April 2020

THE FORGE FIRE

The Newsletter of the Indiana Blacksmithing Association, Inc.

An Affiliate Of The Artists-Blacksmiths' Association of North America, Inc.

IBA is a Not For Profit Indiana Corporation recognized by the IRS under section 501(c)(3)

9:30 AM is the regular meeting time for IBA Hammer-Ins
with beginner training available at 9:00 AM.
PLEASE MAKE SURE TO ASK FOR HELP!

If you would like an IBA membership application form, please contact Farrel Wells, Membership Secretary (765) 768-6235.
BULK LOTS ARE AVAILABLE TO DEMONSTRATORS,
SHOPS, SHOWS AND OTHERS WILLING TO MAKE THEM AVAILABLE.
WE APPRECIATE YOUR HELP.

The Forge Fire is the newsletter of the Indiana Blacksmithing Association Inc. (IBA) IBA is an affiliate of the Artist-Blacksmiths Association of North America Inc.

More nearby resources and organizations for blacksmiths:

Rural Smiths of Mid-America:
Meetings are on the first Saturday of each month
Call Ron Gill
317-374-8323 for details

IBA MEETING SCHEDULE

No hammer-in for April.

Future hammer-in schedule to be decided based on public health conditions.

Check the latest *Forge Fire* for monthly **IBA** revisions.

Editors Message

As I write this message the April IBA hammer-in has been canceled. The COVID-19 pandemic situation is being monitored relative to events in May and June. As noted last month the ABANA conference has been canceled. The IBA is watching the situation relative to the IBA conference. To some degree the decision will be made by government policies regarding social distancing. Please be patient as we work through this. My anecdotal observation is the IBA membership has a higher number of older people and people with high risk factors than the general population.

On a positive note, I was informed the IBA has a new satellite group. Old Town Waverly Blacksmiths meet on the second Saturday of the month at the Old Town Waverly Park in Waverly. Contacts: Mike Lyvers (317-728-5771), Kenny Hale (765-318-3390), Mike Jackson (317-509-9115).

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SELF-MEASURING CENTER PUNCH

Author Tommy Ward. Mississippi Forge Council, The Upset, April 2006 reprinted from BOA Voice Sept. 2016

From time to time I've had to drill a succession of equally and accurately spaced holes. Although laying out the hole spacing can be done fairly quickly using a transfer compass, the positioning of the compass points, scribe marks and, ultimately, the point of the cen-ter punch itself, each present the opportunity for a slight error. Over a series of holes, several small errors can stack up, resulting in a significant overall change in dimension.

The solution to the problem is a self-measuring center punch, which is neither new nor original. I first recall seeing one many years ago in an old metal trades manual.

A standard center punch can easily be fashioned into a self-measuring type by drilling a perpendicular hole through its shank to receive a lateral locating rod. A point is sharpened on one end of a small diameter rod (I used 1/32 piano wire) and the sharpened end is bent 90 degrees to form a locating leg. Cross drill and tap the punch shank to accept a set screw which will be used to lock the adjustment of the locating leg.

Although punches are generally regarded as being made of fairly tough steel, I had no trouble drilling a pilot hole through mine with a 1/8" diameter tin-coated bit running at 1500 RPM and using a coolant. The dimensions of things are not criti-cal, but care should be taken to ensure that the lengths from the cross arm to the tip of the punch is identical to the length of the locating leg.

To use the device, set the desired distance between the tip of the punch and the locating leg. Lay out a longitudinal refer-ence line in your work, and punch the location of the first hole. Then place the point of the locating leg in the first mark, and punch a second mark on the reference line. As the locating point is placed in each successive punch mark, a new mark is punched on the reference line. Continue the sequence as needed.

