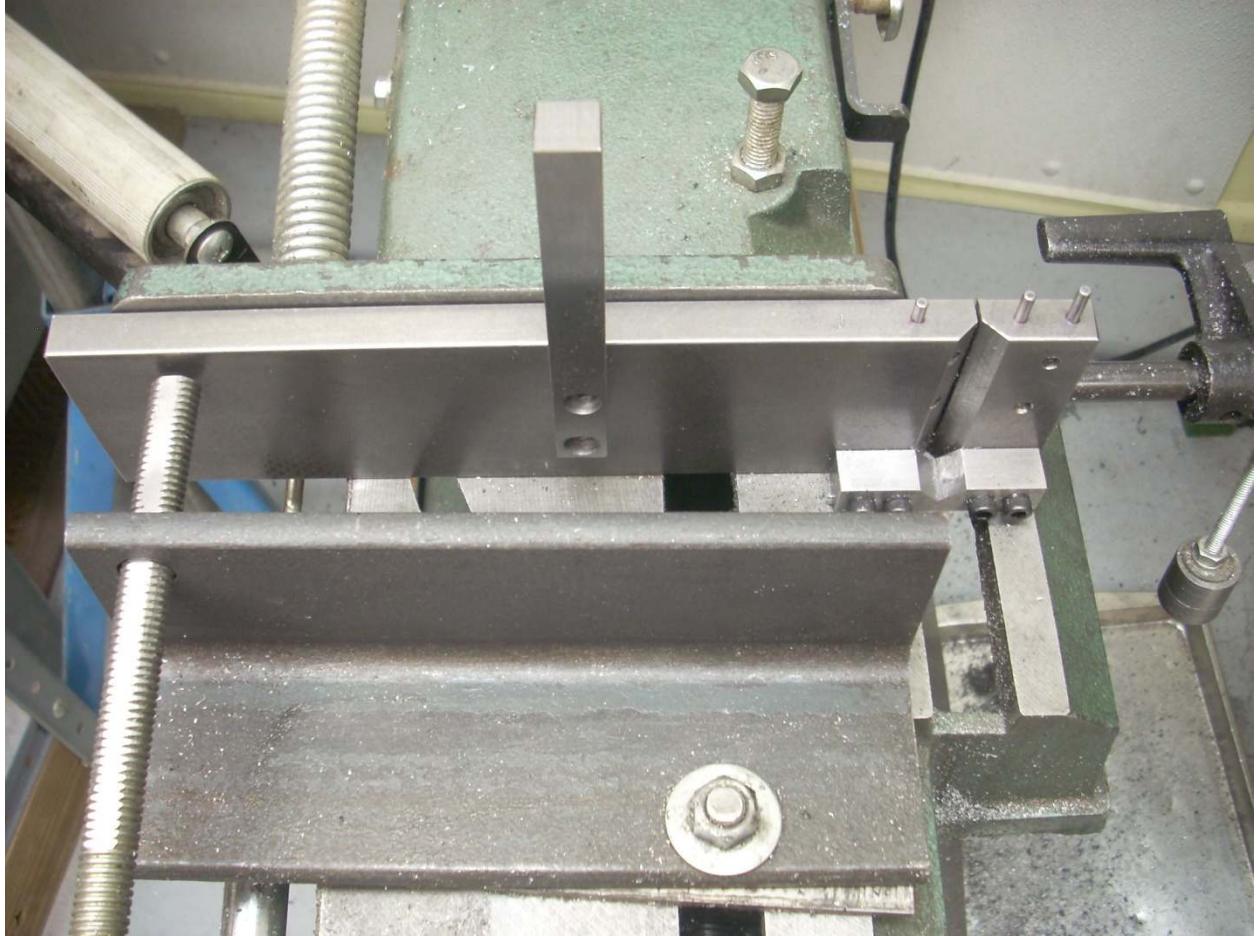


At the top are 3 pins. They accept a locking bar which will be presented later.

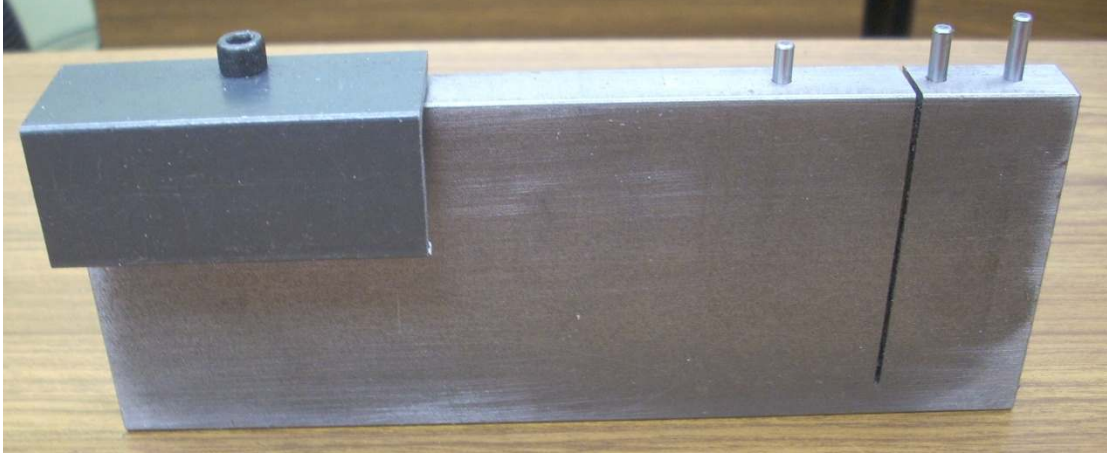
That vertical bar shown above is a stop. It prevents the saw from cutting into that $\frac{1}{4}$ " area at the bottom of the slot.

The three pins are staggered in height to make it easier to put the locking bar on top.

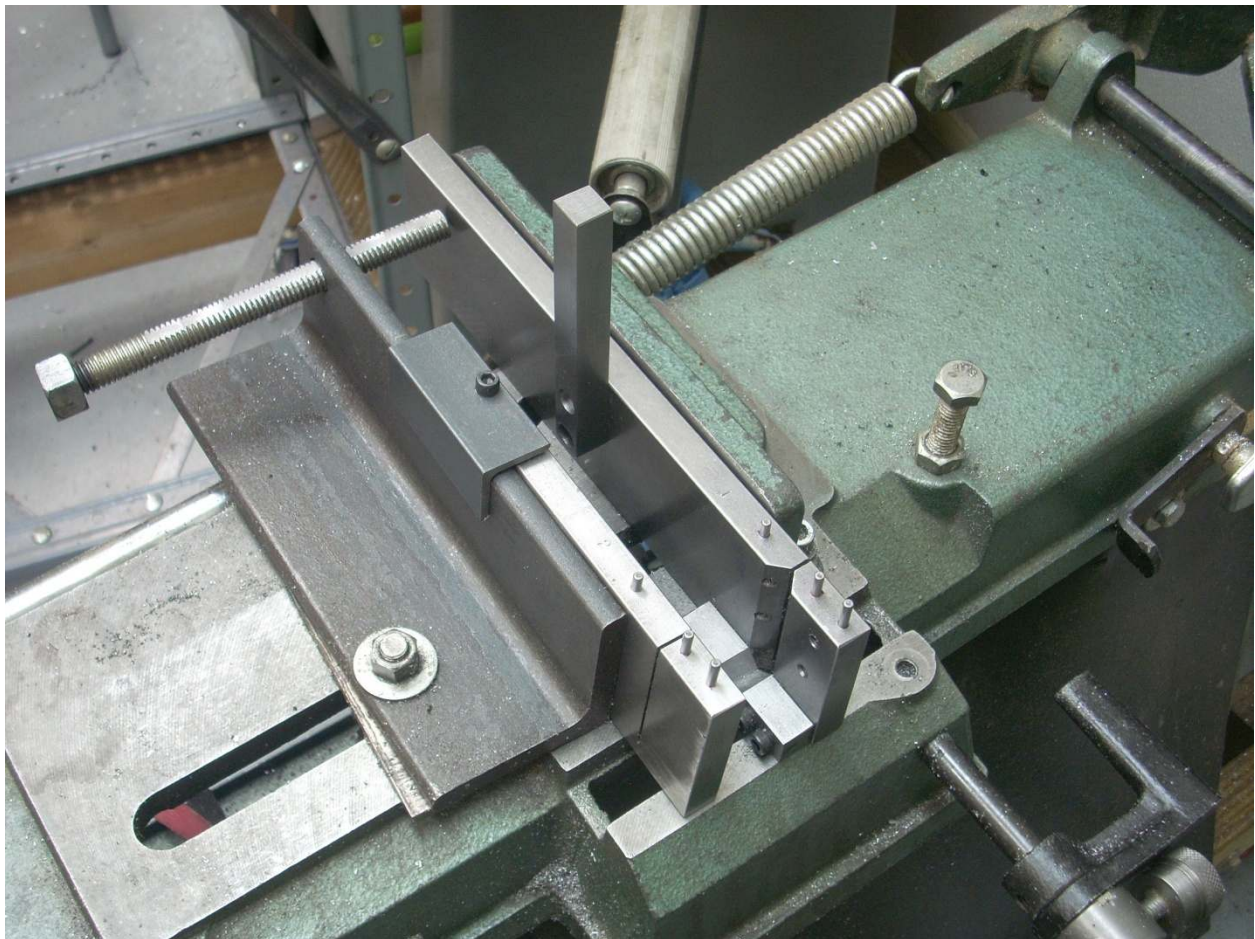
The 4 tapped holes were left over from an earlier design iteration but could be used to hold a sacrificial plate when the saw kerf starts to widen.



