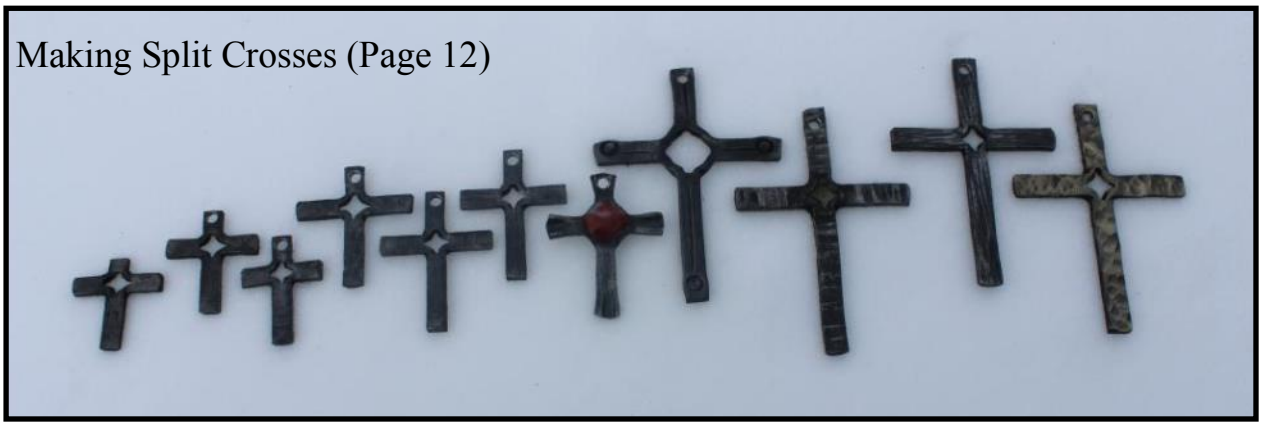
Saltfork Craftsmen
Artist-Blacksmith Association
March 2015

Making Bolt Tongs:
Toby Hickman Style (Page 19)
Two-Man Style (Page 25)

Making Split Crosses (Page 12)



Completed Grille Project from the Mortise and Tenon Joinery Workshop held January 31st in Norman by Saltfork member Gerald Franklin. (Page 7)

Saltfork Craftsmen Artist-Blacksmith Association Officers and Directors

President/cones:
Byron Doner 405-650-7520
6520 Alameda, Norman Okla.
byrondoner@esok.us

Vice-President/Conference: Chair 580-381-0085
David Seigrist
P.O. Box 163 Hollis, Ok 73550
dseigrist2004@yahoo.com

Secretary/workshop coordinator:
Diana Davis 580-549-6824
23966 NE Wolf Rd.
Fletcher, Ok 73541
Diana.copperrose@gmail.com

Treasurer:
Teresa Gabrish 405-824-9681
P.O. Box 18389
Oklahoma City, Ok. 73154
tgabrish@gmail.com

Director/swage blocks:
Bill Kendall 918-742-7836
1756 E. 59th St Tulsa Ok. 74105
wwkendall@aol.com

Director:
Terry Jenkins 405-476-6091
222 N. Washington
Blanchard, Ok. 73010

Director:
Mandell Greteman 580-592-4460
Rt. 2 Box 130 Foss, Okla. 73647
mandell01@windstream.net

Director: Mark Carter 405-964-5754
34509 Hazel Dell Rd.
McLoud Ok.74851
mcarteriron@gmail.com

Assignments:

Editor:
Russell Bartling 918-633-0234
70 N 160th W. Ave
Sand Springs, Ok 74063
rbartling@ionet.net

Webmaster:
Dodie O'Bryan
Pawnee, Ok
scout@skally.net

Librarian:
Doug Redden 918-230-2960
2050 E. 410 Rd.
Oologah, Ok. 74053
Doug.redden2@att.net

Editors notes…

At the 2014 SCABA Annual Conference, Lorelei Sims told a story a new technique she was about to learn from someone who asked her to "not show anyone else." Her reply to him was something like "that is not the blacksmiths way! Blacksmiths share information freely! I can't promise not to share..."

It probably wasn't always that way but in our time it does seem that there is a "blacksmiths way" that involves freely sharing information and techniques. It may be a common realization that the blacksmith craft was almost lost and that sharing information is the best way to ensure continued survival of the craft, or it may just be the type of people drawn to blacksmithing in the first place. I don't think it is because those doing most the sharing have "real jobs" and don't depend on these techniques as their main source for income. A lot of professional smiths seem just as quick to share - even with would-be competitors.

The articles we are allowed to republish from other newsletters and the original material by our very own members are examples of this. And this month's article on split crosses by Dave Custer from Kentucky is another example. Easter is coming up next month I wanted to include some material on the split crosses. I know the split cross technique itself is no "secret" but good complete articles that walk a beginner through the process including texturing are hard to find. From an internet search I found some pretty nice pics and how-to text by Dave in an online forum and e-mailed him asking if he would allow me to print them in our newsletter.

Almost immediately, I got his response. He said feel free to publish it but if I could wait until the end of the week he would send completely new material with much better photos. I have never met Dave or even talked with him over the phone. We have only had e-mail conversations over this last week but I feel like we have a new friend in Kentucky. Dave put this article together in less than a week with brand new material just for us. If you like the article, I encourage you to send him a quick e-mail letting him know. His e-mail address is at the end of the article.

It seems that the "blacksmiths way" is alive and well.

Russell Bartling - Editor

The Saltfork Craftsmen Artist-Blacksmith Association, a non-profit organization Our purposes are the sharing of knowledge, education and to promote a more general appreciation of the fine craftsmanship everywhere. We are a chapter of the Artist-Blacksmith Association of North America.

Visit our Saltfork Craftsmen Website:
www.saltforkcraftsmen.org

President's Notes:

Have any of you been told about "glass blowers cataracts"? I know most everyone has been told of the other more obvious dangers of blacksmithing like, getting burnt, and even more easily with iron that is still hot, but no longer red hot. Or tennis elbow from putting your thumb on top of the hammer handle which can even give you neck problems if you keep it up like I did. We all know that we don't want to breath smoke from the coal fire, but some may not be aware of the problems of breathing air that has passed through the gas forges. Of course you wouldn't breath the "dragons breath" (which is also another place to get burnt) but there may also may be airborne particles of the ceramic fibers from the insulating wool. If I understand right, those fibers are a carcinogenic. I know, bla bla bla!

Ok, now back to the glass blowers cataracts. When I went for my last eye test, I was told that my left eye has a glass blowers cataract which I understand that it is sort of like having a yellow filter or lens to look through. He said that folks that work with molten glass get these from looking at (or staring at!) the glowing furnaces, and glowing glass too much. When I first started forging, I remember buying a pair of "didymium" glasses from centaur forge. After using them a little bit, I stopped because they are not dark, so I didn't think they were necessary, they look and feel awkward, and I wear prescription glasses anyway. I asked the eye Dr. If he knew where I might buy some flip down lenses that I could put over my glasses and he told me to try the glass blower supply folks. I haven't tried yet, so if you know of a source, please let me know.

On the bright side of this, the eye Dr. told me that if, and when my eyes get bad enough, that I can have an eye surgery that would fix or remove the cataract and at the same time, return my vision to 20-20!

The Friday nights at my place have been drawing a good sized crowd lately to say the least! It seems almost every person that shows up has a different agenda that they want to conquer. I guess that most young guys all want to start with a sword, or a very big knife! Very few want to go through the trouble to learn basic blacksmithing skills before tackling a big ole honking sword. Richard Dyer once told me that he tells these guys; "If you want to make sure that you get frustrated and never do any more blacksmithing, then start out with a sword!" They generally come in with at least one piece of leaf spring, two or three feet long. (I've seen longer!) They can't wait to get it in a forge, which is followed by pulling it out with an area about a foot or so red hot. Sometimes they have left it in too long and the steel has already been heated too hot. Generally it has been taken past it's critical temperature so now the grain is too large. This can cause it to fracture easier. Some have heated it so hot that it is burnt up. I was taught that if it's sparkling, that you better cut that part off and throw it away! Anyway, once it comes out of the forge, and they have made it through the crowd to an anvil, they start beating on it. Some actually shape it some, while others just beat on it and wonder why it isn't forming a sword shape! This (most of the time) frustrates me, and sooner or later, them as well.

The hammer seems to move all around on the red hot part until the red has gone out of it. Then the whole cycle starts again, unless they continue to beat on it after the color is gone. I've tried to explain that they don't need such a big area hot, because they can only shape a smaller area per heat anyway. Most of the time, they nod, or agree, but go right back to the same thing. Ive also noticed that they seem to kind of get locked up once they get the shape of a blade. They usually just start another one, since they don't know what to do to finish it up, by putting a handle on it. This is where the basic blacksmithing skills would sure come in handy. I guess, that we are all very impatient when it comes to walking, before running. None of us want to follow all of the directions, we all seem to just want that finished product. I seem to spend my Friday nights going from one guy that isn't getting the results he wants, to another. Often, I feel that I am hurting more than helping because I try to get them through the tough spot they are in, instead of making them back up and do the step that they skipped or didn't get right before they went on, and now are in a predicament. If you have spent time with a master smith like; Mark Aspery, then you have most likely noticed that they have developed the patience it takes to do a good job with each and every step of a project. They truly have walked before they started running! I really believe that being methodical and patient, is the "trick" to making it look easy, and like they are not even having to work at it. On the other hand, if you have watched me with a hammer, you have most likely wondered how I can even claim that I have had classes with any of the really good smiths like Mark! What I am trying to say here is; if you truly want to be a successful smith, please read and follow ALL the directions/instructions!

