September 2019

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.

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

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

No Hammer In scheduled at this time.

Contact Gary Phillips if you are interested in hosting a hammer in.

INDEX

Dates to Remember

Sept 27-29
SOFA QuadState

October 11-12
UMRBC
(Pontiac)

Spreading a Bar

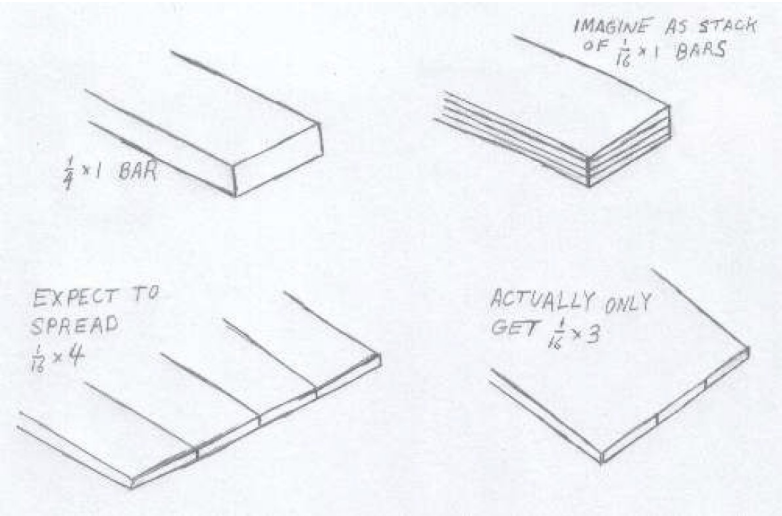
This article reprinted from the July—August 2019 edition of Bituminous Bits
The Journal of the Alabama Forge Council

I saw Mark Aspery at the 2016 AACB conference, right after receiving all three volumes of his Skills of a Blacksmith series for Christmas. It was great to see him again at the 2019 SBA conference, and if there was any repetition of material from 2016 it was all to the good.

Mark is a prominent teacher of hand forging skills. He offers articulate, well reasoned explanations for everything he does. At the SBA conference he started off with a discussion of spreading steel, such as spreading the end of a bar to form a spatula or a ladle. I heard several smiths say that this one bit was worth the admission.

Imagine, for example, that one starts with a ¼ x 1 inch flat bar and wants to spread it out 1/16 inch thick. How wide will the finished metal be? A ¼ x 1 bar can be imagined as a stack of four 1/16 x 1 bars, so spreading would be expected to arrange those 1/16 inch bars side by side, making a 1/16 inch thick piece 4 inches wide. But when Mark demonstrated by spreading a ¼ x 1 bar, when the thickness reached 1/16, the material was only 3 inches wide.

Mark said that he had been experimenting and determined that when he spread material he consistently got 75%, that is, ¾ of the width that calculations would lead one to expect. That would explain why so many of us have experienced spreading stock thinner than we'd like to get the desired width. Now we know, we need to start with 1/3 more material to get both the width and thickness that we want!



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
Dennis Todd (574) 542-4886

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

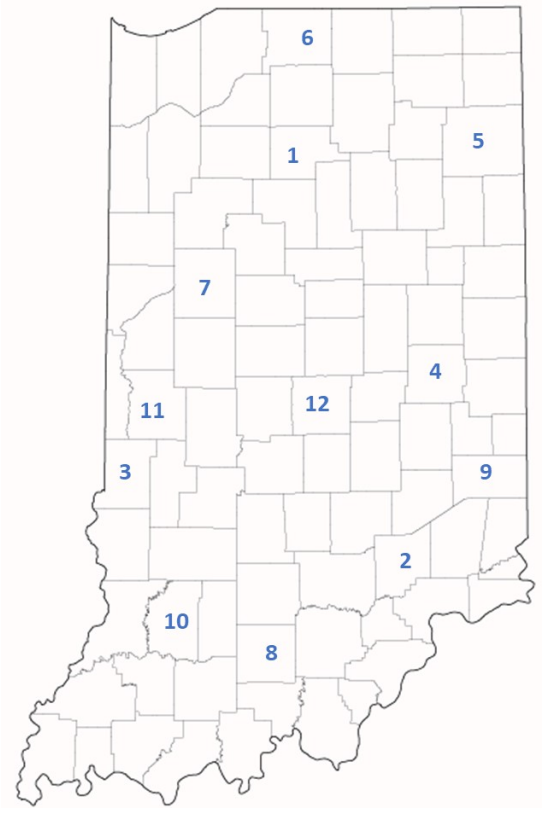
8) Meteorite Mashers
Meet:
Contacts: Mike Mills (812) 633-4273
Steve King (812) 797-0059
Jeff Reinhardt 812-949-7163

