
THE HOT IRON SPARKLE

* Newsletter of the North Carolina ABANA *

www.ncabana.org

Volume 26 Number 1



1st Quarter 2008 – Jan/Feb/Mar



If you like power hammers and the beauty of western North Carolina Mountains, I hope you got to our meeting at Bill Brown's shop

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Jimmy Alexander
Photo by: Hill Willis

A MESSAGE FROM OUR PRESIDENT

President Letter

We had our 4th quarter meeting in October at Bill Brown's shop in Lineville Falls, NC. Bill hosted a great meeting with about 35 people in attendance. The crowd was shown the use of the larger power hammers, a Chambersburg hammer and a heavy duty 5B Nazel hammer. In the morning Andrew Dohner and Bill (as his striker) worked on the Chambersburg hammer and in the afternoon the big Nazel hammer. The bar stock that they used in the afternoon was 2 inch square stock that took a couple of hours to heat up. The Nazel hammer moved the stock like it was 1/4 inch stock. It was awesome! Lunch was catered in. A good time was had by all. Thanks Bill for hosting the meeting!

Our 1st meeting for next year will be the 5th annual meeting at Dean Curfman's shop in Morganton on March 15. There are always vendors and tailgate sales along with a great demonstration using the BIG BLU power hammer. Dean always hosts a great meeting so don't miss out.

Forge safely,
Jimmy

Submissions to the HOT IRON SPARKLE can be made to:

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EDITOR'S NOTES

To the NC ABANA Members,

PLEASE MAKE SURE YOU READ THIS:

With the beginnings of a new year we all become more aware of the passing of time and this often brings about thoughts of making changes to our lives. At least these thoughts have occurred to me. As you get older you wonder if you are in the right place and doing the right thing. In addition to a new year to count, I just had my 68th birthday so I have more reason to think of change. Besides, my wife is already way ahead of me in the thinking about change department. We haven't decided exactly what we will do differently, or where we will be doing those different things – but there is a good chance I will not be able to continue as NC ABANA editor for many more issues. So now is the time for the chapter to prepare for my replacement.

Unfortunately, the consensus is that there is no one in this two hundred member organization who is able to, or wants to, do this job. How discouraging that is. I'm afraid that without the newsletter, there will be little to hold the chapter together. The newsletter makes it possible for people living all over a large geographical area, as we do, to feel connected. So, I am asking all of you to think about the possibility of you, yourself, being the editor of "The Hot Iron Sparkle". If you think you would like to contribute, in this way to the chapter's survival, and you think you would enjoy the challenges of filling these pages four times a year, please don't hesitate to tell me – even if you are only thinking about it.

Let's talk about the requirements. Obviously, you must have a computer and some skills to allow you to use it. E-mail is certainly a requirement so people can send you articles and photographs. A scanner and a printer are necessary, as is word processing software. Since most printing companies do not seem to be Microsoft oriented, the software to make .pdf files is necessary, unless you have a Mac. If you are interested in becoming editor, and have a computer and e-mail, I would guess the chapter would have to dig into its pockets to make sure you have the additional hardware and software to produce the newsletter. You don't have to be a great writer – I certainly am not. Luckily, word processors have spell checkers; otherwise my spelling would have made the "Sparkle" the laughing stock of the blacksmithing world.

While there is time to make a smooth transition, please, someone step up and say, "I'm interested".

I want to thank William Tanneberg for submitting photographs of his metalworking art. This is what I envisioned as the purpose of the newsletter, members sharing with other members the results of their creativity and of their skills.

REMEMBER; IF YOU ARE MOVING PLEASE LET ME KNOW SO YOU DON'T MISS YOUR NEWSLETTERS!!!

SECRETARY'S NOTES

There was no board meeting at the forth quarter chapter meeting.

Respectively Submitted
Marty Lyon, Secretary

REGIONAL GROUP MEETINGS

Triangle Blacksmiths Guild Meetings by Randy Stoltz

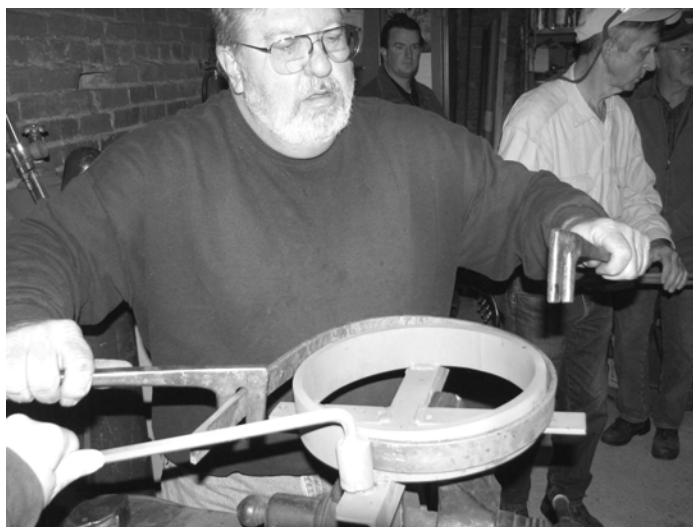
December Meeting

The Triangle Blacksmiths Guild met December 8, 2008 at Jim Alexander's shop in Durham, NC. There was a very good turnout as 19 people attended. Jim Alexander first demonstrated how to make a ring. He started by described how to calculate the length of material needed to make a ten inch ring from 1½ x 3/8 inch stock, by adding the inside diameter to the thickness of the stock and multiplying by 3.142 (or 3 1/7) (pi). The ring in this case was to be butt welded so there was no additional material added to allow for overlap. Then the steel was cut to length, heated, and formed using a vise mounted jig.

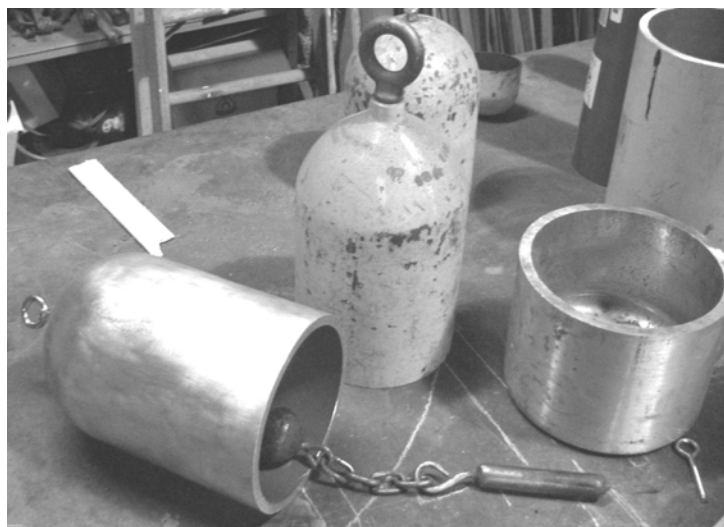
Note that in "The Value of Science in the Smithy and the Forge" by William Hutton Cathcart 1916. page 12, the author states you should calculate the mean diameter of a ring by adding the inner and outer diameters and divide by 2. and multiply by 3.142. This will give the same results as above though. In "The Blacksmiths Manual Illustrated" by J. W. Lillico 1930. page 76 The author states you should Multiply 3 times the inside diameter plus 3 times the material thickness and then add ½ inch for every foot of the inside diameter. to calculate length. Using 3 instead of 3.142 results in a slightly undersized ring. His reasoning is that it is much easier to draw an undersized ring than to jump an over sized ring.

Next, Jim displayed bells made from aluminum high pressure fire fighting SCBA (self contained breathing apparatus) air tanks and demonstrated forging a bell clapper. The clapper ball was formed by wrapping a piece of steel around a round bar and forge welding it together. Then using the power hammer the knob was formed into a ball.

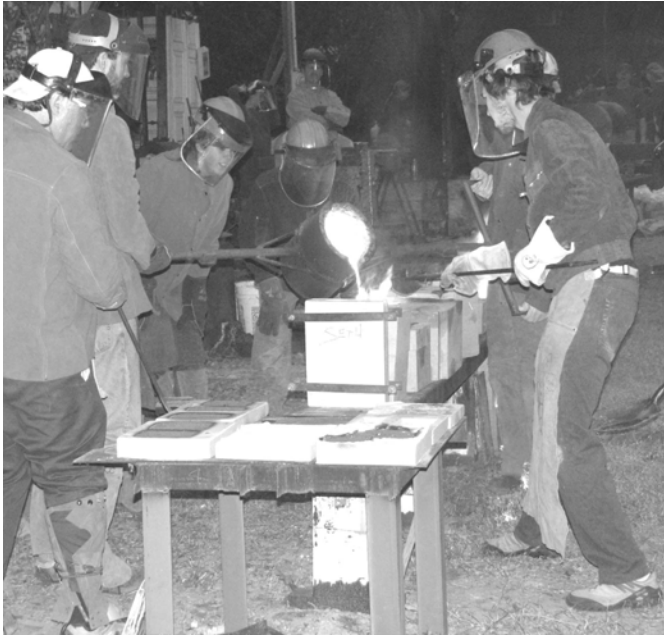
Following the demonstrations there was a brief general business meeting with a question and answer period and general blacksmithing shop talk. Everyone at the meeting was invited to attend a cast iron pour that evening at a small artist's foundry in Moncure, NC. A number of members did attend the cast iron pour with several of them having made molds for the pour and others helped with the handling of the molten iron.



Jim Alexander bending ring on jig



Bell made from aluminum high pressure air tank (fire fighting SCBA tank)



Pouring molten iron from a crucible into a resin sand

Cupula furnace used to melt cast iron at the Moncure,



February Meeting

The Triangle Blacksmiths Guild met Saturday, February 16, 2008 at Roger Barbour's shop in Clayton, NC. Nineteen members and guest showed up for the hands on workshop dedicated to forge welding steel cable into a patterned steel billet. Using $\frac{3}{4}$ inch hard cable donated by Roger Barbour, Parks Low demonstrated how to weld the stranded cable into a solid billet by repeated wire brushing, fluxing, heating the cable, and striking while rotating the cable to keep it tight. Then the cable was reheated and put in a hydraulic press to further consolidate the metal. The welded piece was then cut, folded, and welded back onto itself.

