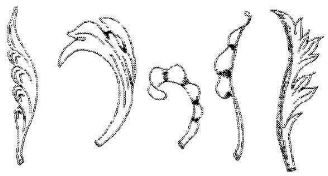
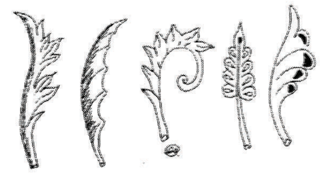


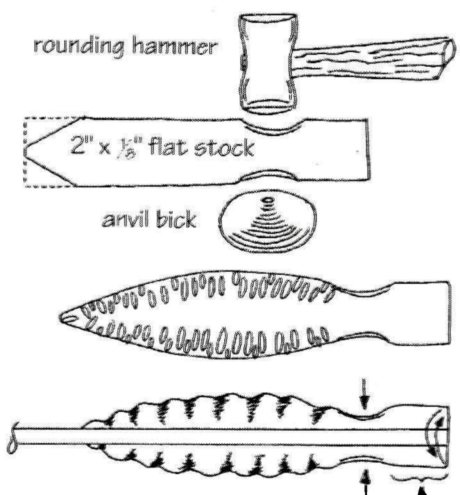
Water Leaves

By Eden Sanders, San Andreas, California,
based on photographs taken by John Graham
During Mark Aspery's
Weaverville demonstration
CBA Skill Level II



Reprint ftom California Blacksmith, No. 08-03, May/June 2008

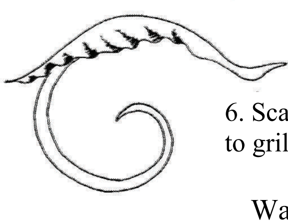
Water Leaf 1



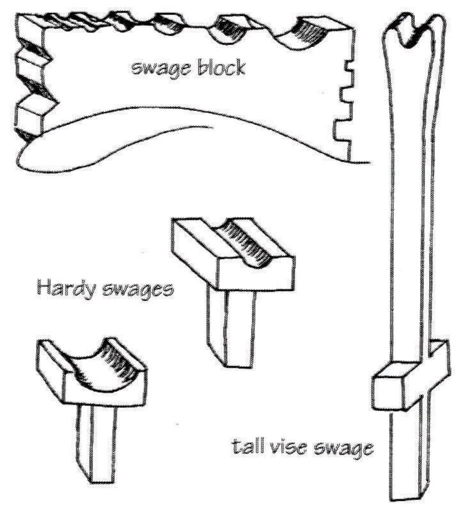
1. Use rounding hammer to narrow the base of the leaf
2. Cut corners to make a point
3. Use cross peen to thin edges and elongate the leaf

4.Use a swadge and round edge of anvil for rippled edges
5. Fold and forge weld on four sides

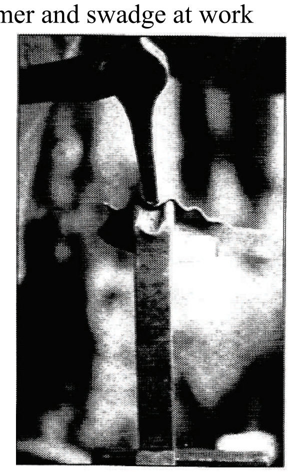
Fold and forge weld on three sides



6. Scarf the end to attach to grill, curtain rod or ...

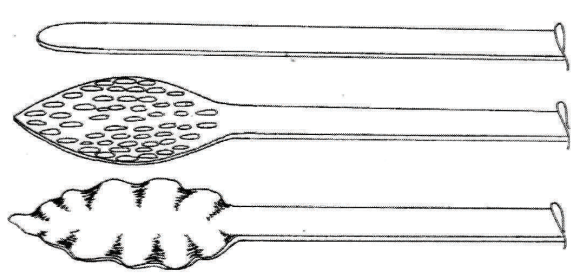


Leafing hammer and swadge at work

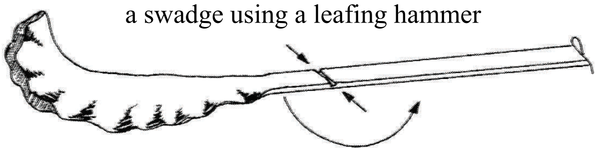


Scooping the leaf in a 45 ° swadge designed to be used in a vise

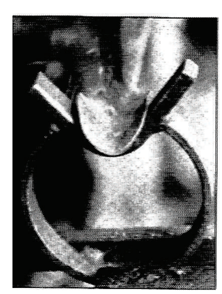
Water Leaf 2



4. Ripple edges over rounded edge of anvil and a swadge using a leafing hammer



1. Round the tip.
2. Use cross peen to thin the edges and shape the leaf
3. Flatten out the peen marks with rounding hammer, and scoop the leaf in a 45° swage with a wide cross peen
5. Cut bar halfway to fold leaf back over the bar, and forge weld
6. Scarf the end of the weld to suit application



Leaf Making

As Taught by Mark Aspery, October 13-15, 2007 and notes by Steve Smith, ME Rep. Attending.

