

# *The Anvil's Horn*

A Publication of: The Arizona Artist Blacksmith Association

Issue No. 151

July 2011

## Peter's Hands

Peter Jonasson won a People's Choice Award at the California Blacksmith Association" Spring 2011 Conference with these drawer pulls.

Peter did a very handy demonstration at a recent Open Forge at Grizzly Iron.



# President's Message:

*Grizz has this issue off, so I'm filling in with a topic of my own.*

For the last few years I have been thinking that my ABANA dues might be better spent somewhere else (like maybe Starbucks or Dairy Queen). While I like looking at the high quality iron art photos in the *Anvil's Ring*, I didn't find much that was of practical use. The *Hammer's Blow* often seemed to skirt actual blacksmithing and hover in blacksmithing suburbia, or cover elementary techniques. Of course, this may be my perception and not yours, but the fact remains that ABANA's membership has dropped dramatically over the last few years for whatever reason.

About a 6 months ago ABANA announced that Mark Aspery was on board to edit the *Hammer's Blow*. Mark is well known to AABA members who have taken classes from him, bought and read his books, attended his demos, and read his articles in this newsletter. Personally I was excited that he was going to have a forum and that I was going to have access to his output.

I recently received my Spring 2011 *Hammer's Blow* and it was everything I imagined it could be, and more. I'll be skipping Starbucks and DQ and sending my money to ABANA so I can keep the *Hammer's Blow* coming. It alone is worth the price of admission.

This month I have parted with editorial policy and re-printed a few pages from the HB so you'll have the opportunity to see for yourself the kind of material you can expect to get—in case you've already decided to spend your ABANA dues at Starbucks. Check out pages 16, 17, & 18.

The Flag demo looks like it will be another great day with Grizz, Mary Ann and Dief doing short demos and then hanging around and providing some hands-on mentoring. Bring your tools.

September's demo features Gordon Williams. As editor I get newsletters from around the country. Gordon has been traveling all over the place regaling blacksmiths with his non-stop, energy packed show of blacksmithing. He is one of the most sought after demonstrators in the country. We're lucky to have him in our own backyard. See him September 17 at Bill and Karen's in Camp Verde.

One last reminder—it's never too early start your auction project. October 29th is coming soon.

*Dan*

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## **Demo: July 16      PIONEER HISTORY MUSEUM**

2340 Fort Valley Road, Flagstaff, AZ

Registration starts at 8am - demo begins 9am - \$10 members - \$15 non-members

We will be gathering in cool Flagstaff for some morning demonstrations, and some afternoon hands on opportunities.

The theme is "Make Like a Tree & Leaf". The **AABA 3 Musketeers - MaryAnn, Grizz & Dief - will be doing demos on botanical forms.**

**Grizz:** will show the fine art of forging a calla lily from a square bar and then a leaf to match the calla lily.

**Mary Ann:** will be demonstrating how to create artistic visual representation of leaf forms, and shapes, using copper and wire. Some techniques will cover using open spaces surrounded by an outline to provide the viewer with the ability to "fill in" the pattern of an abstract leaf. She will also demonstrate using patina finishes to create a variety of interesting colors, and how to properly seal your work in order to prevent muddling the colors.

**Dief:** will start off with a demo of a simple vine & leaf using a very simple, easy to make texturing tool. This will be followed by a botanical form he has used in sculptures and fences. He will finish up with a demo on etching steel via electrolysis.

**This is a one day event...but camping can be accommodated**

**Lunch on Saturday is on your own**

**Please bring something for Iron-In-the-hat and show and tell**

**Tailgating encouraged, bring your stuff**

### **Bring your tools**

### **Directions to Arizona Historical Society Pioneer Museum in Flagstaff:**

I-17 toward Flagstaff  
Exit 23-B  
Merge onto S. Milton Ave  
To N. Humphrey's street/US180 .6 mi  
Left onto W. Columbus  
Follow US-180 1.3 mi  
To 2340 Fort Valley Road

**As always, safety glasses are required.**

# March Demo Report: Bar-U-Bar Ranch

Story by Paul Dief; Photos by Paul Dief, Laurel and Barry Denton, and Doug Kluender

Gracious hosts, beautiful setting, great shop & demos, good food, Blacksmith Olympics, and live entertainment Saturday night! That, in a nutshell, was the recent AABA demo held at Barry & Laurel's Bar-U-Bar Ranch in Skull Valley.

We started out the day with Chris Contos demoing repousse. Chris has been doing this for quite awhile and it showed in his work. If you didn't learn a thing or two from Chris you weren't at the demo.

After a scrumptious lunch served by Chef Laurel & Friends the Blacksmith Olympics were held. The event consisted of trying to throw a hammer into a rubber bucket placed about ½ mile away. Well it may not have been quite that far but it sure seemed like it. A few folks came close but Gordon "Thor" Williams nailed the bucket. The hammer bounced out of the bucket but the bucket then flipped on top of the hammer. Each toss was \$5 – winner take all. Some of us thought we might jump Gordon later and run off with his \$200+ winnings, but then none of us thought we could outrun his mighty hammer.

Iron in the hat was awesome with lots of great stuff. Lenny wasn't there to be the ticket master but Dief did alright in his place even if he had a hard time with names. Jim Sproles finished up the afternoon with a demo on making tongs. Straight forward design resulting in a fine pair of tongs. Dinner was bring your own meat/tofu and a dish to share. There was a ton of great food. The feast was followed up with some good music by the Rusty Pistols.

The "Mystery Guest" Barry promised was not able to make it so he/she/it is still a mystery. All the more reason to make sure you attend next year's May demo.



