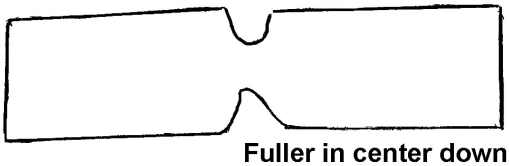
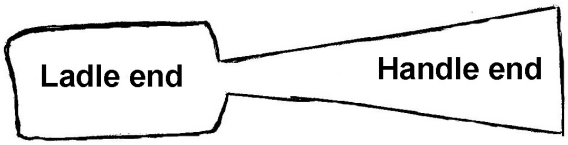
18th Century "Tasting Spoon"

By Marshall Beinstock

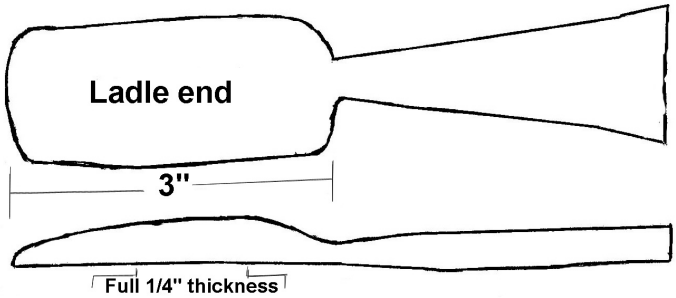
Start with 1" x 1/4" flat by 4"



Fuller in center down to sbout 1/2 original width
maintaining 1/4" thickness



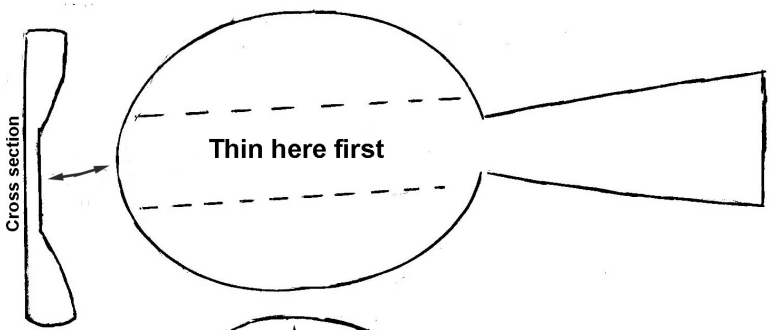
Draw out handle end as shown



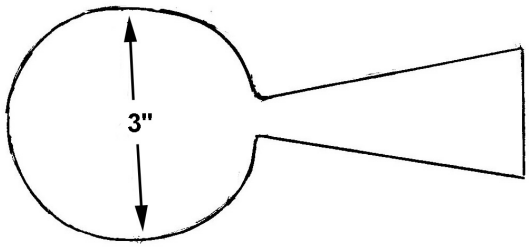
With a cross pien
hammer, taper and stretch
ladle end as shown,
maintaining the 1" width

thinner here

Slightly thicker
here than tip

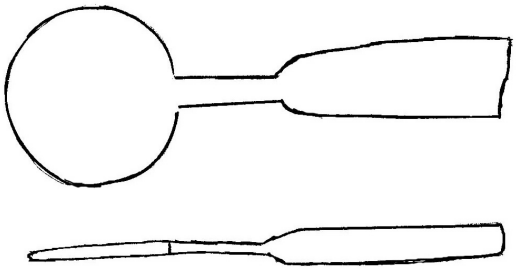


With the cross pien, start
in center, fuller to not quite
the finished thickness



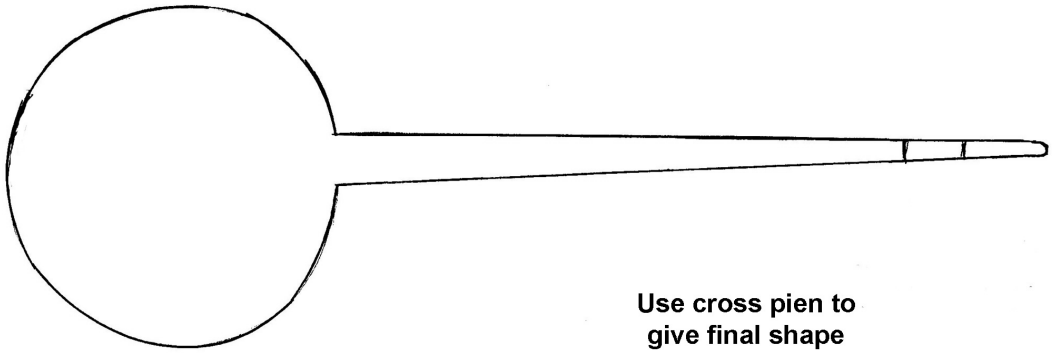
Then, keeping thick edges down in
fire, draw out two edges as shown,
use face of hammer to smooth out
fuller marks

