

4 Hammer Notes

the Newsletter for the Mid-Atlantic Smiths Association

Summer 2007

GEORGE DIXON'S PRESENTATION AT BGOP'S SPRING FLING*- Jan Kochansky*

[These notes from George Dixon's presentation, BGOP Spring Fling, 21-22 April 2007 are not necessarily in the order presented. -J.K.]

It takes less time to use old techniques to produce an old appearance than to fake old appearance using modern techniques.

Chisels etc. for treadle hammers should have small cutting edges to concentrate the force of the blow. Small edges also enable a straight chisel to cut curved lines.

Treadle hammer tools should be hardened for all but the top ½ inch or so. You want the struck end to mushroom rather than spall. The soft end also protects your hammer dies. Tools should be no longer than 4" or so to inhibit kickout.

Cutting plates should not be made of soft materials like aluminum or copper. They deform too much and make cutting difficult. If you've been cutting mild steel, your chisel will not be damaged by a mild steel cutting plate.

All butchers, chisels, etc. should have curved edges so you don't get nicks from sharp corners.

Use rubber cement to attach a paper pattern to the stock. Use a regular chisel to make light setup lines through the paper pattern; it won't shift the pattern like a butcher would.

Use a sharper angle on the butcher used for the first pass. This leaves a shoulder for the more obtuse second pass tool to ride against.

It is better to run several cycles of first pass/second pass tools to get a deep line than to use one pass and hit harder, which would give a less smooth surface and increase chances of undesired effects.

Make first and second pass tools in a set the same width. Otherwise the second pass might not be able to follow the first pass line.

The largest work done in the Yellin shop was the gates for the Federal Reserve Bank in Chicago. Each leaf of the pair weighed 25 tons and involved 6'8 stock forge welded (!). They used a lot of coal.

Yellin's tooling was made exclusively for use with wrought iron. It doesn't work with mild steel, which is too resilient and not soft enough at forging temperature.

George uses S-1 or S-7 for most tooling. He prefers S-1, but it is getting hard to find.

Do careful drawings. It is much cheaper in both time and money to find mistakes on paper than in iron. Make sure all parts clear each other when, for example, a gate swings.

Put the drawing on a wall and stand back. Does it look good?

1/8" Stock is about ideal for chasing and repoussé. It gives enough metal for good effects without taking forever to do.

To make a leaf tool (for veining leaves) fuller a tapered groove into a piece of fairly thick stock, and then roll it over the horn. It's similar to a very fat fishtail scroll.



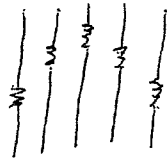
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Leaf hammers are made in sets with progressively thicker faces so they can go down the proper distance into the groove of the leaf tool.

When sinking copper, if you don't work within 1/8-1/4" of the edge, you can sink a hemisphere without changing the diameter. The unworked edge keeps the diameter from growing.

For dippers and other such tools in copper, don't anneal too late in the process or the piece will be too floppy.

If you are doing twists on pickets, don't do the whole one — no contrast. If you only do 8" or so on each, the twisted area can be moved up or down on adjacent pickets for contrast.



Designs with re-entrant elements are looked at longer than those without.



Leads eye out of design



Leads eye back in

You want to have elements that draw people in from a distance, and different elements or details that provide nearby interest, like different quatrefoil ends or rivet decorations.

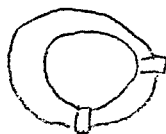
“A line worth making is worth making **boldly**.”

To hide electric welds, smooth the surface, heat to forging temperature, add some scale, and tap it lightly into the surface. After repeating this process a couple of times, the weld essentially disappears.

Square stock on the diamond is wider visually than it is on the square. It also has 3 lines (both edges and the corner facing forward) rather than 2 (the two near corners). You get greater visual impact without increasing the weight.



When setting tenons, cut a couple of grooves in the countersunk part of the mortise for ‘keyways’. When the tenon is forged into the mortise, some of the metal will flow into these grooves and keep the stock from turning. Corollary: make sure you have it where you want it before setting the tenon.



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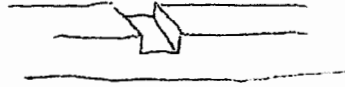
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For a moulding die (for forged patterns along a bar, for collars, frames, or whatever (the example he used was for longitudinally-grooved $\frac{1}{4}$ " $\frac{1}{2}$ " naval brass bar):

1. Hob a rough groove into the die stock (he used an old piece of S-1 about $1 \times 1\frac{1}{2} \times 6$) by hammering a bar somewhat smaller than the brass size into the hot bar until flush.



2. Then use the edges of the groove as guides for fullering pattern grooves into the bottom of the rough hobbled groove. Make several passes.



3. Relieve the ends of the grooves to avoid nicking the stock.

Bronze goes from reflective to matte a little before forging temperature is reached. Don't take it above red or it may shatter when struck [been there, done that]. If you are forging bronze, brass, or monel, use a gas forge. The sulfur in coal has disastrous effects on copper-containing alloys. If you get the stock too hot and it melts, turn the forge off and let it cool enough for the metal to solidify before trying to remove it. Otherwise it gets all over the place [this is also the voice of experience].

When sinking large patterns, it helps to drill an evenly-spaced array of holes about half the thickness of the die stock. It gives the metal something to expand into and makes it possible to sink much larger shapes than would have been possible into solid metal using a given amount of force.

THE PREVIOUS ARTICLE WAS FROM THE SUMMER 2007 MID-ATLANTIC SMITH'S ASSOCIATION'S NEWSLETTER HAMMER NOTES

Post Anvil

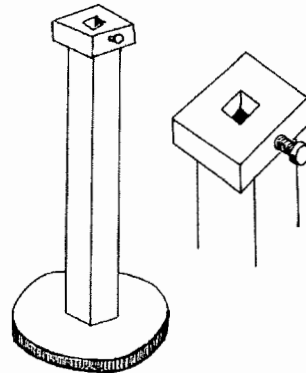
by Richard Shepard, Pittsburgh Area Artist-Blacksmiths
from the New England Blacksmiths Newsletter

Top plate: 2" thick mild steel.

Post: 4" square tubing filled with scrap metal and sand.

Base: 1" thick plate.

Not only for when you don't want to be putting stakes and cut-offs in and out of your anvil's Hardy hole, but if you make it the same height as your anvil, it can serve double duty as a stock support. It has been a helpful addition to my shop.



THE ARTICLE TO THE LEFT WAS RE-PRINTED FROM THE CALIFORNIA BLACKSMITH ASSOC. MARCH/APRIL 2007 NEWSLETTER