The Pete Stanaitis Miner's Lamp

by Curt Welch, Ayr Hill Forge

This miner's lamp project is an excellent exercise to test your growing blacksmithing skills. It's made from a single piece of steel, and requires no joining or welding. Other than one long slit, and one simple twist, it's just a lot of hammer and anvil work. I found it to be quite a rewarding project and hope you do as well.

Though the basic design of this lamp is copied from lamps used in mines over 100 years ago (also known as a Tommy Sticker or a Sticking Tommy), this specific design was created by Pete Stanaitis and is documented on his web site at:

http://www.spaco.org/Blacksmithing/MinersLamp/MinersLamp.htm

The picture above shows the finished project, and the piece of steel we start the project with. It's a 10" piece of ¼" by ¾" flat stock.

Step by Step

1. Slit 4 ½" down the middle from one end. You can cut this with a bandsaw, hacksaw, or straight chisel. In these pictures, I cheated and drilled a 1/8" hole to mark the end of the slit and used a hand-held straight chisel to make the slit. The hole is far easier to see than a center punch mark when the metal is hot, and makes for a nice clean end to the slit. I won't admit to how many heats it took me to slit it.

2. Clean up the rough edges of the slit if needed with a file, and roughly square and straighten one side of the slit. This creates a clean piece of steel to hold with the tongs for all the work to follow on the other end of the stock. This squared off fork will become the pointed stick part of the lamp. This straight fork of the split I will call the bottom edge of the lamp.

3. Shoulder the top edge of the piece 2" from the end, and ½" from the end of the slit. Use the far edge of the anvil for the first shoulder and the near edge of the anvil for the second. These two shoulders will define the start and end of the section that will become the loop handle for the lamp.

4. Draw out the material between the shoulders to a finished result of about ¼" round. As normal, draw it out square, then octagonalize, and then round.

Pete's instructions say to draw this out to about 5".

Let's do some blacksmith math to check this. The material we are drawing out starts as 3" x ¼" x ¾" which is .5625 cubic inches of steel. A ¼" round bar has volume of L x π x r^2, where r (the radius) is 1/8" or .125. Doing some algebra to calculate what length is needed of ¼" stock to produce the .5625 cubic inch volume, we find .5625/(3.14x.125x.125) = 11.5". So Pete's 5" is a bit inconsistent with the instructions to draw to ¼" round. Calculating what size round we should end up with if we draw it out to 5", we find it's about 3/8" round.

I believe in the previous picture, I drew it out to about 10". I didn't have Pete's instructions with me, and drew it down to ¼" round. That's really too long, though it works. Anything from 5" to 10" will work but keeping it to Pete's length of closer to 5" is probably best.

5. Fuller out the 2" x ¾" end, in both directions, to make it about 1 ½" x 3 ½" x 1 ½". It will be about 1/16" thick when done. This will be rolled to form the candle cup (with no bottom).

I found this to be the single hardest step because it will want to turn into a large oval shape at the end of the stick if you just hammer it thin. Keeping the piece square and the bottom edge in line with ½" round section as you fuller it out is a challenge.

6. Bend the top fork of the split up, and square off the corners. This will become the hook handle. Though this step seems simple, it's not. Keep the piece hot as you work on it to keep cracks from forming. Using the vise along with a piece of square stock to drive down into the corner was one trick I found to help with this process. I also used the sides, back, and even the bottom of the anvil heel trying to get this shaped correctly. Use whatever works for you! If the shoulder you created in step 3 was not close enough to the split, you will find this step difficult. You might need to re-shoulder and draw out a bit more material to make this work. The good news about this part of the project is that the result will be hidden behind the candle when done, so it doesn't need to be perfect.

Note how I bend the round bar section to make it easier to hold with tongs, and easier to heat in the fire. As the project grows in size, heating the correct sections in a coal fire becomes a challenge as well. I end up bending the project into very odd shapes at times to allow me to heat and work the sections – as seen in the next picture.

7. Taper the tip of the vertical fork, and then flatten and draw out into a long, flat, leaf-like shape about 6" long. Though this is a straightforward process similar to making any basic leaf, it's made far more challenging by the shape and size of the rest of the project.

8. Decorate the handle as desired, scroll a small loop on the tip, and then form a Sheppard's crook of about 1" diameter.

9. Draw out the other fork from the split to a ¼" square about 6" long, taper the tip, and add a decorative twist. I used a ¾ turn twist. Note that the spike is left square, whereas the loop handle was rounded.

10. Roll the cup to make a round tube – adjust to fit whatever candle you intend to use. Note the direction of the roll! It should roll the same direction that you rolled the handle (I call that toward the back of the lamp).

11. Roll the ¼" round section to form the rear handle. Note that to make it stand correctly, the loop has to extend back to keep it from tipping backwards.

That's it! Finish as desired! I used standard blacksmith's beeswax.

I'd like to add a word of thanks to Pete for creating such an interesting and challenging project! I've made 3 of them now, with the last one taking about 2 ½ hours. The first one took about 5 hours.

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