Dates to Remember

IBA Conference
June 5-7

IBA website: www.indianablacksmithing.org IBA Facebook page: www.facebook.com/groups/IndianaBlacksmithingAssociation/

IBA Satellite Groups and News

1) Sutton-Terock Memorial Blacksmith Shop
Meet: 2nd Saturday at 9 AM
Contacts: Fred Oden (574) 223-3508
Tim Pearson (574) 298-8595

2) Jennings County Historical Society Blacksmith Shop
Meet: 2nd Saturday at 9 AM
Contact: Ray Sease (812) 522-7722

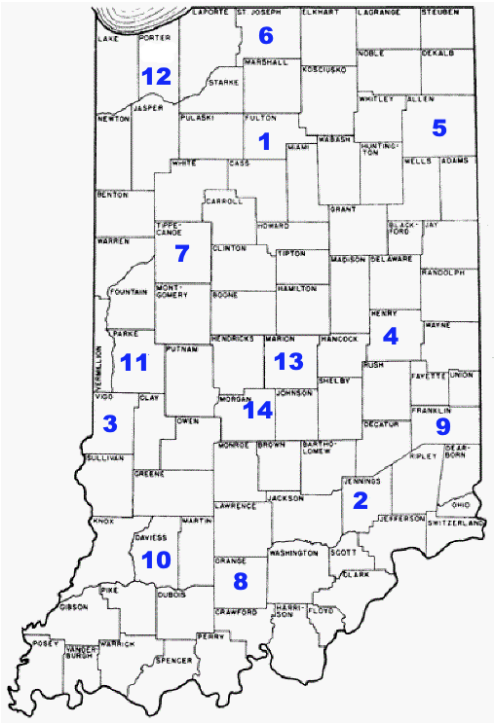
3) Wabash Valley Blacksmith Shop
Meet: 2nd Saturday at 9 AM
Contacts: Doug Moreland (217) 284-3457
Max Hoopengarner (812) 249-8303

4) Fall Creek Blacksmith Shop
Meet: 4th Saturday at 9 AM
Contacts: Gary Phillips (260) 251-4670

5) Maumee Valley Blacksmiths
Meet: 2nd Saturday
Contacts: Clint Casey (260) 627-6270
Mark Thomas (260) 758 2332

6) St. Joe Valley Forgers
Meet: 4th Saturday at 9 AM
Contacts: Bill Conyers (574) 277-8729
John Latowski (574) 344-1730

7) Rocky Forge Blacksmith Guild
Meet: 2nd Saturday at 9 AM
Contacts: Ted Stout (765) 572-2467



8) Meteorite Mashers
Contacts: Mike Mills (812) 633-4273
Steve King (812) 797-0059
Jeff Reinhardt 812-949-7163

9) Whitewater Valley Blacksmiths
Meet: 2nd Saturday
Contact: Keith Hicks (765) 914-6584

10) Bunkum Valley Metalsmiths
Meet: 1st Saturday
Contacts: Jim Malone (812) 725-3311
Terry Byers (812) 275-7150
Carol Baker (317) 809-0314

11) Covered Bridge Blacksmith Guild
Meet: 1st Saturday
Contact: John Bennett (812) 877-7274

12) Snake Road Forge
Meet: 1st Saturday
Contact: Rod Marvel (219) 241-0628

13) Satellite 13
Meet: 4th Saturday
Contact: Darrin Burch (317) 607-3170
Doug Wilson (317) 439-7684

14) Old Town Waverly Blacksmiths
Meet: 2nd Saturday
Contacts: Mike Lyvers (317-728-5771),
Kenny Hale (765-318-3390),
Mike Jackson (317-509-9115).

Jennings County Historical Society Blacksmith Shop

The Vernon blacksmiths March meeting was held at the forge of Kevin Welsh. We were greeted by his lovely wife, Pam, who spent a great deal of time preparing an excellent breakfast. Kevin started by forging a stainless steel bolt but was sidelined when he stopped to help Alex Spellman who was having trouble forging a 12 inch diameter ring from bar stock. Dave Good forge welded a billet from wrought iron. Our forgemasters decided that it is in the best interest to forgo April regular stated meeting. I plan to do some spring cleaning like filling water barrel etc. Things change from day to day so, help your friends when you can and practice good hygiene. Paul Bray

Welcome Old Town Waverly Blacksmiths

so a bit on dust or mist or weld fume collectors.

By Jeff Reinhardt

First lets look at some things that are often confused. A collector is a thing that collects or in effect takes the dust or mist or fume out of the air. The air is usually returned to the work space since some of us are lucky enough to have heated air in the winter. More on that is a bit. An exhauster is simply a system that takes inside air and moves it outside. Dust is dry particles usually considered to be smaller then saw chips. Fume is a smoke composed of metal that vaporized in say a weld puddle, and then when cooled as it drifts away, condenses into an aerosol droplet that becomes solid. So when you say paint fumes about the solvent smell you should be saying those solvent vapors.