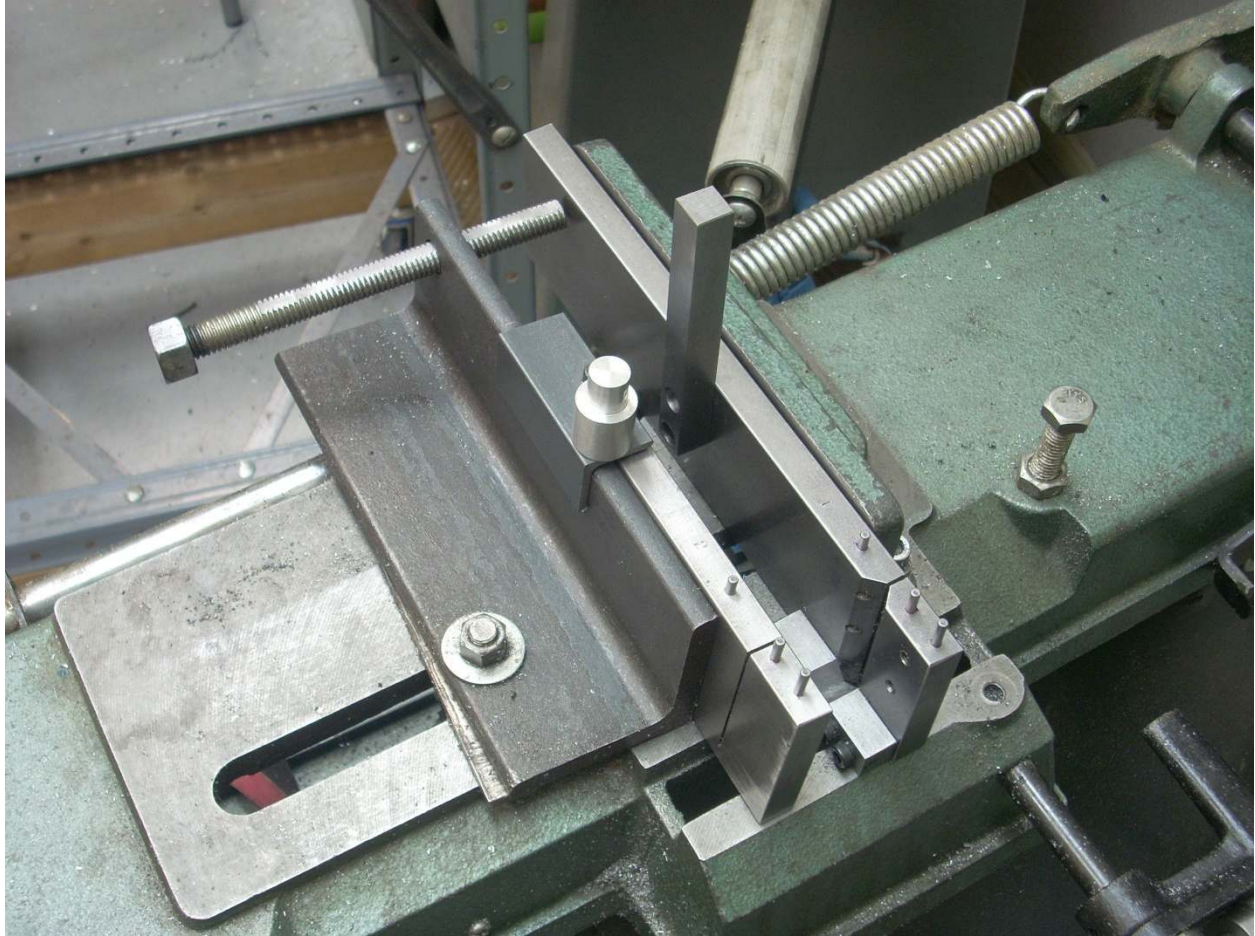
The fixed jaw attachment drops in the saw's vise and is free to slide side to side.



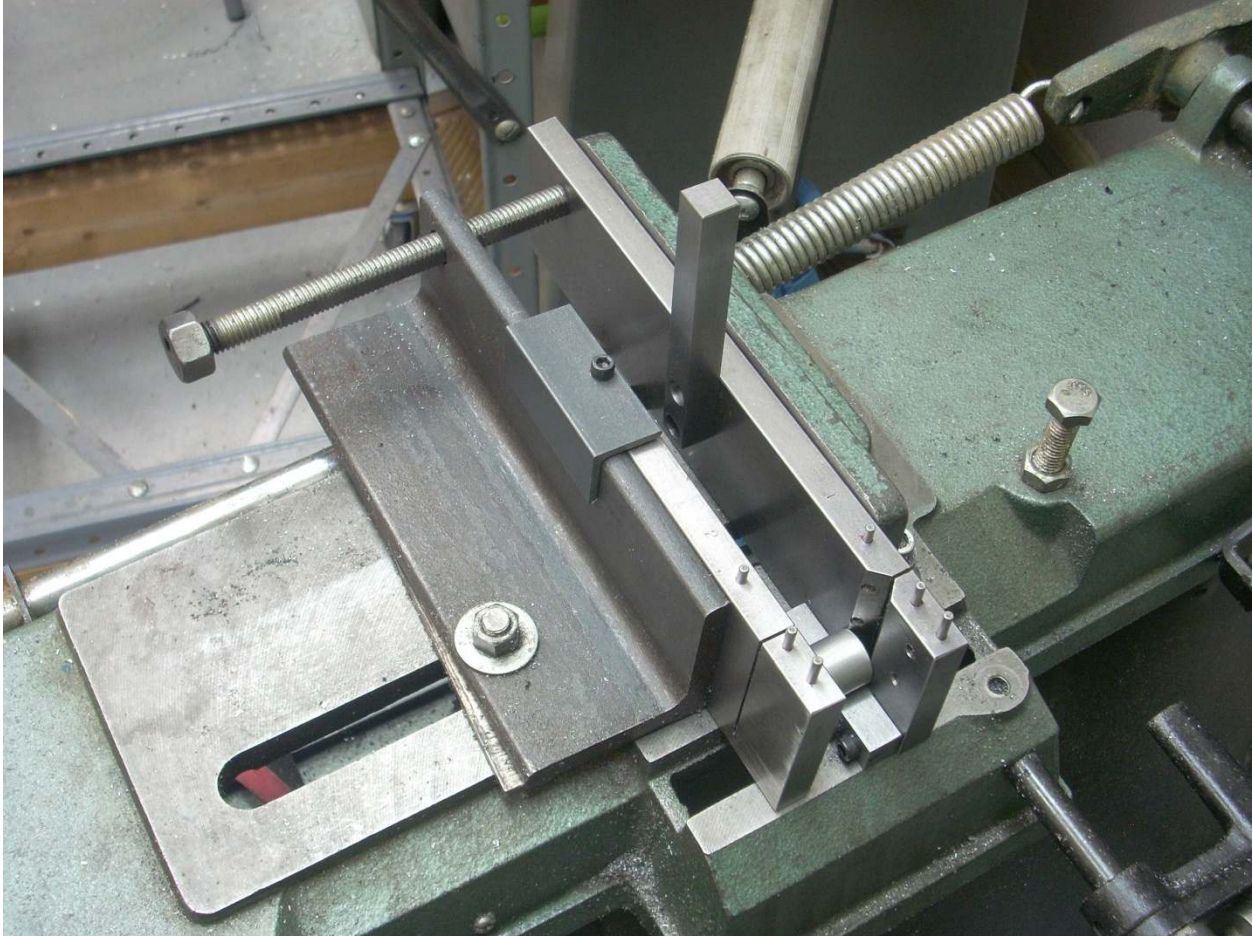
This is the movable jaw attachment. It too has a cut that goes down to within $\frac{1}{4}$ " of the bottom plus has those 3 pins on the top. It also has a piece of angle stock bolted on the top.