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



Jennings County Historical Society Blacksmith Shop

The Jennings County Historical Society Blacksmiths started their meeting with Bill Kendrick and Dave Good making a drift from coil spring and forged a large piece of 4140 into a hammer head. Nathan Pelvor worked on a pair of tongs from Damascus steel. We had 17 who signed in.

Our next meeting will be September 14. Bring iron in the hat items and wallet. Paul Bray

IBA Satellite Groups and News (continued)

Meteorite Mashers

The Meteorite Masher meeting was held this month in The Big Four Station Park in Downtown Jeffersonville Indiana. We were right where the Big Four bridge makes land fall in Indiana. The Old Big Four RR bridge had the approaches torn down in the 60's and sat forlorn and abandoned till about 6 years ago when KY and Indiana built pedestrian approaches and rebuilt the deck of this historic wrought iron rail bridge and integrated the bridge back into the city scape on both sides of the Ohio river. We were once again invited to demonstrate blacksmithing for the annual Steamboat nights. So we brought out the BFH team and made nails. Now since it was the BFH team, we started with 2" round bar and as you can see they dwarf the 125# anvil they are displayed in. We have in the past made a steam boat Anchor from 2" round bar, wizard bike racks from 3" square bar and 3" crosses. This year we had Brodus and Angus Thompson from Vevay, Chuck Henderson and Darren Bender-Beauregard to join the existing team.We did 2 days of 4 hour demo at night and expect to return next year.

Our September meeting will be held in the shade of the Anvilstream camper at Quad State, see you there.

Vise/Anvil Gadget DIY

Photos & Article by Paul Lundquist

The Vise/Anvil Gadget is intended to help a person to make their own blacksmith's vise and anvil to solve the beginner's problem of searching for and affording antique tools. You can forge everything you want to make on this tool. If you have access to electric welding, a saw & maybe a drill press you can make one yourself in a weekend. Together with making an easy Vi-king side blast forge or simple gas forge you can get right to work learning blacksmithing and making the rest of your own hand tools.

The basic idea of the gadget is a block anvil of industrial scrap steel on a heavy stand together with a fabricated vise using removable jaws. All parts & material are easily available and the thing is made by sawing, drilling and electric welding. Refer to the pictures to get the ideas. Dimensions are up to you.

The first step is to get your block of steel to use as an anvil which is often a piece of large fork lift tine. Then you make the stand around that and build a vise on the one vertical leg. Combining all the steel in one unit adds the mass together, which helps augment the 50 to 100 pound anvil block. You can avoid the labor of punching a hardy hole in 3" thick steel by punching it in the 1" thick vise jaw which is much easier. Or avoid punching the hardy hole altogether by clamping lower tools in the vise jaws, having angled cutouts to hold the shank fast. This is what the Japanese sword smiths do; a block anvil with no hole, no heel nor horn and a separate tool holder.

The anvil support table is 1 x 6" flat bar but can be other sizes. Legs can be 2" x 3" tubing cut on a 10 degree angle to splay for stability. Other steel can be used such as pipe. The feet are large enough to not sink down into dirt & have holes to bolt down to concrete. Smaller holes allow wood blocks to be screwed on to raise the height if it needs to be changed. Of course three legs prevent any wobble.