18th Century "Tasting Spoon" Continued



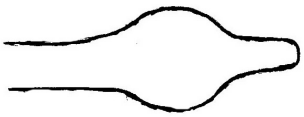
Next, start drawing out handle as shown, to a long straight taper in both planes.

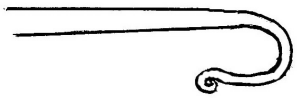
Leave enough mass on end for this detail



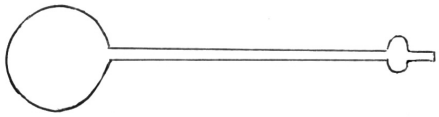
Use cross pien to give final shape

File edges to 3" round





Sink ladle at a red heat into a half round spoon form or a wooden block.

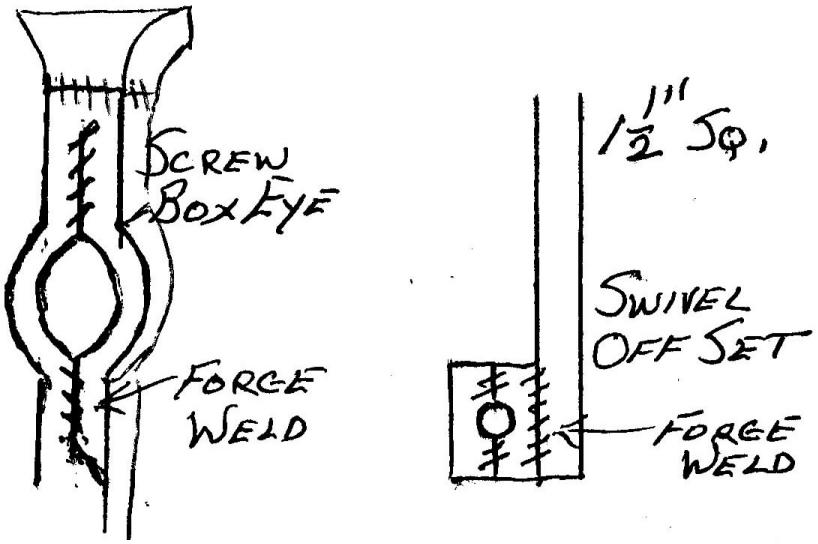


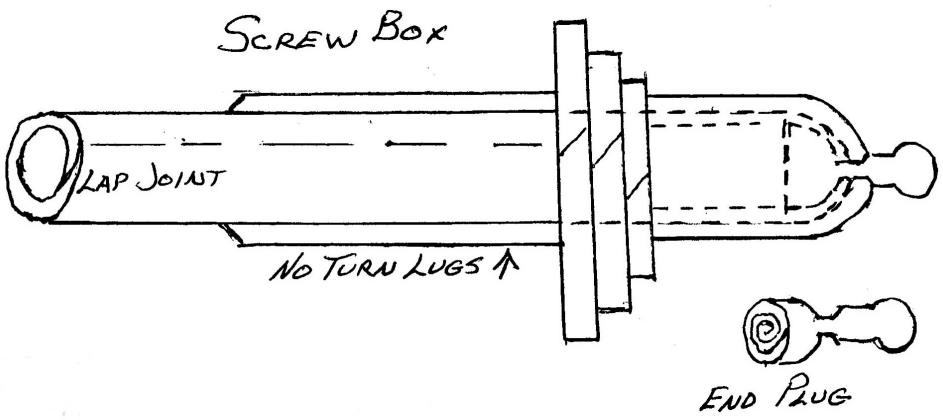
An Adventure in Leg Vise Rebuilding

Article written and contributed by Tim Suter

I happened upon a very old leg vise at a garage sale, that attracted my curiosity. Naturally it was ridiculously high priced, which I questioned and received the standard qualification that "it is old". (So am I but I'm not worth more.) Tactfully I explained that I doubted that it would bring that price as I had seen others in much better condition at venues where there were interested buyers who would never pay that much. Looking it over, it had no spring, the handle was a piece of 3/4 bar, bent over at each end and the screw moved erratically. Leaving. I decided that I would like to have it for the challenge, if the price was right. I kept my eyes on it for the next three weeks and it hadn't moved. I felt the time was ripe so, approaching the seller with tempting green in hand, I boldly asked him if he was ready to part with it for a realistic price. He asked what that would be, I said $25, he said $30. Quick as a hootie owl snatching up a June bug I slapped the green in his hand and the good, stout, young fellow even lifted it into the pick—em—up truck for the congenial old gentleman.

Getting it home I promptly tore it down for clean up and closer inspection. This was indeed an old and very interesting vise. It appears to have been made by hand, hammer and anvil, without the use of a mechanical hammer. The screw box eyes were formed by the leg stock (1 1/2" X 1 1/2") being forged out to 5/8 X 3 X 16 inches, folded over at about eight inches, the eye formed around a mandrill and forge welded back into itself, then forged to octagon to round and with the usual upset at the bottom. The jaws themselves are a separate forging, forge welded onto the top of the legs. At the bottom of the movable leg is an offset for the pivot bolt hole. It appears to have been made with two pieces of the 1 1/2" square stock 3 1/2 inches long stacked at the inside bottom of the leg and forge welded together. A possible explanation for the 1 1/2" square stock is that it was a common bar stock size produced by wrought iron finery forges before various standard rolled bar stock shapes became readily available late in the nineteenth century. It was not uncommon for iron bars such as this to be transported to market from remote Pennsylvania mountain forges by being bent to conform and carried over the backs of pack horses. The pivot bolt is 7/8 but tapered for a solid fit into the hinge side plate, the nut was blacksmith made.