So what is the difference in say a mist collector and a dust collector or a fume collector. In effect the only common items to the 3 are the duct work and that they use a fan to make suction to pull air through the device that separates the mist or the dust from the air.

So a mist collector is usually a multi-stage filtration system often used to collect the coolant mist from machining. The first stage catches the really big droplets and the cigarette butts and so forth. This is usually an aluminum mesh that is easily washable. And if used much you will need to clean often. The second stage is often a foam wrap around a coalescing filter. The foam wrap catches the stuff that will plug up the expensive last stage. It too should be easy to change and or wash out. The last stage a coalescing filter catches the really fine stuff. It works by having a depth media the makes every droplet no matter how small have such a torturous labyrinth path there is almost no way for the droplet to get through the filter without hitting media. The media has affinity for the liquid so it sticks. After enough droplets hit the same spot a big enough drop exists that by gravity it moves downward and eventually drops off the filter into a drain tray. The air then goes thru the fan and back to the shop. Some mist collectors have a HEPA after filter if there is great need for very very clean dry air. The HEPA filters are VERY expensive and often short lived.

Fume collectors often have a course pre-filter and have a HEPA main filter. Since the Fume is dry no need for a coalescing filter or drain tray. There is a GREAT need however for a spark trap to catch embers and sparks BEFORE they get to the filters. The spark traps use change in direction to make sparks that are large enough to remain hot linger in the duct long enough to let them extinguish before reaching the filters. Never let oil mist go in the weld fume collector as they will catch on fire.

Last we come to dust collector. There are several types but most all use a centrifugal separator to separate the heavy larger size particles before any filtration that captures the large particles. In operation these centrifuges have a entry on the side at the top of the collector, and the air is forced to rotate around the sides of the collector. The air must go down to the bottom of the collector and make a 180 degree turn to return to the top to exit. The air also must accelerate as it goes down the outside wall of the collector since they taper inward and that accelerates the air. Since the heavy particles are moving so fast they can not do the 180 degree turn they collect at the bottom of the collector. Here one often sees a slide gate valve that is manually opened with the fan off to allow the dust to fall out. Some just have a drum and with the fan off that is removed and dumped. The really deluxe units have a STAR valve instead that is a rotary air lock and lets the dust or chips fall out as it rotates but maintains the suction. Once the heavy particles are removed by the centrifuge, the air can then go to an after filter. Since these units are often moving huge amounts air air the after filters are often bag houses or loose hanging bag filters. In smaller shops the air is often exhausted to the outside if the unit is not an all day use thing.

(continued)

One thing all of these units share is the idea to always have the fan placed downstream of the collectors. This lets the fan stay clean, prevents blade erosion, and as pressure drop builds on filters the motor draws LESS Hp so it stays cool.

So you want to capture dust, or fume or mist. A rule of thumb is that if you have an air velocity of 100 foot per second across the source of the containment into the collector nozzle you will get almost perfect capture. Now just like a coal forge the farther the nozzle is from the fire the bigger the flow. Put a hood up say 8 feet off the floor and you will have to have, massive air flow as the hood draws not just straight up put from all the perimeter sides. So the closer the nozzle to the source the smaller the nozzle and the airflow needed. Many MIG welders on robots have a tiny nozzle about an inch in diameter perfectly placed at the nozzle and the capture all the smoke with a household vacuum cleaner sized unit.

A really great way to capture grinding dust is a downdraft table. This is a table made with a metal top comprised of flat bar grates. the flat bars have louver flat bars between to control total flow to the unit but these things are an awesome addition to any fab shop. I personally have installed them on cast iron grinding operations where the area was a horrible dirty dusty mess and when the tables went into use the area stayed clean. I have ground cast iron with a 9" grinder on these tables where with the fan off a rooster tail of sparks went maybe 3' sideways and landed on the floor with the table fan on the rooster tail went like maybe 6" and made a 90 degree turn down in the table for capture.

Last but not least, if exhausting outside from a heated shop, lets consider the loss of heated air. In a 24' x 32' shop with a 10' ceiling height, there are 7680 cubic feet if you leave out contents so lets say 7500 cubic feet of air. Now you have that shop up to a nice 72F in the winter and you turn on your dust collector with that 6" dust. A commercial unit that size will be moving about 5000 cubic feet of air/minute, so in say a minute and a half you have emptied your shop of the nice warm air and filled it with air from outside, since you have to have air make up what you are exhausting. Gonna be cold in a minute LOL. And that is why most heated shops use an after filter and return the conditioned air.