After the initial demonstration by Parks the forges were then opened up to all attendees to try their hand at forge welding the cable. The hydraulic press greatly sped up the whole process so many of the attendees were able to forge weld a section of cable and many then shaped it into a knife. We also found the initial process of welding the cable was simplified by using a half round groove on a swage block instead of the face of the anvil. By rotating the cable in the groove while hammering it is easier to keep the strands twisted and tight.

In addition to the cable, Parks made a patterned steel billet using multiple layers of two types of carbon steel and forge welding it together. In another experiment we successfully forge welded multiple pieces of a 1 inch bi-metal band saw blade together to make a knife blank. The thought was many of us have old band saw blades lying around but the tough flexible steel is too thin to make anything out of it. The welded band saw blade blank should make a good knife.



These knives were created by Randy Stoltz from a single piece of 3/4 inch cable about 24 inches long. The large dagger was created by welding one end of the cable and using the other end, unwelded, as the handle to show the cable strands. The ferrule and the end cap on the handle were formed from 3/4 pipe and swaged on using a fullering tool.



Consolidating the weld with a hydraulic press



Parks Low using the hydraulic press to shape the welded cable.

Triad Area Blacksmiths by Marshall Swaringen

January Meeting

The Triad Area Blacksmiths held their January 2008 meeting at the Dixie Classic Fairgrounds with twenty one attending. Twelve of the attendees have joined since the 2007 Dixie Classic Fair. We even had one mom present to watch her son. Safety lesson and demonstration by George Manuel started shortly after 6:30 PM and business meeting started about 7 PM. Members started leaving around 9 pm (four attendees still in school) and the last closed the shop around 11:30 PM.

Marshall Swaringen was elected secretary and board member for NCABANA.

The club elected to continue holding our scheduled meetings on the first Tuesday of each month. With so many new members, we elected to hold some Saturday meetings so the new members can have some hammer time. We will set up as many portable forges as we can. We will put an experienced member with a new member for some one on one instruction. The first scheduled Saturday meeting is March 8, 2008 from 10 AM to 3 PM. We will be there early and stay late (if there are any un-tired arms left). Lunch will be on your own from 1 to 2 PM.

After the business meeting, both forges were going and 3 anvils were in use. Hammer time was shared by all the new members. Even had a new Christmas hammer broken in by one lucky member.

Source for coal:

One of our members, Alexander Simmons, reports purchasing coal in Roanoke (name and address below). The good news may be that the coal is sold in bags. If you do not want to transport loose coal and like the storage convenience of bagged coal this source may be for you.

Mr. Hatcher says the coal is metallurgical grade Pocahontas Stoker Coal. The bags weigh between 60 and 65 pounds and the cost varies from \$4.50 to \$5.00 per bag.

Alexander reports the coal works very well in his forge.

Your editor, Marty Lyon

Frank L. Hatcher
540-342-8723
802 Shenandoah Ave, NE
Roanoke, VA

FORTH QUARTER 2007 CHAPTER MEETING

Bill Brown's Shop, Linville Falls, NC – October 13, 2007

Photographs by Marty Lyon

For us flat-landers, the brisk Saturday in the mountains of North Carolina was really a treat. Bill Brown's shop is just off the Blue Ridge Parkway near Linville Falls. The area is just incredibly beautiful. I can see that the idyllic setting can be an inspiration to any blacksmith and it certainly seems to show in Bill's work.

Bill's demonstrator was Andy Dohner, a young man who recently moved nearby to Bill. It was interesting listening to Andy's travels and blacksmithing experiences. Andy spent several years as a Journeyman Blacksmith, moving from one part of the country to another, working with, and learning from, Blacksmiths on his route. In this manner, he was able to work on many different types and scales of projects. That had to be quite a varied learning experience. Andy calls himself a "Process Oriented Metalworker".

Bill is the proud owner of three power hammers in his well-equipped shop. Andy used the Chambersburg power hammer to demonstrate making a mortise and tenon joint to join two rather large pieces of stock. The Chambersburg hammer is a size 3B hammer and strikes with a 3500 pound blow. Bill relieved Andy to make an interesting decorative twist.

After lunch, Bill introduced us to the big Nazel hammer outside the shop. This yellow giant is a 5B that strikes with a 6500 pound blow. The ground shook with each blow and the sound was impressive. Bill drew out a 2 inch square piece of steel using a round die in very little time.

Finally, as the afternoon was drawing to a close, Andy demonstrated making scarfs and forge weldng.



Bill Brown and Andy Dohner



Andy's Mortise and Tenon Joint



Andy at the Chambersburg Hammer



Bill and helper Kenny Church making twist



Bill at the huge Nazel Hammer



Andy demonstrating making a scarf

Crowd watching attentively



Hear Ye!! Hear Ye!!

Mark your calendars for the 5th Annual
Big Blu Hammer-in / NC-ABANA Meeting.
Saturday March 15, 2008. Time 9:00 a.m. until??

Location:

Oak Hill Ironworks - Big BLU Manufacturing Co.
3308 Frank Whisnant Road
Morganton, NC 28655

See the NEW Big BLU MAX in operation!

Come with great expectations

- Demonstrations! - 9:00 A.M.-12:00 P.M. Plus some additional afternoon Demos.
- Good natured blacksmith bartering
- See the NEW Big Blu MAX Power Hammer demonstrated in its original home
- Experience the newest techniques in artist blacksmithing
- Seminar level education opportunity
- Observation and discussion time
- Iron in the Hat to Benefit NC-Abana Scholarship Fund.
- Barbecue meal with all the trimmings.
- Venders with product samples.
- Blacksmith Tool suppliers w/ An array of quality tools.

The Big Blu Crew, who have become well known in the blacksmith circles, welcomes all to their facility for the 5th Annual Big Blu Hammer-in; Saturday, March 15, 2008.

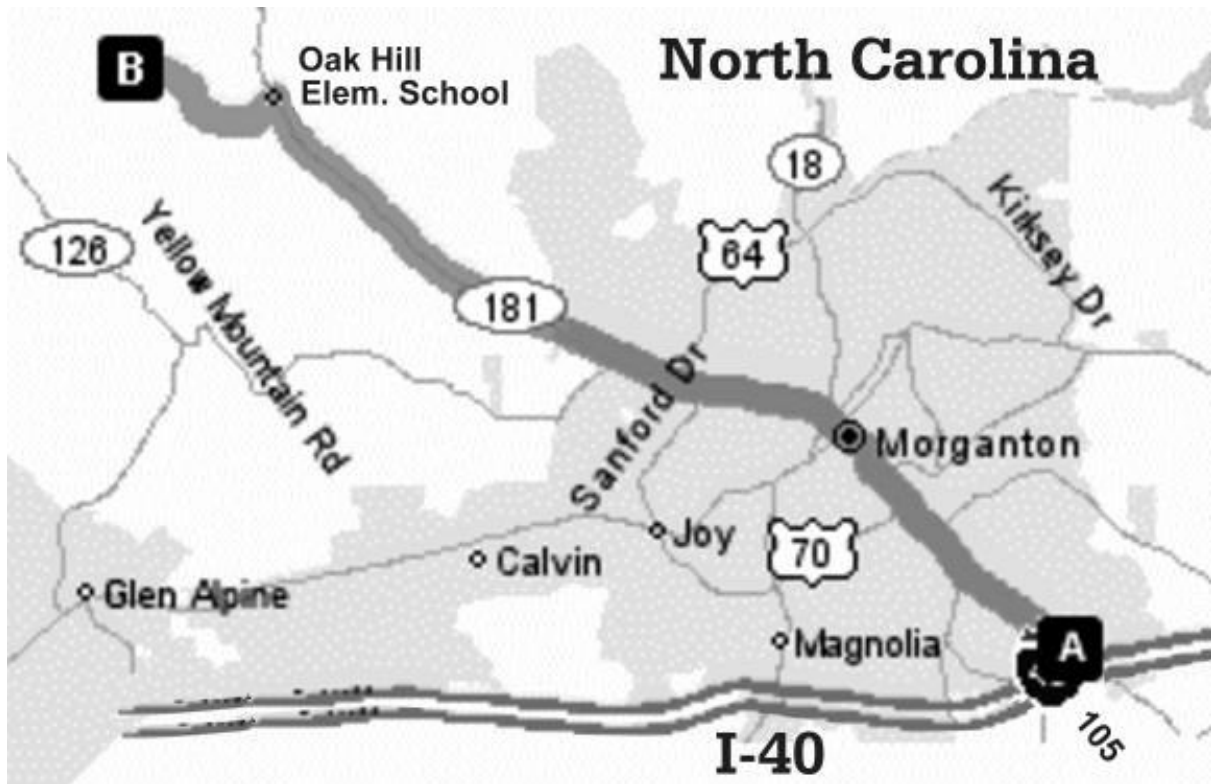
DEMONSTRATORS TO BE ANNOUNCED

The prime focus of the demonstrations is to not only present power hammer and hand hammer technique; but also to point by point follow through with a completely finished project.

So come expecting, come glean some techniques, pointers, and short cuts in making beautiful ironwork that you too will be proud to display and sell.