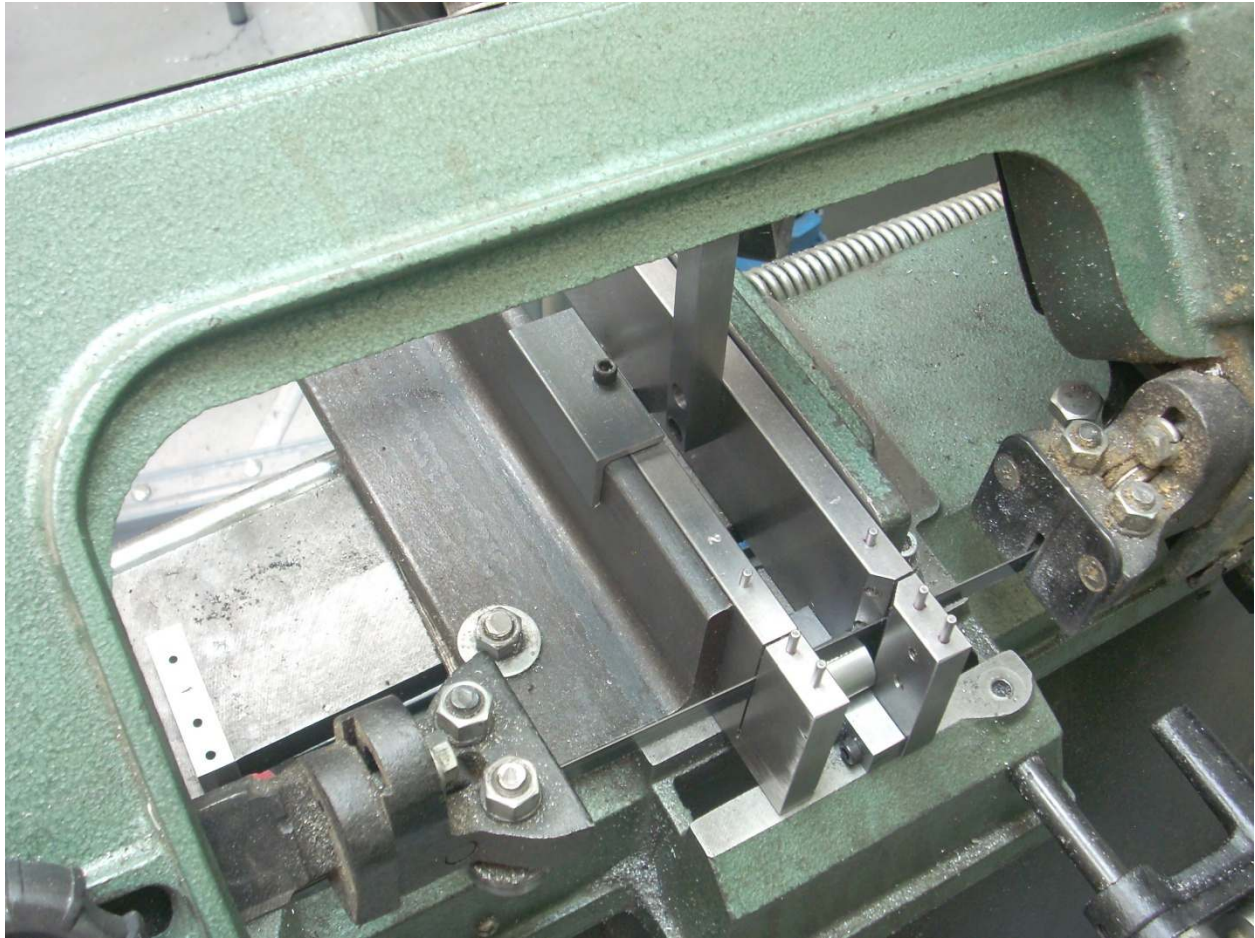
Here you see the movable jaw attachment placed in front of the movable jaw. It too is free to slide from side to side.



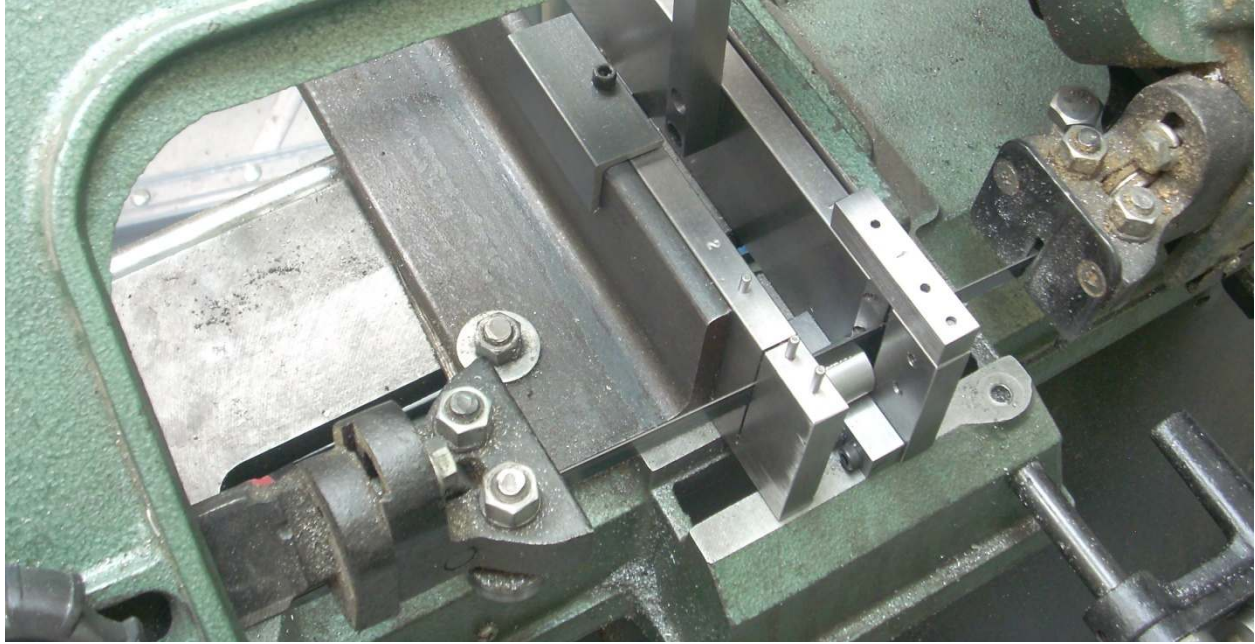
I will cut that small cylinder that is resting on the piece of angle stock. The cut will be on a diameter and along the central axis of the part.



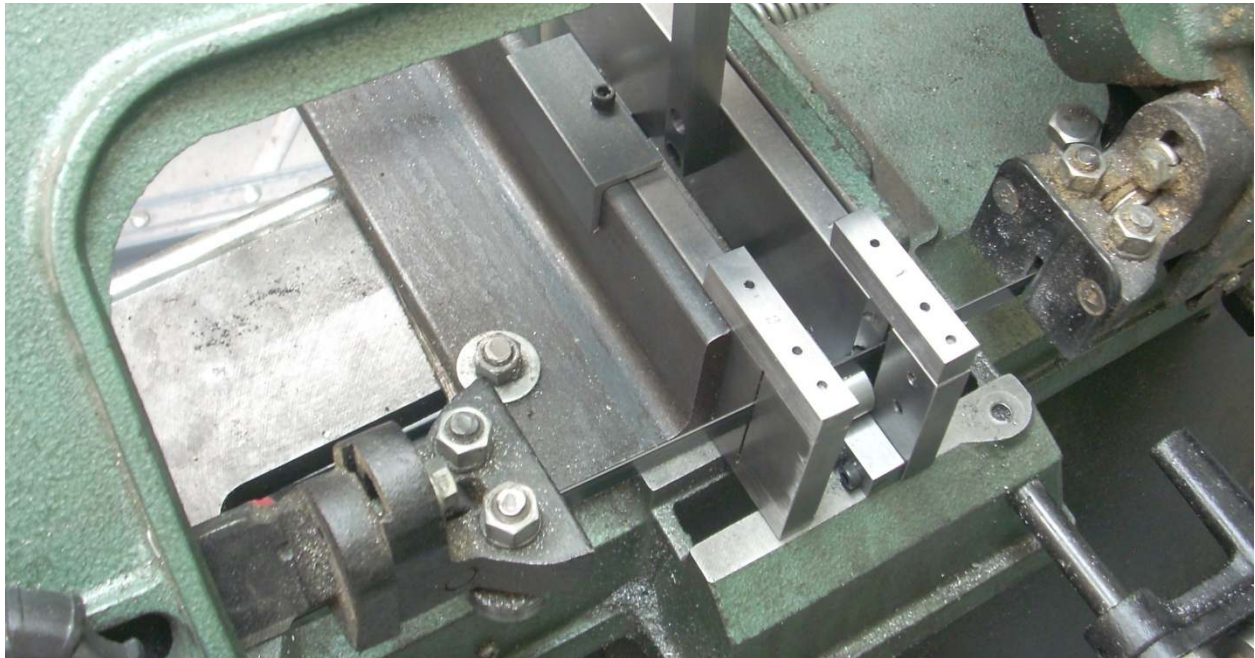
I placed the cylinder down on the bottom V groove with the jaws loose. The screw jack on the left end of the jaws was adjusted to the same distance so the movable jaw is approximately parallel to the fixed jaw.



I then slide the two jaw attachments back and forth until I could lower the blade into the slots.

