

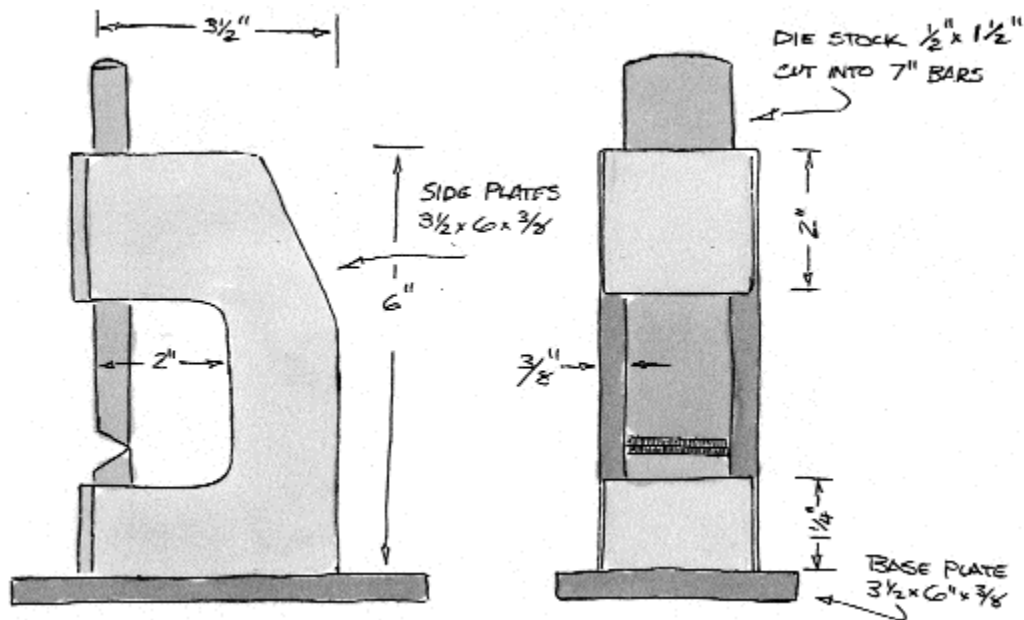
An Easy Guillotine Tool



Guillotine tools are great things to have in the shop, especially for the smith who works alone. For those of you who've never seen one, a guillotine tool is simply a frame that holds a bar of tooling that slides up and down. Jerry Hoffman's *Smithing Magician* is a good example. (See Volume 1 Issue 9 of the *Blacksmith's Journal* for other ideas) The frame can be any design that you want, but it needs to be fairly strong. The tools that are held in the frame need to be as snug as possible, yet still slide freely.

I've made several of these tools, each with varying degrees of usefulness. One was a complete failure the frame wasn't strong enough. Another that I built works great, but the design didn't leave enough clearance for wide stock on edge.

I developed the following design after seeing a similar one made by former ABANA president Lou Mueller. His was by far the better tool but Lou has extensive experience in the machine shop and has access to equipment that I wouldn't know how to turn on, let alone use. I needed something quicker to build yet still work fairly well. This tool seemed to fit the bill.



Most of these dimensions can be adjusted to suit your particular needs, although I'd caution you about making the tool much bigger. Most folks who make these overbuild the tool. That's not such a bad thing when making the frame, but if the dies are too big they'll resist your hammer blows due to the mass of the die. If you're working one inch thick stock with a sledge, by all means, scale it up a bit, but for most work it should be built the size shown or smaller.

The most important thing to remember is to start with the die and build the tool around it. Tool steel is not necessary for these dies, since most of the work will be done hot. They're certainly not necessary for fullering dies at any rate. Use tool steel for the cutting dies if you must. You could even arc weld spring steel faces onto mild steel bar stock and be nice to your hammers.

I've used hot rolled bar stock for the dies before, but cold rolled would be better. The hot rolled dies tended to slop around in the finished holder, perhaps by as much as a sixteenth of an inch, which was more slop than I'd prefer. They were built tightly, too. I had to really wail on it to drive out the bar as I was building it. The tools I used were a torch to cut out the C-shaped frame (a plasma cutter would be better) and a cheap Harbor Freight drill press vise to clamp it together during assembly. Don't use a good one, you'll get weld splatter all over it. You could modify this design with shims, bolt-on adjustable guides, etc, but I wanted something that I could build quickly and get on with my work.

Now you need to drive the die out of the tool. The newspaper helps a little bit, but you'll have to take a short piece of 3/8" thick bar and hammer the die out over a vise opened a bit over 1/2". If it's really tight and you can't get it out, try heating the tool. This will expand the metal just a touch, plus it'll burn out some of the newspaper and should give you enough slack to remove the die.

Once the die is out of the tool, clean off any bits of newspaper and test the die for fit in the tool. You'll probably need to sand, file, or possibly grind off any burrs or spots that bind. When I made dies out of hot rolled, I had a lot of mill scale that was causing binding and had to grind the dies. After I was done, the fit wasn't quite as good as I'd prefer, that's why I suggest using cold rolled for

the dies, and probably the front and back die support plates as well. (I used cold-rolled for this example, and the fit was much better.)