Directions:

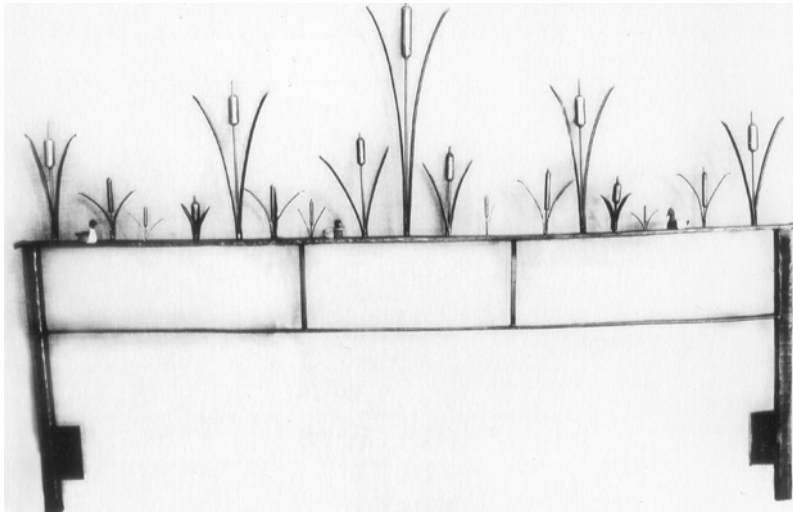
Get off exit 105 on I-40 take a right off ramp - go 1.9 miles.
Continue on S GREEN ST - go 0.5 mi
Continue on N GREEN ST - go 3.7 mi
Continue on NC-181 NORTH - go 0.9 mi
Turn Left on FRANK WHISNANT RD - go 0.2 mi
Bear Right on FRANK WHISNANT RD - go 1.0 mi (Water Mill Road goes straight)
Arrive at Oak Hill Iron Works Inc. 3308 FRANK WHISNANT RD, MORGANTON



WORKS OF NC ABANA MEMBER WILLIAM TANNEBERG

William Tanneberg lives in North Freedom, Wisconsin

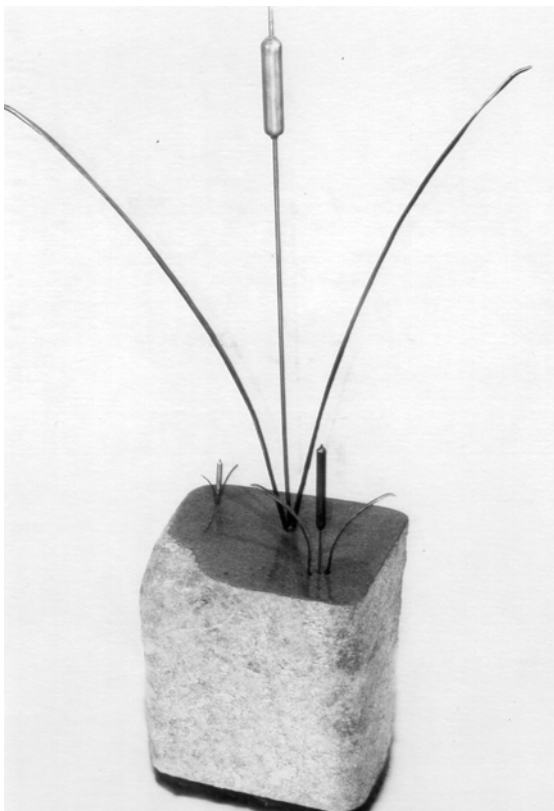
Mr. Tanneberg does mixed media pieces that are both functional and beautiful. We thank him for sending photographs of his work.



Headboard with Copper and Steel Cattails



Glass Vase with Steel and Copper



Rock with Cattail – Rock, Steel and Copper



Copper, Red Brass, and Yellow Brass Vases
(shown bottom side up)

EDITOR'S NOTE: This article was originally printed in the Spring 2001 issue of "Hammer's Blow" from their "The Safe Shop" series. Reprinted from the Jan-Feb 2008 issue of "The Upsetter", the newsletter of the Michigan Artist Blacksmith Association.

Health and Safety News

Preventing wrist injuries

By Brian Gilbert

Earlier this year I took a fall getting into my sailboat and broke my wrist. While going to rehab, I took the opportunity to find out more about wrist injuries and how to prevent them. For a blacksmith, any damage to the wrist pretty much shuts you down, as I discovered. Fortunately, my injury was pretty straightforward and responded well to physical therapy. Other problems, as I found out, are not so simple.

Tendonitis is a type of wrist injury that can be very difficult to treat. It's commonly caused by repetitive strain and overexertion, and newer blacksmiths can be especially susceptible.

When you're new, you don't know how much blacksmithing is supposed to hurt. The answer is...it isn't. It's OK for your muscles to be sore at the end of a session in the shop, but if you're hurting, especially in your joints, you're doing something wrong and could be setting yourself up for serious injury.

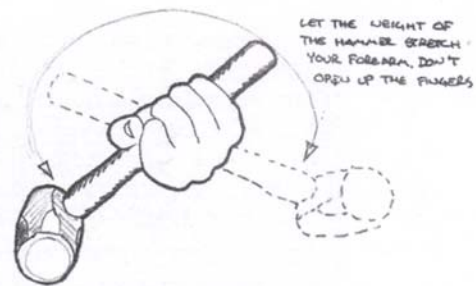
Tendonitis is one of the bigger problems that can develop. The tendons swell as a result of repetitive injury, and a common treatment is surgery followed by complete immobilization. It can take up to a year to recover.

I recently spoke with Jeff Mohr, a professional smith and instructor of mine. Jeff lost six months to tendonitis. I asked him what caused it, and he said he just plain overworked and stressed it out. He didn't have surgery, but slowly recovered using alternating ice and hot water treatments. Since then, he's very careful with his wrist. He uses his power hammer whenever he can, and never enters any sort of hammering contest that occasionally takes place at conferences.

Alternating heat and cold treatments do work. During physical therapy my wrist was first loosened every day with fifteen minutes in a hot air and cornmeal bubbler, called a "Fluidotherapy machine." (An enterprising PT could make big money at a conference with one of these things...it feels great!) You can get similar results with a hot water bottle. After an hour and thirty-minute workout, I'd get fifteen minutes in an icepack.

Blacksmiths also need to watch out for tennis elbow, though I don't believe it's as serious as tendonitis. One of the main causes of tennis elbow is the "death grip," so you should avoid holding the hammer too tightly.

There are a couple of ways that you can help prevent wrist injuries in general. First are general stretching exercises, which you can do before and after each session at the anvil. Second are strengthening exercises, which you can do while you're away from the forge.

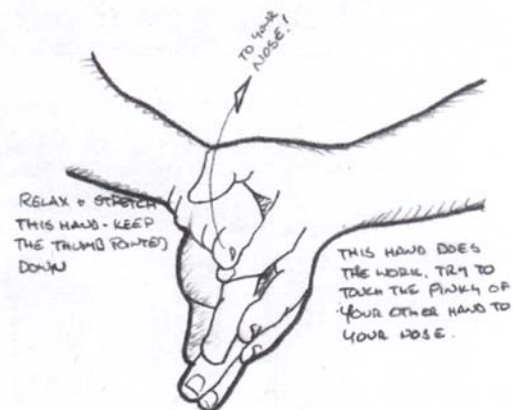


A forearm tendon stretch

Stretching Exercises

There are several easy stretches you can do to warm up before work. One is to lay your palms flat on the anvil, fingers pointing ahead, and slowly lean forward, stretching your wrist tendons. Do this a couple of times.

Next, grab a heavy hand hammer... say, three pounds or so... and hold it by the handle, straight up and straight out in front of you. Lay the hammer slowly over to one side, and then the other. We're stretching the tendons that rotate the wrist here, with the help of gravity on the hammer head. You're also building upper arm strength as you hold a three-pound weight at the end of your arm.



A wrist tendon stretch

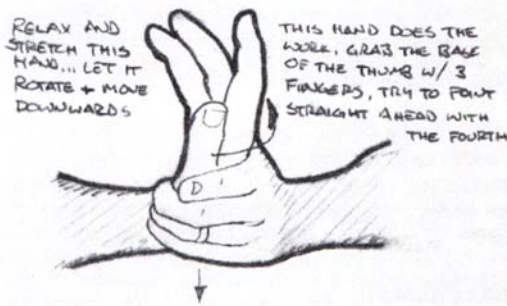
Another really good stretch I remember from Aikido class. Directly in front of your face, hold one hand with the thumb pointing down, the other with the thumb pointing up. Keep your arms bent a little. Grab the thumb-down hand and try and rotate it towards your face, as if you were trying to touch your nose with your pinky.



A wrist and forearm stretch

Here's another to try. Hold one hand out in front of your face, palm out, and thumb pointing down. This is the hand that will get stretched. Take your free hand and grab the back of your other hand, wrapping your fingers around the base of your pinky. Your free thumb should push the base of the other thumb, and your elbows should be bent a little. Now, try to rotate your outward-facing palm up to the sky.

One last stretch that you can do is a little tough to describe. Hold your hammer hand directly in front of your face, palm facing towards you. Take your other hand and grab the back of your hammer hand by wrapping your fingers around the base of your thumb, and place the thumb of your other hand between the third and fourth knuckle. Now rotate the whole assembly downwards, and try to point your hammer-hand thumb straight ahead.



A wrist and forearm stretch

Strengthening exercises

General strengthening of the wrist and forearm can help prevent injuries as well. This is the basic stuff... curls with an eight- to twelve-pound free weight, for example. Spring-type gripper exercisers are handy, and you can keep one in your car. While I was undergoing physical therapy, they gave me a fist-sized lump of stuff that was basically silly putty. Working it with your hand for ten minutes a day can strengthen and loosen your fingers and hand.

Your hands are remarkable tools. You'll never realize just how amazing they are until you lose the use of one for awhile. I hope that doesn't happen to you, and taking a few moments to stretch and strengthen might help prevent problems. Talk to your doctor or a physical therapist if you have any questions. They can help design a specific exercise program tailored to your needs.

So what finally happened with my wrist? Well, after two months in a cast and six weeks of PT, I'm happy to report that I'm almost normal again, though I'm much more careful in the shop now. I don't slap around any three- or four-pounders like I used to (only on occasion, to be honest...I never was monstrously strong, though my grip strength was the highest my physical therapist had seen. I suspect that's common among blacksmiths) and I take frequent breaks. I'd say I can get 90% out of my hammer hand. But it's especially noticeable when I stretch, as my broken hand hasn't nearly the same range of movement as the other. My orthopedist says that I can expect some arthritis later in life, but for now blacksmithing should be good therapy. Try some of these stretches out, and take good care of those hands!

EDITOR'S NOTE: This article was originally printed in the January / February issue of "Stamping Journal", an official publication of the Fabricators & Manufacturing Association International. We thank Parks Low for the article.

Stamping 101: Material guidelines

Properties and characteristics that affect formability

By Daniel J. Schaeffler, Ph.D.

Baking a cake requires the right amount of the right ingredients, added at the right time, and baked at the optimal time and temperature. Sheet metal production is not that different. Literally hundreds of different "flavors" of metals are available, each with its own blend of physical, chemical, and surface properties and characteristics.

Strengthening Metals

Pure elements are relatively soft and malleable. When you move a carpet, it takes a lot of force to pull the carpet from one end. However, if you first create a little wave or ripple and propagate that through the carpet, it becomes much easier to move. Metal forming on the atomic scale is not that different.