*Chris Contos*

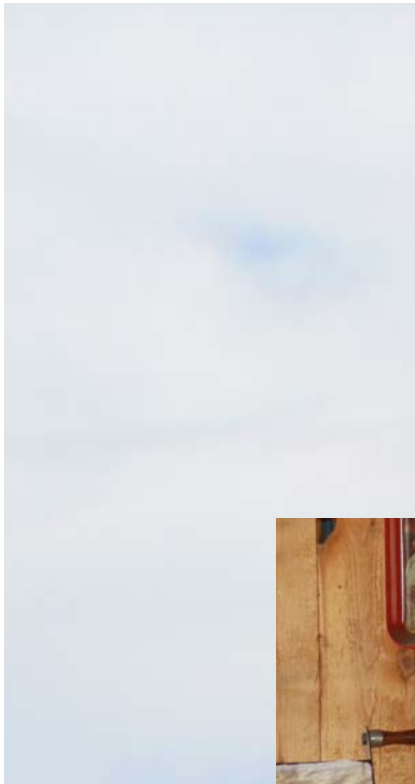
*Below: Chris brought a pile of his work to show some possibilities for using the techniques he demo's.*







*The Rusty Pistols served up some great entertainment after dinner on Saturday.*



*Which items go together:  
Hammer –anvil  
Hammer—chisel  
Hammer-hot iron  
Hammer– clouds ???*

*Right: Terry Porter showing amazing form trying to get his hammer in the bucket.*



*Jim Sproles, the afternoon's demonstrator.*



Thanks to Laurel and Barry for hosting and organizing another great event .

## Chasing and Repousse Workshop

**When:** November 4-6, 2011

**Where:**

The Studio of Grizzly Iron, Inc.  
1329 W Lincoln St  
Phoenix, AZ 85007

**How much:**

Registration \$395.00

Please Register before October 15th

(\$100.00 Down payment required when registering)

**What you take home:**

8" pitch bowl w/red German pitch

Chasing hammer

Copper for your projects

**Why:**

To learn the ancient techniques of chasing & repoussé. This workshop will enhance your metal working skills as well as create new ones. We will also go over how to make the tooling necessary and make one or more tools if time allows.

**Anything else:**

Repoussé tools will be provided for your use, these will be available for purchase during the class.

**How to Register:**

Register online at [www.grizzlyiron.com](http://www.grizzlyiron.com) or contact Rodger or Jason at 602-716-9660



## September's Demo Gordon Williams

From Bill Morris

With a few comments from yer ed.

Gordon Williams is the planned demonstrator for September. Gordon has a blacksmith school at Pieh Tool Co. and is the proprietor of Victory Forge, both located in Camp Verde. He has a lively demo planned. He said he'd do his best to work, teach, talk and pat his belly all at the same time. A partial list of the things you'll have an opportunity to see Gordon demo:

Making texture tools.

Knothole making tools.

Rope swage

Bamboo with hidden leaf attachment.

Forge welding leaves of different sorts.

A fireplace screen, with four ways to stretch and attach the screen.

An interesting bar splice.

Making pyramid head rivets, with a little different rivet header.

Glass flower.

Down and dirty tong ring.

Eyeball tool making.

Fireplace door handle.

Maybe a head or two, possibly a cat.

Could also try the reverse engineered bird, always a crowd pleaser.

"As many helpful hints as I can remember or make up. Oh and a few hammer throwing tips."

Of course, a weekend in Camp Verde wouldn't be complete without the "We take requests, but we play anyway band". Bill, Wally and Pete can always use some help –bring your strings.

Remember to save September 17 and 18 for this fun, informative, and exciting AABA event!



# Merit badges at Grizzly Iron

by Jason LaBrash

On Saturday June 11, we had five boy scouts come to our shop and work on their metal-work merit badge. Each one of them made a steak turner and a spatula. Rodger LaBrash, Tyler Adams and I assisted them and I'm not sure who had more fun, us or them! First we gave them a safety talk on the shop. We then discussed basic metallurgy. We went through types of metals, including distinguishing between ferrous and nonferrous metals. We also went over tool steels and their uses. After this we discussed the basic tools a smith used.

We then showed each of the individual steps to making the steak turner and spatula. We showed them the basics of doing a flat taper, a fish tail taper, and a round taper on a square bar. We also showed them how to twist a bar while it's hot in a vise and we showed them how to make a hook on one end of the bar.

From there, the scouts laid out their bars with center punch marks and then started forging. Most of them had a little difficulty managing a hammer for the first time. We found out we didn't have enough lighter hammers. They did most of the hammering themselves with a little help from each of us.

Even though they had some challenges, all of them were excited to learn each of the steps. They kept saying all day that it was the coolest merit badge they had done. All of them came out with two finished pieces that looked excellent. They should all be very proud of what they accomplished.



## Dief's Corner

Q: Hey Old Fart: Did I hear you right? 95 is half of 100???

A: Yep, young feller, you heard me right. Here's my theory on good blacksmithing (also works for lots of other stuff too). When you are 95% done with a project you are only half way done. Too many folks get all riled up and hurry thru the last few minor details of a job. In reality that final 5% of the job is where you should spend half of your effort making sure the job is done not only right but beautiful.

I've seen far too many smiths get in a hurry at the end of a job and take short cuts greatly diminishing the value of their work. It can help to have someone else look at your work. Instead of asking them "How do you like it?" ask them "Tell me three things that could be done better?" Listen to their critique. Maybe these are areas you need to spend some of that "half of your effort" I mentioned earlier.

A perfect example: Bobby Jo Blacksmith creates a beautiful forged gate and then uses standard hex bolts to mount it. This is like painting a big ol' zit on the Mona Lisa. Just ain't fitting. It only takes a few extra minutes to modify a standard bolt to match your work. It will make a BIG difference in the appearance of the whole project. Here's one of my favorite solutions. Start with square head bolts or lags screws. Remove the machine marks and round off the corners and edges with a grinder. (You can stop at this point for a more refined look.) Next beat the top and side up with a ball peen hammer that has either been forged to a 1/8 inch rounded point or has a 1/8 inch diameter weld puddle on it. This will give the bolt head a nice bumpy texture. Use a wire cup brush on a grinder (wear a full face shield for this as these brushes like to throw wires around) to take the edge off the bumps. Patina to taste and you're all set!



Photo – Left: start with this, Middle: smooth finish with muriatic acid/hydrogen peroxide patina, Right: bumpy texture with Japan Brown patina).

