Universal Tongs

Michael Wollowski

The tongs in figure 1 are possibly the most universal tongs you can make. They combine the superior holding power of the Patrick Pelgroms Tongs and the light weight and geometry of the Off-Center brand tongs.

In a prior article (see the May 2011 newsletter), I showed how to make the very versatile Patrick Pelgroms tongs by re-working existing tongs. Recently, I taught a couple of students how to blacksmith. We decided to make our own tongs, however, I did not have five donor tongs lying around. This meant that we were going to have to start from scratch. I always liked the light weight of the Off-Center brand tongs as well as the fact that you can hold items that have an end on them such as the water lily of figure 2. Hence, I decided to combine the advantages of those two types of tongs and a new kind of tongs was born. After some research, I decided to make the tongs from 36" length of 3/8" round 1045 carbon steel. In this article, you will find construction notes on how to make these tongs. The bit shown on the upper side of figure 1, I will call the "top".

Figure 1: The finished tongs

Figure 2: Usefulness of tongs

Figure 3 below: Detail of bits

Top Bit. To make the top bit, gradually flatten one end over a length of about 1¾", ending in a ½" wide and 3/16" thick tip, as shown in figure 4. Next, bend this end to a semi-circle of about 3½" diameter. The exact diameter is up to your specific needs. Make a second, fairly tight 100^{O} bend where the reigns begin. Mine ended up with a ½" radius. See figure 5 for the current state of affairs.

Using a 1" round punch; flatten the tight bend, the portion that will eventually be punched for the rivet. Flatten it to about half the width of the material, i.e. about 3/16". Ensure that you flatten a little bit towards the business end of the tongs. See figure 6 for details.

Next slit and drift a ¼” hole for the rivet. You need to make sure that the center of the hole is at least above the inside edge of the reigns; see the dashed line in figure 6. Otherwise, the reigns will open up too much when you hang them in-between the reigns.

Figure 4: Business end of top flattened

Figure 5: Top bit bent to shape

Figure 6: Top bit finished

If you do not have a ¼” slot punch and drift, a quick fix is to obtain a small round punch and grind the tip so that it acts as a slot punch. Measure and mark the punch where the tip has a diameter of ¼”. Figure 7 shows this combination slot-punch drift tool. Slit one side all the way through, then turn over the bit and slit from the other side. Continue on until the punch is just shy of the ¼” mark. You may have to use the 1” round punch to re-flatten this portion of the tongs. The hole may not be perfect; however, it is ok to drill the hole to size.

Once this end has cooled, you are ready to work on what will become the bottom bit of the tongs. Be mindful that 1045 will crack if you quench it from too high of a heat.

Figure 7: Combination slot-punch drift

Bottom Bit. The first order to business is to flatten the other end so that you can eventually form the bottom V. Since this requires a good amount of materials, spread the steel with the pein to about ¾” wide and about 1/8” thick. Do this over a length of about 1”. The transition from the 3/8” round stock to the flattened tip is about ¾” long. See figure 8 for details.

Next, form a V over a 90^{O} swage block and while you are at it, extend the V by scoring the round portion of the bit; see figure 9 for details. Bend the bottom bit by first bending the V you formed at a fairly tight 100^{O} angle, then bend the next portion to a semi-circle of about 2” diameter. Finish the bending operations by a fairly tight 100^{O} bend where the reigns begin. This last bend should be similar to that of the top bit. See figure 10 for details.

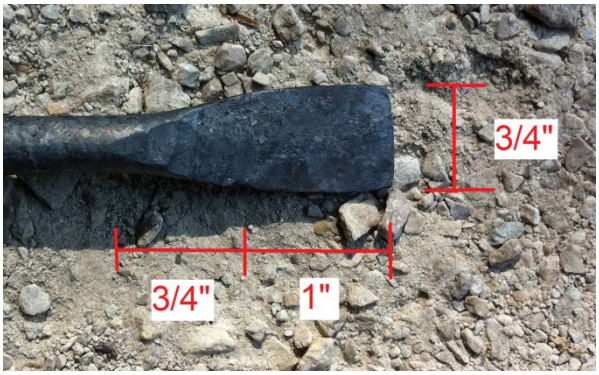

Figure 8: Business end of bottom flattened

Figure 9: Bottom bit end formed

Now is a good time for some file work. The back portion of the bit, i.e. the portion that was merely scored, now needs to be filed to a V. The V has to extend over the entire length of the bottom bit, such as shown in figure 11. The bottom bit needs to have just two contact points, one on each end. In other words, it needs to be slightly concave. This way, with the top bit meeting up in the center of the lower bit, you have just three contact points, ensuring a tight grip.

The next couple of operations are the same as for the top bit: flatten the bend, slit and punch a hole for the rivet and drill it to size. Next, cut the forged piece in the center between the two rivet holes and draw out the reigns to your preferred length and shape. For your reference, mine ended up 13” long, as measured from the rivet hole.

Figure 10: Bottom bit bent to shape

Figure 11: Bottom bit filed to V

Assembly. Using a ¼” rivet, dry-fit the tongs and based on it, ensure that the two bits line-up. Next, cut the tip of the top bit to size and file a V notch into it. See figure 3 for details. Punch a ¼” hole in a small piece of cereal box cardboard, heat the rivet and assemble the tongs, placing the piece of cardboard in between them. Once the rivet is set, burn away the cardboard and gently tighten up the rivet as needed.