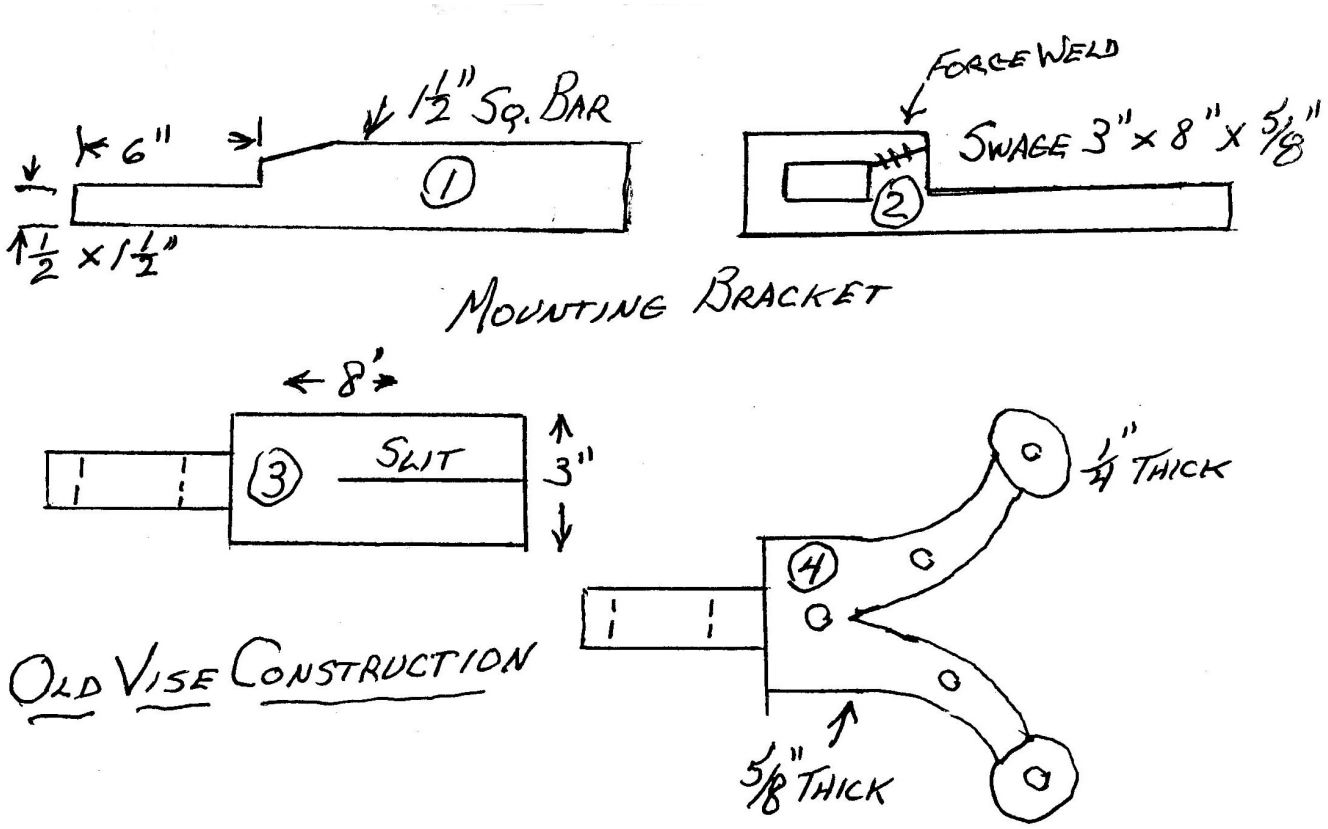


The screw box itself was made up of nine parts. The barrel was a rolled tube 1 1/2" ID X 2" OD with a lap seam, the bell at the back was made the same with a 2" ID. These two pieces were then forge welded together at the end and forged over into a recess in the end plug. The plug itself appeared to have been made with a roll up of thin plate and simultaneously welded as it was forged to shape. The three thrust rings were forged of 5/8" square bar with a lap joint. This joint was not welded. I think the purpose was to have a tight fit but one that could be forced onto the barrel. This was all brazed together as a unit along with the female screw thread inside, and no turn lugs.

I put the screw box assembly in my gas forge and brought it up to bright orange to melt the brass, expecting to easily extract the worn and damaged screw thread. Not so, the thread was distorted and tangled and refused to come out easily, so I bumped it on the pavement several times which promptly distorted the tube to a point of no return. Now I had to take it apart to salvage the thrust rings, end plug and no turn lugs. This was more difficult than you might think. It seems to me that things that have been together a long time like it that way.

To make the screw helix, I formed that with 3/16" key stock, the dimensions came out compatible with the screw thread depth and 1 1/2" ID pipe for the barrel. I wrapped the key stock into the screw threads, carefully correcting a twist that wanted to develop as I progressed. This was done cold so the helix could spring open a bit to have a more comfortable