Choose the height so you can stand up straight at the anvil & deliver strong hammer blows. I use wrist height. Don't hurt your back hunching over a knuckle high anvil face. Knuckle high is too low & doesn't really work very well. Pay attention to this when working out how long to cut your leg material. A block anvil can be used on its long edge at wrist height for ordinary forging and laid flat for heavy sledge hammer work. It can be used on end for an even higher surface. Compression bolts & spacers hold it tightly to allow changing the anvil position. Its better than welding.

The vise design uses removable jaws and the full goodness of that is yet to be realized. This vise also uses a wheel to move it which I find faster & safer than the traditional sliding handle. The Acme thread push screw & nut is from Amazon. The nut floats loosely so as to not bind & the screw bears against a brass piece to reduce friction in a screw guide on the swing arm. See photos for details.

The vise leg is 2” square tube with 1/4” wall in order to take the loads & is vertical for upsetting loads. The swing arm is the same material so that the removable vise jaws can be interchanged.

Those jaw sockets are made from 2-1/2” tubing, 1/4” wall 3” long to fit snugly over the 2” tube. The inside weld seam must be removed in order to fit. Do this with a chisel & file before welding to the jaw. Weld the jaw plate on perfectly square so that when you rotate the jaws they always meet evenly. These jaws can be used with any of the four edges of the jaw plates coming together which means you can have plain jaws, jaws with a V-cut in them to hold squares & rounds both horizon-tally & vertically (so you can hold anvil tools solidly), jaws drilled for heading rivets & lots more.

There can be more additions if you want them such as sockets beneath the support plate for horizontal bending forks or horns. The swinging & swiveling tool tray uses a short piece of 1/2” pipe welded to a leg, a cranked piece of 1/2” round rod going into another piece of pipe welded beneath the tray frame. You can also make a swing arm for a water can holder to cool punches handily by the anvil. A tray welded beneath the anvil between the legs can hold more tools etc.

In this design I combined ideas from several smiths including Ron Kinyon, Dan Jennings, Brian Gilbert, Doug Kluender, Brian Brazeal, et al. You can make changes and evolve it to suit yourself.

The design is free. You may copy & evolve it under creative commons. Make it your own. Help others. Please feel free to contact me at betheblacksmith@gmail.com or (828) 767-6722.

This 2 page article reprinted from the September/ October 2019 edition of On The Anvil, the newsletter of the Philip Simmons Artist Blacksmith Guild.

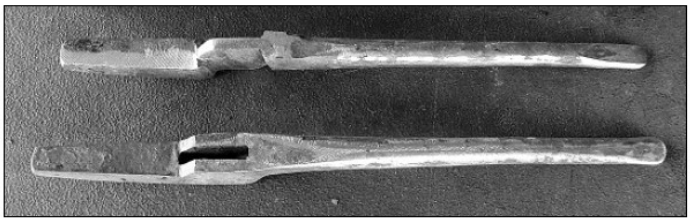
Box Joint Pliers

Demonstration by Gary Brown

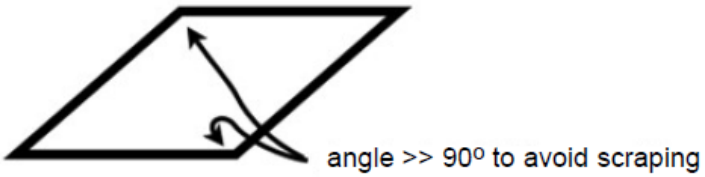
CBA Spring Conference 2014

Side View

Top View



This is an example of a process to make precision-fi t-tools using imprecise tools and processes.



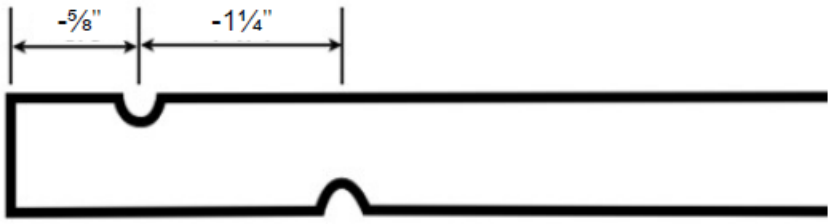
Some points to pay attention to:

1. Maintain the centerline carefully.

2. The box joint is diamond-shaped, not square. Its length is your choice. A golden mean ratio looks nice.

3. The diamond angles are not 45º. (see drawing)

The start is similar to making tongs, but the boss area needs to be thicker for the female part.