Forge Welding in a Gas Forge - Mark Aspery

A riveting way to deal with forge welding in a gas forge.

I recently taught the basket handled poker at a gas-forge only school in the L.A. area.

I'm not very practiced in a gas forge, so I tried the class at home in a farriers gas forge.

I found that I could weld faggot welds, that is, stock sister'ed to another piece of stock, but that jump welds (drop tong welds) were quite a bit harder to deal with effectively with repeatable success.

For the basket, I chisel cut the slope to the scarf and thinned the toe slightly. For the ⅜-inch square bar that makes the shaft, I upset and created the slope to the scarf only. I eliminated the step for a normal scarf in both pieces, and drilled a 9⁄64-inch hole just behind the scarf area.

The two pieces were then riveted together with a length of ⅛-inch round bar. The 'rivet' held the two bars together, but didn't stop sideways movement - just for the record.

I used a washer as a spacer when riveting the bar, giving me spare material to head the second side of the rivet.

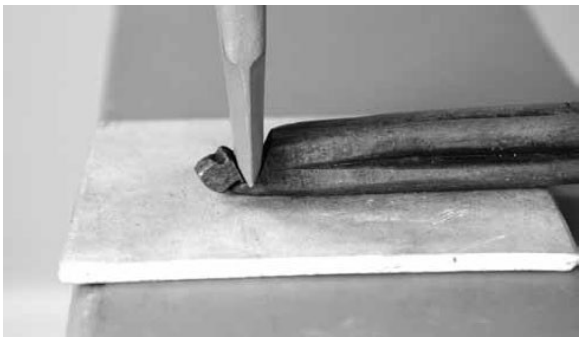
The pieces were heated and then fluxed and returned to the fire. There wasn't a whole lot of brushing involved.

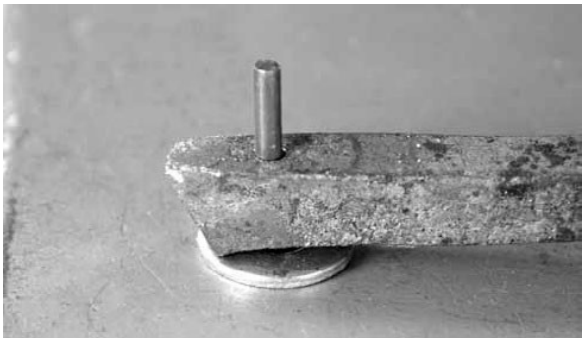
Angling the basket down slightly as I approached the anvil helped straighten the two pieces back into alignment.

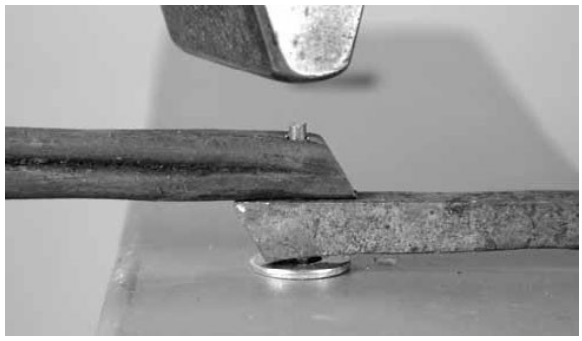
The weld, now a faggot weld, worked great. We had over 20 students in the class and everyone got their welds, both at the handle and at the poker end.

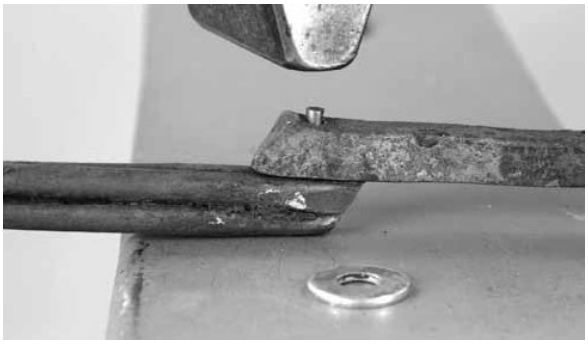
The idea of pinning two pieces together before welding is not new. It was used during the wrought iron era. In the UK, you can find gates where leaves had been riveted on prior to forge welding - where the leaf has long since rusted away, leaving the hole for the rivet - which was not in a welding plane.
Mark Aspery.