clearance with the screw. Six foot of key stock yielded about eight inches of helix. Next I made a sleeve of .040" brass that fit snugly around the screw helix. (When soldering or brazing remember mothers admonition "cleanliness is next to Godliness") I thoroughly cleaned the inside of the pipe and the brass sleeve, fluxed them with a paste flux and put the thread helix into the sleeve.

I wanted to put the screw into the helix in order to assure a proper thread alignment. The problem would be, how to keep the brass from fluxing onto the screw. This was solved by coating the screw liberally with high temp 1500° spray paint. I cured the paint according to the instructions and ran the screw into the helix. Then the brass sleeve, helix and screw were coaxed into the pipe as a unit, it was a very snug fit. The four foot length of pipe was not cut as I wanted a good handle on a piece that would, otherwise, be awkward to handle with tongs. The eight inch depth of my forge was just right for the heat zone I needed, with the screw excess through the back door. The piece was put in the forge, the forge lit and brought up to heat along with the piece. As it came up to heat I could observe,



at the end, the flux get fluid then the brass, next the helix come to color and finally the brass flow to the helix. This happened at a bright orange approaching yellow. I rotated the piece slowly arid soaked it at this temperature for several minutes before turning off the forge. (I wouldn't hesitate to try this in a coal forge at another time.) When it returned to a black heat, I took it from the forge and put it in my vise.