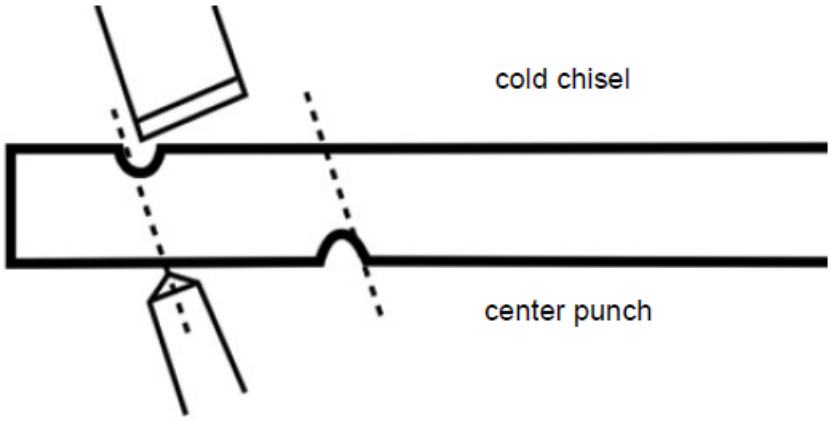
Stock

1/2" x 3/4". Start with a long piece ~10" so that you can cut off the extra later, but have a handle while making the joint. You can scale this up or down. Gary feels that the smaller size is more difficult.

Female Part

Fuller in about a third of the way across the stock, as shown.

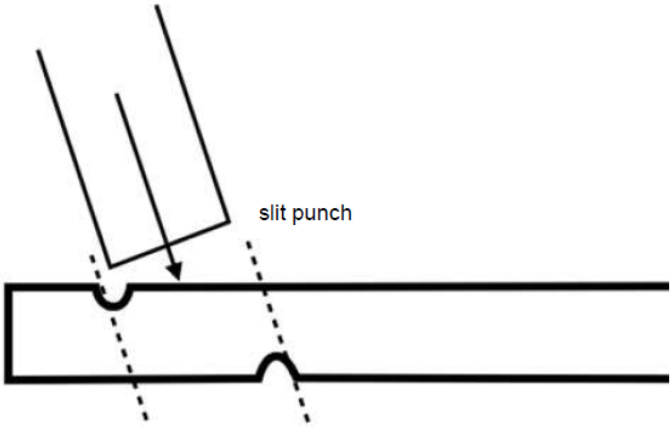
Flatten sides. Let it cool, then mark (cold) for punching. Mark the corners, making sure that the line is centered. Mark the end of the punch line with a center punch. Use a cold chisel to mark the corners and the punch line, making sure that the line is centered.



Box Joint Pliers

Then slit punch, using a slit punch that is sorta sharp. Do this at a high heat – you'll lose less metal that way. Slit at an angle – work from both sides, trying to meet in the middle.

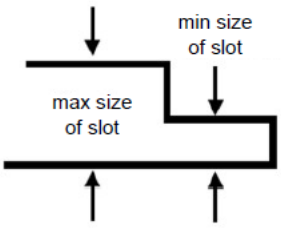
You want the hole about ⅛" undersized, because you'll drift it next.

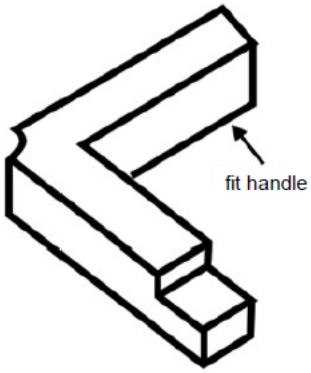


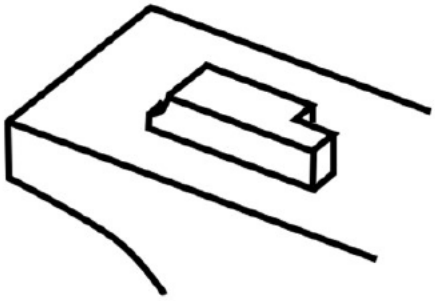
Gary then made a drift out of ¼ x 1 mild steel. He used this to drift the box hole. He also had to do a bit of hammering on the sides with the drift in place, to clean up the sides. Draw out the jaw and the handle (rein).