Atomically, a pure metal can be pictured like a 3-D network of racked billiard balls all the same size. To make a steel alloy, for example, some of the iron billiard balls would need to be replaced

with ones made of manganese (Mn), silicon (Si), phosphorus (P), titanium (Ti), and so forth, which are similar but not identical in size to the iron balls. Furthermore, even though all the balls touch, small gaps exist between them, called *interstices*. Small stuff can fit in between, like cue chalk. This is where small elements like carbon and nitrogen fit (see **Figure 1**). The disruption in the pure iron atomic lattice caused by these alloying additions is responsible for what is known as *solid solution hardening*.

When some alloys are heat-treated, these small elements combine with larger ones and precipitate out of the matrix, creating more obstacles to metal flow, resulting in higher strength associated with *precipitation hardening*. An example of this is titanium carbide precipitates in steel. *Work hardening*, also known as *strain hardening*, occurs when many dislocations accumulate. (Remove one ball. Now the balls themselves can change spots. Of course, this changing of spots is harder if many pieces of cue chalk are in the gaps—the balls don't roll as easily. It'll take more force to move them. And that is what higher strength is all about.)

Ultralow Carbon Steels

Steel is, by minimal definition, an alloy of iron and up to 2 percent carbon (if it is more than 2 percent, the alloy is *cast iron*). Carbon is small enough to fit into the interstices of a primarily iron matrix, making it an "interstitial element" in steel. If the steel alloy has an ultralow carbon level (typically less than 50 parts per million), most of these gaps will not be occupied and, as such, can be called interstitial-free (IF) steel. These primarily ferric (iron), very formable IF steels are *extra-deep-drawing steel* (EDDS). Achieving this low carbon level does not occur using conventional steel processing. Instead, the molten steel must be put under a vacuum that decarburizes it by removing carbon monoxide, as well as other gases like hydrogen and nitro-

gen. This process is called *vacuum degassing*, and it is done in the production of vacuum degassed interstitial-free steels (VD-IF).

Mild and Higher-strength Steels

Mild steel (also known as *drawing steel*) contains about 0.04 percent carbon and 0.25 percent manganese, along with several other elements in much smaller quantities. Even with all the alloying, these low-carbon steels are still about 99.5 percent iron. Increasing the alloying typically leads to an increase in strength, a decrease in formability, and more challenging weldability (higher carbon equivalent). High-strength steels (carbon-manganese); conventional high-strength, low-alloy steels (HSLA); and advanced high-strength steels (AHSS) such as dual-phase (DP) and transformation-induced plasticity (TRIP) steels have different balances of strength, formability, and weldability based on their different chemistries and processing at the steel mill.

The AISI/SAE name for carbon and low-alloy steels is a four-digit number: The first digit indicates the primary alloying element; the second digit reflects the type and amount of the other alloying elements; and the last two digits indicate the carbon content, in hundredths of a percent by weight (see **Figure 2**).

An entire spectrum of properties is available, varying with alloying addition, heat treatment, and mechanical processing. However, the composition variations can be illustrated by bending two seemingly identical paper clips back and forth a few times. Although they both have the same composition, one has less formability than the other. With this in mind, you might consider adding mechanical property limits to your material order. The tighter range of properties may reduce your scrap.

Stainless steels are iron-based alloys containing at least 10 percent chromium (Cr). A transparent, chromium-rich oxide film forms on the surface, which limits further oxidation, or rusting.

Stainless steels are named according to their microstructures and hardening mechanisms.

Austenitic stainless steels are characterized by low yield strength, rapid work hardening, high elongation, and high impact strength. They contain 15 percent to 30 percent Cr and 2 percent to 20 percent Ni. The 300 series stainless steels are alloyed with chromium and nickel. In the 200 series, some of the nickel content is replaced with manganese (Mn) and nitrogen (N); molybdenum (Mo) can be added to improve corrosion resistance.

Austenitic stainless steels have greater corrosion resistance than both ferritic and martensitic stainless steels. Unlike ferritic and martensitic stainless steels, austenitic grades are not magnetic and are not subject to an impact transition at low temperatures. They cannot be hardened by heat treatment and are strengthened by work hardening (higher n-value than other types of stainless steel). Type 304 is the most widely used alloy of the austenitic group. It has a nominal composition of 18 percent Cr and 8 percent Ni, which is why it is sometimes referred to as *18-8 stainless*.

These steels are used for automotive trim, cookware, food processing equipment, and household appliances.

Ferritic stainless steels (400 series) contain 10.5 percent to 20 percent Cr and are essentially nickel-free. These grades cannot be hardened by heat treating and only moderately hardened by cold working. Ferritic alloys have good ductility and formability and typically are stronger than austenitic steels.

Ferritic stainless steel's high-temperature mechanical properties typically are not as good as austenitic stainless steels and fail by brittle fracture at low temperatures. The 400 series is magnetic, with good ductility and resistance to corrosion and oxidation. Chromium and molybdenum increase corrosion resistance, while titanium and niobium (Nb) improve weldability. Type 430 is the general-purpose stainless of the ferritic group.

Ferritic stainless is used in applications in which resistance to corrosion is important, such as automotive exhaust systems and hot water tanks. Even though the austenitic grades typically have better formability and therefore can make more complex part shapes, the increases in nickel prices in recent years provide significant incentives to making processing changes to accommodate forming ferritic alloys.

Martensitic stainless steels (also part of the 400 series) usually contain between 11 percent and 18 percent Cr and have more carbon than the ferritic grades. They are magnetic, subject to an impact transition at low temperatures (brittle fracture), and are capable of being heat-treated to a wide range of useful hardness and strength levels. However, they are not as corrosion-resistant as austenitic or ferritic grades. Type 410 is the general-purpose alloy of the martensitic group.

This series is used extensively in cutlery, sports knives, and multipurpose tools. Excess carbides may be present to enhance wear resistance, or as in the case of knife blades, to maintain cutting edges.

Precipitation-hardening (PH) stainless steels are chromium-nickel alloys. They may be either austenitic or martensitic in the annealed condition. These grades develop very high strength after a heat treatment at around 500 to 800 degrees C. PH results when the heat aging treatment causes hard intermetallic compounds to precipitate from the crystal lattice as the martensite is tempered. Common uses are aerospace components.

Duplex stainless steel alloys are magnetic and have a mixture of austenite and ferrite in their structure. They exhibit characteristics of both phases with higher strength and ductility. Depending on the composition, duplex alloys can have good cyclic oxidation resistance, stress corrosion resistance, pitting corrosion resistance, and high strength and weldability. Duplex stainless steels also generally have higher

strength but lower toughness (brittle fracture at lower temperatures) than austenitic stainless steels.

Common uses are components for

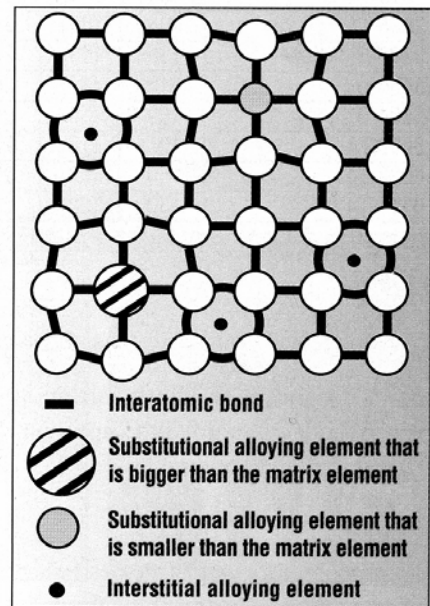


Figure 1

Small gaps between atoms, called *interstices*, are where small elements like carbon and nitrogen fit. As the alloying increases, the straining in the atomic lattice increases, requiring more force to deform the workpiece (hence making it a high-strength metal).

Naming Convention for Carbon and Low-alloy Steels (AISI/SAE)

1XXX	Carbon steels
13XX	Carbon-manganese
2XXX	Nickel steels
3XXX	Nickel-chromium steels
4XXX	Molybdenum steels
41XX	Chromium-molybdenum steels
43XX	Nickel-chromium-molybdenum steels
4340	Nickel-chromium-molybdenum steels with 0.40% C
5XXX	Chromium steels
6XXX	Chromium-vanadium steels
7XXX	Tungsten-chromium steels
86XX	Nickel-chromium-molybdenum steels (less Ni than 43XX)
9XXX	Silicon-manganese steels

Figure 2

The first digit indicates the primary alloying element, the second digit reflects the type and amount of the other alloying elements, and the last two digits indicate the carbon content, in hundredths of a percent by weight.

Aluminum Alloys, Tempers

Alloy and Temper	Yield Strength		Tensile Strength		Elongation (%)	n-value	r-value
	MPa	KSI	MPa	KSI			
2008-T4	125	(18)	250	(36)	28	0.25	0.70
2010-T4	130	(19)	240	(35)	25	0.23	0.74
2036-T4	195	(28)	340	(49)	24	0.22	0.90
5182-O	130	(19)	275	(40)	21	0.33	0.80
5454-O	115	(17)	250	(36)	22	0.30	0.80
5754-O	100	(14)	220	(32)	26	0.30	0.80
6009-T4	125	(18)	220	(32)	25	0.22	0.64
6022-T4	150	(22)	255	(37)	26	0.25	0.70
6111-T4	150	(22)	280	(42)	26	0.28	0.70

Note: Paint bake done for 30 minutes at 177°C (350°F).

Figure 3

Chart courtesy of the Aluminum Association, www.aluminum.org.

marine petrochemical, desalination plants, heat exchangers, and papermaking industry applications.

Aluminum

Rolled aluminum grades are designated by a four-digit code describing the main alloying additions (the first digit indicates the primary alloying addition), followed by alphanumeric suffixes that describe subsequent processing done to modify properties.

The O temper is in the annealed and recrystallized condition, which results in the lowest strength and highest ductility possible within that alloy. Alloys in the H condition are work-hardened, with or without a further heat treatment. The T temper is for products that are heat-treated, with or without a combination of subsequent work hardening and aging. For example, Al6111-T4 is an aluminum-magnesium-silicon alloy that is solution-heat-treated followed by room-temperature aging.

Each alloy family has characteristics and tempers (see Figure 3) that lend it to specific applications, summarized below:

The 1XXX series is essentially pure aluminum (≥ 99 percent Al), and therefore is very soft and formable. These grades are characterized by excellent corrosion resistance, high thermal and electrical conductivities, low mechanical properties, and excellent workability.