Mark has a brand new Youtube video on this process:
https://www.youtube.com/watch?v=dNHSC0m7K0o
Thanks Mark! - Editor









This article reprinted from the April 2020 edition of Saltfork Craftsmen Artist-Blacksmith Association newsletter

How I Make a Copper Coffee Scoop

by David Robertson

I have been working on some smaller scale pieces recently and I thought I would share the process of making two different types of copper coffee scoops.

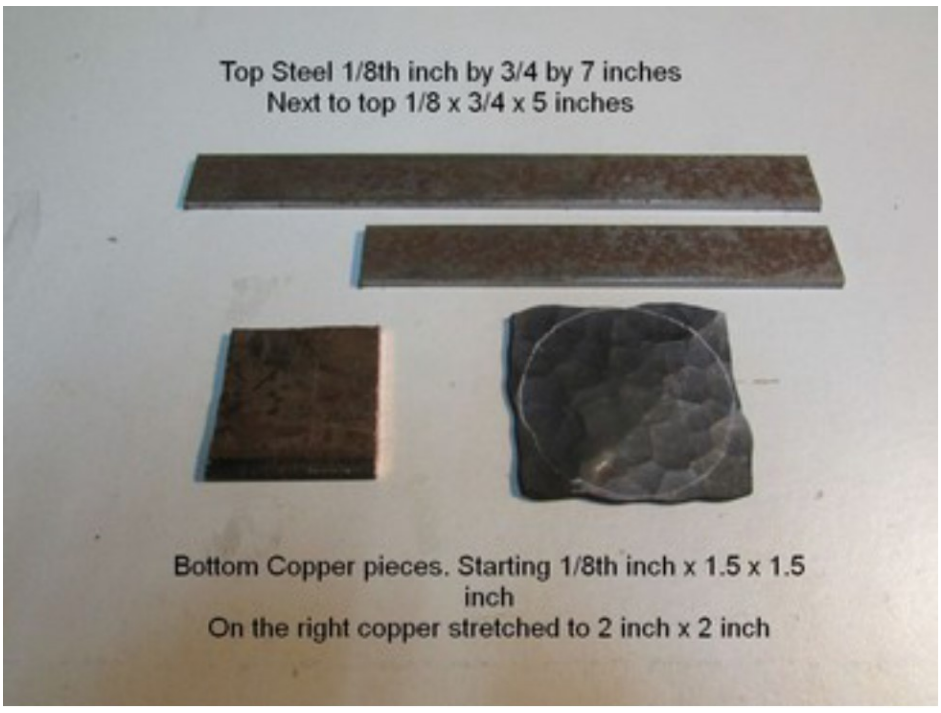
Of the two scoops *(photo, right)*, the bottom is more traditional, based loosely on a basting spoon. The top more of a free form leaf design.

The copper scoops are the most interesting part of the process as I do not get to use copper all that often. Although copper is more expensive than steel the added impact of a shiny copper surface is well worth the added cost.

Copper is a very soft metal to work. It is a joy to work hot out of the forge. It is almost like working with clay it is so soft.

A caution here. Copper melts at 1085 deg. C or 1984 deg. F. This temperature is easily reached in our forges. If you happen to be using an alloy of copper (such as a bronze) your melting point may be lower. Most brass does not like to be forged.

Be a little cautious with your temperature at first. Copper and some bronzes will let you work well into black heat. (Aluminum bronze does not like this and will crack below incandescent colour.) The starting pieces for the handles are steel strip 1/8th x 3/4 x7 inches *(leaf)* or 1/8th x 3/4 x 5 inches *(traditional)*.