If you made it through all that, then you have made a fair start. Thank you! - Byron

Secretary's notes…

Another month has come and gone and we will soon be at the beginning of another SCABA year. According to our By-Laws our year begins on April 1st and goes until the last day of March. Dues are due in the month of April. At this time we have 308 members on the rolls and of that number there are 238 that still need to get their dues in the mail. Please don't put it off until you start missing newsletters. Time gets away from us and before we know it we have gone past our grace period and will be missing out on the great newsletter that our editor is producing. This year you will receive a membership card by return mail. If you have NOT received a card by now you need to send in your dues. I have gone through the membership and have sent our cards to everyone that is either a life member or is paid up. If you have not gotten a card and feel that this is an error, let us know.

Another issue that is roaring right up is the election of new officers. This year we have 4 that will be on the ballot. Board members that are up for election are Byron Doner, Bill Kendall, Mark Carter and Mandell Greteman. We need to encourage these members to run again or if they feel that they can not serve, we need to accept that decision, Thank them for their hard work on the board and then we need to find another member that will be willing to run. Being a board member is not Hard work but you do have to be willing to attend the necessary meetings and help make the decisions that will move SCABA forward.

There will be a ballot in the next newsletter. If you would like to have your name on the ballot or wish to nominate someone please let a board member know.

There will be a board meeting on Saturday, March 7th at 1.00 P.M. at Byron Donor's place in Norman. If you have something to bring before the board or just want to sit in on a meeting you are welcome to attend.

Secretary...Diana

SCABA Library Titles:

Robb Gunter Basic Blacksmithing parts1,2,3 and the controlled hand forging series
Clay Spencer SCABA conf.2013 pts. 1,2 and 3
Jerry Darnell 18th century lighting, door latches and hinges
Brent Baily SCABA conf. 2011
Mark Aspery SCABA conf. 2011
Robb Gunter SCABA conf. 1998
Robb, Brad and Chad Gunter 2009 joinery, forging, repousse, scrollwork, etc.
Bill Bastas SCABA 2002 pts. 1 - 6
Jim Keith SCABA conf.2007
Power hammer forging with Clifton Ralph pts. 1 - 5
Doug Merkel SCABA 2001
Bob Alexander SCABA 2008
A. Finn SCABA 2008
Bob Patrick SCABA 2004
Gordon Williams SCABA 2010
Daryl Nelson SCABA 2010
Jim and Kathleen Poor SCABA 2001
Ed and Brian Brazeal SCABA 2006
Ray Kirk Knives SCABA 2002
Frank Turley SCABA 1997
Frank Turley SCABA 2003
Bill Epps SCABA 2003
M. Hamburger SCABA 2007

When I copy a set for someone I make three copies. Best time to contact me is in the A.M. by phone. - Doug Redden, Librarian

KGA Knife Show…

There will be a KGA knife show this year on **March 14th** from around 9:00 AM till about 4:00 PM. It will be held in Oklahoma City, OK at the H & H Shooting Sports complex. There will be about room for 20 tables and they will cost $50.00 each. This will help pay for the electronic advertising bill board that H & H has and for the facility. We hope to make this an annual event.
For table reservations, contact Mike Miller (918-260-5771) to let him know you want one and send the money to me at PO Box 1445, Tahlequah, OK 74465. Make it payable to the Knife Group Association and I will send you a receipt. Table locations will depend on the order of being received. Mike will be assigning table spots. If you wish to be close to some one or YOU WISH TO SHARE a table, please let us know. Table sharing is highly acceptable at our knife shows. I know this is kind of a short notice but when some one offers you a good deal, it is hard to turn down.
The facility is located at 400 South Vermont, Suite 10 just off I-40 and Meridian. There are several motels in that area and Mike is getting a list. He did tell me that there was one for $49.00 a night. If you have any questions, please let me know. I will try to post more information on our web site as it comes available, www.theknifegroup.com.

Ray Kirk
KGA Sec/Treas
918-207-8076
gadugiblade@yahoo.com

Regional Meeting Schedule

- SE regional meeting March 7th (0pen)
- NE Regional meeting March 14th: Will be hosted by James Maberry at the Will Rogers Birth Place. Lunch of Chili and Cornbread will be provided. Bring a desert or side dish to help out. Trade items is a cooking utensil (fork, steak turner, spoon, ladle, etc) directions: From Hwy 169 & 88 go east 1 mile, turn left and follow signs to Will Rogers Birth Place.
- SC Regional meeting March 21st (Open)
- NW Regional meeting March 28th: Will be hosted by Mandell Greteman at his home in Foss Oklahoma. (exit off I-40 go north on Hwy 44 across the rail road tracks one block turn left go 2 blocks end of the road big gray and while building or follow the signs.) Lunch is provided but bring a side dish to help out. Trade item is a fish hook.

2015 meeting dates….

SE Region (1t Sat)	NE Region (2nd Sat)	SC Region (3rd Sat)	NW Region (4th Sat)
Jan.3rd	Jan 10th	Jan. 17th Byron Doner	Jan 24th Gary Seigrist
Feb. 7th	Feb. 14	Feb. 21st Tony Cable	Feb. 28th Bob Kennemer
March 7th	March 14th James Mabery	March 21st	March 28th Mandell Greteman
April 4th	April 11th Doug Redden	April 18th	April 25th Dorvan Ivy
May 2nd	May 9th Ed McCormack	May 16th(JJ McGill)	May 23rd Terry Kauk
June 6th	June 13th Doug Redden	June 20th(R. Vardell)	June 27th Don Garner
July 4th	July 11th	July 18th(Larry Mills)	July 25th Gary Seigrist
August 1st	August 8th	August 15th	August 22nd Monty Smith
Sept. 5th	Sept. 12th	Sept. 19th (Jim Dyer)	Sept. 26th Roy Bell
Oct. 3rd.	Oct. 10th	Oct. 17th	Oct. 24th Cheryl Overstreet
Nov 7-8 conference	Nov. 14th	Nov. 21st	Nov. 28th Mandell Greteman
Dec 5th	Dec. 12th	Dec. 19th	Dec:26th (Merry Christmas)

Meeting hosting form can be found on page 15 along with membership application form.

Work Shop Schedule

May 9th there will be a beginning Blacksmithing workshop at the Murray County Antique Tractor & Implement Association Grounds outside Sulphur Oklahoma. JJ McGill is hosting the class. Cost will be $35.00 and registration Opens May 1st. Class is limited to 6 students. Attendees MUST be members of SCABA or join during the class.

May 30th there will be a beginning Blacksmithing workshop at Temple Oklahoma. Ricky Vardell is hosting this workshop and assisting teaching. Cost will be $35.00 and registration will open May 1st. Class is limited to 6 students. Attendees MUST be SCABA members or join during the class.

NW region workshop/play day schedule:

May 30th– Workshop—Hammer Class– Elk City Museum
August 29th– Play day– hosted by Don Garner at 23713 E. 860 Rd.
Thomas, Ok. 580-661-2607
October 31st– Workshop– pattern welded steel by Gerald Brostek at the
Blacksmith Shop at the Elk City Museum Complex.

If you are interested in attending either a play day or workshop in the NW Region please contact Bob Kennemer or the host of the event. Regular monthly meetings are always open to anyone that wishes to attend.

Diana not only keeps track of the workshops but the monthly meetings. If you want to host a meeting in your area you need to fill out one of the host forms in the newsletter and get it mailed in as soon as possible. Consider having a beginning blacksmithing workshop in your area. We have a lot of new members that need a little guidance getting started. A one day workshop will give many of them just the encouragement they need. Let me know if you would like to plan a workshop in your area.

-Diana Davis 580-549-6824 or Diana.copperrose@gmail.com

In Remembrance…

I would like to to let you know that we have lost a member. Jeffery "Jeff" Faircloth has passed away. I know that most of you did not know him. He was a new member that had came out to my place on just a few Friday nights. He was a big guy with a full head of hair and a boyish grin on his face always. Kind of a big ole cuddly bear type. A bit shy and very polite. Please keep his wife, Gina in your prayers as she makes her way without him.
- Byron Doner

Demo Opportunity…

I have a request from the Claremore Chamber of Commerce for a blacksmith to demo at the upcoming Home and Garden show April 10-12. The Contact person is Ann Baker 918-520-9748. Anyone interested should contact Mrs. Baker for more information.

-Diana

Around the State….

NW: No meeting notes available.

NE: No meeting was held in February.

SE: No meeting was held in February.

SC: **South Central February Meeting:**

Saturday February 21, 2015 – South Central Meeting. We could not have asked for a better day. It was sunny and warm all day made better by like-minded people spending time together. The first members arrived around 8:30 and people showed up all morning. There we many faces I knew and several I did not but I tried to meet every one. We ended up with 30+ people in attendance.
The trade item was a blacksmith's knife and we had 12 fine examples for the swap. Individual interpretation was well represented as we had several styles and sizes in the trade.

We had a good lunch with lots of goodies to nibble. I worked at the forge a little and then got out of the way to let someone else try their hand and watched a new member forge a railroad spike knife with advice from onlookers. I believe he was happy with what he made to take home. The meeting broke up around 2:00 and people went home to take a nap (or not). But it sounded like a good idea anyway.

If you didn't make the meeting we missed seeing you. If you did make it, I am glad you came and hope to see you next time. I would urge everyone to consider hosting a meeting. If you have in the past, do so again, if you have not, then put your name on the list. It is certainly a rewarding experience.
Submitted by: Tony Cable

Correction….
In the February 2015 Newsletter article "Christmas on the Chisolm Trail," Bruce Willenberg's name was misspelled. Sorry Bruce! - Editor

Mortise & Tenon Joinery Workshop

Gerald Franklin

Saltfork sponsored a Basic Mortise and Tenon Joinery Workshop on January 31, 2015. Workshop coordinator Diana Davis arranged for the workshop to be hosted by Byron Doner at his shop in Norman. She also arranged for Gerald Franklin to teach the class.