In the 2XXX series copper is the main alloying addition to aluminum. It is a heat-treatable series and undergoes some strengthening from precipitation aging during a paint-bake cycle. These alloys do not have as good corrosion resistance as most other aluminum alloys, and therefore usually are painted or clad for additional protection. For aerospace applications requiring very high strength and high fracture toughness, certain high-toughness alloys are available.


In the 3XXX series, manganese is the principal alloying element. These alloys are not heat-treatable, with strengthening coming primarily from solid-solution strengthening and precipitation hardening. Typical applications for the 3XXX alloy series include automotive radiator heat exchangers, tubing in commercial power plant heat exchangers, and beverage can bodies.

Aluminum-silicon alloys comprise the 4XXX series used to make welding wire and as cladding alloys for brazing sheet, in which a lower melting range than that of the base metal is required.

Magnesium is the primary addition in the 5XXX series. The formability typically increases with increasing amounts of magnesium, but as this level approaches 3 percent, there is the potential risk for corrosion under certain conditions. These alloys are not heat-treatable, and any work hardening from forming may be lost if a paint-bake cycle is used or operating temperature is greater than about 150 degrees F. Also, they are susceptible to Lüders' band formation (stretcher strains), so these alloys are not the best candidates for exposed applications. Specialty alloys include 5182 used for beverage can ends. Other 5XXX alloys are used in automotive body panel and frame applications.

The 6XXX series is heat-treatable and contains magnesium and silicon in addition to aluminum. These alloys are relatively formable, and they will strengthen during the paint-bake cycle, making them the most commonly used aluminum alloys for automotive closure panels.

Zinc (Zn) is the principal alloying element in the 7XXX series. When magnesium (with or without copper) is in the alloy, a high-strength, heat-treatable

grade is produced. Higher-strength 7XXX alloys exhibit reduced resistance to stress corrosion cracking. These alloys are not considered weldable by commercial processes and are regularly used with riveted construction. 

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Want more information?

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- "Introduction to advanced high-strength steels: Part I" — 1139
- "Introduction to advanced high-strength steels: Part II" — 1158

SCHOLARSHIPS – DOESN'T ANYONE WANT A SCHOLARSHIP?

No one has applied for a scholarship for about two years. There is money from "Iron-in-the-Hat" just for this purpose. To possibly generate some interest I have included here all of the information and requirements for the W. Dean Taylor Memorial Scholarship Fund.

NORTH CAROLINA ABANA SCHOLARSHIP FUND

Updated: July 2004

ARTICLE I: The Name of the Scholarship Fund will be the W. Dean Taylor Memorial Scholarship Fund. Scholarship Funds will be obtained from donations, "Iron-in-the-Hat" drawings, fair sales receipts, and special fund raising projects. The Board of Directors may transfer funds from the General Fund to the Scholarship Fund at its discretion. Accrued funds will deposited in an interest bearing account. Each year the Chapter will offer one or more scholarships in an amount not to exceed \$500. The Board of Directors will decide the number of scholarships to be awarded depending on available funds.

ARTICLE II: Any member of the Chapter who has been a member at least one year prior to his/her application will be eligible for a scholarship. Applicants are responsible for obtaining information about available courses and workshops. Applicants for a scholarship should submit a written statement of purpose including an indication of what course they intend to take. They may, if they desire, include photographs, slides, or examples of their work. In the event that the course or workshop is canceled, the recipient is allowed a second choice. Scholarships winners will not be eligible for another scholarship for the next three years.

ARTICLE III: Applications may be submitted to any Board Member at any time and will be acted on at the next Board of Directors Meeting after receipt. Winners will be notified immediately, and announced in the next issue of the Hot Iron Sparkle. Scholarships must be used within one year of their approval.

ARTICLE IV: Scholarship funds may be used to cover tuition, room, and board. Other expenses are the responsibility of the recipient. Funds are to be used to attend recognized schools or workshops for hands-on blacksmithing only. Funds will not be used to attend conferences or similar events. Funds will be paid by the Treasurer directly to the school or institution attended.

ARTICLE V: Scholarship winners agree to the following obligations:

- (1) Upon completion of the course or workshop, the recipients will submit a written report, with photos if possible, for publication in the Newsletter.
- (2) Recipients will give a demonstration of some technique that was learned in the class at a chapter meeting within six months of completion of the class.
- (3) Recipients will donate some object to the Chapter Auction.

ARTICLE VI: Scholarship winners will be chosen by the Board of Directors or by a committee appointed by the Board. Board members who wish to apply for a scholarship will not participate in the decision.

North Carolina ABANA

Membership List as of Feb. 26, 2008

Dear Members,

It is that time of year for the annual publication of the list of NC ABANA members.

Please review your entry in the listing. If you need to make any changes contact me by mail, phone, or e-mail. Note that some of the e-mail addresses are marked INVALID. Messages sent to these addresses were bounced back to me. If any of these addresses belong to you, please contact me with a correction.

Anyone whose membership expired prior to January 1, 2007 is not included in the listing. As usual, the month and year that your membership expires is indicated on the mailing label of the newsletter. In addition, I have been sending statements to members in the month prior to their membership expiration and a reminder several months later if they have not submitted their dues. If you have a valid e-mail address I send a conformation to you that I have received your dues. Membership dues are still \$20.00 and can be mailed to me.

Thanks and regards to all of you,

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ABANA Announces the Vance Baker Scholarship Fund

Vance, who passed away last year was a member of NC ABANA and was a much loved instructor at the J.C Cambell Folk School. See pages 4 and 5 of the third quarter, 2007 issue of this newsletter for tributes to Vance.

From ABANA:

Vance Baker, a retired line foreman for the utility board in Athens, TN, began blacksmithing in the 1970's.

Over the years, Vance taught blacksmithing at the John C. Campbell Folk School, as well as at the Appalachian Center for Crafts. Some of his skilled reproduction work can be seen at Fort Loudoun in Vonore, TN.

As Vance honed the craft that he loved over several decades, he especially loved introducing beginners to the world of blacksmithing.

This scholarship, founded by two self-described "Vance Baker groupies" is intended to carry on that tradition. This scholarship specifically reaches out to women, as an underrepresented group in the blacksmithing community, to begin to share in this time honored craft.

APPLICATION CRITERIA and GENERAL INFORMATION

1. Any female beginner student age 18 and older who has a strong interest in pursuing blacksmithing may apply.
2. The scholarship has been established to allow such a student the opportunity to take a beginning level blacksmithing class at John C. Campbell Folk School. Visit www.folkschool.org for a list of classes.
3. The scholarship is intended to cover class fees, material fees, and housing expenses. The scholarship does not cover any travel expenses. Scholarship amount will not exceed \$1,000 and will be paid directly to the Folk School. One scholarship will be awarded per year.
4. Applications must be postmarked no later than March 15, 2008 and the recipient will be notified by April 15th, 2008. Applicants should take this into consideration when selecting a class.

Continued on Page 30

EDITOR'S NOTE: This article was originally printed in the Spring 2003 issue of "Hammer's Blow". It is from a series of educational articles, directed towards beginning blacksmiths, made available by ABANA

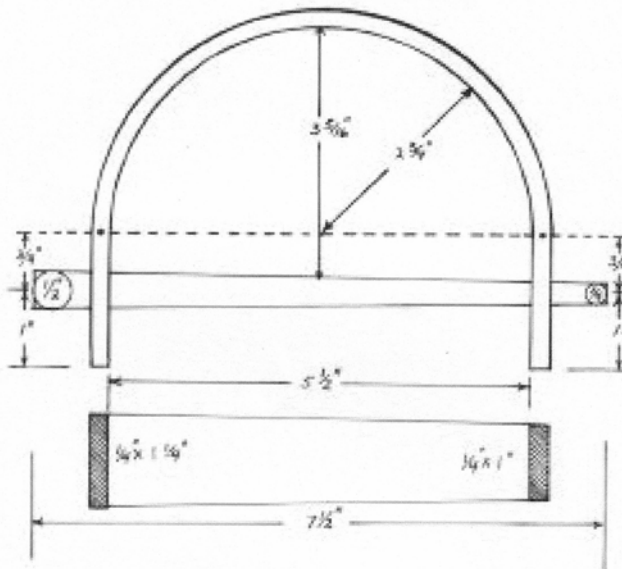
CONTROLLED HAND FORGING

Drawing, Punching, and Bending

By Peter Ross

Illustrations by Tom Latané

Lesson Number Six- Drawing Punching, and Bending



1. The final forged shape.

Definition: This lesson uses skills developed by previously published lessons.

Intent:

The student will learn to incorporate several basic skills into a single project while maintaining dimensional control.

Tools needed:

Basic tools plus tongs to hold 1/4" thick flat bar, tongs to hold 5/8" or 3/4" diameter on end, and punching tongs to hold punch (if using a short punch), center punch, rule, compasses.

Materials:

24" (or as convenient) of 1/4" x 1 1/4"

24" (or as convenient) of 1/2" square mild steel

5/8" or 3/4" tool steel to make two punches

Method:

It will take planning to achieve target dimensions. Let's start by thinking of the bent rectangular bar.

First, the bar must be the right length and the two holes correctly placed. If the bar is forged to proper length, the bending will be simple. We can accurately compute the overall length and the distance between holes from the plan (see lesson Four, Bending, *Hammer's Blow*, Volume 11, #2, Spring 2003). This will give us the "straightened" layout of the bar. With this layout established, the choice of steps can begin.

In planning a project, it is wise to do the less-predictable opera-

tions early and do the more predictable ones later. By "predictable" I mean in the dimensional sense- not the skills of the workman.

For example, forging a taper of precise length can be done with certainty (using the method learned in lesson one, *Hammer's Blow*, Volume 11, #1, Winter 2003), but it is difficult to predict how much stretching will occur while punching holes. If we punch early in the sequence, the uncertain effects on dimensions are resolved before drawing to final length. Maintaining correct dimensions will be simpler and more direct. Making the round tapered pin will not affect the dimensions or fit of the flat bar, and can be done independently.