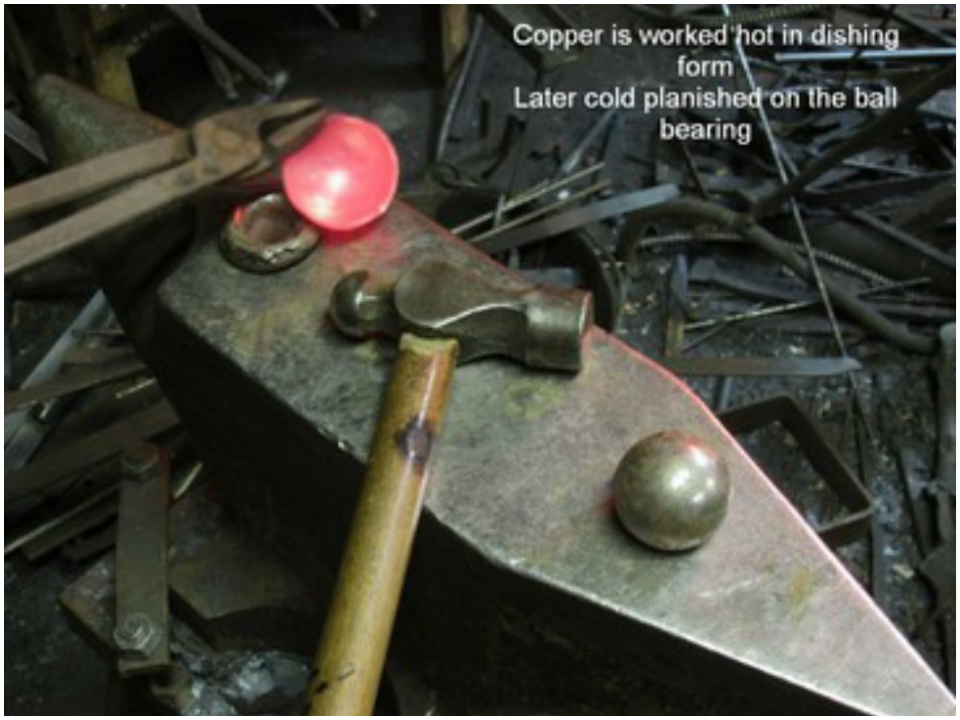


The Copper Scoops

The copper I have on hand is 1/8th inch thick and I cut pieces 1.5 inches on a side (left side bottom – *image right*). I then forge with rounding hammer to 2 inch x 2 inch plate (bottom right side). Then a roughly 2 inch circle is drawn (I used 1.5inch black pipe which gives an OD of just under 2 ".)

Next I rough cut the circle with aviation or tin snips. The circle is refined later. The above photo shows the tools used in the forming process of the copper scoop. Small tongs to grip the side of the bowl. Below the tongs is a dishing tool. In this case it is a piece of pipe

that has been flared on the top and squared on the bottom to fit the hardy hole. There is also a steel ring welded to the underside of the flare for reinforcement. It is very important that the surface is radiased smooth as any sharp bits will cut into the copper. The copper is hammered starting in the centre with the ball of the ball peen hammer. Multiple heats and constant turning and changing angle is required to create a rough deep bowl shape.



I then anneal the copper. Heat to medium orange and quench in water. (opposite of ferrous metals) Once annealed it is cold dishing further roughly shape the scoop. Many small hammer blows with the ball to get a shape that is slightly smaller than the ball bearing at the right.