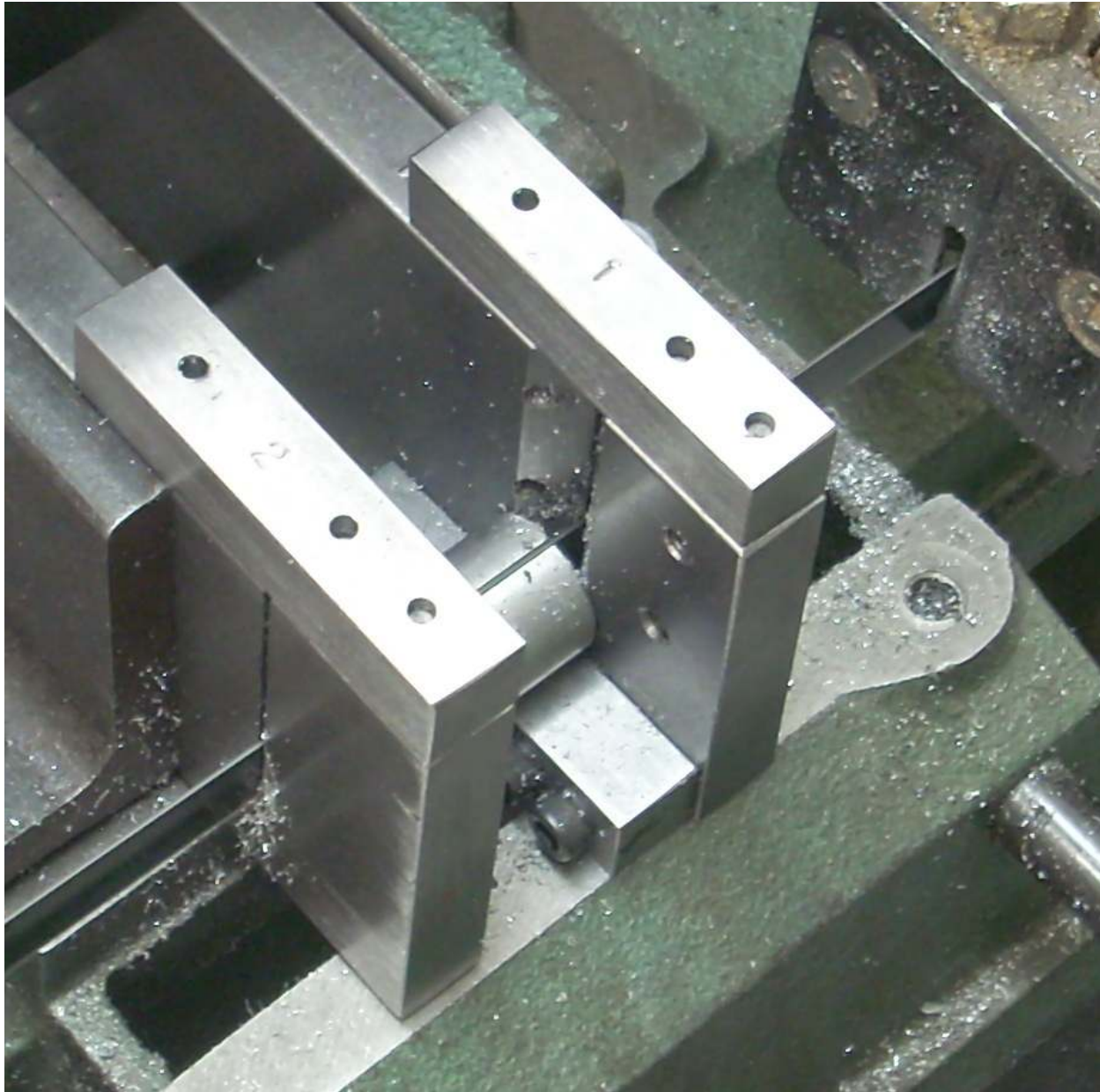


The locking cap has been placed over the pins on the fixed jaw attachment. This provides added rigidity to the part of the attachment to the right of the blade.

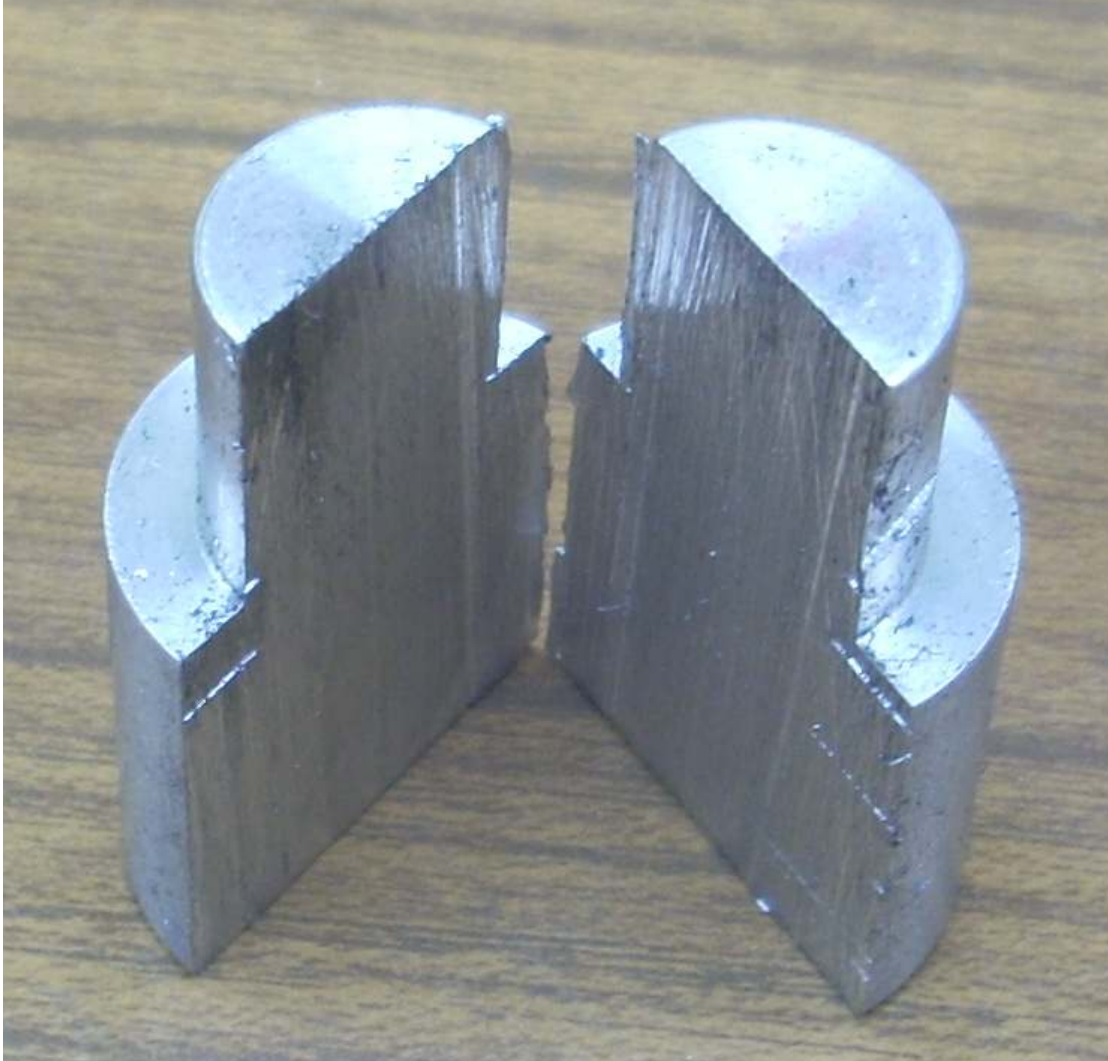


And then the second cap was installed over the pins of the fixed jaw attachment. Note that the blade is now captured within the vise jaws.

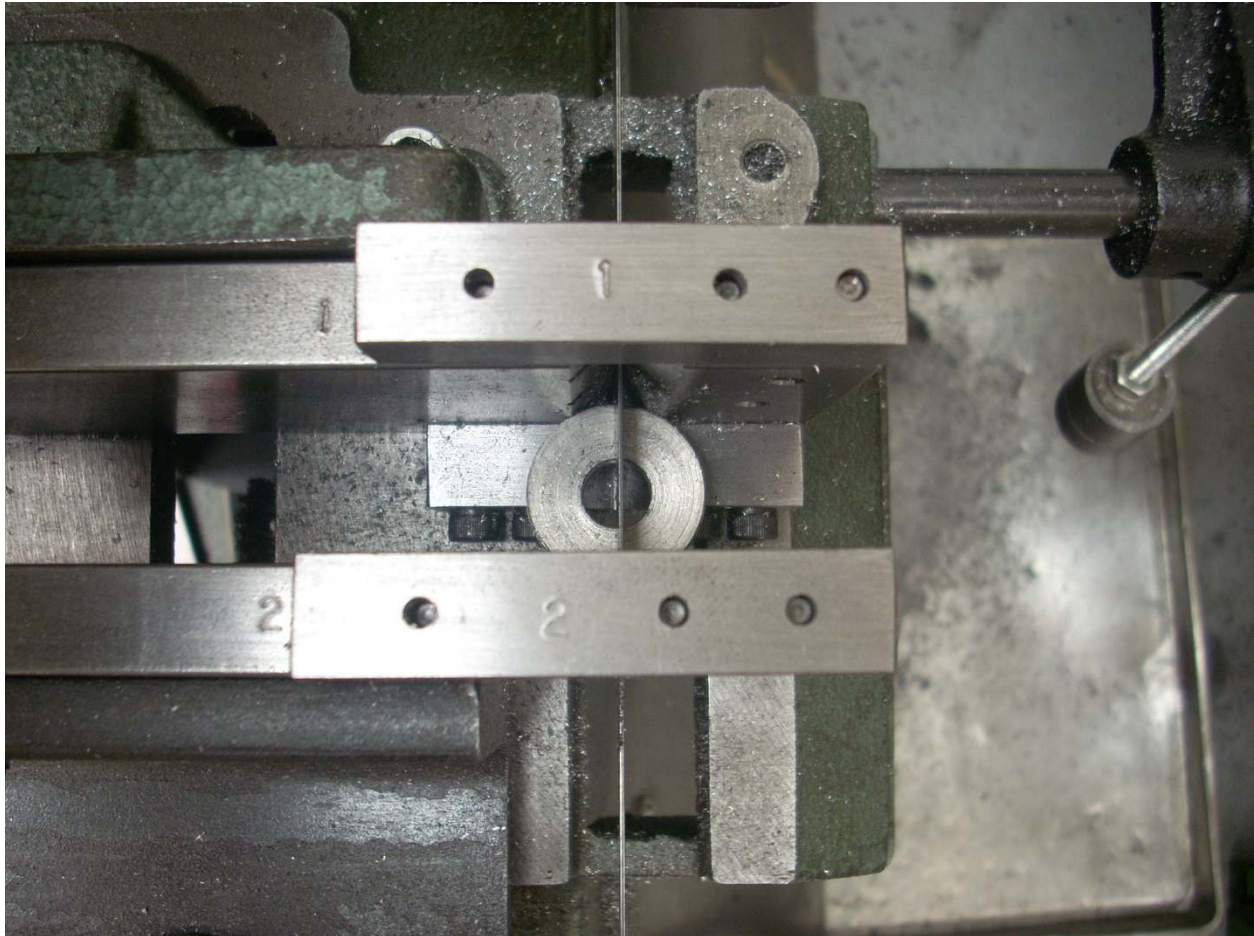
The vise is now tightened to secure the work piece.