Now for the moment of truth, would the screw be free? I tried to turn it with a bar, no movement, don't panic! I bumped the bar with a hammer, again, again, a barely perceptible movement, again, more movement, a sigh of relief. Continued teasing and the screw was out. After fully cooling the screw was teased in and out several times and as the flux residue was broken up the action became increasingly smoother. The pipe was cut to length and the end forged over and into the groove of the end plug, using a torch and localized heat. A short piece of 2" ID tail pipe was forced over the 1 1/2" pipe to form the bell, forged over and gas welded to the 1 1/2" then planished to a nice transition into the contour of the end plug. The thrust rings and no turn lugs were brazed individually to the assembly with the screw back in place to assure preserving thread alignment.

I used a 3/4 X eighteen inch piece of 5160 for the new screw handle. A band of 1/4" X 1/2" was arc welded with a generous fillet at both sides then forged into a suitable ball at each end. The purest could do this in his forge by making a half round with 1/4" X 1" in a swage for the bands. Some jaw mis—alignment was corrected with heat and hammer work at the hinge lugs. The jaw spring of course was no challenge to make.

I had an educational experience, I have a good post vise from virtual junk
and best of all I had fun. **Tim Suter.**

Foundations

A Resource for Beginners... by Bud Oggier

Part 1. The Anvil's Ring/Spring 1986

Foundations is a new column designated for the novice and we are fortunate to have Bud Oggier as its' author. While this material is not geared for the experienced smith, I think anyone who has tried to teach the craft to a beginner will appreciate and profit from Bud's words. For the person who is attempting their first time at the anvil, let Bud guide you along. It doesn't get any clearer than this!

Well, Jean, so you'd like to learn to be a blacksmith. Let me show you around the shop a little and then we'll get started.

"In order to do any serious forging you need at least four tools:

- Something to heat with-a forge
- Something to hold the iron-tongs
- Something to hit on-the anvil
- Something to hit with-the hammer.

"This is my forge. It has a 1/2" plate for a base, with a fire pot close to the chimney. A supply of air comes from an electric blower underneath. Notice the forge is set up so I can put a long bar into the fire with plenty of room on each side. I can heat the middle of a twenty foot bar if need to.

"My anvil is set two steps away so I don't have to walk much, but with plenty of space all around it to manipulate a piece. The anvil is set up with the horn at the left. In some shops the horn is set to the right. I don't see much advantage either way, so I guess it's all in what you get used to. The height of the anvil needs to suit the smith working on it. A good rule of thumb is that the knuckles of the smith should hang just about at the top of the anvil face. Here, at the right of my anvil, is a rack and table that holds my hammers and stools to be "struck". My vise is mounted at the end of the forge and the tong rack is on the wall beside the forge. As you can see, there are a lot of other things around here, but we'll talk about them when we get to them. Right now, let's talk about fuel for our fire.

"Soft or bituminous coal is used for blacksmithing. Any soft coal that has the following qualities is suitable: low in sulphur, low in ash content, high fusing point of the ash, and it must convert to coke readily. Sulphur in coal causes the iron to become 'hot short'; that means that the iron breaks easily when at forging heat. A high fusing point reduces the amount of "clinker" that forms in the bottom of the fire. Clinker is really solidified molten ash. If you find a coal that meets all of the above, don't be concerned if it contains a fair amount of "fines"; this will coke up and be fine. In fact, some smiths prefer to use a pulverized, soft coal. If the lumps of coal are larger than an egg, break them up with your hammer. I like nothing larger than a walnut.

"How about we make a fire and get started.

"Jean, you'll see as we work along that I'm pretty set in my ways and I never work or watch without safety glasses.

"Each day when I'm down here at the forge, I separate the 'green' coal from the coke, put the coke over here at the side of the forge, and clean out the fire pot completely, I like to start out the day with a new fire that I know has no ash or clinker in it. To start a fire I use three, full sheets of newspaper wrapped up in a ball (leaving a small portion loose for lighting), light the tag end, hold it in the chimney hole for a few seconds to get the draft started, drop it into the firepot or "tuyere", add some small coke from the pile, and turn on the blower enough to make it burn briskly. Put on more coke as soon as the fire is burning well. Build up a pile about three to four inches above the fire pot. Now add green coal to both sides and the back. Don't be stingy. You don't burn coal in the fire, but convert it to coke by heating it on the sides of the fire and driving the gasses out of it. Coke burns much hotter than coal. Coke is what you actually burn.

"Well, it looks like the fire is burning well, so we can shut back the blower. Always try to work with the smallest fire you can that will do your job. Too large a fire only uses up more fuel and makes clinker faster. It the fire gets too large, put a little water along the edges and cool it off.