Six students signed up for the workshop and all six completed the project, which was a small (10 inch square) grille. The corners of the grille were joined with square tenons. The mortises for these tenons were drilled, heated, and drifted square. All the other tenons were forged and the mortises were punched and drifted. There was a simple pass-through element inside the grill consisting of a ½" round bar passing through a ½" square bar. The pass-through was punched with a slot punch and then drifted round.

Photo 1: The Class (L to R) Mark Carter, Bruce Willenberg, Tim Jones, Chuck Ogden, Marc Carson, Dale Dixon

In addition to the actual construction of the grille, we spent some time talking about the tools involved in the various steps. We talked about the construction of the tools, the reasoning behind the construction and some alternatives that could also be used.

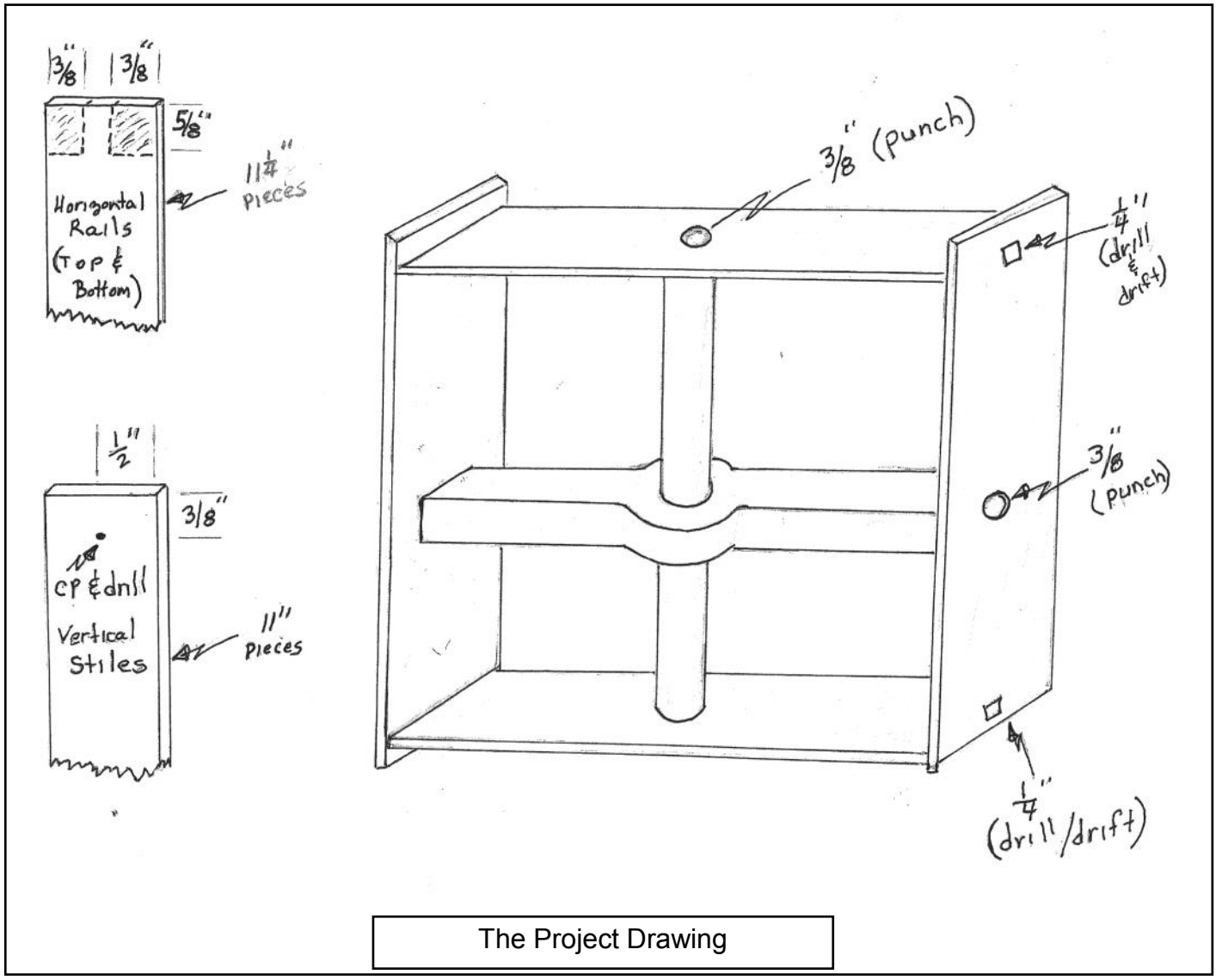
Byron and Carol Doner worked hard to provide great hospitality for the group both in the shop and in the dining room. Carol whipped up a great lunch of tacos and fixings. Daughter April provided a pineapple cake and Frankie Franklin sent a chocolate cake, so we ate very well. The lunch hit the spot and gave us all a good break from the project.

Everyone worked hard and stayed on task so we were able to finish all six grilles before quitting time. The group paid particular attention to measurement and layout, which paid off when it came time to assemble the grilles.

Thanks to Diana for her coordination, Byron and Carol for their hospitality, and to the workshop participants for their hard work and attention to detail.

Photo 2: Gerald demonstrates the slot punch

Photo 3: Class watches the demo



The Project Drawing

This is the project drawing we built the grille from. The materials list and forging procedures are continued on the next page...

Photo 4: Some of the tenons were sawed.

Photo 5: Another view of sawing a tenon.

Mortise & Tenon Joinery Workshop - Background and Procedure

The mortise and tenon joint is a strong and versatile joinery technique that has been in use for hundreds of years. It is useful in the construction of more traditional pieces as well as contemporary work. This type of joinery is often used to emphasize the craft as it gives a final appearance of a one of a kind, handcrafted item.

Photo 6: Some tenons were drawn on a guillotine tool

The joint is composed of a mortise, or a sized hole, and a tenon, which is a peg that is formed to fit the hole. The tenon is fitted through the mortise and then peened so that it forms a mechanically sound joint. The peened end can be forged into a decorative shape that adds further interest to your piece.

The grille that we will build will employ both round and square mortise and tenon joints. We will also make one pierced pass-through joint using a slot punch and a round drift.

Cut List:

Two each ¼" x 1" x 11 1/4" long flat strap (Horizontal elements (rails) of the grille)
Two each ¼" x 1" x 11" long flat strap (Vertical elements (stiles) of the grille)
One each ½" x ½" x 11 1/4" long square bar
One each ½" x 11 1/4" round rod

Layout:

Using a center punch, mark the center of each piece of flat strap and the square bar. This mark must be accurate as it sets the stage for the final assembly of the grille element. Make sure that you center the punch mark laterally as well as from end to end. Mark the center of these pieces on both sides.

Photo 7: Layout work is important.

Mark the square mortises by center punching the two vertical elements (the 11" stiles) 3/8" from each end on one side.

Layout the 1/4" tenons on the top and bottom horizontal elements (rails). Place a mark 5/8" from each end of the rail elements to set the depth of cut. Then place marks 3/8" from each side to mark the sides of the tenon. Cut these tenons on the bandsaw or with a hacksaw. File to dimension (¼" square). Dress and true the shoulders with a file.

Forge Work:

Drill the 1/4" mortises. There will be four of these, one at each corner of the finished piece. Then take a good orange heat and drift the hole to ¼" X ¼". Make sure to keep the drift square with the workpiece.

Punch the 3/8" mortises at the center of each rail and stile. There will be four of these.

Slot punch and drift a ½" hole in the center of the central element (½" x ½" square bar). While you have the piece hot, apply your touchmark. If you don't have a touchmark, the piece can be marked cold with letter stamps later.

Measure the shoulder to shoulder distance on the two rails. Divide the longest distance by 2 and add 1/16". Transfer this distance to each end of the ½" x ½" square bar. Center this distance on the slot punched hole. A transfer punch is helpful in measuring from the center of the hole.

Photo 8: Back-punching a round hole over a bolster

Assembly:

Using the sizing jig, bring the three horizontal elements to the same length. Set the jig to the length of the longest element and hammer the shorter elements (cold) on the anvil face to bring to length. Check these pieces often so that you don't get them too long.

Assemble the grille cold to measure the shoulder distance for the 3/8" tenons on the ½" round bar. Add about 3/16" to this shoulder to shoulder distance to allow for shortening due to squaring the shoulders with the monkey tool.

Layout and forge the 3/8" tenons on the ½" round bar. Set the shoulders with a butcher and forge the tenons with a swage. Trim all round tenons to 9/16" length.

Final Assembly:

If you haven't done so already, re-check the length of the horizontal elements in the sizing jig.
Assemble the central element and the ½"round bar first.
Use torch to heat the tenon ends and peen to a tight fit.
Heat the entire grille with a propane torch and brush it down.
Apply wax finish.

Photo 9: Some assembly required...

Photo 10: The finished product. Everyone finished. The left stile in this photo looks bent but it is a photographic distortion.

Tenon Ratio Tables

Gerald Franklin

Use the tables below to quickly determine correct shoulder placement for drawing out tenons. The tables give the amount of increase per unit length of tenon given the starting and ending dimensions:

Example: If you have a 5/8" square bar and want a 1/2" round tenon on it, Table 2 tells you that the finished tenon will be 2.0 times longer than the shouldered piece. So, if you want a tenon that is 1 1/2" long, shoulder the piece 3/4" from the end (the desired finished length divided by the number from the table.) This should give you enough material for a tenon of the desired length (3/4 X 2.0 = 1 1/2). Always start shoulders a minimum of one half the cross section from the end of the material.