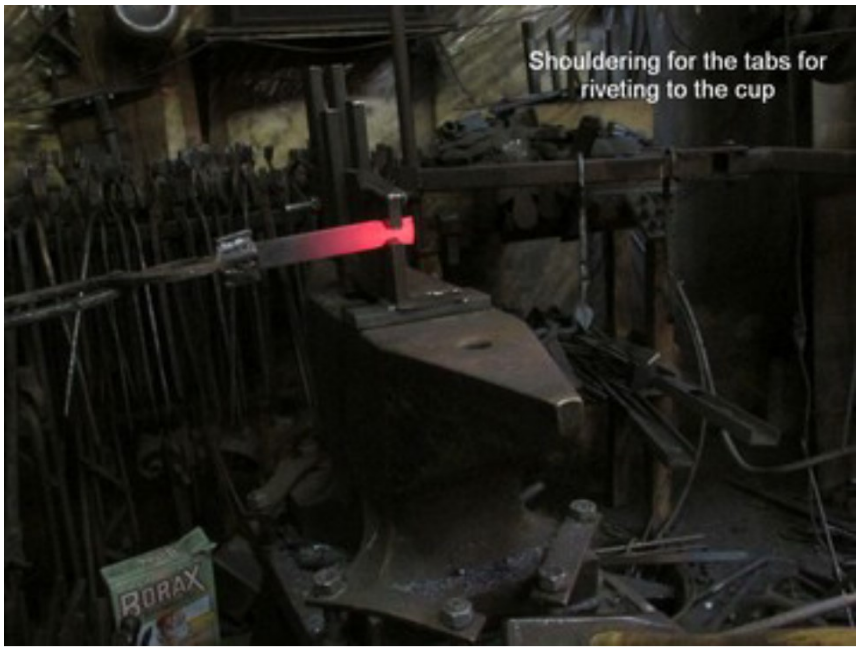
Plannishing

I wanted a fairly uniform final shape that would hold roughly the right amount of coffee. I had a 1.5 inch di-ameter ball bearing. This works perfectly for a plannishing stake. I simple place the copper on top and gently hammer all the facets down on the ball bearing. Around the whole surface smoothing the whole scoop. This is smoothing the inside as well. The edges are ragged from the stretching and cutting. This evened out on a belt sander. Each scoop is a slightly different size but are of uniform shape.

The copper gets a heavy copper oxide developing when it is heated in the forge. This can be removed by acid as in pickling jewelry, or by mechanical means such as sanding or wire wheel.
I use the wire wheel on both inside and outside to create a nice clean shiny surface.

The Handles

Both handles start as small flat bars. Both have some level of draw out on them but the leaf one is quite a stretch.
First on both styles of handles I need some sort of tab for the riveting to the bowl. At this point it is just shouldering with leaving 1/4 inch hanging over the shouldering tool as in the photo (left).



The traditional handle above is shouldered on the top end about 1/2 of an inch between the shouldering tool and end of the bar. The over hang is drawn out to a little more than an inch long. If too long you can cut off. This will get formed into a hook for hanging

at the end of the shaping of the handle.

The handle is tapered from shoulder to top end in a smooth taper. The tabs are stretched laterally with the cross peen and then smoothed with the face of the hammer. The goal hear is to thin and get enough material to support the bowl. They can be cleaned up for shape and size with belt sander or angle grinder with flap disk.

The handle should have the edges sanded off and a pleasing curve forged in for comfort. The tabs need to be dished a little to match the curve of your bowl. The angle of the scoop also has to work. Can you comfortably get the coffee out of the bottom of the bag?

The sanding of the corners before finishing shaping the handle is important. You do not want any sharp or rough spots for early morning ease of use.

The leaf handle is similar steps. Major difference is the leaf finial and the heavy draw out.

The longer flat bar is hot cut at roughly 45 deg. The point is then refined and tapped to the middle of the bar. I then knock the very tip over the far edge of the anvil to give it more of a leaf look.

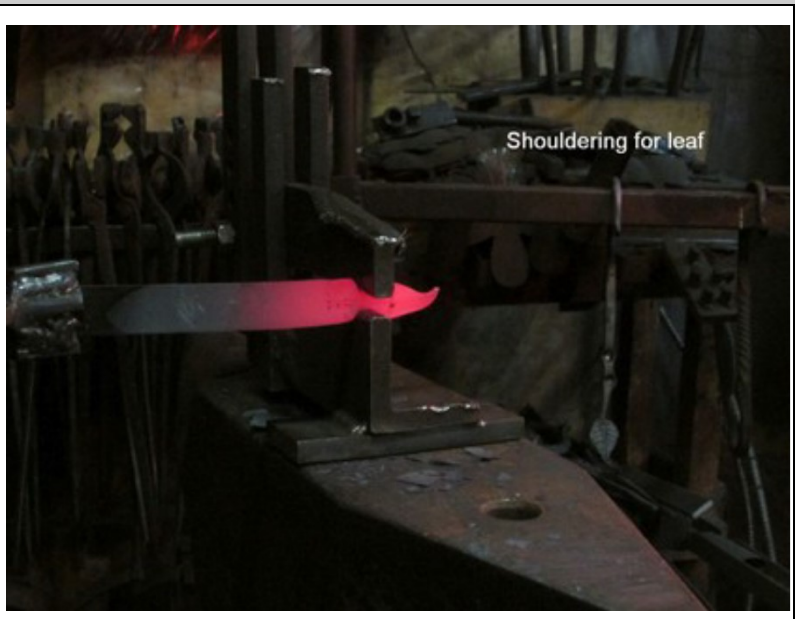
Shouldering is done just behind the taper of the point. The centre part between the leaf shoulder and the tab shoulder, is squared up and drawn out over the horn until nearly twice the length. All corners are rounded off and smoothed out.