"Okay, Jean, let's get started. In forging, all you can do is make a piece longer and thinner, or shorter and thicker. All forgings are variations of these two functions.

"Jean, the way I like to teach is to tell you what we're going to do, show you how to do it and then have you try it.

"To start with, let's take two pieces of 1/2" round, mild steel and forge one of the ends flat. We'll heat the portion where we will forge until it is about orange, then put it on the anvil and forge it fiat. Other types of steel may require different temperatures. Notice when I put the piece in the fire, I push it straight in, not down toward the bottom. The reason is that the air blast enters from the bottom and I want most of the oxygen consumed before it reaches my work piece. Heat plus oxygen causes scale (ferrous oxide) and the more scale, the smaller the piece becomes. Sometimes you will get as much as a 10% reduction in size. When you work at the anvil take a comfortable stance. Try not to bend over too much; it gets tiresome. Hold the hammer close to the end of the handle and strike firmly.

"Well, my piece is hot enough to work. Notice that my hammer blows start at the end and work toward me. Try to hit with the hammer face parallel to the anvil. I'll forge this down to about ¼" thick. Okay?"

"Now you try it".

"Hold it, Jean. You've done well, but now the piece has cooled off so it won't forge well. No one ever made any money pounding cold iron. Once your piece has reached a "blood" red it's time to reheat. Notice that your piece is not uniform in width; that's because your blows were not uniform in force.

"Now, let's work on the other piece of steel and make one end square. In forging a square we'll do everything we did before, with one addition. Between each hammer stroke rotate the piece a quarter turn.

"I like to let my fire develop a large bank of coke on either side and pull coke from the back end to feed the fire. I think it keeps my fire smaller and the side banks of glowing coke act as an oven which intensifies the heat in the middle.

"Well, let's make a square on the other end. Remember to do everything as before, plus turn the piece between hammer strokes.

"Now my piece is hot enough. I hit it once, turn my hand a quarter turn to the right, hit it, turn to the left, hit it, turn it back to the right, hit it, turn, hit, turn , hit. See how that works?

"Okay, you try it. Good!

"Now, let's take the piece we are working with and make the square end round again. To make a square piece round or to reduce the diameter of a round piece: first forge a square, then knock down the edges to make an octagon, and then forge it round. Remember to put your piece straight into the fire, not down into it. Pull some coke over it, adding more from the back if you need it. Set the heated piece on the anvil on its edge, not on one of its flat sides. As you forge this edge flat you will be simultaneously flattening the opposite edge as well. This is because when you hit a piece on the anvil it is really getting hit twice; once on the top by the hammer, and also on the bottom side by the anvil. After you have forged those two edges flat, turn your piece and forge the other two until you have an octagon with sides of equal size.

"Fine, Jean, but try to make each blow with the same force. Good, that's better! Let me heat up and I'll show you how to complete rounding it up.

"Notice my blows are lighter now because I don't have to move as much metal. Try to keep your hammer face parallel to the anvil. Roll the piece after each blow and don't hit the same place twice. The less forging you do while rolling the piece, the better. Do just enough to round it up. See how that came out? Your turn.

"Don't be afraid to let your piece get hot enough — bright orange to yellow is a good heat for this steel. Now you're ready — remember, don't hit hard and turn after each blow.

"Great! Notice your piece is longer now than when we started. The stock had to move somewhere and the only place it could go was to get longer and thinner.

"Well, Jean, let's make this piece shorter and thicker. The process we are going to do is called 'upsetting'. To do this, heat the piece, keeping the heat contained in the area to be made thicker or upset, but strike it on the cold end.

"1 want to take two heats this time to show you what happens before you try.

"Now that the end of my piece is hot, I put the hot end on the anvil with the piece vertical and strike the cold end. It's not so much how hard you hit it as

how often. See, now the hot end is starting to swell out. Watch your piece carefully. If it bends, straighten it out before you go any further, then continue.

"Jean, the length of the section in this bar we're trying to upset is about 3" long and is less than 1/2" thick. If we try to upset the entire length at once, we would have a lot of bending problems. To overcome this, I'm going to reheat the piece to just beyond the upset portion, cool off about 1 1/2" of the end with water, and then upset further by striking from the same end as before. One other thing that will help is to first forge a short, blunt, four-sided taper on the end we want to upset, to concentrate the force in the center.