Reprinted from New England Blacksmiths, VOL. 28 NO. 1, Winter 2008 Edition.
Mark is originally from Wales. He has a lot of experience and skill in many areas of blacksmithing. He is very good as an instructor, clear in his explanations and entertaining (watch out for his understated British wit). He has written a book, Mastering the Fundamentals of Blacksmithing, with a second volume in process. The photographs in the book are excellent b&w, clear, detailed and well composed. I strongly recommend both his book and his classes.

This class was on making leaves; both period leaves (water leaf, acanthus) and more modern leaves. The class starts you from scratch, making the tooling to make the leaves. The work is all done by hand, a few items made with the help of a striker. Our class was only three days (the full class is five), so we didn't have time to finish all the pieces.

General Info gleaned from Mark:

Case Hardening
Mark makes many tools out of case hardened mild steel, including his leafing hammer. The steel is easier to forge, available in many more shapes and sizes, less expensive. Case hardening is usually sufficient, especially for leaf work. He likes Kasenite #1 Fine (but he says that in England, they use rose petals...):
Heat to orange
Cover with Kasenite
Reheat to orange
Quench
A quick and easy process. Mark says that Kasenite has wetting agents that make it work something like Superquench, plus it adds carbon. Mark's quenches screamed a lot like Superquench; mine did not (practice...). Case hardening compound is made of "ground up dead things" and smells like it.

Heat treating - bits and pieces
Mark's book has a very clear chapter on this, one of the clearest explanations I've read. Heat treating starts with the premise that the steel is stress free- thus the need to normalize before hardening.

Tenoning
Use a butcher to isolate the mass of material to form the tenon. Forge all four sides or the tenon will walk off center. If you hit the anvil with your hammer, almost all of the energy conies right back at you. Now hit hot metal. Force from the top moves the hot metal. What comes out the bottom of the work into the anvil is less force, so less force is applied to the bottom of the work than the top. This causes a centered tenon to move off center if you only forge two sides. Forge all appropriate sides.

Pickles
Oxalic Acid-only attacks oxide, not the metal
Phosphoric Acid-only attacks oxide, not the metal
Vinegar-dissolves borax

I use phosphoric acid to pickle stuff. It works really well and leaves behind a layer of iron phosphate which provides some rust protection if your project languishes for a few months as mine have a habit of doing. Some concrete cleaners are dilute phosphoric acid (read the label).

Design
Mark has interesting things to say about design, which would be difficult to reproduce here. Some bits: Vertical lines look stoic/solid, horizontal ones look at rest. Lines at an angle add a dynamic element. Even numbers tend to annoy, odd numbers give the eye a place to go, a focus.

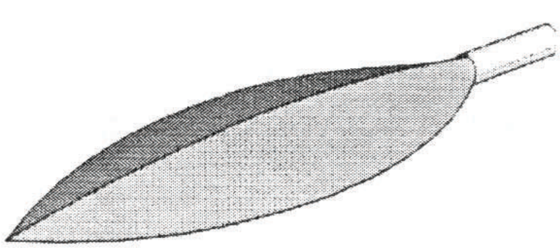
000000 boring
000-000-000 more interesting (note odd)
0o0o00 etc.

Restoration work in England
With an old. piece, you cannot simply start welding on new leaves. This greatly damages the value of an authentic item. Instead, new leaves are attached with epoxy, which is reversible.

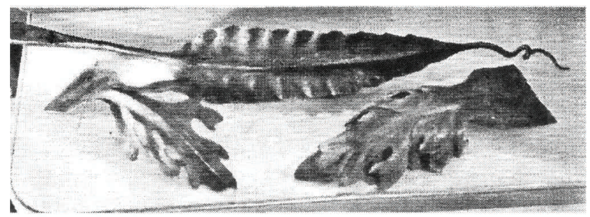
Klein Tools bull pin (#3251)
Costing $10 or $15, this is a good buy for making a tapered drift, especially if you lack a power hammer. It is 1. 1/16" diameter at the top and 15" long, tapering to 3/8" Mark says it sparks like it is an S series tool steel. He calls it "the transmorgifier drift:,

Teflon/UHMW can be used to back up cold sheet work.

