

Tongs - Basics

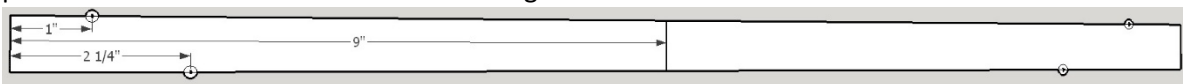
Good tongs are an extension of your hands, allowing you to securely hold pieces that would otherwise be too hot to handle. There are a larger variety of tongs than any other tool, each size being sized to hold primarily one size and shape of material.

Properly forged tongs need to hold work securely... or they are dangerous!

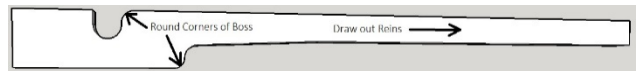
Flat Jaw Tongs are the most basic. They are made to hold one thickness of material, but can handle any width. They hold relatively well and are very versatile.

These tongs are made from flat bar with a twisted jaw. For smaller $\frac{3}{4}$ " x $\frac{3}{8}$ " works well. For larger tongs $\frac{1}{2}$ " x 1" is a good choice. The layout here is for $\frac{3}{4}$ " x $\frac{3}{8}$ ". The design of these tongs allows for their forging without the use of tongs.

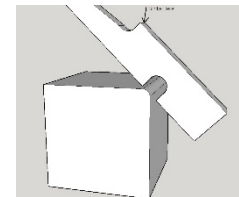
- Start with 18" of $\frac{3}{8}$ " X $\frac{3}{4}$ " mark the center at 9" with a center punch
- Layout the jaws by putting center punch marks on the edges as shown. Do this on both ends.
Note: Holding the center punch as close to the edge as possible will cause a small dimple to protrude from the side of the flat bar making it easier to locate the mark when the stock is hot.



- Take a good yellow heat Using a piece of $\frac{3}{8}$ " round bar or fuller, drive it into the first punch mark until it's about $\frac{3}{8}$ " deep. Do this in multiple steps... drive in 3-4 blows then turn and flatten the sides that spread out.
- Turn it over and do the same at the $2 \frac{1}{4}$ " punch mark... but only drive it down about $\frac{5}{16}$ " deep.
- Now draw out behind the second fuller to start the handles or reins. Draw down to approximately $\frac{3}{8}$ " square for about 4" or so.



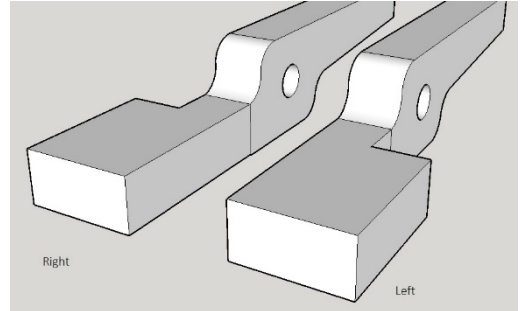
- Round the corners of the boss, where the rivet will go. Use the corner of the anvil and hold the piece up at an angle to round up.
- Now turn the piece around and do the same thing to the other end. Try to get both ends as close to the same as possible. The two halves should be identical.
- Take a good yellow heat and in the center of the boss, punch and drift a hole for the size of rivet being used. A $\frac{1}{4}$ " or $\frac{5}{16}$ " rivet should suffice.
 - Set the punch and give it a light blow.
 - Check to make sure it is the location you want it. Adjust if it isn't and hit it again lightly.
 - If the piece is still hot... drive the punch in with 2-3 good blows and then remove the punch and quench it cool.
 - Heat and repeat as is necessary until the punch bottoms out on the anvil.
 - Turn the piece over, find the "dark" spot... set the punch there and punch through. The plug will shear easier if the piece is just below a red heat.
 - Then drift to size over the pritchel hole.