'I'll upset it the way it should be done. Once the piece is hot I forge the point — nothing fancy — then cool it off in this tank of water known as the 'slack tub' or 'quench tank.' Next, I put the other end in the fire, get it up to a bright yellow, and start the upset. Notice, if it's starting to bend, it needs straightening. Now I can upset more. This time when I take it out of the fire, I'll cool off the first portion of the upset I just made. The objective is to have only the portion I want to upset at a working heat.

"To cool the first portion of the upset, I pour water from the slack tub onto the far end of the iron with a can and then dip the other tip of the iron in water to cool it. Now I can upset. See — the heat, and therefore the swelling, is all contained between the two cool places. One more heat to upset the tip; this time I have to cool almost all that has been upset before with my water can so that only the end gets brought up to size.

"Now that it's all been upset, I'll round it up a little. There, all the work we did on it has disappeared and it's back to its original size.

"Your turn, Jean. Remember, point the end, cool off about half the length, heat about 1 1/2" of the other end, and upset. Watch for bending, and straighten if necessary.

"Watch out, Jean, it's starting to bend — you had better straighten. That's better, now upset some more. Now, another heat. Cool off both ends. Go for it! One more heat for the tip. Great! When you cool, it's not necessary to get the piece cold, just cool enough to get most of the red out of the area you don't want to upset. With some practice you'll learn how much heat the piece can stand. Generally, it's easier to forge down than to upset, so don't be afraid to upset a little more than you need and then forge it down to size.

"Jean, let's forge a square taper of a given length and point size. In this case, let's make a taper 2" long with a ¼" square end.

"First, forge a blunt taper on the end down to ¼". Use the same technique you used to make the square. Hit! Turn! Hit! Turn! Okay? We'll use ½" square, mild steel. The only thing different from the making of the square is to raise your hand holding the iron up so the angle between the anvil and hammer form a taper.

"Here we go. End up! Hit! Turn! Hit! Turn! Your turn. You're doing well, but try to keep your holding hand at the same level so the taper is the same on all sides. That's better.

"The size of the end is established. Let's put a chalk mark 2" back from the end of the anvil; that will be our mark to tell us when the taper is long enough. When you get an anvil of your own, it's a good idea to learn the dimensions of the anvil so you can use it as a rough and ready ruler. For instance, the face of this anvil is 18" long x 4¾" wide, the hardie hole 1 1/8" square, the hardie hole to end of anvil is 4", etc.

"Time to finish this taper. Start almost at the far end and work the taper down same as before. Hit! Turn! Hit! Turn! Check against this chalk line a little more. Hit! Turn! Check! There, that's okay. Your turn.

"That's fine, Jean. Good job. "Notice the iron is starting to move a little easier? Your blows show more confidence and uniformity. That's good.

"You may want to get a copy of one of the many instruction books available. In my opinion, one of the best is The Blacksmith's Craft, published by the Council for Small Industries in Rural Areas (COSIRA). It can be obtained from the book sellers that advertise in the Anvil's Ring. If you get it or any other, I'd like to go through the exercises with you before you try them alone for awhile.

"See you next time!"

Bud Oggier is a blacksmith from Cushing, Maine. He presently serves on the ABANA Board of Directors.

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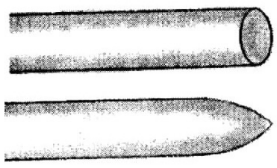
A Simple Leaf

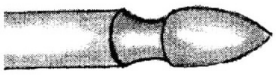
George Dixon, Metalsmith
www.traditionalmetalsmith.com

Stock: 1/2" round steel or bronze.
Tools: Hammer, anvil, tear-drop punch, chisel, top and bottom fuller.

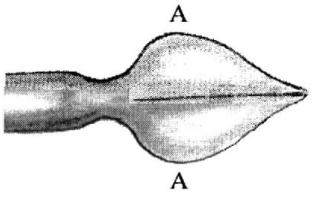
Take a forging heat (orange to orange-yellow) on one end of the stock. Forge a blunt point. The longer and thinner you forge that point the more narrow the leaf will appear. As with all blank forms, leave this one thick.