Table 1: Round to Round and Square to Square

● ➡ ● ■ ➡ ■	Finished Tenon Size							
Starting Bar Size	1/4	5/16	3/8	1/2	5/8	3/4	7/8	1
1	16.0	10.2	7.1	4.0	2.6	1.8	1.3	1.0
7/8	12.3	7.8	5.4	3.1	2.0	1.4	1.0	
3/4	9.0	5.8	4.0	2.3	1.4	1.0		
5/8	6.3	4.0	2.8	1.6	1.0			
1/2	4.0	2.6	1.8	1.0				
3/8	2.3	1.4	1.0					
5/16	1.6	1.0						
1/4	1.0							

Table 2: Square to Round

■ ➡ ●	Finished Tenon Size							
Starting Bar Size	1/4	5/16	3/8	1/2	5/8	3/4	7/8	1
1	20.4	13.0	9.1	5.1	3.3	2.3	1.7	1.3
7/8	15.6	10.0	6.9	3.9	2.5	1.7	1.3	1.0
3/4	11.5	7.3	5.1	2.9	1.8	1.3		
5/8	8.0	5.1	3.5	2.0	1.3			
1/2	5.1	3.3	2.3	1.3				
3/8	2.9	1.8	1.3					
5/16	2.0	1.3						
1/4	1.3							

Table 3: Round to Square

● ➡ ■	Finished Tenon Size							
Starting Bar Size	1/4	5/16	3/8	1/2	5/8	3/4	7/8	1
1 1/2	28.3	18.1	12.6	7.1	4.5	3.1	2.3	1.8
1 3/16	17.7	11.3	7.9	4.4	2.8	2.0	1.4	1.1
1	12.6	8.0	5.6	3.1	2.0	1.4	1.0	
7/8	9.6	6.2	4.3	2.4	1.5	1.1		
3/4	7.1	4.5	3.1	1.8	1.1			
5/8	4.9	3.1	2.2	1.2				
1/2	3.1	2.0	1.4					
3/8	1.8	1.1						
5/16	1.2							
1/4								

Making Split Crosses

An article by Dave Custer, owner/operator at Fiery Furnace Forge Blacksmith LLC in Columbia Kentucky.

Well folks, it is freezing cold here in Central Ky. Today, while I was setting the tooling up and making samples, it was around 15 degrees in the shop. We've had eight inches of snow on the ground since last Sunday night....almost a week now. So on the subject of split crosses.....

The split cross is a subject that has been often covered in smithing articles. Hopefully you will enjoy reading about how I do mine, and maybe learn a new trick or get new ideas for you to use in your own shop.

For starters, we need to determine the starting dimensions of our cross blanks. In the past I have liked using a 3 3/4-inch long piece of 3/8-inch square bar. For this article I decided to do some test runs on some different size and proportions. So I cut some 5/16-inch square bar 2 1/8-inches long and 1 5/8-inch long.

The split cross requires a series of three cuts or splits to complete! You can use a band-saw, porta-band, angle grinder with a cutting disk, or hack saw.

Blanks Ready to Cut...

The first cut is longer, the second is shorter

In my 3 3/4-inch long blank of 3/8-inch steel, the first cut is 2 5/8-inch long. The second cut is started at the apposite end of the bar from the first cut, and oriented to be 90-degrees to the first cut. This second cut is 1 3/8-inch long. It should overlap the first cut about 1/4-inch to 5/16-inch. If the overlap is too little, the resulting center hole in the cross will be too small, and if the overlap is too long the hole will be too large.

First Cut...

I use a horizontal/vertical band-saw with a horizontal table with a zero clearance slot cut around the blade. I have a set of jigs and stops that allow me to cut crosses without measuring. I use a long threaded rod to apply screw pressure to push the cross through the bandsaw blade. You can use a pair of vise grips to hold the steel and push it through the blade and a couple silver pencil marks to show where your cuts should be. Wear gloves, safety glasses, and ear plugs!

If you decide to use stops and guides, keep dummy blanks of your favorite cross sizes. This will allow you to set up your stops and guides quickly, without measuring. Simply slide your dummy blank onto the blade and set your stops up around it.

Second Cut...

Final Cut!

The third and final cut is made in half of the long first cut. This will eventually be the top of the cross, so it needs to be trimmed shorter. I make this cut, approximately 1-inch from the end.

Before going to the forge, grind or file any burs off.

In the 2 1/8-inch blank cut from 5/16-inch square the long cut was 1 3/8-inch, the short cut was 7/8-inch, and the third cut was 5/8-inch.

In the 1 5/8-inch long blank, the long cut was 1 1/8-inch, the short cut was 5/8-inch, and the third cut was 1/2-inch. Play with these measurements to create your favorite shape and proportion.

Now let's heat it up. A good pair of light, 1/8-inch flat jaw tongs, makes cross making very pleasant. Grab the thin section of the cross with your tongs.

Use a long thin chisel to open up the first section of the cross.

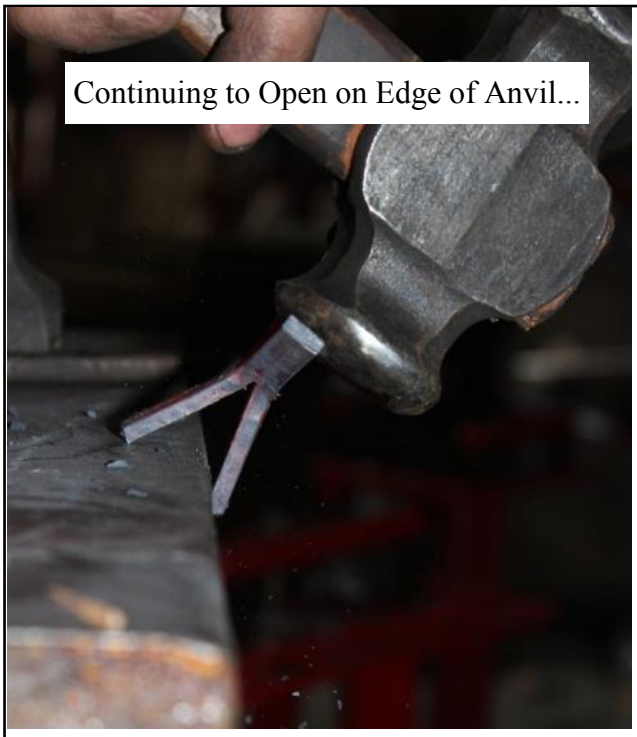
Then use a hot-cut to open up the other cut. The thin blade of the hot-cut gets the cross open enough so that you can use the edge of the anvil to open up the cross even more.

The Prepared Cross Blank…

Opening with the Chisel...

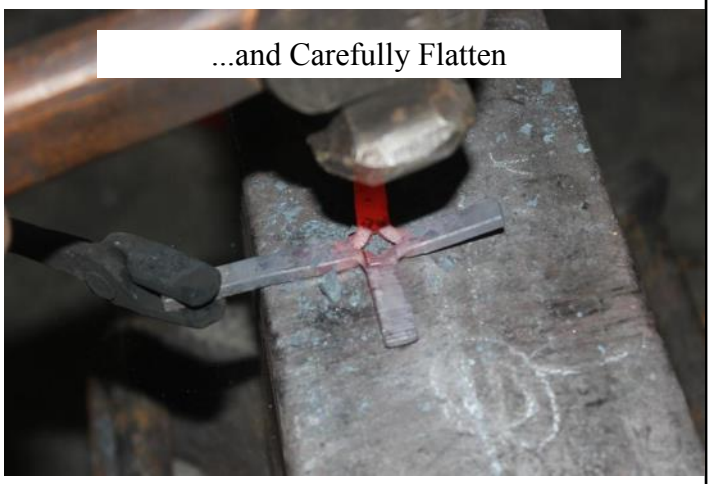
Starting the Second Split on the Hot Cut...

Opening Further with the Hot Cut...



Continuing to Open on Edge of Anvil...

Now Move to the Face of the Anvil…

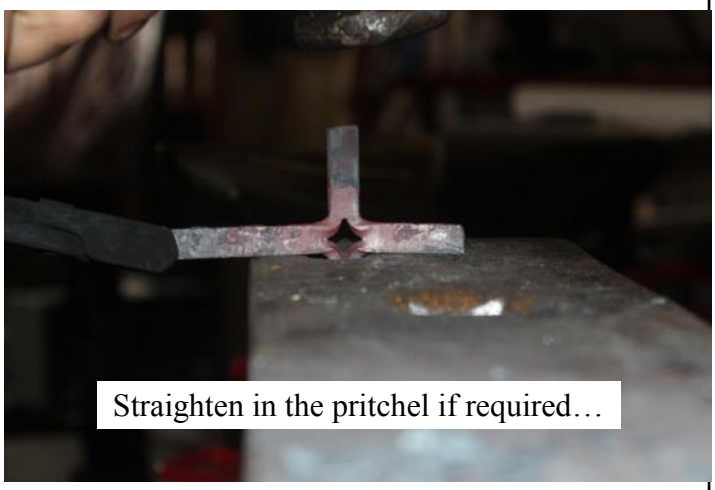


...and Carefully Flatten

Finally flip the cross over with the left and right "wings" facing up, and use a hammer to flatten the cross completely. This is a very critical stage in making the cross. As you gently hammer everything down flat, you can adjust your hammer blows to adjust how the cross bends as it is flattened. If you take care, you can control it sufficiently so that the cross requires no straightening or adjusting afterwards.

If the cross requires straitening, use the pritchel hole! It is a great way to adjust your crosses. The Hardy hole may also be used, but the pritchel is best.

Now comes texturing! You can go with a simple edge chamfer texture, ball peen texture, cross peen texture, or a favorite of mine, a bark texture. There are as many ways to texture a cross as there are people who make crosses.....experiment, play around, and have fun...



Straighten in the pritchel if required…

The Bark Texture Tool

Before and After Texturing…

Texturing Tools…

Some Texturing Variations…

Once texturing is complete, do any last minute straightening that is needed.

Other options include drifting the center hole to a circular shape which makes a "Celtic cross," melting a marble into the center, and adjusting the proportions of the sides, top, and bottom. For a Celtic cross, the overlap of the long and short cuts needs to be slightly larger so a drift can open it up a little.