You can see the blade part way into the work piece.

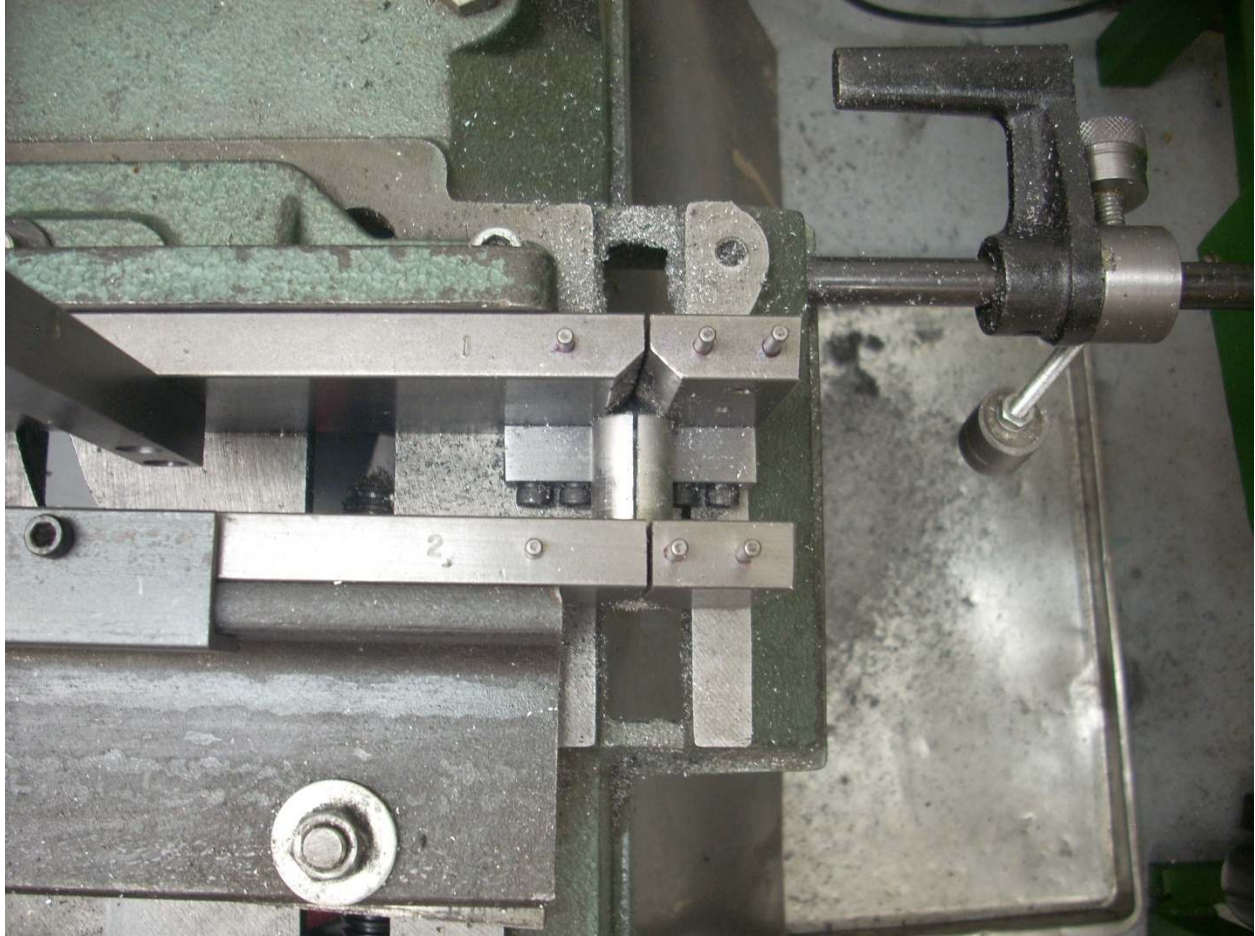


Here is the cut cylinder. Note that both pieces were independently clamped by the jaws so when cut through, they did not move.



Here is a work piece being cut along a diameter. While the last work piece was aligned by the bottom V, this time I used the vertical V.





In this last example I cut a piece of conduit through one side.



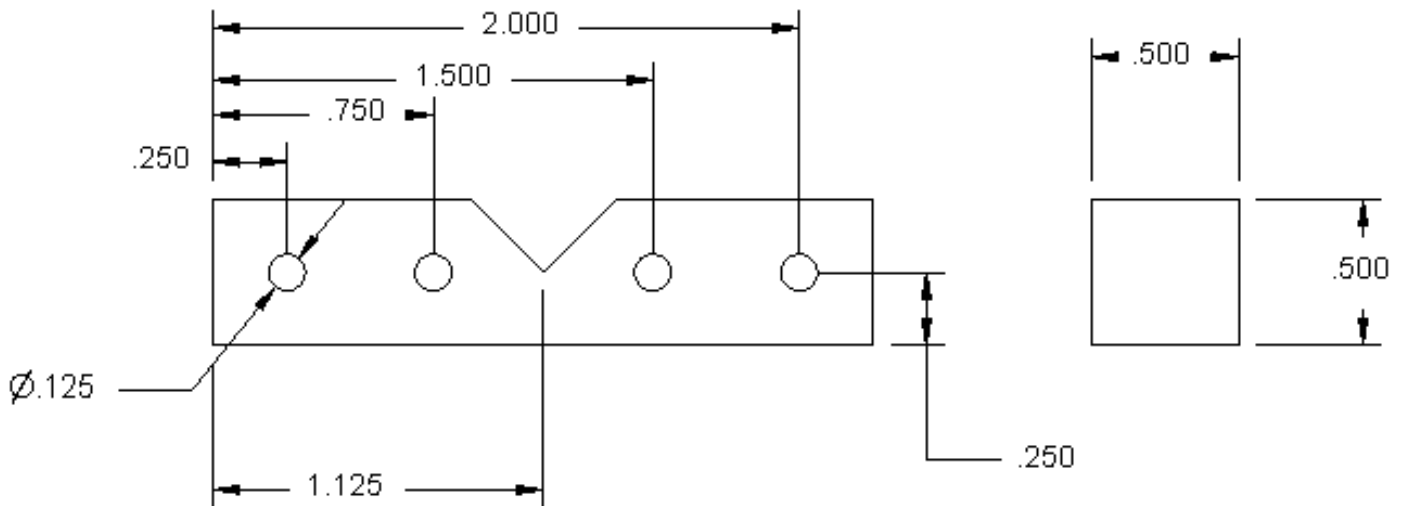
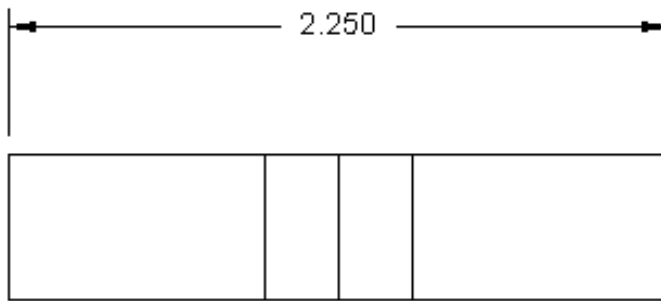
When not needed, the vise attachments just lift out. Nothing is bolted in place.

I will next present the show drawings and follow up with a few pictures of the fabrication.