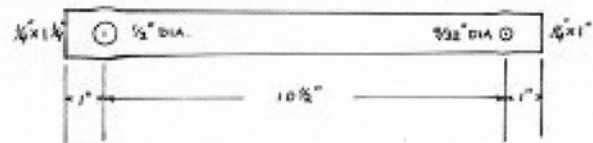
Step One:

Make two punches, each with a 4"-long round taper. One should end in 3/16" diameter and the other end in 3/8" diameter. Be certain that the entire taper is carefully forged and truly round. Any irregularities in the tool will transfer to the work.

Review Lesson #3 (drawing a round taper) if necessary.

Previous lessons have involved only mild steel, but for this exercise, we will need something tougher for the punch. If the punch is made of mild steel it will likely bend in use. Using a harder steel, even if it is not hardened and tempered, will make a more durable tool. At this beginning stage, I recommend avoiding more exotic and expensive tool steels. A very serviceable punch can be made from the simplest tool steels (such as W-1) and they will be much more forgiving for the beginner to use. The drawback of simple steels is that they are softer and will deform more easily during use, especially if they get hot. Good technique will enable you to use them with very little problem.

If you would rather not buy new steel, you may use a piece of scrap (such as a piece of coil spring) of appropriate thickness.



2. Flat bar in its unbent layout.

Step Two:

We will start with the flat bar.

Refer to the drawing of this project for dimensions and calculate the length of the flat bar before bending. Also determine the distance between holes. Review this procedure in Lesson Four (Bending) if necessary.

It is often a good idea to make a simple sketch of the piece as it should look before bending with these dimensions noted. At this stage, it is nothing more than a tapered flat bar with two holes.

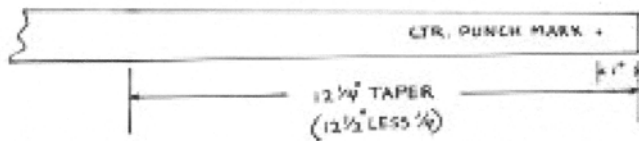
Begin by forging a taper on the end of the flat bar. This taper does not end in a point, so draw the end of the bar only until

CONTROLLED HAND FORGING

you reach the target dimension- in this case, 1/4" x 1". Square the end by upsetting if necessary. Once you have forged the end to dimension, work your way back up the bar until you have a straight, even taper 1/4" shorter than the desired length. This will allow for some stretching during punching and final corrections.

Hints:

Do not draw the bar too thin, as this is the hardest fault to correct. Any areas that are too thin must be upset to proper thickness. Refer to the lesson on upsetting if necessary.



3. The marked bar.

Targets:

Make sure the bar is an even 1/4" thick the entire length of the taper. Variation should be 1/64" or less.

Hold length tolerance within 1/16"

Make the taper as smooth and straight as if it were the end of the project.

Step Three:

Measure from the small end to find the location of the small hole. Using the center punch, mark the location. Make a deep mark so that it will be clearly visible when the bar is hot.

Take a heat and punch the small hole.

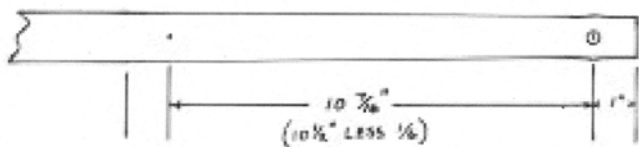
Drift the hole to 9/32" diameter using the punch.

Refer to lesson 2 (Hot Punching) if necessary.

Hints:

It is a good idea to mark the bar when cold (or mostly). This will avoid errors caused by measuring a hot, expanded bar: after the bar cools and shrinks, the marks can be off by as much as 1/8". Also, using the center punch on hot material may draw the temper from the small tip.

Targets:



4. The layout of the second hole.

Punch and drift the hole in the same heat. Since the punch is close to the final hole size, this should not be difficult. After drifting, the bar should be at a low heat and ready for smoothing. For this project, it will be acceptable to leave the bulge

around the hole.

With practice you should be able to punch, drift, and smooth the bar in one heat.

Step Four:

Using the center of the first hole as the starting point, measure for the location of the second. Punch and drift the second hole to 1/2" diameter.

Hints:

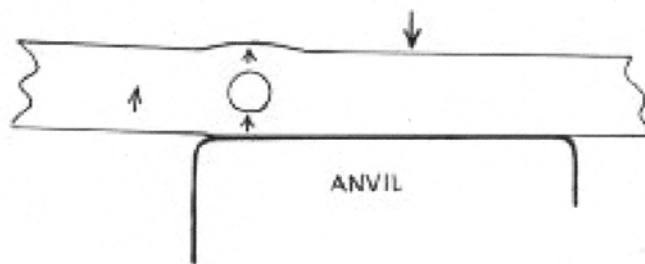
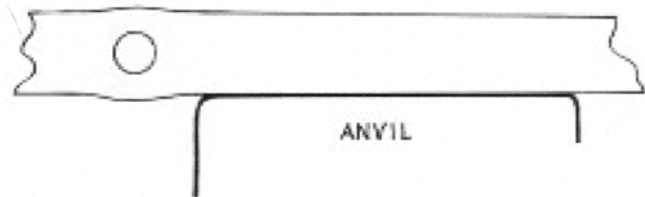
Rather than center punching the exact location, make the mark approximately 1/16" too close to the first hole. This will allow for inevitable stretching, and decrease the chance of the holes being too far apart. If there is any error to correct, it will be much easier to stretch the bar a little than to shorten it.

A more accurate measurement can be made when the bar is cool.

With the second hole finished, measure between the holes and correct the taper length to match the dimensions on your sketch. Final measurement is best done with the bar below a red heat, to minimize errors. This is also the time to make sure the taper is straight and even and the surfaces smooth.

For this project, the bulging of the bar edges around the punched holes may be left as is.

Once the holes have been punched and the bulges created, it is very important not to let the bulge rest on the anvil even when working in the middle of the taper. With a bulge on the anvil, the taper will not rest squarely on the anvil face. A hammer blow



5. Proper placement of the bar.

in this condition will bend the bar and squash the hole. This is an example of an idea presented in lesson one: the bar is squeezed by the hammer and the anvil simultaneously. You must think of what the anvil will do whenever positioning the bar.

Targets:

Hold length tolerances of each section to plus or minus 1/32", and overall length to within 1/16".

CONTROLLED HAND FORGING

Step Five:

Now that final length is established, the piece can be cut from the bar. Make a mark on the face of the bar with the center punch, or on the edge with the hardie. Take a heat, and using the hardie, cut the piece from the bar.

Hints:

It is helpful to cut before bending for two reasons: first, if we are going to dress the end of the bar with the hammer, this is the last convenient time. Once the bar is bent, it will be impossible.

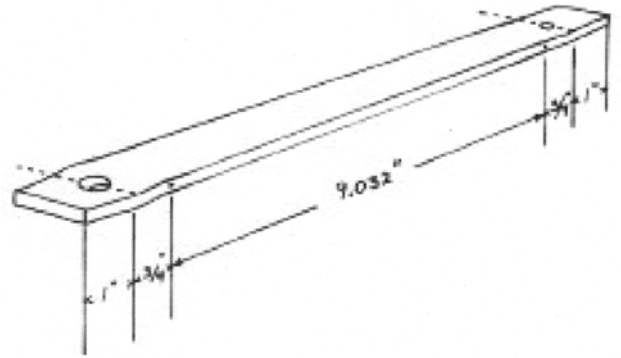
Second, cutting would deform the bend if it were already done. We would have to do the work all over again.

Careful cutting will keep the end of the bar as square as possible and make upsetting easier. Since this is a rectangular bar, it will help to cut part way through from all four sides. The intent is to keep the resulting burr as small as possible and centered on the end. If you cut equally from opposite sides rather than mostly from one side this will happen.

From this point onwards, it will be necessary to hold the piece with tongs. Simple flat jaw tongs will work well for this project. Most tongs are made to fit one size bar, though they sometimes will hold several additional sizes adequately. To check to see if tongs fit properly, the jaws should be parallel at the thickness of the bar. Thus, the jaws will contact the bar for the entire length of the jaw. Conveniently, one pair of tongs sized to hold 1/4" thick flat bar will hold the piece at either end, or anywhere in between.

Hints:

It may be necessary to square the end after cutting. If so, make sure to quench everything except the end itself to prevent undo-



7. The bar with punch marks on edge.

ing the accurate dimensions already achieved.

In preparation for the final step, it may be helpful to mark the limits of the bend (see Lesson 4, Bending) on the edge of the bar.

Step Six:

Bend the piece to match the given dimensions. Heat approximately one half the length of the bar and bend while holding the cold end in the tongs. Once done, switch grip to the bent end, heat the second half, and finish the bending. Switch grip as often as necessary to make corrections and adjustments.

Hints:

Since the bar is tapered, care must be used to get an even bend (it will bend more easily where it is smaller). If you have chosen to center punch the edges of the bar for reference it should be easy to determine if the bends start and stop at the correct places.



SMALL

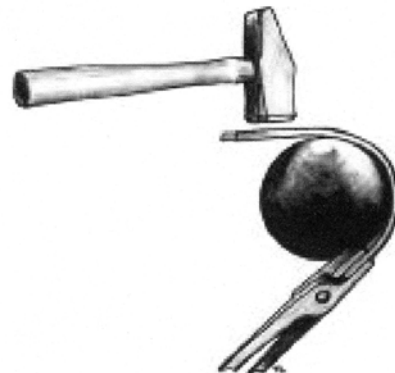
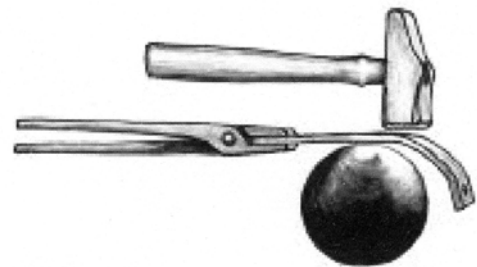


LARGE



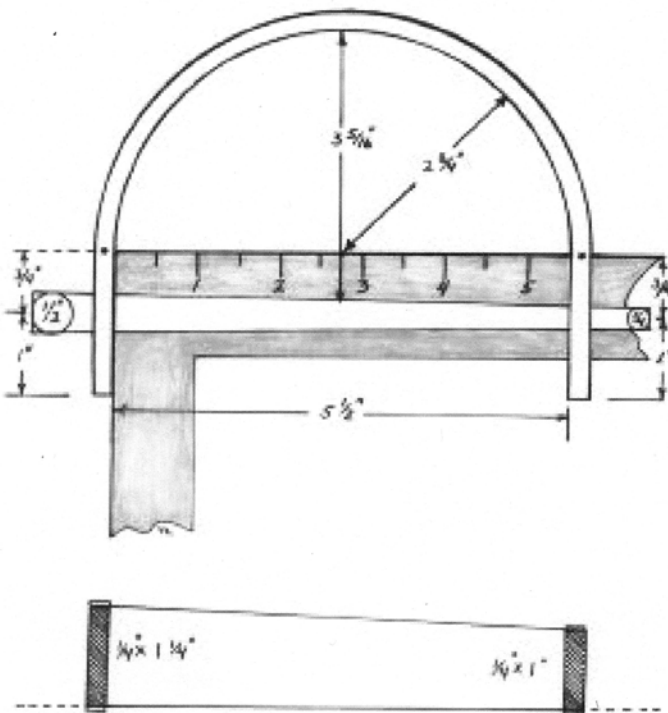
GOOD FIT

6. Proper and improper tong fit.



8. Manipulation of stock for bending on the horn.

CONTROLLED HAND FORGING



9. A square can be used to assure that the curve begins and ends properly, to locate a center to check the curve, and to check that the straight ends are parallel. The sides of the curved bar should lie evenly on a flat surface except for the swelling around the punched holes.