## Open Forge Tucson

Local members and guests enjoyed an informative Open Forge at Harold Hilborn's shop in Tucson on June 4. Terry McCann brought in a couple of knife blanks that he had forged from a coil spring, and local bladesmith, Uhrs Chantell, helped him finish the grinding process and explained the heat treating steps for those blades. This was followed by open discussions of materials for knife handles and demonstrations and discussions of top-of-the line grinders and belt sanders including Sam Riverra's Tormek Super Grinder 2000.

The next Open Forge in Tucson will be in September because of Harold Hilborn's travel and work schedule. The September Open Forge is tentatively scheduled for Labor Day Weekend (September 3), but there is some question about how many people will be in town that weekend. Check the September issue of the Anvil's Horn or the AABA website ([www.az-blacksmiths.org](http://www.az-blacksmiths.org)) or the AABA form on iforgeiron ([www.iforgeiron.com](http://www.iforgeiron.com)) for last minute details.



Old Fart, the Q & A guru. I think he makes up his own Q's, but if you have a question for him email: [Dief@phoenixrockgym.com](mailto:Dief@phoenixrockgym.com)



# Zach Lihatsch

So hey there, my name is Zach Lihatsch I am a blacksmith and fabricator here in Tucson, and have been getting The Anvil's Horn for a while now. I am about to go to North Carolina and spend some time studying under Claudio Bottero at the Penland school.

I make almost all my own tools and have sent images of some of my hammers and tongs as well as bottle keys and some cleavers.

Zach

*Nice work, Zach, thanks for sharing. Ed.*



## CALENDAR 2011

August 6	Open Forge	Grizzly Iron	Phoenix
August 18-21	Western States Conference	Alpine Village	Mount Hood WA
September 3	Open Forge	Grizzly Iron	Phoenix
September 17 & 18	Demo Gordon Williams	Bill & Karen Morris	Camp Verde
October 29	Auction & Banquet	Sahuaro Ranch	Glendale
November 12	Demo	TBD	

## Welcome New Members

Don Davis	Terry Geleide
Silas & Karen Compton IV	Terry Horne
Scott A. Anderson	Janice Miller
Frank Mazza	Bob & Leslee Oaks
Manny A. Moreno	Jim Sproles
Angelo Parker	John E. Rice
Gene & Cynthia Parker	

## The AH Needs your Articles and Shop Tips (Photos too!)

Come on folks –make something, take a pic and send it in. Everyone says that photos of iron work is their favorite part of the AH.

Where's your brilliant ideas and what happened to the illustrated HOW-TO articles? They seem to be getting very scarce in all of the ABANA affiliate newsletters. The few that do get created get printed in all the newsletters. So, put that great idea in in the hands of over 5000 blacksmiths, send it in to the Anvil's Horn. Danshammer@cox.net

## AABA Publications

Most of the Best Tips Project Ideas Patterns from ABANA Chapter Newsletter, aka The Tips Book, is 291 pages of all those things organized so you can find them. It is bound in a 3-ring binder so you can add info as you get it. Available at demos for \$25.

The Blacksmith and His Art by Jess Hawley. Many feel this is still the best basic blacksmithing book available. Plus it's got pictures and a bit of history. Available at demos for the wholesale price of \$12, Or from Pieh Tool or Blue Moon Press for \$20.00

## 2011 Auction & Banquet

The annual auction/banquet is coming up soon! It will be October 29<sup>th</sup> this year at Sahuaro Ranch. It is not too early to begin working on your auction piece!

We will be doing the food like we did last year by cooking it ourselves. We will supply all the meats; steak, chicken and veggie burgers, and the sides will be a potluck. We will need people to help set up, cook, barbeque, and clean up. Please let Jason know what side dish you will be bringing. We don't want to all wind up eating potato salad.

We also need help with the usual auction items: planning, calling vendors for donations, setup, tear down, registration, spotters and recorders during the auction.

If any of these jobs interest you or you just have a strong urge to help out AABA in some way but don't know how, contact Jason. You can call 602-717-1459 or email him at [jason@grizzlyiron.com](mailto:jason@grizzlyiron.com).

**Deadline: August 5** for the September issue of the Anvil's Horn. Earlier would be greatly appreciated. Articles, photos, notices, and ads can be emailed to: [Danshammer@cox.net](mailto:Danshammer@cox.net) or mailed to AABA 2522 W. Loughlin Dr. Chandler, AZ 85224

## Western States Blacksmith Conference

August 18-21 NWBA will host a conference in The Alpine Village of Mount Hood, Washington. Interested in smithing on the AABA blacksmith wars team? Contact Grizz.

For more information: [www.westernstates2011.com](http://www.westernstates2011.com)

# AABA Website: AZ-blacksmiths.org

## Open Forge: Phoenix

Grizzly Iron is hosting their monthly open forge on 8:00 am until around noon. July 2 and August 6 will be the next ones.

Grizzly Iron, Inc  
1329 W Lincoln St., Phoenix, AZ 85007

## Open Forge: Tucson

There'll be no Tucson open forge in July or August and September is in question due to the Labor Day conflict. Look for this popular event when the weather cools off. Questions? Give Harold a call at (520) 603-6723.

## Vern Lewis Welding AABA Discount

Vern Lewis Welding Supply, Inc has a great discount program for AABA members. Delivery is available at the low price of \$8.00 per order.

Vern Lewis Welding Supply, Inc: [www.vernlewis.com](http://www.vernlewis.com) or contact Carol Arnold @ 602-252-0341

Examples of Discount pricing

Oxygen - \$12.30 (LG Cylinder) 75/25- \$39.38

## Pieh Tool Educational Opportunities

**Beginner/Intermediate Blacksmithing Classes with Gordon Williams**

\$455 per 30 hour class. All materials and equipment are provided.