Fuller in the shoulder of the leaf blank. Either use a top and bottom fuller or a spring fuller and rotate the stock as you set the shoulder. Do not get the fullered area, which will become the stem, too thin at this point. If it is too thin too soon, it is liable to break off during the forging and decorating cycles that are to follow. When all of the leaf-work is done, the thick stem will be forged down and refined into a graceful stem.

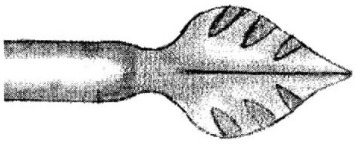


Cross-peen and spread the leaf blank. Take it down some and then flip and finish spreading it. This approach helps keep the forging symmetrical. Use the rounded edge of the hammer face to develop a ridge down the center of the leaf blank. Again, keep the leaf blank thick (3/32" to 1/8" at the side edges) to allow for sinking the tear-drop punch.

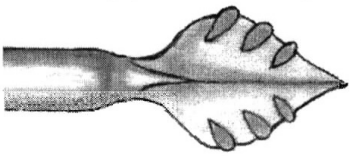


Refine the shape on edge using the horn of the anvil and a well configured hammer face. The hammer face should be slightly crowned in the center with a seamless transition from face to side.

Layout the leaf blank, cold, with the tear-drop punch. Use the tapered leading edge (toe) of the tear-drop punch on up to the entire tool, depending on the size of the leaf blank and the desired effect. Angle the layout towards the stem.

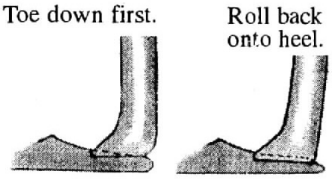


At a forging heat, sink the tear-drop punch into the layout marks on the leaf blank. Since the tool is the same for layout and hot work, it will 'feel' the layout positively even when the blank is too bright to see the layout.



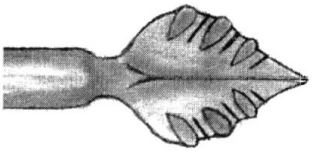
Set the toe of the tear-drop punch down into the hot metal first. As it is struck with steady and moderate strokes, rock it back onto its heel, This will push the metal under the tear-drop punch both down and out towards the back of the tool (heel) and thus outward from the edge of the leaf. This gives the finished leaf a scalloped silhouette and more visual interest.

This tool action moves the hot metal down and outward.



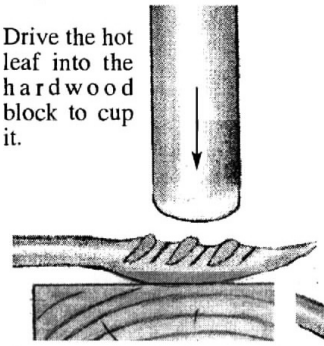
Another surface effect can be achieved by using the chisel to incise a line between each tear-drop impression.

This chisel cut will contrast and enhance the tear-drop effects.

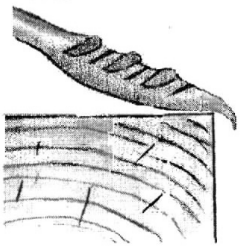


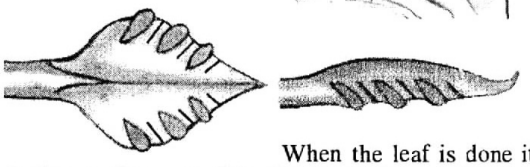
Finally, take a heat and place the leaf, face side down, onto a block of hardwood. Set a ball-end tool centered on it and drive the tool down, cupping the body of the leaf.

Drive the hot leaf into the hardwood block to cup it.



The hardwood gives under the tool pressure while it, being softer than hot chased metal, protects the surface work in a manner that a metal form can not. As the final effect on the leaf, extend the tip past the edge of the wood block and lightly hammer the leaf's tip back over the leaf's face.





When the leaf is done it is time to draw out, thin, the stem. Do so with care to avoid marring the shoulder of the finished leaf.

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Contact : Tim Neu
to register for hammer-ins
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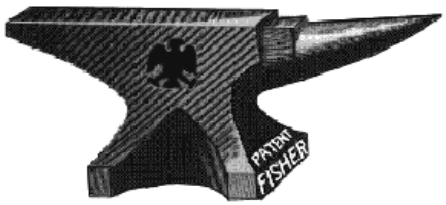

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