Horizontal V Block

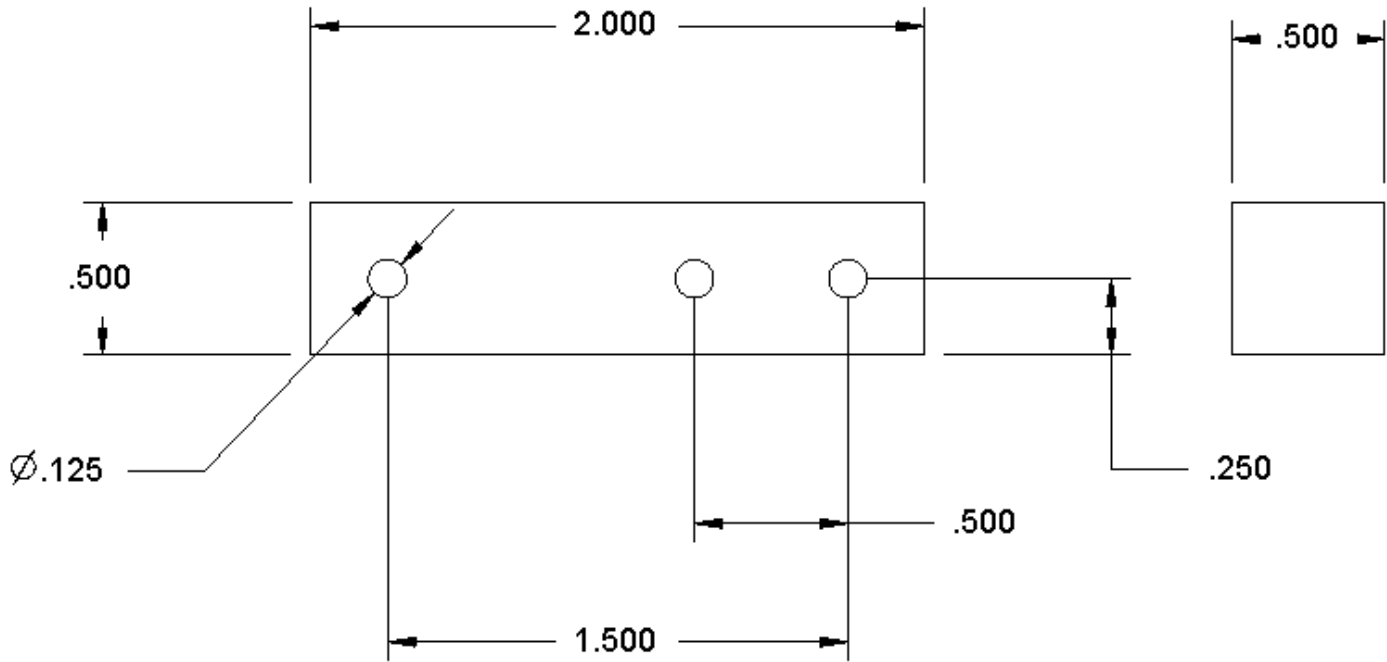
Material: CRS

Quantity: 1



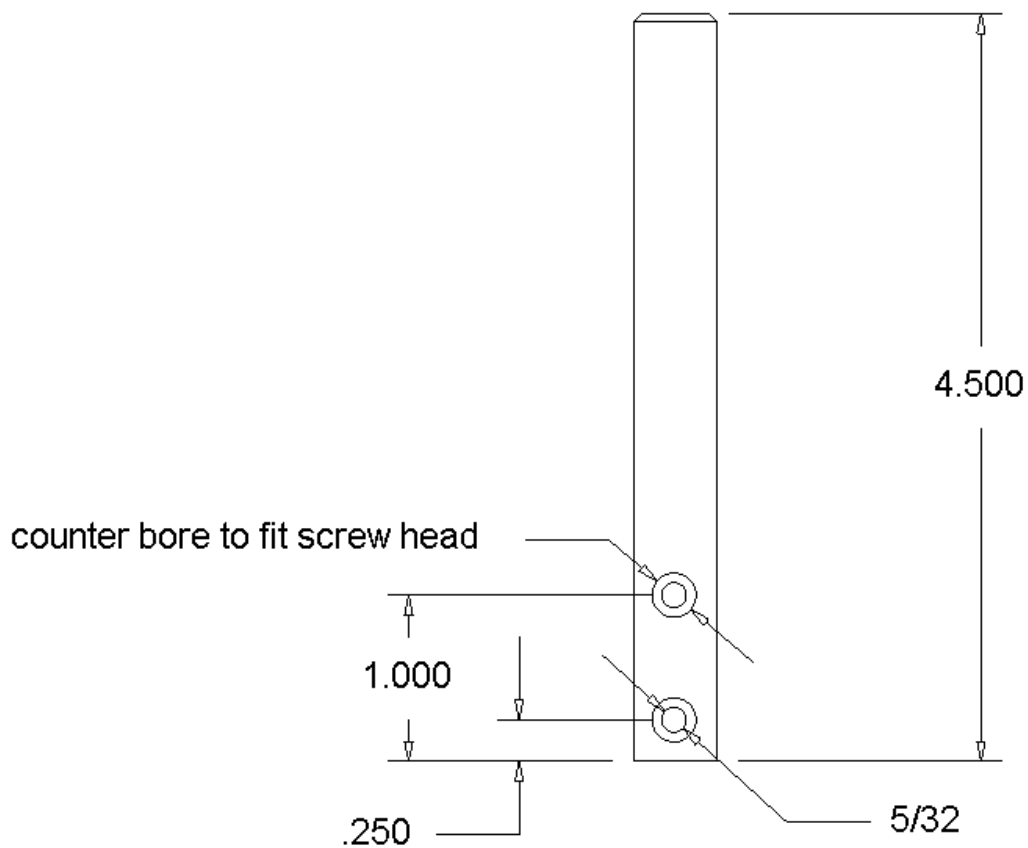
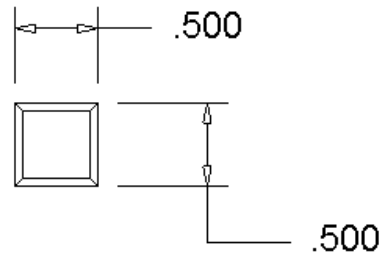
You may wish to make this part first and then match drill through the holes into the fixed jaw body.

Locking Bar
Material: CRS
Quantity: 2



Make these locking bars first and then match drill through them into the top edges of the bodies.

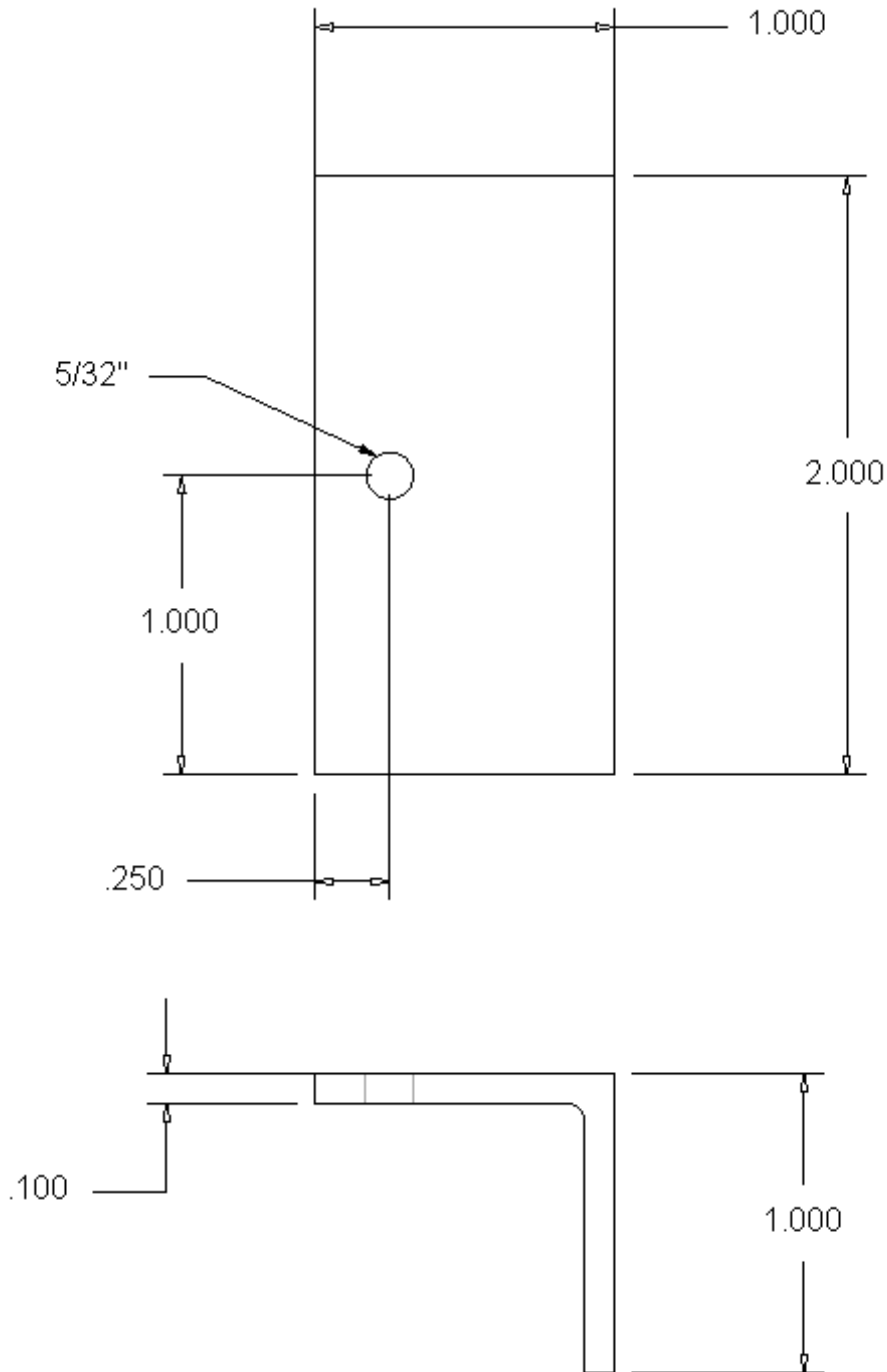
Vertical Stop material: steel



You may wish to make this part first and then match drill through the holes into the fixed jaw body. It is positioned with the blade in the fixed jaw body and the blade resting at the bottom of the cut. This stop contacts the pivoting frame of the saw.