Bill Pieh Resource for Metalwork at Pieh Tool in Camp Verde, Arizona. Contact: 928-554-0700 or [www.piehtoolco.com](http://www.piehtoolco.com)

## MCC Blacksmithing & Welding

The MCC blacksmithing program is one of the best deals around - over 60 hours of instruction for just under \$450 and that includes material and propane! Saturday (Jaime Escobedo instructor) and evening classes (Dan Jennings instructor) are available. Blacksmithing is WLD103.

TIG, MIG, Arc, Gas, and Art classes are all available, as is certification in any of those welding methods at Mesa Community College, Southern and Dobson in Mesa.

If you try to register for any Welding Department classes on line, you will find all classes are closed (full). Contact Dan at [danshammer@cox.net](mailto:danshammer@cox.net) with the class number (time and days) of the class you'd like to take—I'll get an override number so you can sign up.

For more info go to: [www.mesacc.edu](http://www.mesacc.edu)

### AABA New Member and Membership Renewal Form

Name \_\_\_\_\_

Address \_\_\_\_\_

City \_\_\_\_\_ State \_\_\_\_\_ Zip \_\_\_\_\_

Phone \_\_\_\_\_ Email \_\_\_\_\_

Professional blacksmith \_\_\_\_\_ Hobbyist \_\_\_\_\_ Farrier \_\_\_\_\_ Blade smith \_\_\_\_\_

Your main blacksmithing interest \_\_\_\_\_

Occupation or skill \_\_\_\_\_

Please check one:

Regular membership (\$30) \_\_\_\_\_

Family membership (\$35) \_\_\_\_\_

Mail to: Terry Porter  
2310 E. Melrose St.  
Gilbert, AZ 85297

**Make Check Payable to AABA**



# My Experience with Electro-Etching

by Dan Jennings

I have always subscribed to the concept: “Don’t sell what you can’t make.” I tried really hard to sell a straight forward, forged fireplace surround with a standard, natural iron finish. But the designer had something else in mind. She wanted some “depth” and a finish that wasn’t “pewter” (designer speak for natural iron which to me looks nothing like pewter).

When I saw the shape she wanted I was skeptical, but I called Harry Pelzer who I know to be a first rate sheet metal mechanic with access to a large brake and shear. Harry assured me that bending up the sheet metal was not a big deal.

Then the designer wanted the sheet metal hammered. Harry explained that we would form the sheet by making a whole series of small bends, which would leave lines in the hammered texture. I thought of making an anvil to slip inside the contour so it could be hammered after forming, but decided that would probably result in sheet metal that looked beat up rather than hammered.

I remembered Paul Dief’s demo on electro-etching and proposed the idea to the customers –they liked the concept. I set up a 5 gallon bucket, battery charger and rebars and made a 6” square sample. It looked great and they loved it.

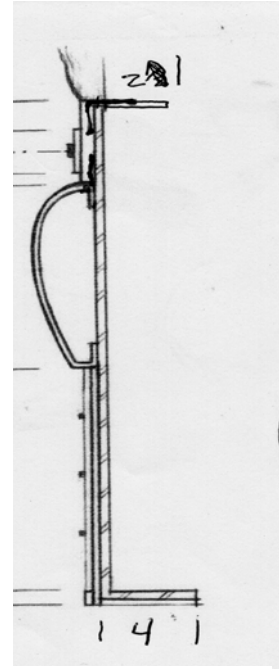
Harry and I set about cutting up a 4 x 10 piece of 14 ga. When we began the forming I could see we were in trouble. The dies were old and worn; they bent more on one side than the other, which mean that the ends of each part had a different contour. We finally got three pieces that were somewhat similar and pretty much the same shape along the entire length. There was a burr on the male die which I didn’t notice until I got everything home and realized there was a whole series “dents” about  $\frac{1}{4}$  inch long and  $\frac{1}{2}$  the material thickness deep. The dents were picked up with a hammer and dolly. The corners were TIG welded and finished, then re-welded to fill in any low spots and finished some more. Two days later everything was as good as I could get it. The dents and bending lines were gone, the corners were contoured, and the whole thing was DA sanded to 220 grit.

The next task was to create the texture by electro-etching. The piece was 54” wide and 40” tall and of course I didn’t have a tank bigger than a 5 gallon bucket. I decided to etch the piece flat rather than stand it up. With a couple sheets of particle board and some 2 x 4’s, I built a 60 x 48 x 24” high box and lined it with some heavy plastic sheeting.

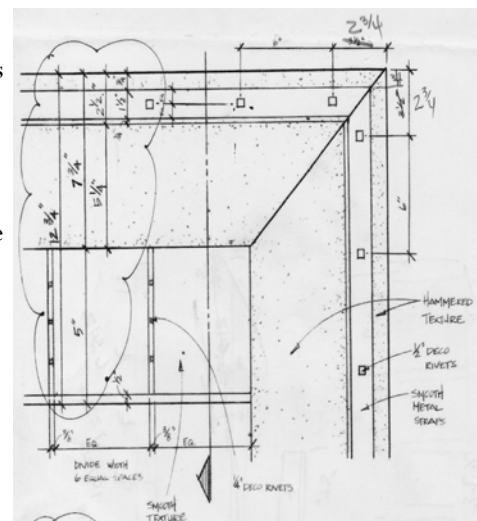
The etching process was an act of faith. Would it over etch and I would find holes all the way through the relatively thin 14 ga steel? Would it somehow touch the rebars and burn a big hole? How long should I let leave it in? I didn’t have much faith, I pulled it out and checked it every few hours.

The contoured surface etched quite well on the edges, but the center that was facing the rebar etched very little. I think it would have worked much better standing up.

The welds etched about twice as much as the parent metal. The nice, crisp blended corners became vague. Interestingly, the ripples from the TIG weld became not only visible, but highlighted.