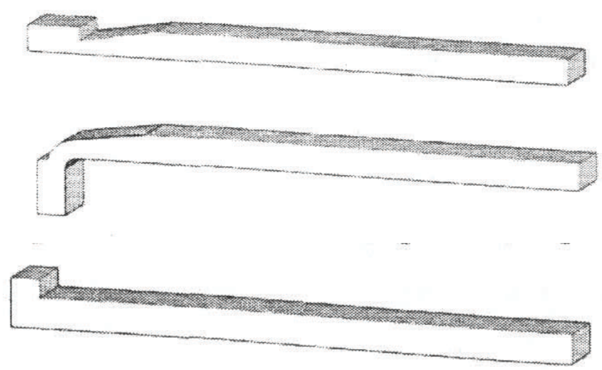
Leaves
Water leaf
"Ibis leaf is a representation of a hearts tongue fern. Start with 1/4 x 3/4 stock. Taper the tip of the bar and spread. to perhaps twice the width. Spread. the far side (hard side) first, then the near side. "Leaves are like dinosaurs - thin at both ends and thick in the middle". Make a small shoulder at the stem. While heating the leaf (in a coal fire), heat it upside down. If you lift the stock (at the cold end), you can see into the fire under the leaf Don't heat quickly or you'll burn it up. Form a valley (hot) using a leaf hammer and the crimping stake, with the shoulder up. The leaf will curl - over curl it as crimping the edges will straighten it a little.
It is very easy to lose the valley during edge crimping. Work from the edge in, keeping the leaf on edge, not horizontal. This is easy to say but also easy to do wrong. Practice ...
The tip of the leaf should be blown over to make it lifelike.



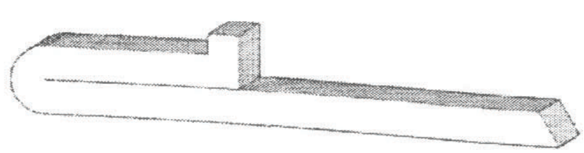
A simple abstract leaf
A very credible looking abstract leaf can be made without veins, broadly triangular in cross section:
Other leaves
We also did one of Mark's contemporary leaves and an acanthus leaf. My notes on these don't allow me to do them justice here. Take his classes or read the next book when it comes out.

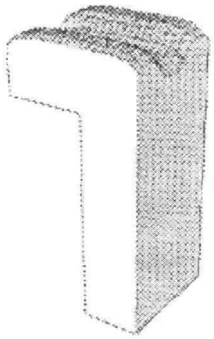


Tools made for the leaf making class
Crimping stake
1/2" x 1." bar (for anvils with a 7/8" - 1" hardy hole) Make a shoulder, leaving about 1" full thickness.



With the step up, fold the end down over the edge of the anvil at about 90 degrees.
Invert and upset the tab back down into the body.
Flip and work over a sharp anvil edge, pulling back on it to clamp on the edge, squaring up the tab.
Now bend back about 3" from the end and close the fold. The folded part should now be about 1" square and goes in the hardy hole, with the projecting tab acting as a stop. Knock off sharp edges everywhere appropriate. Cut stock so 4-6" will project above anvil. Cut with a hot cut so that the scrap has a square face and this tool has a bevel on the end.



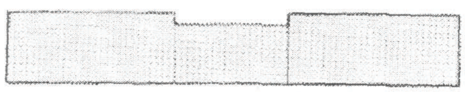


Now take the beveled end of the stake and bend it 90 degrees (ours went opposite the tab). Heat the top and put it in a vise so that the bent end is resting on the jaws. Hammer a piece of 1/2" round into the top to form a groove. File to smooth the edges all around and case harden.

The top should look something like this when done.
This approach to hardy hole tools will obviously make more than just a crimping stake.

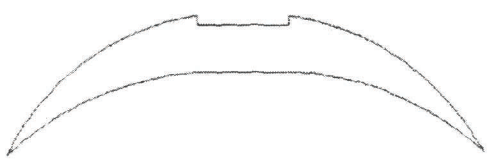
Vise stakes
Start with 5" of 3/4" round stock. Forge a flat in the center the same size as your vise jaws (vertical dimension) by using a piece of square stock and a striker.

Rotate the stock 90 degrees and thin one side a bit - maybe the left half is now 5/8" and the right half 3/4" The idea is to make each end into a stake tool, but with different widths.



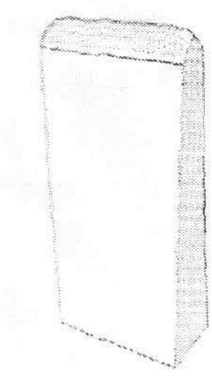
Rotate back 90 degrees and make a clean, one sided taper the full length of each side.