Movable Jaw Clamp

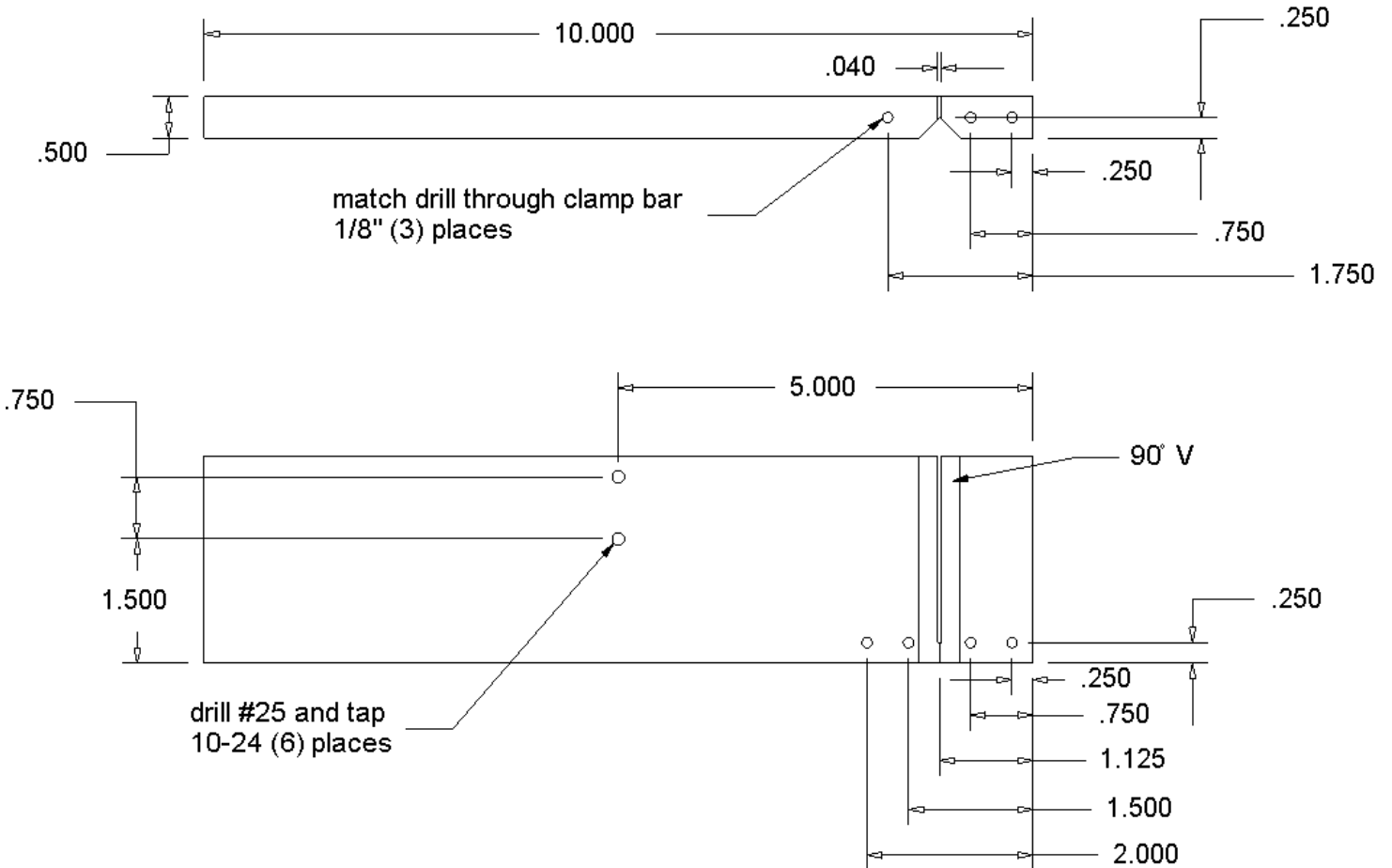
material: steel angle stock



Fixed Jaw Attachment Body

Material: CRS

Quantity: 1

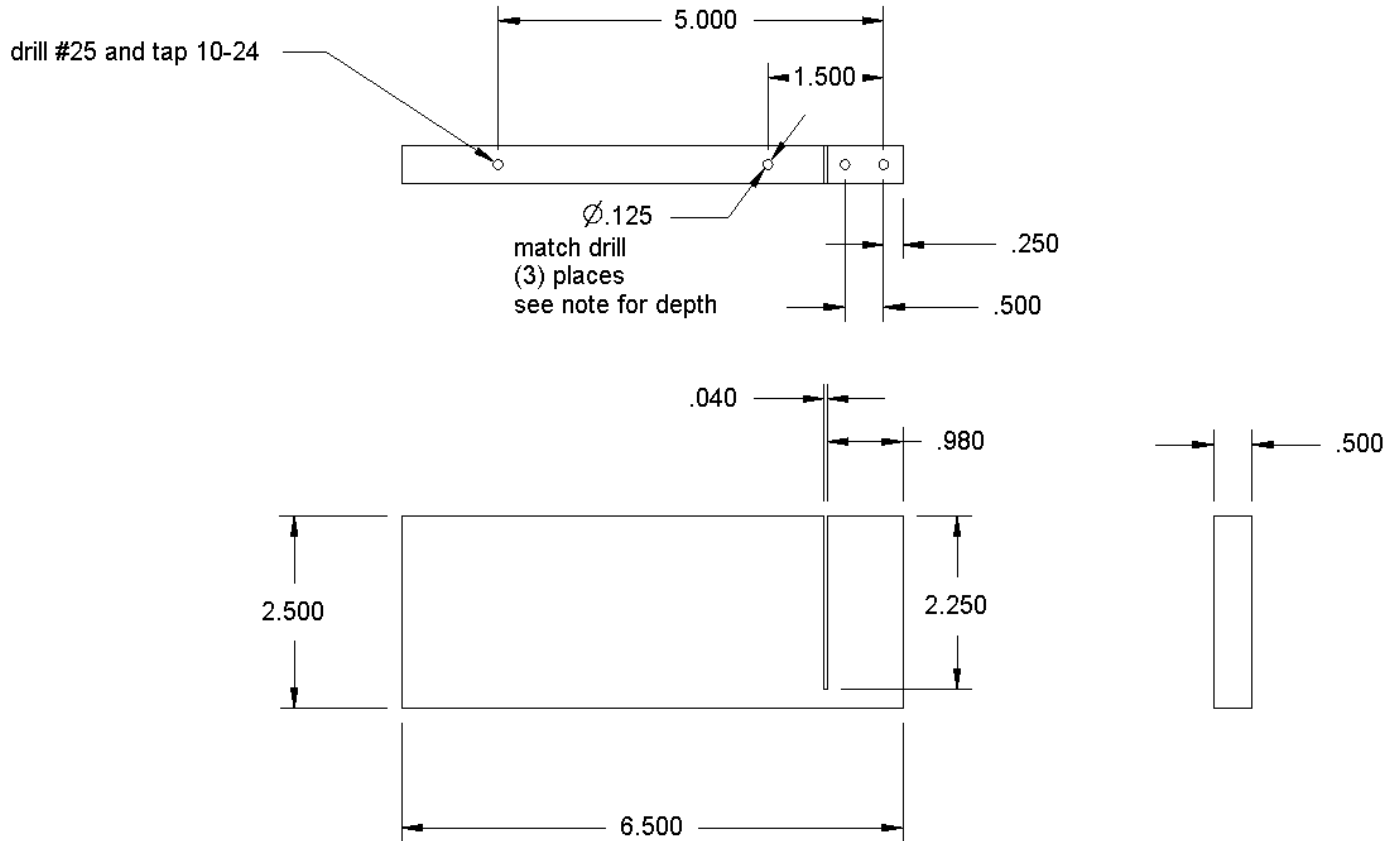


The three 1" long pins that engage the locking bar are staggered in height to make it easier to fit the bar. The right most 1/8" diameter hole is 0.55" deep. The middle hole is 0.65" deep, and the left most hole is 0.75" deep.