*This a section view. The sheet metal part causing the grief is the half egg shape profile.*

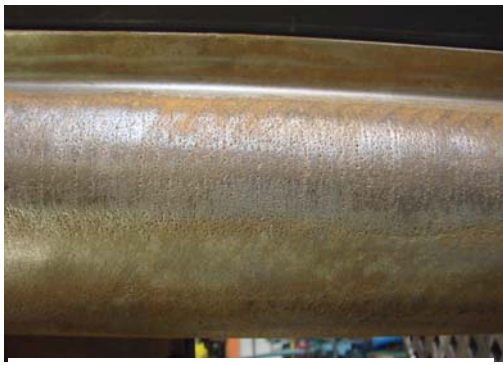


*This is the front view showing mitered corners. It’s hard to tell from this scan, but the sheet metal is textured. There is a smooth  $\frac{1}{4} \times 1 \frac{1}{2}$  trim piece that gets riveted in place. The center section below the  $\frac{1}{2}$  egg is also smooth.*

*Con't from page 12*

I used Sculpt Nouveau Slate Black for the patina. One section was to be left smooth – the patina turned out as expected producing a nice leathery black / brown. However, on the etched material the same patina produced bright orange rust. Nothing I did would change that, I finally Scotch-bried that patina away as much as possible and used SN's Traditional Black and got a black base to color with Guilder's Paste.

In the end, I was happy with the results and I won't hesitate to try electro-etching again– well maybe I'll hesitate a little.



*This is a detail of the etching that is supposed to show the difference in texture around the contour. I'm not sure if it will show in the printed version.*

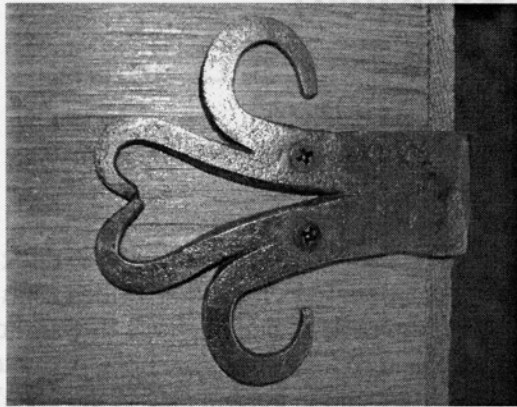


*Etching tank. I had Lowes cut the sheets on their panel saw (they don't charge for the cuts). The heavy plastic had a couple small holes . This required that I leave the hose trickling with just the right flow so that it didn't over fill and reach the charger clamp or go too slow and leave the part uncovered. I also added washing soda every few hours. It was a mess.*

*The finished fireplace surround. In it's final form the texture inconsistencies and the etched welds seemed to blend together and pretty much disappear.*

*As this is being written it is bolted to the wall and surrounded by rock. The owners haven't seen it, but the masons and contractor liked it. I'm expecting to have to tweak the color a little when the room is complete.*



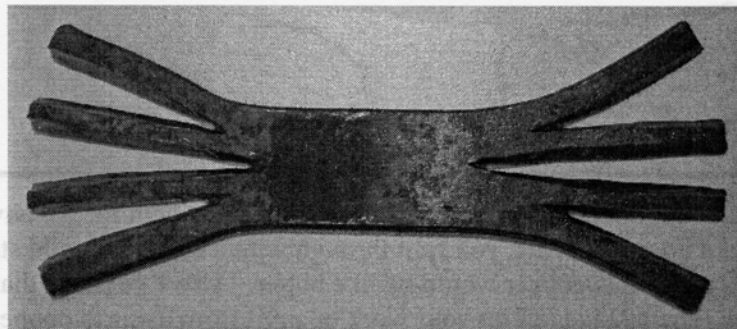
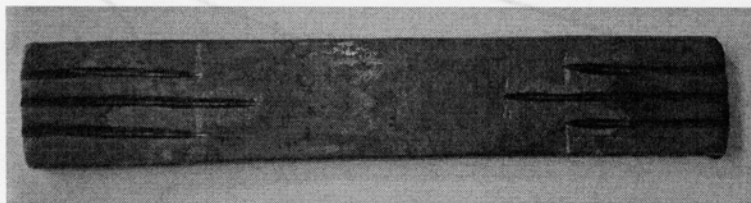
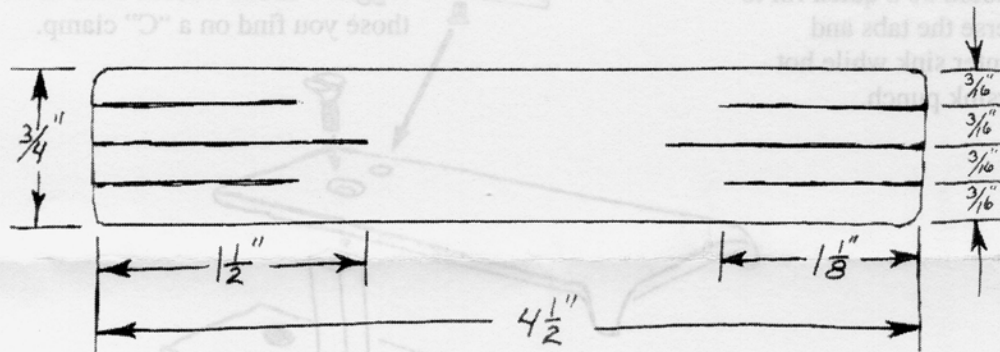


## Corner Bracket

By Carl Davison  
Northeast Blacksmiths Association

Years ago I made a small pine chest that I had always intended to make corner brackets for. The brackets would add some strength while providing a much needed decorative detail to an otherwise plain wooden box. The traditional design finally chosen at left gives you a real opportunity to hone your splitting skills. The stock used is 4 1/2" long 1/8" thick by 3/4" wide mild

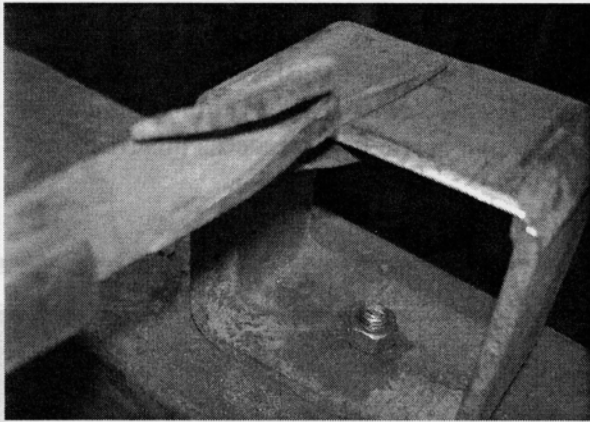
steel. The layout in the below drawing once transferred to the stock is then chiseled in cold. Having the pre chiseled layout gives you a good reference feel if you split through the stock with the metal hot. Through splitting can however be done cold or hot, your choice. An anvil cutting plate with a hold down is most helpful for the splitting process either way, hot or cold.