Male Part

First, make a step tool to help this process along. The min size section is the start width. The max size section is the finish width. Also make a matching square top tool piece.







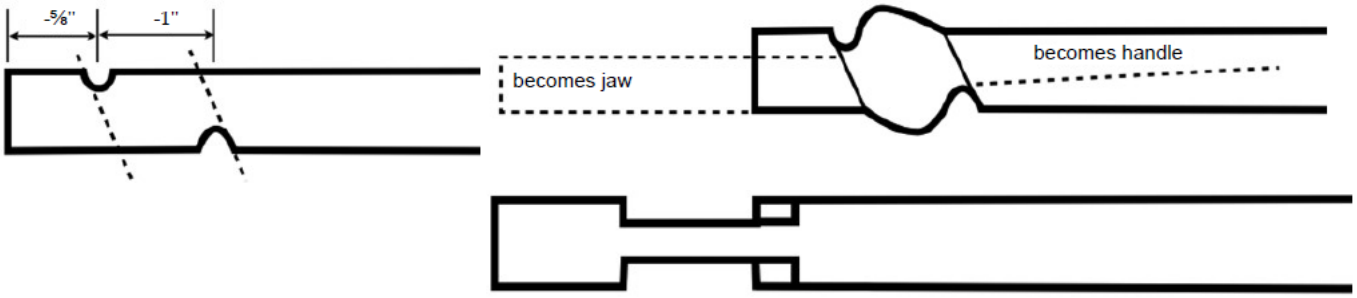
Here's how you'll use it:
The top tool is a matching rectangular bar.

Box Joint Pliers

Forge the male part at a good yellow heat to get sharp corners. If you get too much distortion, switch to a rasp or file to bring to desired size/shape.

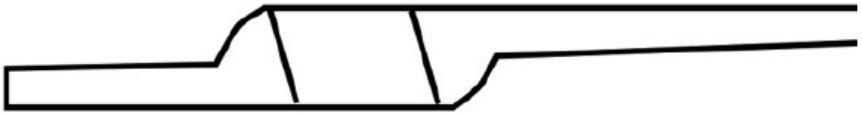
Fuller a third of way across, the stock, a little closer together than for female part.

Spread using the Hardy tool and matching top tool as square-cornered fullers.



The thinned section will stretch when you forge it back in.

Now, being careful not to destroy the necked-down part, draw out the ends to form the front and back of the joint.



Cut off 3" to 4" back, and draw out the handles.
Going back to the female part, draw out the front and back, and then cut off the same distance back and draw out the handle. Be careful, the tricky part is to avoid collapsing the eye. If necessary, correct the eye with your drift.

You don't want too close a fit, as we will forge the pieces to match.

Gary made the handles half-round, using a half-round bottom fuller.

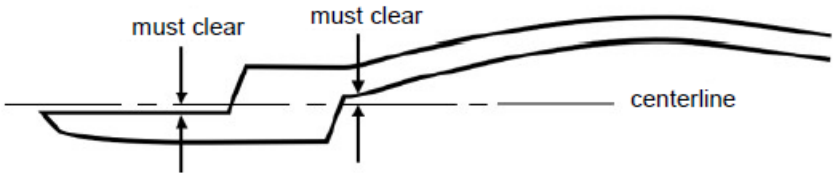
This was the end of the first day of Gary's demo. He put it together the next morning.

Box Joint Pliers

Assembly

Align the pieces so that the centerline through the box matches the centerline of the jaw and leg.
Note the sections that must clear the centerline.