Movable Jaw Attachment Body

Material: CRS

Quantity: 1

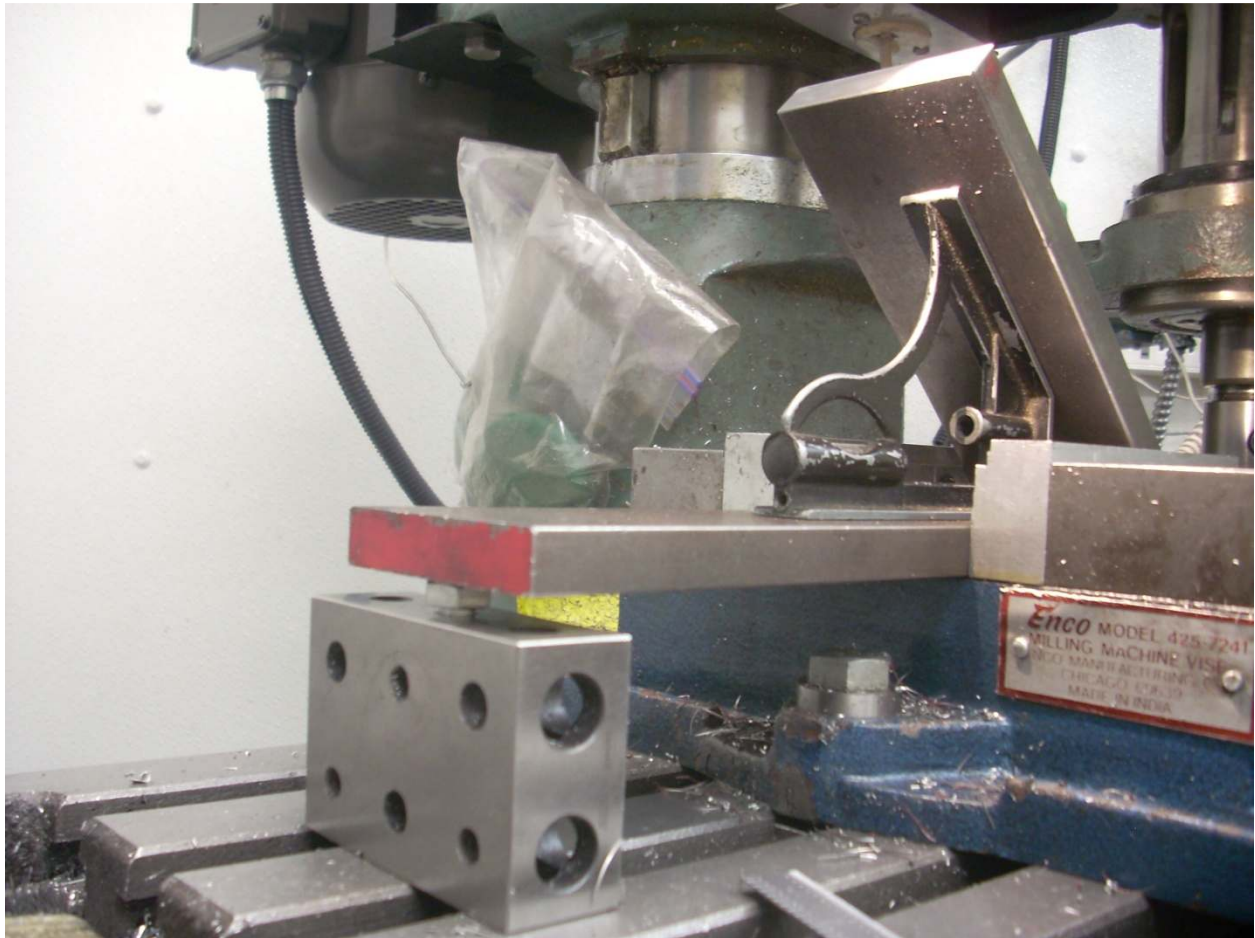


It is best to match drill through the locking bar for the 1/8" holes. The hole on the right is 0.55" deep. The center hole is 0.65" deep and the left hole is 0.75" deep.

You will also need (6) 1/8" x 1" pins, and a selection of 10-24 SHCS bolts. The pins are secured with Loctite[®] Red.

Shop Work

The only challenging part of the project is cutting the two 90° Vs.



The movable jaw attachment has been set at about 45° with my combination square. The fixed jaw blank was used as a support and to provide a spacer on the left side of the vise.

I used a bolt set into a 1-2-3 block as a jack because there wasn't room for my regular jack. Funny, but I never thought to use a 1-2-3 block this way before.

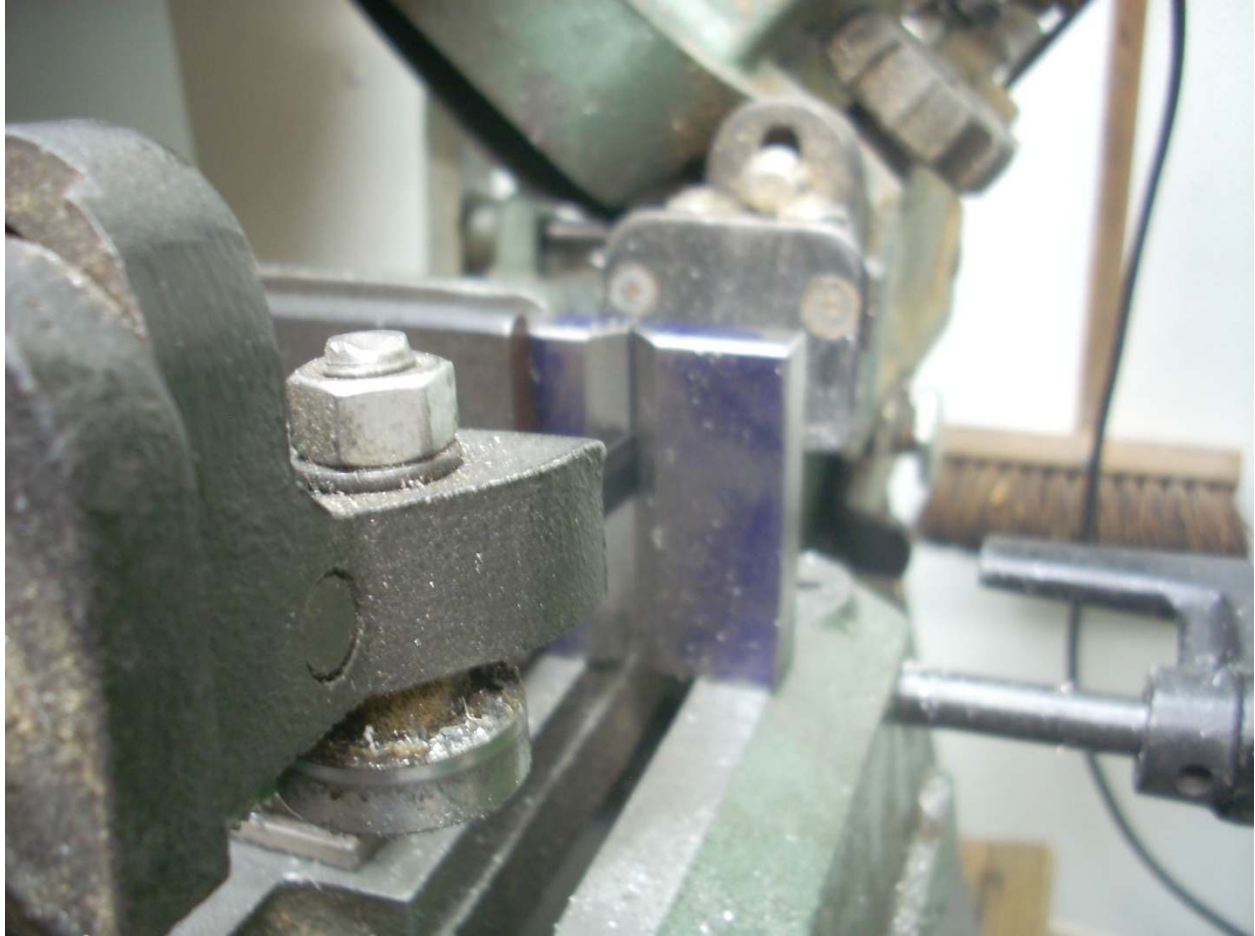


You might be able to make out the layout lines on the edge of the bar. This cut does not have to be precision but I did want it fairly close.



I took a series of 0.05" deep cuts so as not to stress the set up and cause the bar to shift. The bottom of the end mill was set even with the layout line. I then fed it in until I just started to cut the surface. Next I zeroed my X axis and fed in a distance equal to $0.25" \times 1.414 = 0.354"$.

This same procedure was used to cut the horizontal V bar.

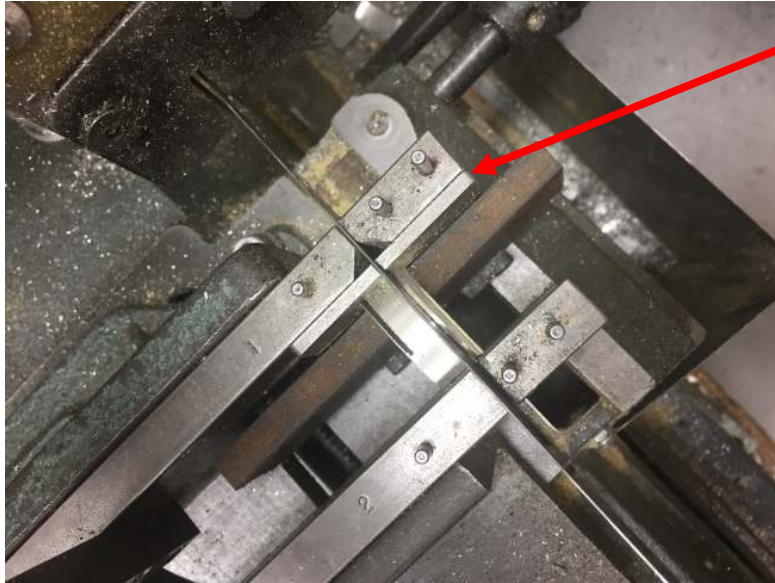


Both body attachments were sawed in place. Just be sure not to saw all the way through!

The assembled jaws were shown at the beginning of the article.

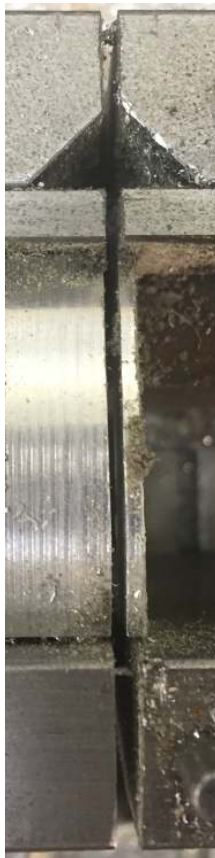
As you may have noticed, I'm a big fan of match drilling. Especially with the locking bars, it is very difficult to drill these holes so the bar does not bind up. By match drilling the first hole, dropping in a pin, then match drilling the second hole, you will be able to drop in the second pin. Then proceed to the third hole and pin. Do be careful to drill straight in or you could still have binding problems.

After years of using this jaw assembly, I needed to cut a small piece of square stock. At first I tried my side mounted vise which clamps at 90° from the built in jaws. This vise is fine if you don't need to cut all the way through. But cut too deep and the clamping force grabs the blade and can snap it.



Instead, I added a plate that bridges the back jaw vertical V. It just rests in there. The brown block of MDF supports the stock.

I still get the benefits of supporting the part on both sides of the cut but now it works for flat faced stock as well as round.



Acknowledgements

Thanks to Larry Rudd for finding numerous errors in my shop drawings.

I welcome your comments and questions.

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