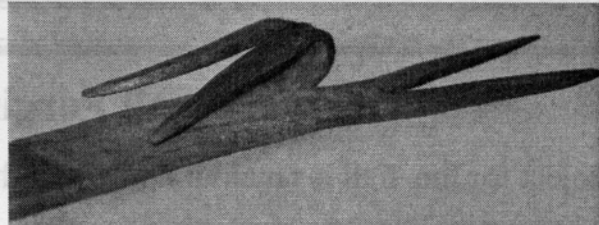
This piece was split cold.

*Reprinted from Fire & Iron, Newsletter of the Northeast Blacksmith's Association*

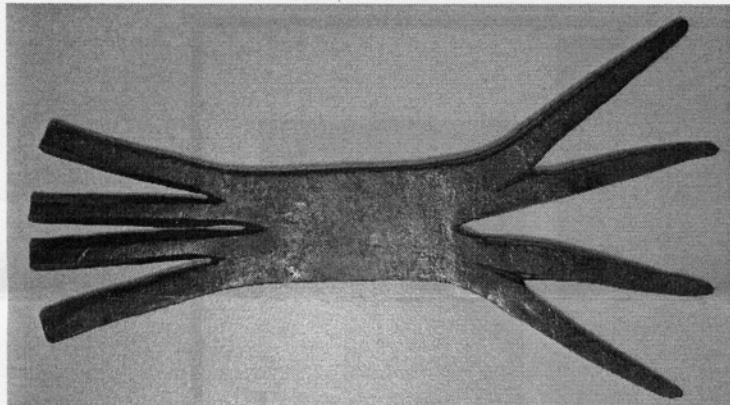




Once split you draw out the 3/16" strips. Use an anvil bridge to draw out the strips. As shown below bending back one pair of the split fork allows access to the inner tine for drawing out.

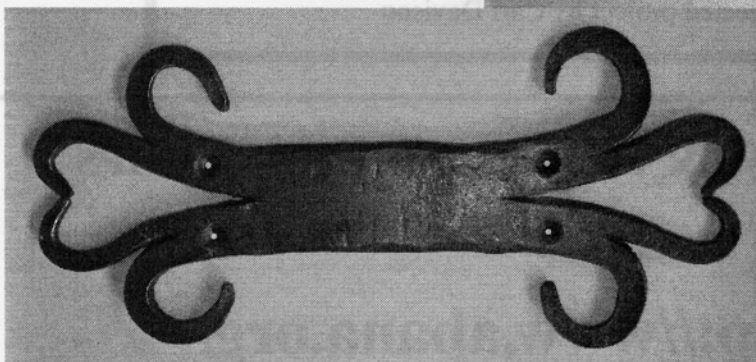
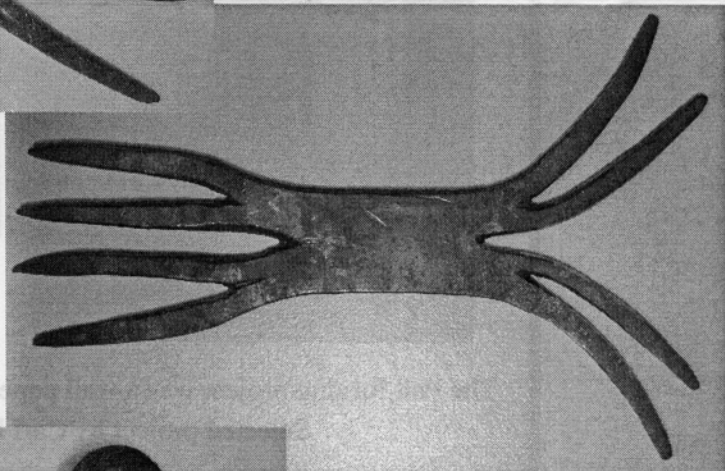


One pair bent out of the way.



One end completely drawn out

Both ends completely drawn out, right side refined and prepared for final bending.



Outer scrolls can be bent with scrolling pliers but hammering on the anvil horn tip seems to work better. The inner heart is bent using scrolling pliers. Holes located, countersunk and drilled through, ready for final corner bend

## HARDIE SWAGE'S VISE REPAIR

### My Vises

by Hardie Swage - USA

Before we look at repair work to a post or leg vise, I think that it is important to understand what may have caused the offending problem in the first place.

Typically, a post vise has non-parallel jaws when closed. The jaws become parallel at some distance apart as the jaw rotates around the pivot (joint bolt) at the bottom of the moving arm of the vise. This distance to parallel varies from vise to vise. A non-parallel operating vise jaw may allow some material to pivot or slip in the vise

In an effort to grip moving material or to utilize the vise in substitution for another tool (such as an upsetting vise), the jaws can get over-tightened by the smith in an effort to stop the work from moving. Hammer-tightening the vise should be avoided.

The area of weakness, in either arm of the vise, is the material surrounding the eye that holds the 'Box' or the 'Pin' of the operating mechanism.

Excess strain may cause the eye material to bend. This results in the jaws no longer aligning. The jaw on the bent leg will stand proud (above) of the other jaw.

Another problem is clamping material at the side of the jaws and over-tightening the vise. This can cause the jaws to become racked or twisted. Spacer blocks of the correct size placed on the other side of the vise jaws will prevent the racking from taking place, as well as enabling the vise to grip your work more securely.