To melt a marble in the cross center place the marble in the center hole and gently place it in the forge. Use a low, slow heat until the marble heats and sags into the center hole. Allow it to air cool.

To make the left and right hand sides of the cross small, decrease the length of the original shorter cut. To make the bottom leg of the cross shorter, decrease the length of the original longer cut. To make the top leg of the cross shorter, increase the length of the third cut.

A brass wire wheel will make a nice finish patina on crosses, and can be applied cold. You can also use a hand-held brass brush, but you must heat the cross up to approximately 600-800 degrees before brushing.

Drifting for the Celtic Cross…

Melting a Marble…

Once the cross has cooled, center punch and drill a hole in the top of the cross. I like to drill 3/16-inch as it is large enough for most key-rings. As with any iron-work, chamfer all drilled holes with a larger bit, and make sure there are no burs anywhere on your finished product.

I have included a number of various texture ideas to help get you started.....your imagination is your limit though, so be inventive, and try new things. I have tried to cover the major steps and technicalities behind split crosses in this article, but if you do not understand something or have questions, feel free to email me at blacksmithdave@gmail.com.

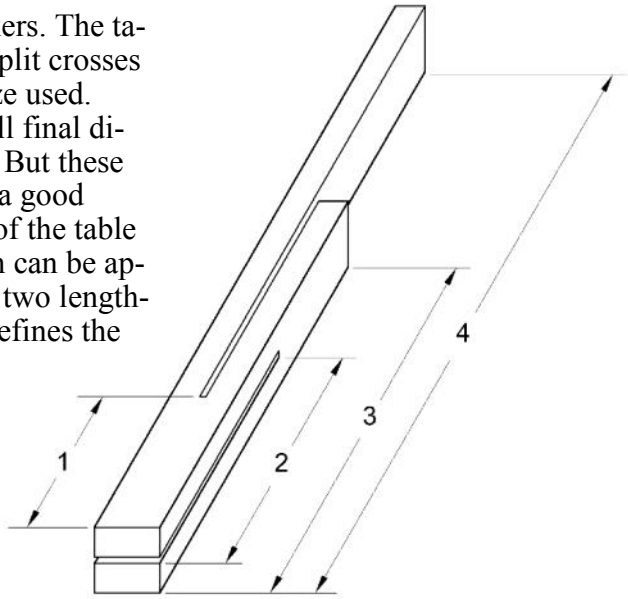
I hope you have enjoyed!

Dave Custer - Fiery Furnace Forge Blacksmith LLC

Split Cross - Quick Dimensions

	Width Dimension of Stock									
Dim	**1/4**	**5/16**	**3/8**	**1/2**	**9/16**	**5/8**	**3/4**	**1**	**1 1/4**	**Any Size**
1	9/16	3/4	7/8	1-1/8	1-5/16	1-7/16	1-3/4	2-5/16	2-7/8	2.30 x Size
2	15/16	1-1/8	1-3/8	1-13/16	2-1/16	2-1/4	2-3/4	3-5/8	4-9/16	3.63 x Size
3	1-7/16	1-13/16	2-3/16	2-7/8	3-1/4	3-5/8	4-5/16	5-3/4	7-3/16	5.75 x Size
4	2-5/16	2-7/8	3-7/16	4-5/8	5-3/16	5-3/4	6-15/16	9-3/16	11-1/2	9.21 x Size

This information was provided by Jim Carothers. The table gives quick approximate dimensions for split crosses to get good proportions based on the stock size used. These dimensions are not really critical and all final dimensions are really subject to personal taste. But these dimensions would be a good guideline to get a good "look" to the final product. The last column of the table provides the basic ratios that were used which can be applied to any size of stock. The overlap of the two lengthwise cuts (dimension 2 minus dimension 1) defines the size of the opening in the center of the cross.



Quick Projects – Adjustable Bending Jig

Gerald Franklin

I saw this jig in Bill Phillips' shop. It's simple and adjustable by clamping in the vice. You can also drop a larger diameter pipe over the smaller one to increase the versatility of the tool.

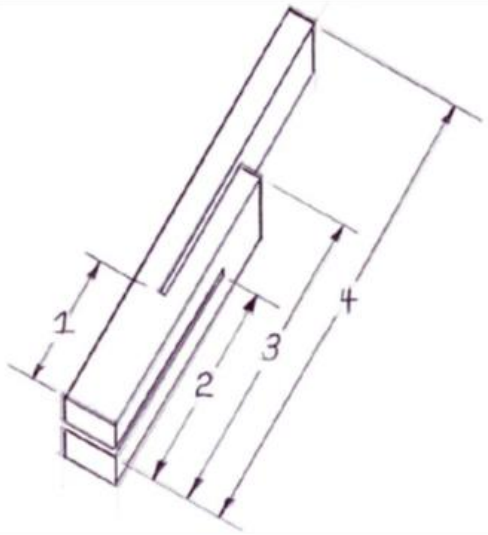
Split-Cross from a Pipe

By Dominick Andrisani

Many blacksmiths have created beautiful split crosses (a.k.a. Friedrich Cross) using solid square stock cut as shown in the sketch below. It is also fun to use the same technique to make split crosses out of pipe. When you are done the cross appears to be made out of pipe of half the original diameter. Typical dimensions are given in the table below.

	Diameter of Pipe(inch)				
	1/4	3/8	1/2	5/8	3/4
Length#	Length (inch)				
1	9/16	7/8	1+5/32	1+7/16	1+23/32
2	29/32	1+3/8	1+13/16	2+9/32	2+23/32
3	1+7/16	2+5/32	2+7/8	3+19/32	4+5/16
4	2+5/16	3+15/32	4+19/32	5+3/4	6+29/32

Dimensions for lengths shown below.



Split-cross lengths defined here for a square bar also work well for pipe (sketch and dimensions by Jeff Reinhardt)

If making your cross out of stiff copper pipe, make the three cuts shown in the sketch above. Cut the metal before annealing or the pipe may become so soft as to collapse while being cut. The second step of annealing the copper (getting it red in the fire) is very important to prevent the copper from tearing in the center where the four arms meet. You should anneal copper only in a space where there is good ventilation as some nasty fumes may be given off. If using soft copper tubing, the annealing step can be skipped, as the copper is already soft and flexible. Allow the copper to cool or quench it in water. The copper should be worked cold.

Opening the cut-annealed-cooled pipe should be done slowly and carefully. Considerable stretching of the material in the center where the arms meet will occur. The opening should be done equally on each arm with an eye for symmetry. You can use any flat tool to help you open the cross. I used a wide chisel to get it slightly opened and gloved fingers to open it the rest of the way.

Partially opened ½-inch copper pipe. Take care that the opening in the middle remains symmetrical.

Fully opened piece, but the four ends have not been rolled closed to form ¼-inch pipe.

In the photographs above the vertical arms are concave up and the horizontal arms are concave down. After fully opening the cross (as shown in the right photo above) each arm will need to be rolled closed so that the original ½ inch pipe closes

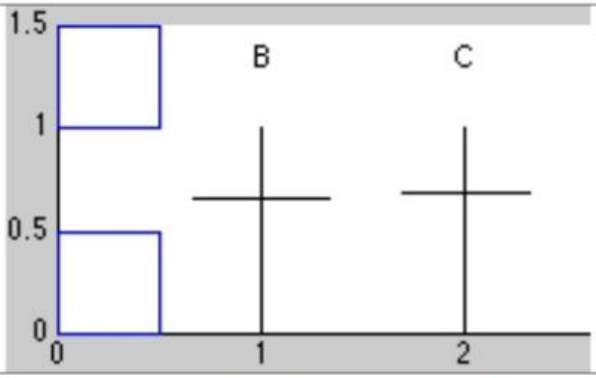
into a ¼ inch pipe. This can be done with a hammer on the anvil. I prefer to use a copper hammer on copper. The vertical arms will close on the top as illustrated, thereby producing a seam in the front, while the horizontal arms will close at the back producing seams on the backside. I find that laying a ¼ inch diameter steel rod on the cross helps me to align the top and bottom arms and to form a uniform ¼ inch pipe around the rod. The rod can be slid out with a little elbow grease. The rod can then be used to align and form the horizontal arms. Take care in forming the copper near the center of the cross to get smoothly varying edges connecting the horizontal to the vertical arms.

Illustrated below is a finished split-cross made from half-inch copper pipe. The finished dimensions are 6 inches tall by 4 ¼ inches wide and the arms are ¼ inch in diameter.

Split-cross made from ½-inch copper pipe showing seams along the vertical arms. Arms are ¼ inch in diameter. The top arm is a little shorter then the right and left arms.

To complete the cross, the copper was cleaned in a mild acid pickle (like pH Down available at your favorite pool store), rinsed in water, darkened by dunking in a solution of liver of sulfur (available at www.delphiglass.com) for several minutes, rinsed again in water, scratched with a hack saw blade to make the copper sparkle, and polished with paste wax. Note in the picture above that there are seams on the vertical arms. These can be filled in with braze or left as shown. On the backside of the cross the horizontal arms also have the seams.

A final word about the overall proportions for a cross: throughout history you can find examples of many different cross proportions (ratio of height to width and ratio of the length of the top arm to the height), and you can still see all manner of cross proportions in use today. The one for you to use is the one you think looks better. Several examples of overall cross proportions that I think look good are given in the illustration below.