At this point I use the cross peen to stretch the leaf laterally. Note in the Hardy hole is a bolt that has a square shank. This provides a tight working surface. If you happen to miss with the cross peen you won't ding up your anvil.

The photo (*middle right*) shows the diagonal peening to create the vein structure in the leaf. Again done on the heavy bolt.

Last step on the leaf is to use a Vee bottom stake to give the leaf some 3 dimensional relief. I use a sharp cross peen on a lighter hammer to make the shape.

Next is bending about 2/3 rd of the way from the scoop (shorter bit is towards the leaf).
This can be bent over the horn, with bending forks, pliers or your favourite jig. Then twisting around the handle to make the finished look. Orienting the tabs and the loop in the handle and the bowl of the scoop at the correct angle.
It should be pleasing and comfortable in your hand. This is very light material when it is all stretched out so minor adjustments are easy to do hot.



David Robertson has been blacksmithing full time since 1993 and currently works and teaches from his shop in mid-western Ontario. He has a passion for making tools, jigs, and organic forms in his work.

www.ArtistBlacksmith.com

(All photos by the author)

Originally published in the Winter: December 2019 issue of *The Iron Trillium*, newsletter of the Ontario Artist Blacksmith Association. Reprinted with permission of the author. Contact David Robertson for permission to reprint.

Final Steps

Once the pieces are formed it is time to drill and wire wheel. All surfaces need to be clean and free from sharp edges and catch points. The scoop needs to have the heavy copper oxide removed either chemically or by abrasion, then buffed to a shiny surface. The inside of the scoop may be easiest tackled with a Dremel tool or similar. Outside surface standard wire wheel works fine.

The easiest way I have found for assembly is to drill the two holes in the handle first. I use 1/8th by 1/2 inch rivets so 1/8th inch holes. I then mark and drill one hole in the copper clean up the bur and rivet one side to the handle. Align the second hole and clamp with small vise grips and drill the second hole through the open hole in the handle. That way I am guaranteed of the alignment. Rivet the second rivet. The stake allows me to support the rivet head while peening over the shortened rivet. Depending on the thickness of the material I may end up cutting off about 1/4 inch of the rivet. I use the ball peen the for riveting.

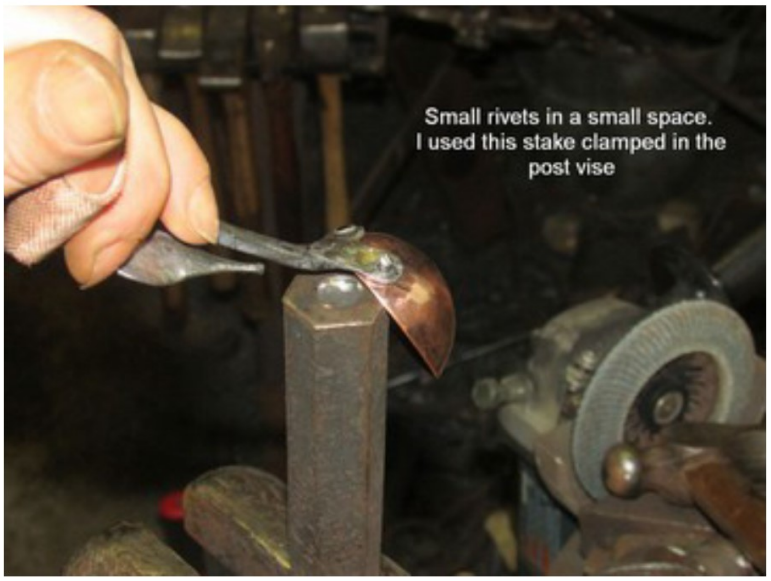
Once all completed run your fingers over the surface to make sure no sharp or catch points. If there are file or sand them down.

I like to do a double coat of clear coat to pro-tect the steel from rusting and the copper from oxidizing. I have used Tremclad clear and lately Rust-oleum clear. Both seem to have reasonable durability.

Remember these are not dishwasher safe. They should be cleaned with a damp cloth and dried right away. The joy of traditional materials.

A great little project using multiple techniques and the bonus of working with non ferrous metal.


Leaf shaped in Vee bottom tool with narrow cross peen


Small rivets in a small space. I used this stake clamped in the post vise


Copper Scoop riveted in place

The *FORGE FIRE*
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