Refer to Lesson Four (Bending) if necessary.

Remember, the two ends including the holes are not bent, but straight.

Targets:

The two straight sections at either end should be parallel in side and end views, and the correct distance apart. They should also be perpendicular to the imaginary "horizon" created by connecting the two dots.

With a straightedge connecting the two reference dots, check the radius of the bend and whether the ends are square.

Match the given dimensions within 1/16" or less.

Step Seven:

With the flat bar completed, it is time to make the tapered round pin.

Starting with 1/2" square bar, draw a round taper to match the given dimensions.

With the proper taper made, cut the piece from the bar and square the cut end if necessary.

Straighten and check for accuracy.

Hints:

Refer to Lesson Three (Drawing a Round Taper, *Hammer's Blow*, Volume 11, #2, Spring 2003) if necessary.

When cutting a round bar that is to have the end squared, cut evenly all the way around the bar. This will leave the resulting burr small and centered on the end.

Since you are using 1/2" square bar as a starting material, it is possible to make a pin which is larger than 1/2" diameter. Therefore, use care in checking your progress.

Step Eight:

With both parts cool, slide the pin through the holes in the bent bar. The pin should stop close to the desired location, with close to correct amounts projecting from both holes. If the pin is round and straight, the distance between it and the top of the arc will remain constant even if the pin is rotated.

Check all given dimensions.

Hold tolerances to 1/16" or less

If you have made a full-size drawing, you can place the finished piece directly over it to check your results.

If the piece does not match the sketch, you can also figure out where the errors occurred; whether holes are in the right place, bending was accurate enough, or overall length was estimated correctly.

Continued from Page 26

5. To apply, please send an email inquiry to: VBakerMemorialScholarship@earthlink.net with the subject line APPLICATION. Include your name and address and preference for mail or email correspondence. Application materials and instructions will be mailed or emailed to you.

If you would like to donate to the fund, address your check to RJ Hadle and mail it to:

Vance Baker Memorial Scholarship Fund
c/o RJ Hadle
13240 Bradyville Pike
Readyville, TN 37149

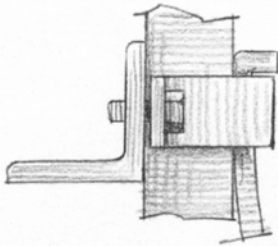
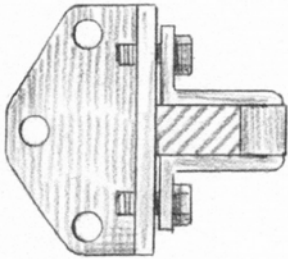
The Vance Baker Memorial Scholarship has been generously funded for its first five years of existence.

All donations will be placed into a savings account specifically for the purpose of funding the Vance Baker Memorial Scholarship.

Funds cover a class, materials, and housing at the John C. Campbell Folk School for one female beginner blacksmithing student (age 18 and older) each year, up to \$1,000. Any and all funds left in the account after that will accrue interest for future years.

EDITOR'S NOTE: This article is from the "Blacksmith Journal" published by Hoffmann Publications. They have been kind enough to allow ABANA chapter editors access to some of their back issues free of charge. The "Blacksmiths Journal" publishes beautiful shop drawings of blacksmith projects. See the last page of this article for more information,

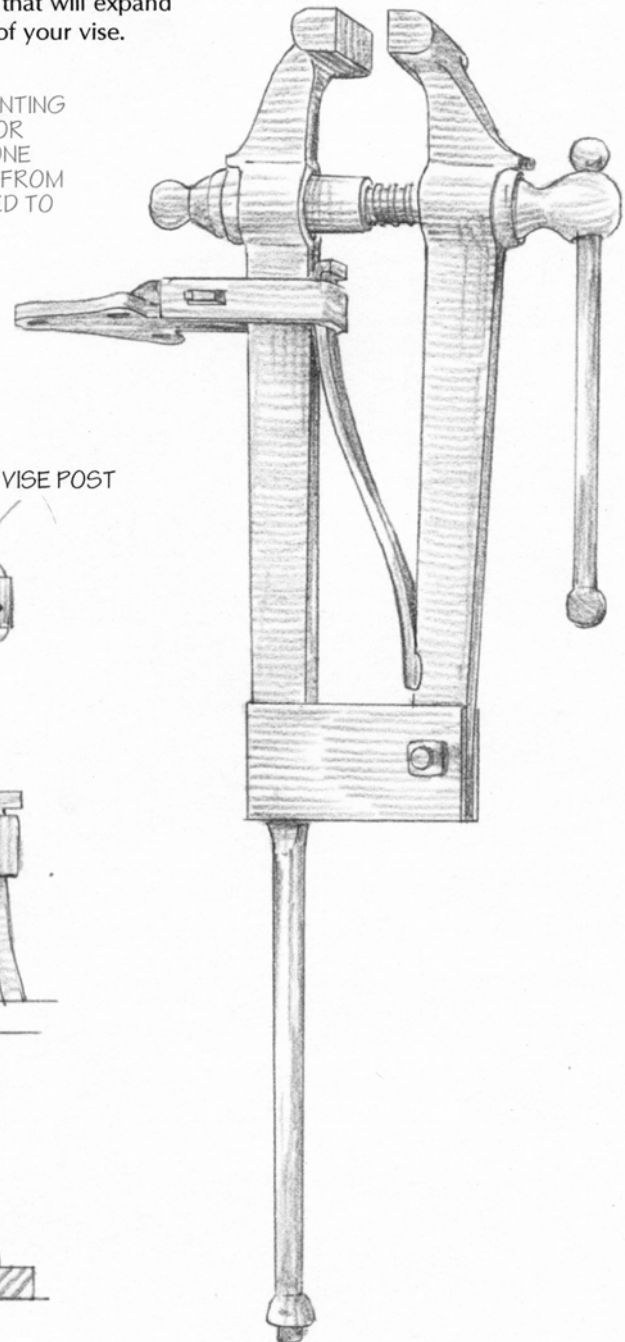
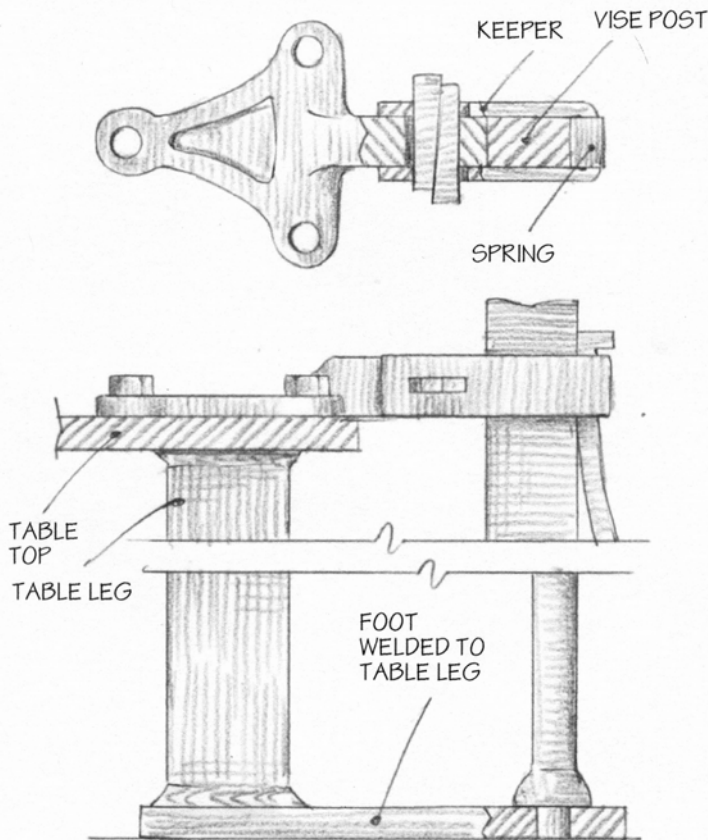
POST VISE



The most essential blacksmith's equipment found in the average shop is the forge, anvil and post vise. Given its essentialness, a post vise should be large, firmly mounted and in good working order. Bigger is better; a 6" vise (measured across the width of the jaws) should be the minimum size to be considered. Make sure both the screw and thrust washer are well lubricated and work freely. Some notes on mounting your vise (this page) are followed by some suggestions for accessories that will expand the usefulness of your vise.