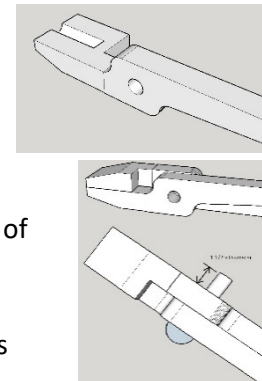
- Twist the jaw. The direction of the twist is determined by which hand you hold them in when you are using them... if you leave the reins side by side as most commercial tongs are. If you offset them so they align up it isn't as critical about which direction they twist. Take a good heat at the point of the twist and place the boss in the vice jaws so that the front of the boss is even with the edge of the vice jaws. Place the jaws of your twisting wrench just even with the rear edge of the bit and make the 90-degree twist. Looking at the end of the tong bit, twist toward the hand that will be holding the tongs when forging.

Right Handed Tongs - Tongs held in the left hand while forging.

Left Handed Tongs - Tongs held in the right hand while forging.

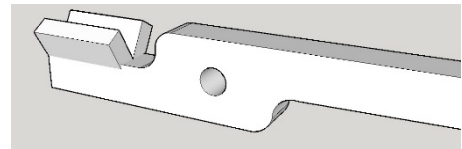
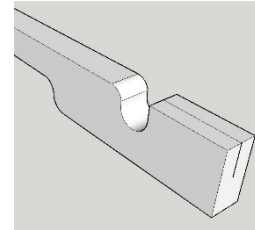


- Square up the twist. Don't thin the jaw too much but forge down to remove the twisted area. Lay the boss on the anvil face with the offset of the jaw over the edge (on the far side.) This will help keep the surfaces that pivot against each other flat and smooth.
- Cut the piece in half at the marked center punch.
- Draw out the reins to your personal preference. They can be round, square, or flat. They should have a slight taper from the boss to the end of the rein.
- Fuller a 1/4" groove in the center of the bit or jaw in line with the handle. The center of this fullered groove should line up with the inside edge of the boss.
- Check to ensure that both pieces are exact matches and that the rivet will go in the hole.
- Cut the rivet to the proper length. The amount of rivet protruding out of the hole to be set should be 1 1/2 times the diameter of the rivet. For example, if the boss width is still 3/8" on both pieces and the rivet diameter is 1/4" then you'll need 3/4" of rivet for to get through the tongs then another 3/8" to peen over for the head or 1 1/8" total length.
- Assemble the tongs, heat up the rivet, and form the head.
- Work the tongs as the rivet cools to loosen them up.
- Take a good heat on the jaws. Place a piece of material the size the tongs are to hold between the jaws and lock into a vice.
- Twist the boss area to align the rivet with the jaws and adjust the reins for alignment.



Split Jaw tongs are a variation that holds round and square stock very securely. The process for these is the same, except the jaws are not twisted.

- After punching the hole for the rivet use a hot cut to split the jaw down the middle.
- Spread it out approximately 90 degrees.
- Assemble the tongs.
- Heat up the jaws and insert a piece of square bar the tongs are going to hold.
- Tap the jaws around the square bar so it fits well.
- These tongs will hold round or square bar of that size very well.



Welding on reins

After drawing out from the fuller at the back end of the boss you can weld on reins. I prefer 3/8" round bar for reins and for these tongs I use a 10" length. You can size these to whatever length you like, maybe longer for using around a gas forge or shorter if you prefer shorter tongs.

A couple of things I have found that helps me is 1, I start my forging on the bits at the final punch mark or at the back end of the boss then draw this down and get it ready for welding. This helps ensure that the small areas of the forged down bits don't get damaged when reaching welding heats in the fire. (It also is easier to scrap the piece when I mess it up since I haven't done all of the bit forging already.) Also 2nd a piece of 10" long 3/8" round bar is approaching to hot to hold when forge welding onto the bit so to not need to use two sets of tongs for the weld I leave the 3/8" stock 20" long and then cut it at the mid-point when I'm ready to finish up the tongs prior to riveting.

As these instructions are not meant to state how to forge weld, I will not elaborate on the finer points such as how to scarf.

- Step one is to take a short heat on each end of the 3/8" round bar and upset the ends to prepare them for the weld unless the reins are in two pieces then of course just upset the end being welded on to the bit.
- After upsetting scarf each end in preparation of the weld.
- On the section of the bit just behind the boss, draw the stock down from the fuller to a width of just about 3/8". This section should draw out to about 3" or so. Then scarf that end also.
- Bring both the rein and bit to a welding heat and good luck.
- Perform the same steps to the other bit and then continue with your forging.

Now use these tongs to make more tongs.!