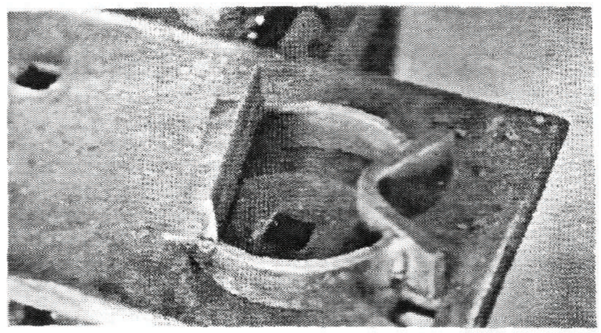
File the tips to have gently rounded curves. Looking at the Hat face, the top should be mostly flat but have rounded edges. In cross section, the tip should have a radius, no sharp spots. Take all the sharp corners off the rest of the tool and case harden.



A second tool is made the same way, but instead of leaving it flat, bend the flat parts back -45 degrees.
This is also a good approach for small ball tools, such as 1/2 to 5/8" diameter.

Mark at the vise with the vise tool.

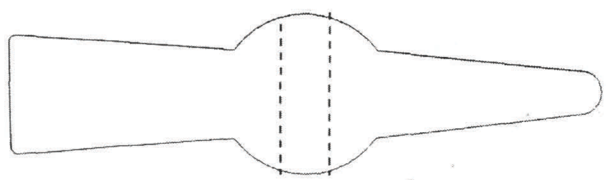


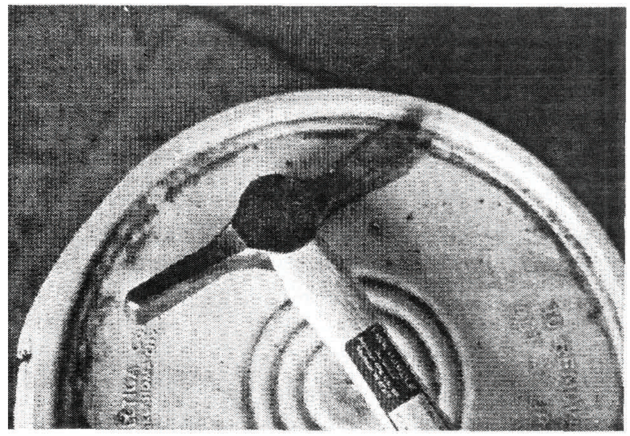


Another version of a crimping tool.

Leaf Hammer

This is sort of what it looks like from the side (if it looks funny, blame me not Mark):





The peen end has a 3/16" radius (3/8" dia.). When used with 1/16" sheet material, the outer radius of the sheet will be 1/4 (1/2" dia.), which matches the crimping stake.

Punch a hole in 1" square stock with a slot punch (~ 1/8" x 3/4" rectangle with rounded corners). Hit it once and take a look, correct tool if you are off. Remember to quench the tool occasionally. If the tool gets stuck, turn the stock upside down and flatten the back side to make the punch drop out. Do not try to drive the punch all the way through, you will upset the end of the punch and it will never cone out. Finish punching from the back side once you are most of the way through the head. The eye will likely be a little off center. Heat with the thick side of the eye down (coal forge) so the thick side gets hotter. Lay the drift on the anvil, hanging over the horn. Slip the hot head onto the drift and pick up. Drift from the back side where the slug was knocked out. First, drift parallel. A parallel drift might have a (parallel) body section 3/8" x 3/4" or 5/8" (rounded edges), depending on your hammer handles. The parallel drift would be a little smaller than your handle. It has a short, slight taper on the struck end and a longer taper on the other end, sized to fit in slot.

If your initial slot is off at an angle, initially drift it round. This can offset the hammer ends-fix by hammering with the drift in place to correct. Mark uses a fly press to punch eyes. I've done a great job of welding tools in hammer eyes using a hydraulic press. With the drift in, peen the eye edges to stretch material along the handle. The longer an eye reaches down the handle, the better it holds.

Taper the hole with a tapered drift hanging the hammer head over the horn.

If you are hand hammering, shape the head after the slot punch, then drift. If using machinery to shape the head, finish the eye first, then shape the ends.

Cold Chisel for cutting curves in sheet material.

'Ibis chisel doesn't look like much, but it's the cat's meow once
you try it out. Forge a bluntly pointed chisel blank. Taper and flatten , ending up with perhaps a 3/16" x 1/16" tip. File the tip to the shapes below. Do NOT round the corner between the 45 degree and flat portions of the edge (side view). To use it, tip the chisel to the left (side view) and cut towards the right. Sounds strange, but it works very nicely. This tool should be made of high carbon steel, hardened and tempered.