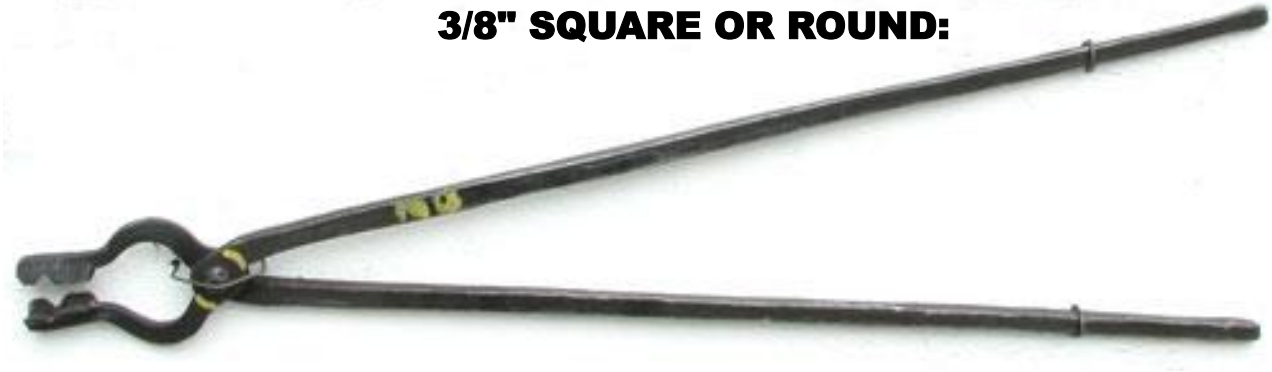
Two cross proportions drawn to scale. The two blue squares should look perfectly square.

Method	Top Arm/Height	Height/Width
B	0.333	1.500
C	0.301	1.618
Copper Cross	0.333	1.412

Proportions for the two cross designs and for the copper cross pictured at left. The top arm is the vertical portion above the crosspiece. Method C uses the Golden Ratio (ratio of height to width is 1.618) while method B uses round numbers like 1/3 and 3/2. The top, left, and right arms are the same length in methods B and C.

HOW TO MAKE

LIGHTWEIGHT, OLD STYLE, HOLLOW BIT TONGS FOR HOLDING 3/8" SQUARE OR ROUND:



These tongs are similar to a pair of versatile tongs made by Toby Hickman as he was video taped when at Joe Pehoski's Shop in 1991. That video is available for rent from ABANA. These instructions differ from that video primarily in that these are designed to be made using a hand hammer. They can also be made using a power hammer as did Toby Hickman.

To make these tongs several blacksmith processes are used: i.e. conceptualizing the final product, marking the stock, isolating the different parts, drawing out the shank and reins, upsetting the bit, slitting the bit, bending the shank, punching the rivet hole, riveting, and putting on a finish, if desired.

A good tong steel, particularly for beginning tong makers, is the common mild steel called A36 that typically has a maximum of .29% carbon. More experienced tong makers sometimes like to use a medium carbon steel such as 1045, 4140, 8640 for a stronger tong. An advantage of mild steel is that if at a red heat and then cooled in the quench tank, they are not as susceptible to cracking as they might if made of a higher carbon steel. A36 is also inexpensive and easy to work. A36 is slightly stronger than 1018/1020 (the typical cold rolled) which will also work for tongs. Remember that the stronger the steel, the lighter can be the tongs and vice versa. With this style of tongs, which hold <u>both</u> round and square stock in a very satisfactory manner, it is often not necessary to own tongs which only hold round bar stock.

The dimensions given in this article are for tongs made from bar stock 1/4" by 3/4" by 11". This size is suitable for tongs designed to hold 3/8" material. The same 1/4" by 3/4" bar can be used to make tongs that will hold from 1/4" up to 1/2" material, although these tongs are a little lightweight to be holding 1/2" iron. For this size tong a bit of approx. 1" in length (marked at 3/4" on blank bar before forging) and a boss length of 7/8" to 1" is typical. Since the reins and the shank (space between the boss and bit) will be drawn out, their final length will be approximately 2 times as long as the original marked distance. The shank on these tongs is marked at 1 1/2" and will stretch with drawing out to approximately 3".

Once familiar with the steps in this process, the size of the tongs can be altered depending on the dimensional characteristics you desire in the tong. Larger tongs can be made using larger bar stock with the same approximate dimensional relationships such as 5/16" by 1", 3/8" by 1", 1/2" by 1 1/4" etc. The key factor in determining the size of stock to use for a particular pair of tongs is to determine a suitable size for the boss. The boss does not change in thickness or width during the process of making the tong. An approximation for determining how long a piece of bar stock is needed is to simply use 1/2 the length of the desired finished product. Keep in mind that the shorter the shank the greater the holding power, but at the expense of versatility. Rivet size is not critical except that generally the bigger the tongs the bigger the rivet. A simple guide is to use a rivet at least as thick as the boss on the tong blank.

Both tong halves are made exactly the same. There is not a left and right half except if and when punching the hole, as later explained. Blacksmiths often make tongs to be used either in the left hand or right hand depending on which rein falls in the palm of the hand when the tong is opened. Another consideration sometimes discussed is whether, when in use, torque is applied counter clockwise or clockwise. There are a good number of blacksmiths that don't worry about left or right hand and this article doesn't either. An easy solution if right or left handed is of concern, and the tongs seem to be for the wrong hand, is to bend a jog in each rein near the boss. Make the bend so that one rein is directly on top of the other allowing equal fit for either right or left hand.

STEP #1

To isolate the different parts of the tong, first ***mark*** with a silver or other marking pencil the junctures of the bit, boss, and rein as shown. Then indent the bar on those marks by driving the cold bar into the corner of the anvil to make a small indentation. This indentation, if adequate in size, will make it easy, when the bar is hot, to <u>feel</u> those marks on the edge of the anvil in preparation for the next process. Without the indented marks, and with the iron hot, it is difficult to find and forge the right spot. Mark and indent both pieces, side by side at the same time, which helps in making both tong halves the same.

STEP #2

Isolate the different areas for processing. At a forging heat, notch the bar on 3 places previously marked by driving the bar onto a small radius edge of the anvil. Hold the hot iron above the face of the anvil at an appropriate angle. Holding the bar at an approximate 45-degree angle will work. Then hammer the bar over the anvil edge to the proper depth. Notch no more than 1/3 of the bar width (¼") at the juncture of the reins and the boss, 1/3 of bar's width at the juncture of the boss and the shank, and 2/3 of the bar's width (1/2") at the juncture of the bit and the shank. Care must be taken in not making these notches too deep as they then become weak areas. Also, the tong is stronger if those notches have a rounded inside corner rather than a sharp square corner.

STEP #3

A. ***Draw out reins*** at a forging heat. The reins can be drawn out first in order to provide a built-in handle eliminating the need for a pair of tongs to hold the work. Be careful not to make the reins too thin or too narrow near the boss. Keep the reins rectangular with the width wider than the thickness providing extra strength in the direction needed. Maintain the original bar's 1/4" thickness at least near the boss. Try for a nice even taper, wide at the boss and narrow at the end. Knock off or round up the edges so the reins will feel comfortable in the hand. This 1/4" by 3/4" bar stock tong is easy to draw out by hand although a "welded on handle" is another suitable option. Drawing out this small stock with a hand hammer is good practice for blacksmiths looking to increase their hammer control and, with practice, should be relatively easy and quick. A power hammer is my method of choice when available.

B. ***Draw out the shank*** (between the boss and the bit) at a forging heat. Hammer on the back of the bar over a narrow corner or spot on the anvil to keep the previously forged boss and bit out of the way, avoiding damage to them by an errant blow. While maintaining the original 1/4" thickness, maintain a width of 1/2" near the boss and taper the shank down to a 1/4" width right before the bit.

C. At a forging heat, ***forge*** the bit width down to approx. 9/16" in preparation for splitting. The bit will lengthen to about 1" and become a little thicker.

If, by chance, a cold shut develops anywhere, grind or file it out, as cold shuts are the beginning of a future crack!

STEP #4

A. ***Split*** the length of ***the bit***, at a forging heat, approx. 1/2 the width. Take care to keep the split centered and straight along the length of the bit. This may take some practice on scrap pieces. A hold down device is necessary when working alone. Making this centered slit usually works best for me by standing in front of the bit so that I'm looking down the length of the tong. Begin at the shank end of the bit and chisel toward you. Stick with the chisel on the ¼" bar stock to preserve the thin bit, but on thicker stock it is also possible to make the slit with a hacksaw. Making the split now while the shank is straight is much easier than after the shank is bent. Another good way to split the bit is to take a pretty high heat on the bit and shank. Then put the shank in a vise (with a vise jaw protector which puts a rounded edge on the sharp vise jaw), place the tong 1/2 with the bit up and sticking above the vise, and bend the bit down so the bit lays horizontally in the crack on the vise top - with the side to be split up. Then we have a bit that is at an approx. 90 degree angle to the shank, and is supported by the crack in the jaw protectors. Then take the chisel and make the split. This process is easier for some and since the bit is eventually bent anyway, this system works well.

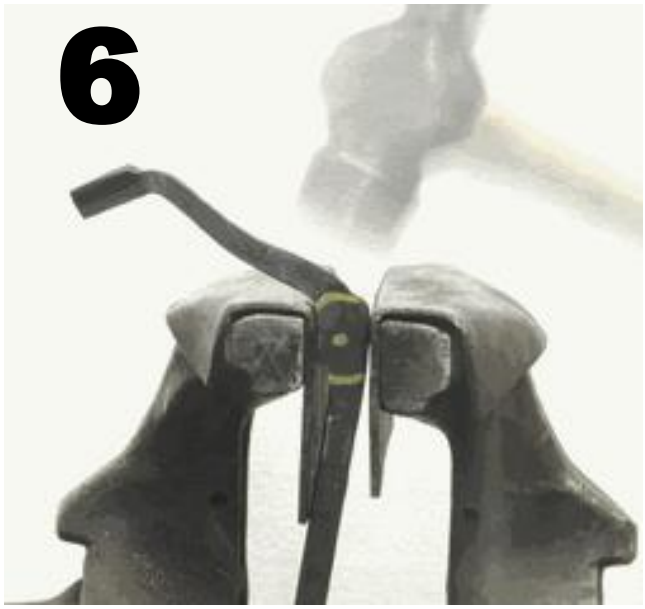
B. ***Open the split,*** at a forging heat, to the proper 90-degree angle by carefully hammering onto a sharp corner or edge of the anvil.