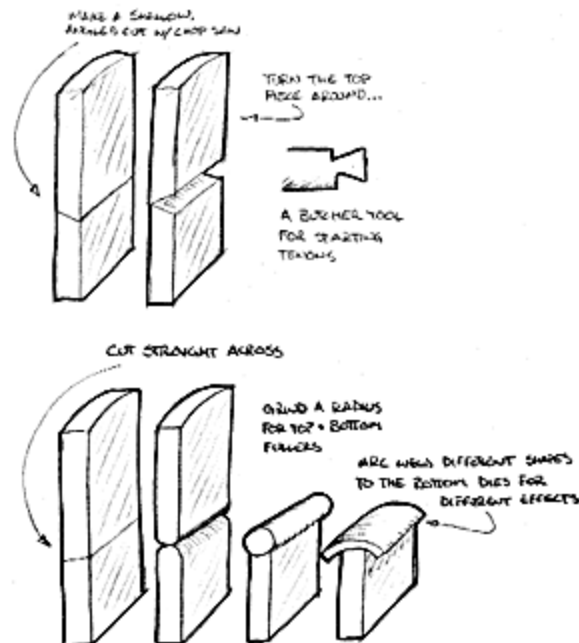
Once the base plate is welded on, all that remains is a mounting piece on the bottom, either an appropriately sized piece of square stock to fit your hardy hole, or a piece of bar stock for use in the vise. I went with the hardy stem, most of our vises are too high for this tool. You could use a piece of bar steel that fits diagonally across the hardy hole to work both as an anvil tool or a vise mounting, but I've never tried this.

When you fit the die, you're looking for a snug, sliding fit, but you don't want the die to stick. If they do, the tool will be difficult to use, although a slight sticking would probably be OK. The dies should break in as the tool is used and slide a little easier.

Once you get the dies fitted the way you like, wire brush what you've done so far. (Sandblasting would be better.) Drill a hole through the base where the bottom die will be, this way if a die gets stuck you'll have a way to push it out. Weld the tool onto the base plate. Again, it helps to clamp the tool down to keep it from shifting. Tack weld all four corners first, then chain weld the side plates onto the base plate, and the front plates. I put the die bar into place before welding, just to be sure the holder stays in alignment.

Dies for the Guillotine Tool

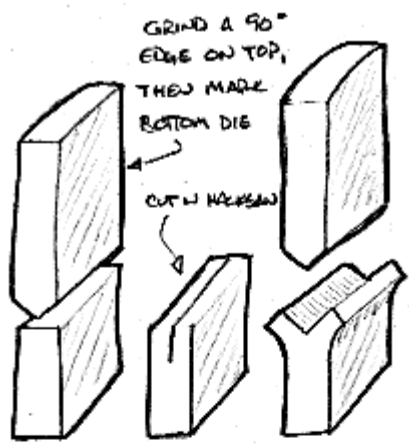
There is practically no limit to the number of dies you can make for the guillotine tool. It's basically a matter of modifying the end of a piece of bar stock to suit your purpose. You are limited in design of the top die to the width and thickness of the die, in this case 1/2" by 1-1/2". Since the bottom die is stationary, you can weld on any size of rod, plate, holders, etc. For single pattern stamping of, say, a small diamond or heart shape, it may be better to build a holder for smaller dies, about 1/2"x1".



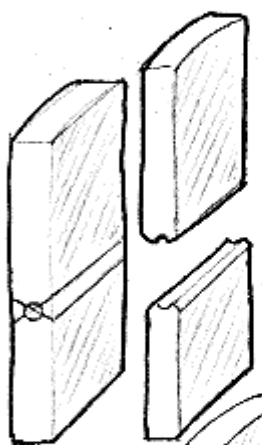
Since these dies are only used on hot metal, mild steel will suffice, even for cutting tools and butchers. I've used one for years with minimal wear, but that's only occasional use. I bought some case hardening compound to try on these, but it's too soon to tell if it makes a significant difference. If you plan on using these tools daily, it might pay to make dies out of your favorite flavor of tool steel. I've even arc welded tool steel faces onto mild steel dies with good results. Fullering dies are a natural for these types of tools, since the edges are always aligned and parallel.

Butcher tools work well and are easily made from one shallow angled cut with a chop saw. I haven't tried cutoff tools yet, but I hear they work as well, especially straight edged hot cuts. These would be best made from tool steel, and you'll need a guillotine tool with a minimal amount of slop in the dies.

Grooving dies have a lot of potential with a guillotine tool. They are designed to work along the length of a bar. They're neat because they can work two sides of the bar at once. Other uses for this tool are decorative pattern stamping, tenon forming, swaging, etc. Though I've never tried it, a guillotine tool should work under a treadle hammer or hydraulic press. If you use a press, though, you may need to make some arrangement to keep the dies from overheating.



GET THE BOTTOM DIE
HOT, DROP INTO TOOL
AND SPREAD. USE TO
SET V-JAW TONGS,
GROOVE LEAVES, ETC.

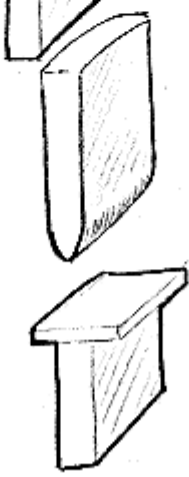


THE RESULTING DIE SET
CAN BE USED FOR COLLARS
OR GROOVING STOCK
BEFORE TWISTING

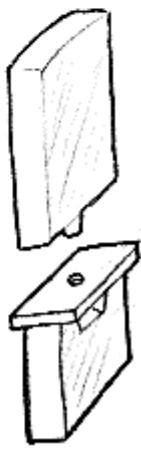
DRILL INTO DIE STOCK
THEN USE TOOL STEEL
INSERTS FOR PUNCHES,
CHISELS, ETC.



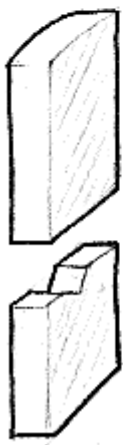
CUTOFF
TOOL



TOP
SWAGE



PUNCH



TENON
TOOL



SETTING
CHISEL