I have a tool secured to my vise with wire rope. The tool features four popular sizes of material and is quickly used in the vise as a spacer to prevent the jaws from racking.

I'm sure that the person who purchased your vise originally thought that the vise belonged to them – and yet here you are the new owner. I think that it would be a nice touch if the next owner were induced to think of you kindly.

As my skills and knowledge grow, there seems to be a compelling desire to revisit old projects and do them again in a better manner. So adding a new leg vise to my shop was also a reason to revisit the other two.

My vises are mounted to benches and the benches are fixed to the wall. The two main vises are elbow high for

general cold work, like filing, but I have done a fair amount of hot work on them as well. The problem with hot work is that I am often not working from a comfortable position – with my elbows up and out. For years I have wanted to add a "low" vise to my setup for hot work.

The "low" vise is 3 or 4 inches higher than my anvil and lets me get on top of anything I am trying to do. The bench it is mounted on is also lower than usual. Planishing ladle bowls with the planishing stake in the low vise is a vast improvement. How do I know? My arms, back and shoulders tell me so!

Once a selection was made for the low vise, it was time to correct as many faults as possible before installation.

Here are some of the problems that I encountered with my low vise prior to installation.

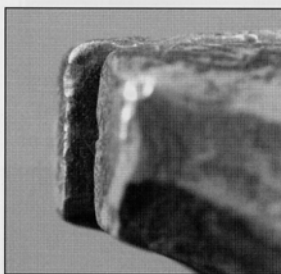


Fig 1. Jaws do not align horizontally



Fig 2. Jaws do not align vertically

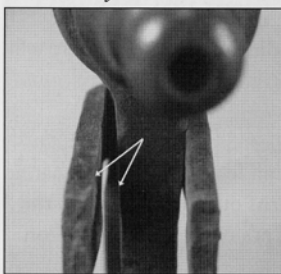


Fig 3. Clamp not a good fit and needs tightening

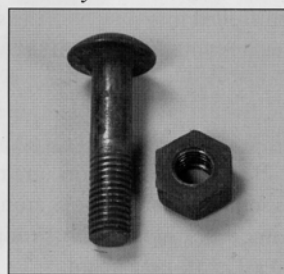


Fig 4. Bolt in good condition & cleared of any blame

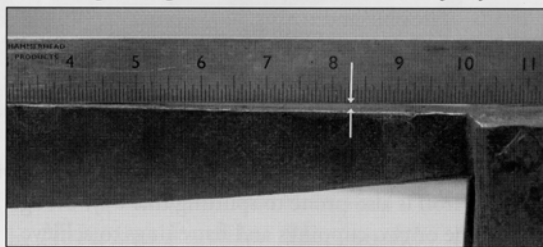
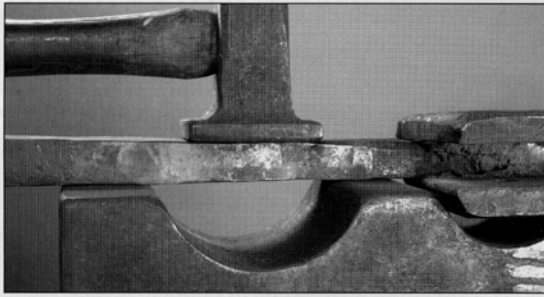
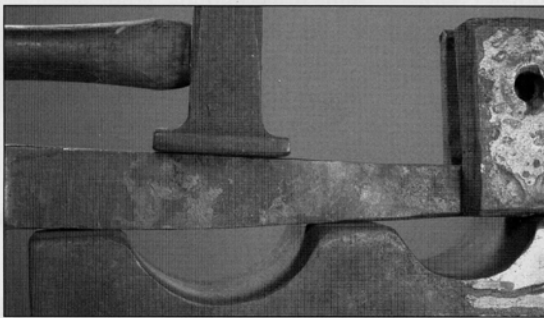


Fig 5. The fixed arm is bent backwards near the joint and also sideways at the same place

# HARDIE SWAGE'S VISE REPAIR



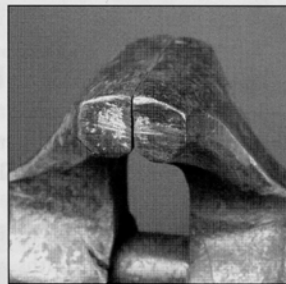
*Fig 6. I cured the sideways bend first. I chose to use a rosebud for a concentrated heat as constant vise assembly was needed to check my progress as I worked*



*Fig 7. The use of a flatter prevents any hammer marks appearing in the vise arm. Using the swage block gave me room for the material to move during straightening*



*Fig 8. Correcting for racked jaws; the joint was clamped in another vise for protection*



*Fig 9. The repaired vise; both jaws align nicely, and grip stock securely*

## 1. One Jaw Lower (fig 2)

- Small joint bolt has been substituted or is worn and needs to be replaced. Joint bolt needs to be a snug fit and screwed down fairly tight.
- Leg between the jaw and joint is bent. (fig 5)
- Multi-ton press works wonders and does not take the temper from the hard jaws. Definitely a cold-work job OR a job for an isolated heat with a rosebud on an oxy/fuel system. Consider both legs as potential candidates

for this treatment. Hot adjustment may add more problems than it solves. An issue here is that the material surrounding the eye (if that is the offending area of the bend) will have been stretched on the outside of the bend. Straightening the bend may cause the material to deflect in towards the eye and may prevent the re-installation of either the box or the pin. "Adjustment by grinder" is to be avoided.

## 2. Jaws misalign left to right (fig 1)

- As above, this may be a joint bolt fitting issue (fig 4) or a sideways bent arm(s) (fig 6)

## 3. Retention clamp (collar) not a snug fit (fig 3)

- View from the side at eye level and check the slots for matching alignment.
- Sharp inside corners are a danger. Using the long leg of the vise for a form and mashing everything down has to be done with care and caution. If the vise leg has sharp square corners, round them with a file.
- If slots for the wedges are not aligned on the same plane, adjust clamp while hot using hammer and anvil. This may lead you to making new wedges.
- When everything fits well, mark the collar and wedges with a center punch so pieces come together the same way every time. The collar needs to be placed with same side up each time, and the reference mark tells you how.