STEP #5

A. Heat the shank from boss to bit then quickly cool only the bit in water to keep the bit from being distorted by the hammer in the next bending processes. Then ***bend bit*** end back approximately 70 degrees from the shank. The bend is easily made if the heated shank is placed in a post vise with the bit sticking up and out and then hammering the cold bit over. Use a cover on the vise jaw with an appropriate radius on the top edge to keep the jaw from dinging up the tong and preventing too sharp of a bend.

B. Heat the boss and shank area and ***bend*** the boss end of the ***shank*** approx. 70 degrees (cool boss, if needed, to keep from damaging it). A quality bend is easy if either the shank or the boss is placed in a vise with jaw covers.

STEP #6



A. Bend the shank at a forging heat between bit and boss into a half circle curve using a hammer and the horn of the anvil, bending forks, and/or another pair of tongs as needed. Try to line up the slit in the bit with an imaginary line running through the place where the rivet will go.

B. ***Punch and drift hole*** (or drill) in the center of the boss for the rivet. A drill leaves a nice uniform hole, but a punch leaves more material in the boss. If only a punch is used and not a drift, the rivet joint is inferior due to the tapered hole made by the typical punch leaving only a small surface touching the rivet. Therefore, punch a small hole, at a forging heat, and carefully drift to size (1/4" for these tongs). Drift over a 5/16" bolster (hole in a piece of iron). Set the rivet either cold or hot. Rivet should stick out approx. 1.5 - 2 diameters before pounding down. Make a nice domed rivet head with a small hammer. Using heavy hammer blows, and/or hot rivets, helps expand the rivet inside the tongs filling up any slop or space.

Note that when punching, punch and drift from the inside of the tongs to the outside of the tongs. Punching and drifting will push metal and raise a ridge on the far side of the drifted area and around the hole. These raised areas, if allowed to face each other inside the joint, or unless filed down or in some way eliminated, will result in a loose-fitting joint. Figure out how the tongs will go together ahead of time and keep the abutting sides of the pivot joint flat and smooth. Since sometimes the rivet can be damaged in the ensuing adjustment and alignment process, it is often safer to use a bolt and nut temporarily, and then set the rivet in the final stages of completion.

STEP #7

A. Heat the tongs from boss to bit to a orange heat, then roughly ***adjust shank and bit*** as necessary so that the tongs hold a scrap piece of 3/8" square bar in the bit. Adjust bit around the scrap piece by squeezing the bit in a vise and/or finessing with a hammer on the anvil. While in the vise, ***adjust or bend the reins*** so they are open to the distance that will, when in use, fit comfortably in your hand.

B. Using the same heat or, if necessary, again heat from boss to bit. Quench to cool the newly fitted bit leaving the shank, boss and upper reins hot. Then, while holding the scrap of bar the tongs are intended to hold, place the reins in a post vise with tongs vertical and bit end up. Then bend shank, etc. where appropriate to align everything so the scrap bar stock remains tightly held and also lines up along the tong's length with an imaginary line running through the center of the rivet and the bit.

Bending forks, pliers, or another pair of tongs and a light hammer could be useful in this adjustment process. Continue the alignment and adjustment process until satisfied with the results.

STEP #8

If the reins are hard to move due to a tight rivet joint, heat the joint and open and close the reins several times until they loosen up. ***Finish*** with your favorite finish (wax, oil, etc.).

It is handy to cut or file a V grove toward the end of the bit so the tongs can be used to hold bar stock across the tong as well as in line with the tong.

Additional note: It is handy to have the tong reins hang straight down and not spread apart when the tongs are hanging on the tong rack. To accomplish that effect, during the process of making the tong, bend the reins next to the boss so that when assembled there is a space exceeding the width of the rod upon which the tongs are to hang. If correct, the reins will hang straight down and take up less shop space. This bending is easy to do if the rein is put in a vise, with the boss next to the vise, and then with the hammer bend over the boss at a bending heat. This concept is optional and is not represented in the tongs in this original article. See chart mentioned below.

There is a good chart on tongs showing dimensions and boss design at: http://www.anvilfire.com/bookrev/ind_pres/tongs_chart.htm. Note that the tongs style in my article above are referred to as "Goose Jaw" Tongs in the chart. Also in addition to dimensions, carefully note the construction of the angles etc. in the boss/pivot area.

Written & photographed by: Dick Nietfeld, Shady Grove Blacksmith Shop, www.blksmth.com, Grand Island, Nebraska USA - 6/5/2001

This article is re-published with permission courtesy of Dick Nietfeld, Shady Grove Blacksmith Shop, www.blksmth.com. There is also a very well done Youtube video by Torbjorn Ahman showing tong making based on this method. Search Youtube for "Blacksmithing—Forging a Pair of Bolt Tongs" or use the direct link: https://www.youtube.com/watch?v=JmBXrC4S5as
— Editor

THE 2010 CALGARY MAIL-IN EXERCISE

Follow these steps to forge a pair of bolt tongs that celebrate Calgary's two-man tradition

By Chris Gregory, FWCF, CJF

When Marshall Iles and I first discussed the 2010 Calgary Mail-In Forging Exercise, the shoer from Alberta said he wanted something that had a real Calgary feel, yet was a departure from the ordinary.

As soon as I suggested forging a pair of tongs, he immediately agreed. Only later did I realize I was to write the article on the exercise. I apologize to all you expert toolmakers.

The World Championship Blacksmiths' Competition has always had such a strong two-man team influence, so it is only appropriate to finally bring this to the Calgary Mail-In. The desired result for this exercise is a pair of bolt tongs that will hold 3/4-inch stock.

Go to www.americanfarriers.com/ff/calgary to download the guide to this year's exercise and see images on how to forge a pair of these tongs.

My son Cody is normally my two-man partner, but that caused a conflict because he is also my normal photographer for articles. For that reason, many of these shots will look like I have done all the work, when in reality, Cody brushes the hot stock, picks up the camera, takes a picture, strikes for most of the heat and then takes another picture. I work him like a rented mule.

I hope that you can get someone out to the forge to help you with this project. For the making of these tongs, we only used two power tools: an ancient Little Giant Trip-Hammer and a 14-inch straight grinder.

Step By Step

As I wrote before, the desired end result for 2010 exercise is a pair of bolt tongs that will hold 3/4-inch stock. The tongs in this article were made from two, 12-inch pieces 3/4-inch sucker rod (**Figure 1**). Cody and I looked around the shop in the hopes of finding a new and exciting way to make bolt tongs, and settled on making a pair that had modern and antique features. I have a real nice pair of old Champion tongs, so I copied the jaw design from that set (**Figures 2 and 3**). I also like the way

Entries must be received in Calgary by June 15, 2010. Visit www.americanfarriers/ff/calgary for more information on this exercise. In the March issue, we'll run the entry form and mailing address for submitting your tongs. You will also be able to download the entry form at that point at www.americanfarriers.com/ff/calgary.


Fig. 1


Fig. 2


Fig. 3

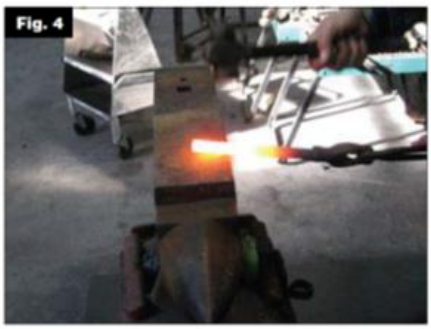


Fig. 4

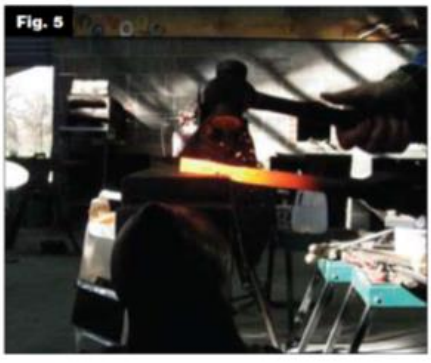


Fig. 5

top of each other. This makes it so that you do not have to make the tongs for a left-handed or right–handed person, not that it really matters that much. Heat the boss and place it past the face of the anvil at 45 degrees as seen in **Figure 28**. You can use a lot of different tools for the next step, like a set-hammer or cross-peen, but if you are by yourself, the round side of your hammer will work fine (**Figure 29**). It should now have an offset in the reins like **Figure 30**. The jaws are now mostly made (**Figure 31**) and the hard work of drawing out the reins is about to begin.

I told you I used my trip-hammer, so you can see that in **Figures 32 and 33**. That is the easy way, but it is not as much fun as using a striker. Draw the reins out as much as you want with your hammer (**Figures 34 and 35**), and send them to the 14-inch power straight grinder.

A lot of blacksmiths get in a hurry at this point because you just want to see what these tongs are going to be like. However, it is at this point when you really need to slow down. Getting the boss and jaws cleaned up here will take care of a lot of the pitfalls that await the hasty tong maker. Heat the jaw and clean up all areas with a file (**Figures 36 and 37**). Take some time to shape the jaws, boss and reins so that when you put the tongs together, there is a better chance of not having too great an adjustment. This is a move you can also use on farrier tongs. Forge each piece into shape, and then lay a piece of stock against the inside of the jaw and inside of the rein (**Figure 38**). The stock should go right over the rivet hole. (With farrier tongs, use the size bar stock you are making the tongs for.)