In a nutshell, here's the process:
Open the female jaw with the drift.
Slide the male part through.
Hammer down to match.



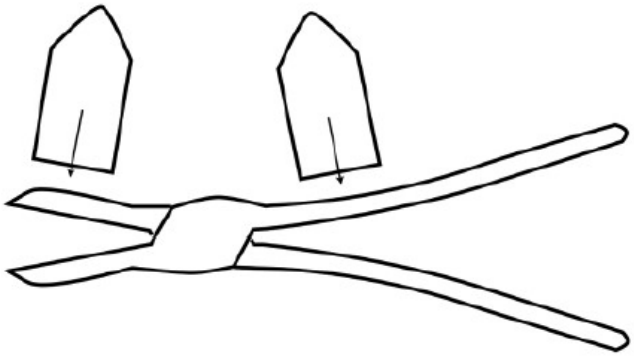
To spread the female part of the joint, use the drift with the female part warm, not super-hot.

You do not want to stretch the material, just move it out of your way.

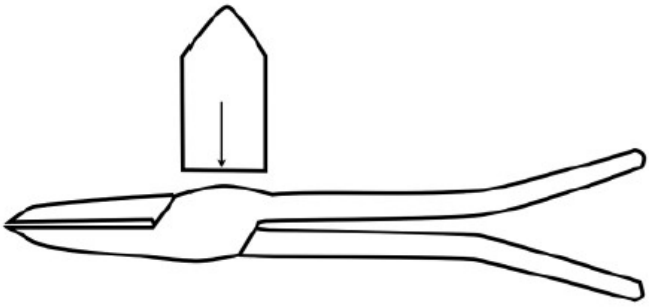
Go slowly, using several heats.

Once it is open enough, slip the male part through.

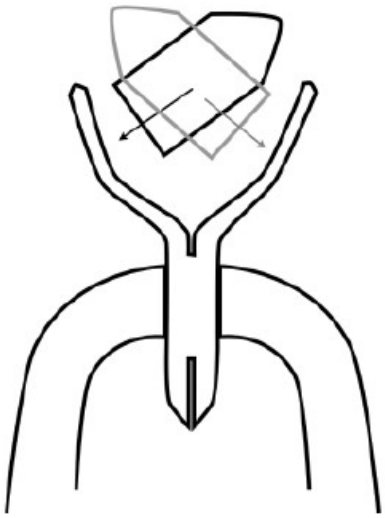
Heat both pieces, and hammer the jaws and legs closed.



Next, flatten and remove any bulges.



Hammer the jaw section back to rectangular, and then even up the jaws and handles. You want the pieces to just fi t, to be a slightly tight fit.



Go to the vise, bend out the legs, and then re-heat and curve.

Open and close to check the action. Drill, countersink the hole, rivet and fi le.

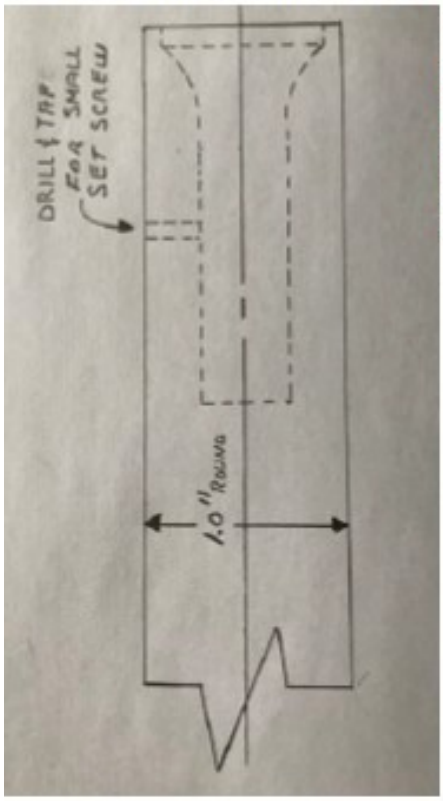
Enjoy and admire!