## 4. Bar on turn screw bent

- Again, these may be wrought iron and it is not hard to bend them. Straighten in a vise rather than beating with a hammer. Place hot handle horizontally in vise and tighten. Rotate handle and squeeze again, repeat until straight. Reheat and work from other side to get whole handle straight. Best done with a buddy to help! Avoid "hammer tightening" when vise is in use.

## 5. Screw box not smooth or sticks

- Clean thoroughly and apply very light oil. Work back and forth to locate any tight spots. Work over screw threads with file to do a LIGHT dressing, if necessary.

## 6. Poor spring pressure on short leg

- If there is no binding in the joint, you may need to bend the spring to give greater tension. Work above red and air cool. No heat-treating necessary. Spring end should have a "foot" with wings on both sides to keep the spring centered on the vise leg. If you need to make a new spring, start with a section of car/ light truck spring and forge as necessary. □



# WROUGHT IRON

## Why weld that eye?

Peter Ross - Siler City, North Carolina

The methods of working wrought iron are both similar and different than those employed in working mild steel. Why is that? Wrought iron has a distinctive structure that separates it from almost every other metal in use today.

During manufacture, the initial bloom contains a fair amount of slag trapped inside the hot mass of iron. (The slag is not dissolved, but physically trapped as bubbles in the bloom.)

As the bloom is forged or rolled into bar form ready for the smith, some slag is squirted out. However, much of it remains trapped in the bar as each of those bubbles is stretched out into a long, thin filament running lengthways in the bar.

These thousands of filaments give wrought iron its distinctive character and behavior. It is not a homogenous structure. Better quality iron has tiny filaments and even distribution. Poorer quality iron will have larger pockets of slag, sometimes clumped together; making for faults in the bar.

Wrought iron bar was also made from scrap; scrap wrought iron, that is. Bundles of scrap were piled, brought to welding heat, welded under large hammers, and drawn out/rolled into new bar. The slag in the new bar is what remains after welding. If the welding is done well, there will be few traces of inclusions. If not, there can be large seams or distinct layers visible to the eye.

Because the filaments (grain) run lengthways in the bar, it is somewhat predictable. Iron turns out to be strong in the same ways that wood is strong. Let's compare a bar of iron to a 1" x 6" pine board.

Fasten one end of the board and bend or twist the other. The 1" x 6" is flexible and strong. So is iron.

Saw halfway across the middle of the 1" x 6" and try the same strain. The board will fail at the saw-cut. So will iron. Saw the board along its length and it will not fail. Neither will iron. Try cupping the board edges 30 degrees and it will likely split. Iron is also prone to splitting this way, though it may take one or two cuppings and flattenings to achieve.

Finally we come to the most pertinent scenario- drive a nail too near the end of the board: split! Guess what? Iron will do the same. Punch a hole near the end and you will often split the bar.

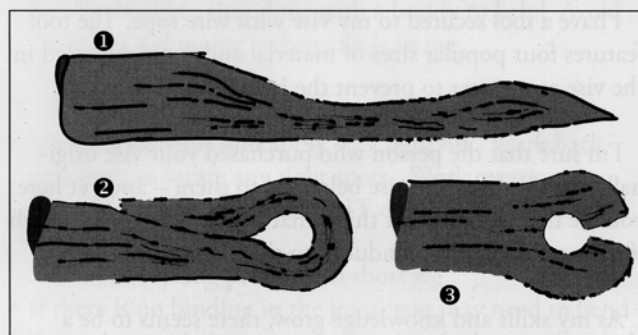
How does this affect working iron? First, try avoiding the things that would weaken the 1" x 6". Cuts along the grain are ok, but cuts across the grain mean failure. A hot shut is the same as a chisel cut, so it's very important to avoid sharp-edged tools whenever forging shoulders or drawing down bar. The sharp-edged dent of a misplaced hammer blow or anvil edge can start a shut that becomes a failure later on.

When slitting a bar, the established method with questionable iron is to punch or drill holes at either end of the intended slit to stop the ends of the hole from tearing beyond your cut.

There is a well-tested solution to "the hole near the end of the bar" problem. The established method is to bend the bar around and weld to itself. Plenty of examples come to mind- axes, froes, hinges, hoe eyes, all sorts of hooks, even scissor handles. By bending the iron into the shape of the eye, the grain follows the circumference of the hole and avoids the tendency to split: stronger AND safer.

Avoid cupping and flattening cycles. Keep the bar flat and square during forging and it will hold together much better.

Keep in mind that wrought iron is not homogenous. It will vary in character at different places in the same bar, and from one bar to another. Even when new, it was made in different grades and qualities. Think of it like wood. □



*The three images above show:*

- 1.) A wrought iron bar scarfed, ready to form an eye
- 2.) The same bar with the eye turned, ready to weld and
- 3.) Punching a hole too close to the end of a bar of wrought iron and the resultant splitting of the bar.

# Classifieds

Classified ads are free to members and can be submitted by email to: [danshammer@cox.net](mailto:danshammer@cox.net)

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Contact Barry at Bar U Bar Supply below.

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Call Jim Lewallen, Jr. 602-510-0808

Kinyon Simple Air Hammer pneumatic kits. Includes cylinder, valves, fittings and hose.  
Ron Kinyon 602-568-8276

# Sources

**Rocky Mountain Smiths** have videos available of their conference demonstrators. Most of these are high quality edited, multi-camera videos. For more info go to: [www.rockymountainsmiths.org](http://www.rockymountainsmiths.org)

## Bar U Bar Supply

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Metalwork books, some of which are only available through them. [Bluemoonpress.org](http://Bluemoonpress.org)  
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For membership info or address change, contact: Terry Porter 2310 E Melrose Street, Gilbert 85297 480-988-2070 trp555@prodigy.net



Transom Grille by Dan Jennings

*(I was really short on photos of your work for this issue., so I here's something I did a few years ago.)*