Heat the boss and drive your round stud punch into the hole to drift it to the appropriate size for your rivets (**Figures 39 and 40**). Turn it over (**Figure 41**) and give it a whack to knock the punch out. You should use rivets, but if you don't here is a method of riveting the two halves together. Taper the end of a piece of round stock that is just slightly too large for your the hole you punched in the boss (**Figure 42**). Make sure that it will go into the rivet hole at least an inch (**Figure 43**). Mark about 3/8ths of


Fig. 18


Fig. 19

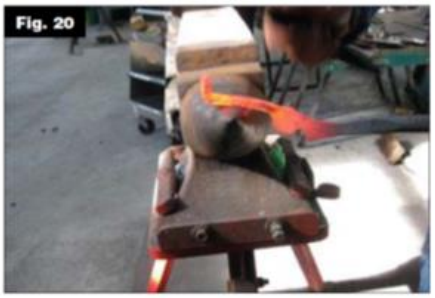


Fig. 20


Fig. 21


Fig. 22


Fig. 23


Fig. 24


Fig. 25


Fig. 26


Fig. 27

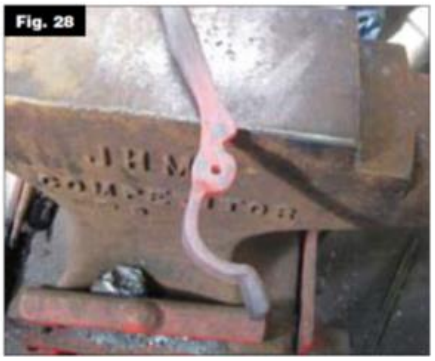


Fig. 28


Fig. 29

that a modern tong is not made for left or right-handed people, has an offset in the boss, and a bit of sex appeal where the boss meets the rein. Add that to the Champion jaws, and it should make a nice pair of bolt tongs.

To start this off, heat the end of the bar and place it about 3 inches onto the face of the anvil (**Figure 4**). Using half-face hammer blows, shoulder the stock to make the area where the boss and jaw come together (**Figures 5 and 6**).

For heat two, lay the stock at 45 degrees to the face of the anvil, with the jaw projecting past the far edge of the anvil (Figure 7), and forge the boss with half-face blows (**Figures 8-10**).

The next heat will find you on the horn using the cross-peen as a fuller (**Figure 11**). It should now look about like **Figure 12**. Reheat and move to the horn to forge the sex appeal (**Figures 13 and 14**).

This is a good time to form a lot of the jaw. Begin by bending a bit more than an inch of material past a rounded corner on the anvil (**Figure 15**). Using moves that you would use on a hockey stick for a straight bar, make a nice, crisp corner (**Figures 16 and 17**). A set-hammer and a striker can help to clean things up (**Figure 18**). Repeat all the steps exactly so that you have two pieces that are exactly the same (**Figure 19**).

To form the rest of the jaw, heat the piece and bend the jaw around the horn (**Figures 20 and 21**). Move to the step of the anvil, and use your cross-peen to make the end of the jaw rounded to hold the stock. Move the stock in the step as you hit it (**Figures 22 and 23**). The next task is to punch a nail hole in the center of the boss (**Figure 24**). I like to use a common stud punch for this job (**Figure 25**). With the stock hot, drive the punch into the boss until it is almost to the anvil. When you turn it over, you will have a shiny spot that should correspond with where you were punching from the other side (**Figure 26**). Place the punch exactly in the middle of that spot and punch out the little metal slug (**Figure 27**).

Next, you want to make the offset in the reins so that the tongs will go together with the handles directly on


Fig. 6


Fig. 7


Fig. 8


Fig. 9


Fig. 10


Fig. 11


Fig. 12


Fig. 13


Fig. 14


Fig. 15


Fig. 16


Fig. 17


Fig. 30


Fig. 31


Fig. 32


Fig. 33


Fig. 34


Fig. 35


Fig. 36


Fig. 37


Fig. 38


Fig. 39


Fig. 40


Fig. 41


Fig. 42


Fig. 43


Fig. 44


Fig. 45


Fig. 46


Fig. 47

an inch from the boss (**Figure 44**), and cut most of the way through with an anvil devil (**Figure 45 and 46**).

Heat the rivet you just made and insert it into the two pieces (**Figure 47**). Since it was cut most of the way through, it is an easy thing to twist off the long piece (**Figure 48**). Turn the tongs over and pick up the piece that is still hot and sticks through the other end (**Figure 49**). Move the tongs till the rivet has lost all color (**Figure 50**).

Next, heat the jaws and place a piece of round stock in them to size them up (**Figures 51 and 52**). Less is more here, and if you hit too hard, you will only loosen the jaws instead of making them to size. You also stand a good chance of getting everything out of true if you are not careful here.

Rasp the end of the jaws so that they are the same length (**Figures 53 and 54**). (Jim Keith, Jim Poor and Jim Quick don't usually have to do this part. It is what they get for having the name Jim.)

Figures 55 and 56 show the finished tongs beside the Champions that we used for a partial model. You will see that our jaws are a little weaker, but the boss and rein design have a nicer look. I can tell you from standing here that the new tongs definitely have a nicer feel.

You should now have a pair of finished bolt tongs. Make sure that they hold the stock straight (**Figures 57 and 58**). Brush them up and send them to Canada (**Figure 59**).

Everyone should have a lot of fun with this year's contest. Besides, who doesn't need another pair of bolt tongs? It is better to have three or four pairs of practice tongs lying around than a bunch of capped-toe shoes that didn't make the cut. Best of luck to everyone, and I hope you learn and enjoy. Ω


Fig. 48


Fig. 49


Fig. 50


Fig. 51


Fig. 52


Fig. 53


Fig. 54


Fig. 55


Fig. 56


Fig. 57


Fig. 58


Fig. 59

This article is republished with permission from the Editor of the American Farriers Journal
www.americanfarriers.com

SCABA Shop and Swap

For Sale:

6” round nosed pliers (great for putting scrolls on small items) $5.00 each.
Brooms tied, $20.00 on your handle Please contact me for help with handle length.
Contact Diana Davis at Diana.copperrose@gmail.com

For Sale:
24”(wide) x 1”(thick) Ceramic fiber blanket (similar to Kao-wool) $1.00 per inch of length. Twisted solid cable 1/2” diameter $2.00 per ft.
Contact Larry Roderick at 940-237-2814

Wanted:
Advertising Coal Hammers, Contact Mike George at 1-580-327-5235or o Mike-Marideth@sbcglobal.net

Club Coal

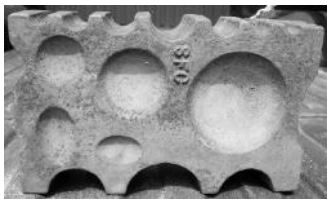
Saltfork Craftsmen has coal for sale. Coal is in 1-2” size pieces The coal is $140.00/ton or .07 /pound to members .**No sales to non-members.**

NW Region coal pile is located in Douglas, OK. If you make arrangements well in advance, Tom Nelson can load your truck or trailer with his skid steer loader for a fee of $10 to be paid directly to Tom. Tom has moved his skid steer and must now haul the loader to the coal pile to load you out, hence the $10 charge. You may opt to load your own coal without using Tom’s loader. The coal can be weighed out at the Douglas Coop Elevator scales. Contact Tom Nelson (580-862-7691) to make arrangements to pick up a load. Do not call Tom after 9 PM!! Bring your own containers and shovels. Payment for the coal ($.07 per pound) should be made directly to the Saltfork Treasurer.

NE Region coal location: Charlie McGee has coal to sell. He lives in the Skiatook, Oklahoma area. His contact information is:
littleironworks@gmail.com or (home) 918-245-7279 or (cell) 918-639-8779
S/C region coal location: Club coal is now available at Norman at Byron Donor’s place. Call Byron to make arrangements to come by and get coal.

.

SCABA swage blocks
$110.00 plus shipping to members. (1st block)
$130.00 plus shipping to non-members
Contact Bill Kendall for more information

SCABA Floor Cones are now available from Bill Kendall, Byron Donor and Gerald Franklin. The price is $200 plus shipping and handling.

We have SCABA t-shirts available. They are a grey pocket “T” with the SCABA logo on the pocket. Contact Diana Davis for information. The t-shirts cost $15.00 each. Free shipping is you buy 2 or more. Add 2.00 for shipping of only one shirt. (Anything larger than 3X is considered special order and will take up to 2 weeks and will be at extra cost.)

Show your pride in SCABA
License plates for $5.00 each.
We have a few caps for $10.00.

SCABA Membership Application

January 1, 2015 to March 31, 2016

New Member_____

Membership Renewal _____

Please accept my application Date: _____

First Name _____ Last Name _____

Married? ____ Yes ____ No Spouses Name _____

Address _____

City _____ State _____ Zip _____

Home Phone (_____) _____ Work Phone (_____) _____

E-mail _____ ABANA Member? ___ Yes ___ No

I have enclosed $20.00 for dues for the period ending March 31, 20 16

Signed: _____

Return to: Saltfork Craftsmen, 23966 N.E, Wolf Road, Fletcher, OK 73541

Saltfork Craftsman Regional Meeting Hosting Form

Region_____SE _____NE_____S/C_____NW

Date: Month_____day_____[correct Saturday for region selected above]

Name_____
Address_____
Phone/email_____
Trade item_____
Lunch provided_____yes_____no

Directions or provide a map to the meeting location along with this form.

All meeting are scheduled on a first come basis. Completely filled out form MUST be received by Secretary/Workshop Coordinator no later than the 15th of the month TWO months **PRIOR to the meeting month.
Completed forms can be mailed or emailed.
You will receive a conformation by email or postcard.
A form must be filled out for each meeting.
If you don't receive something from the Secretary/Workshop Coordinator within 10 days of your sending in your request, call to verify that it was received.

Saltfork Craftsmen Artist Blacksmith Assoc. Inc.
23966 NE Wolf Rd.
Fletcher, OK 73541

Non Profit Organization
U S Postage Paid
Oklahoma City, Ok
Permit #2177

Address Service Requested

SALTFORK CRAFTSMEN