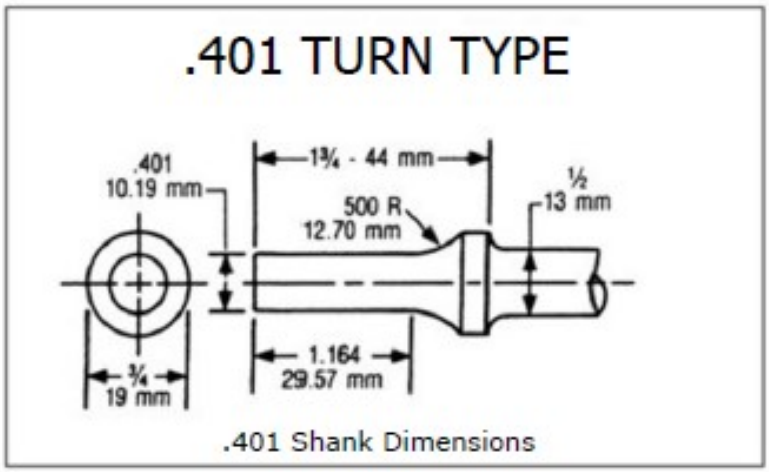
This 4 page article reprinted from the September/October 2019 California Blacksmith newsletter of the California Blacksmith Association.

Universal Rivet Set Driver by Bob Elliott

Good rivet sets take time to make and one just will not be enough for you. You will end up making one for every different size rivet you use. .401 Shank rivet sets are made to be used in an air hammer, and come in just about any size rivet you will ever need for your projects. But an air hammer is not always the best tool to use, and if you are without an air compressor the air tools will do you no good. Now, by making a hand held adapter you can make use of them!

I took a piece of 1-inch round stock about 10-inches long and drilled a hole in one end ***one*** size larger than the .401 shank and deep enough to accept the .401 shank. Then using different size drill bits, I removed steel at the end of the stock to except the flared part of the.401 shank. Note: If you have a lathe this step can be completed by using the lathe, and it will also eliminate the next step. Once the drilling is complete, heat the 1-inch round you have drilled, up to a yellow heat and drive it onto a .401 shank tool, this will form the end to fit the .401 shank. Now you have a universal rivet set driver that can be used for any .401 shanked rivet set or tool. Drill and tap the side of the driver for a small set screw which is used to hold the .401 shank tool in the driver.





Above: Plan view Right: .401 Shank Dimensions Below Left: View of flared end Bottom Right: Rivet set with hand held adapter.

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Trail of Courage Living History Festival

Sept. 21-22, 2019. 10 a.m. to 5 p.m. Sat. 10 a.m. to 4 p.m. Sun.
Admission charge $8 adults, $3 children, free for kids 5 and under.
See www.fultoncountyhistory.org for registration forms for participants.

Free admission for volunteer workers: Firewood to cut, ticket sellers at the gate, FCHS food booth, help by demonstrating or talking on Friday for Trail school day when buses bring kids from as far as Elkhart to see the demonstrations, hear stories, etc. Please sign up ahead of time as all students are same price regardless of age: $4. No food served, bring your own lunch.

Fulton County Historical Society, 37 E 375 N, Rochester, Ind., 46975, 574-223-4436, fchs@rtcol.com.

Two blacksmith shops:

- In Living History Village called Loyal, Indiana, beside the round barn, named Sutton-Terock Memorial Blacksmith Shop.
- Fred Oden blacksmith shop in the festival area in the woods at south end of the grounds.

FCHS grounds are a mile long from county road 375 N to Tippecanoe River. At the north end is the museum, round barn and living history village of 14 buildings. At the south end is the Trail of Courage festival in the woods next to the river. Attendance 12,000 to 18,000. This is a big event with foods cooked over wood fires, traditional crafts, Indian dances, 2 stages with period music & dance, canoe rides on the Tippecanoe River, muzzleloading shooting & tomahawk contests, much more. Children's activities include candle dipping, storyteller, Mountain Man tug of war, games.

Come join us and have fun and learn as this portrays true frontier history in Indiana. Many teachers give extra credit to students who attend and write a report afterward.