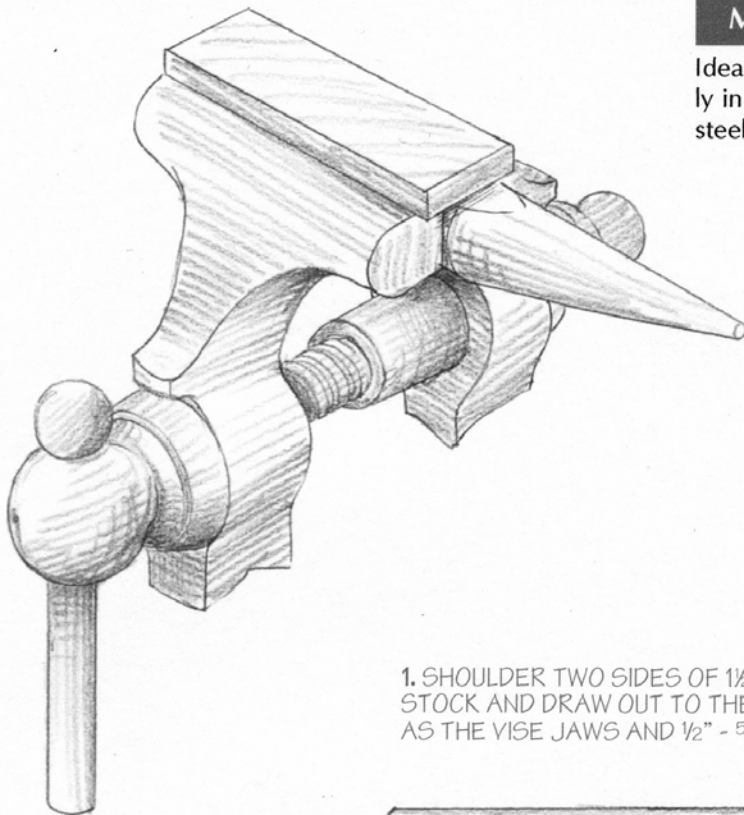
IF THE ORIGINAL MOUNTING PLATE IS DAMAGED OR MISSING, ANOTHER ONE CAN BE FABRICATED FROM 1/2" ANGLE AND BOLTED TO THE VISE AS SHOWN.

THE ILLUSTRATIONS BELOW SHOW A TYPICAL WAY TO MOUNT A POST VISE TO A STEEL WORK TABLE.

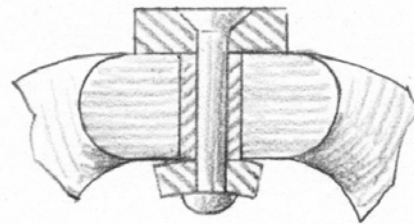


MINI ANVIL

Ideal for fine work, this "mini anvil" clamps securely in your vise. The parts are made from 4140 steel, or whatever scrap found around the shop.



A CROSS SECTION SHOWS HOW THE ANVIL IS SECURELY CLAMPED IN THE VISE.

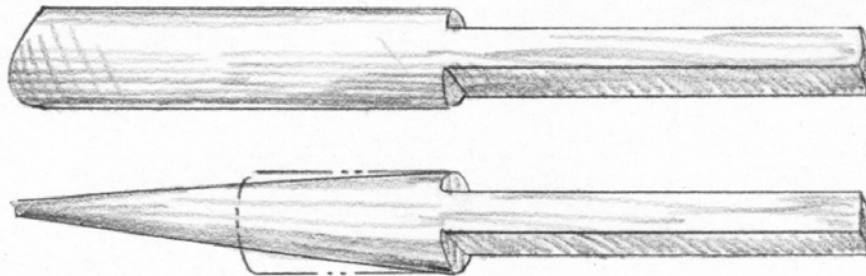


1. SHOULDER TWO SIDES OF 1/2" ROUND STOCK AND DRAW OUT TO THE SAME SIZE AS THE VISE JAWS AND 1/2" - 5/8" THICK.

1.

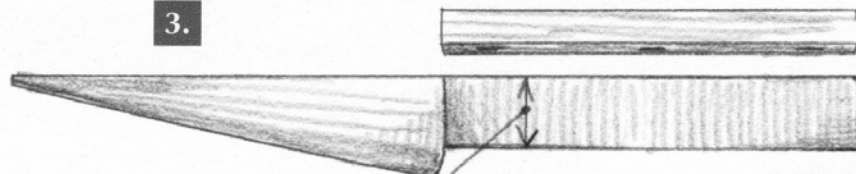


2.



2. TRIM THE OTHER END OF THE STOCK AND TAPER THE HORN THE AMOUNT DESIRED.

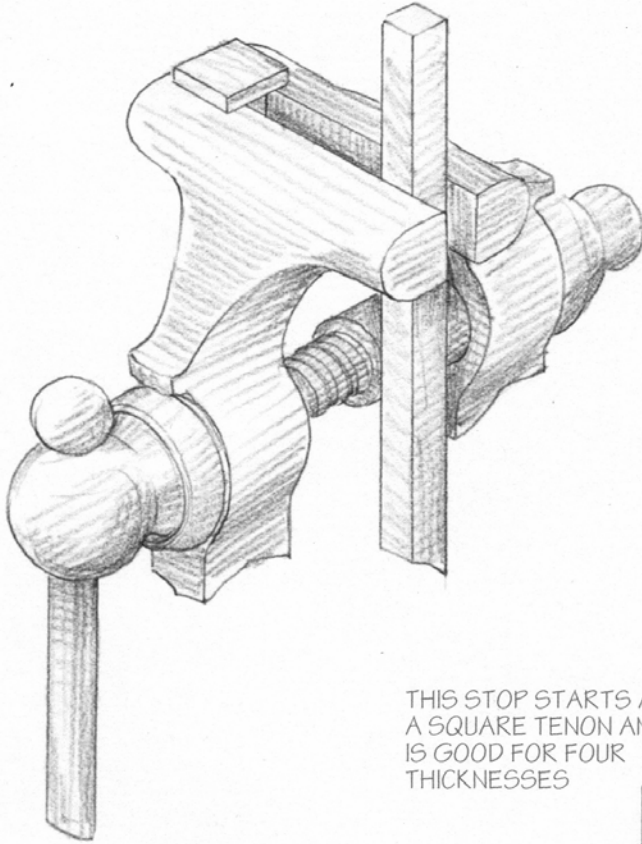
3.



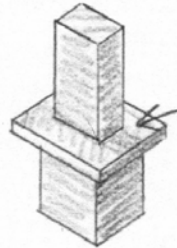
3. DRILL THE TOP PLATE AND KEEPER ALL IN ASSEMBLY WITH THE ANVIL HORN TANG. COUNTER SINK THE TOP PLATE AND RIVET THE WHOLE THING TOGETHER.

THICKNESS OF VISE JAW





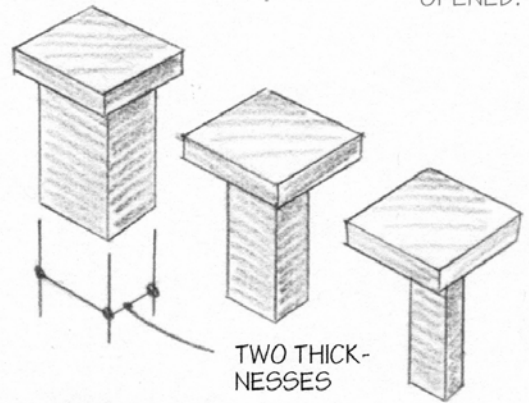
THIS STOP STARTS AS A SQUARE TENON AND IS GOOD FOR FOUR THICKNESSES



ANVIL BLOCKS

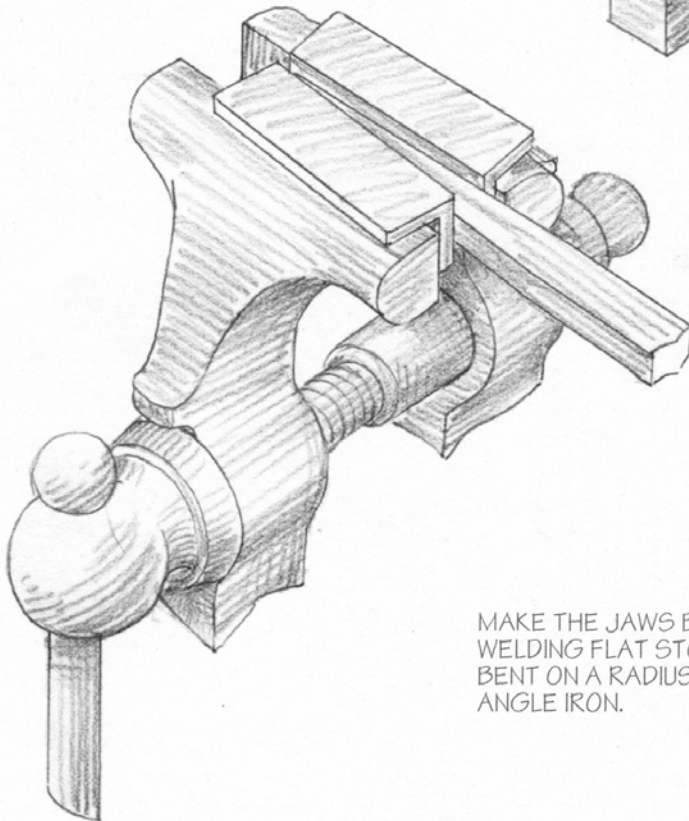
Anvil blocks support the opposite end of the jaws when clamping work near one end. Without the blocks the jaw will torque away from the work thus lessening clamping pressure.

THESE ANVIL BLOCKS ARE GOOD FOR TWO THICKNESSES OF WORK. THE CAP KEEPS THEM FROM FALLING THROUGH WHEN THE VISE JAWS ARE OPENED.



DRIVE ON HOT

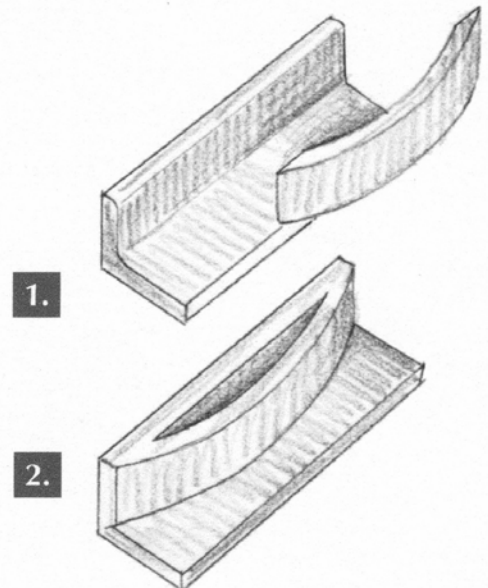
TWO THICKNESSES



MAKE THE JAWS BY WELDING FLAT STOCK BENT ON A RADIUS TO ANGLE IRON.

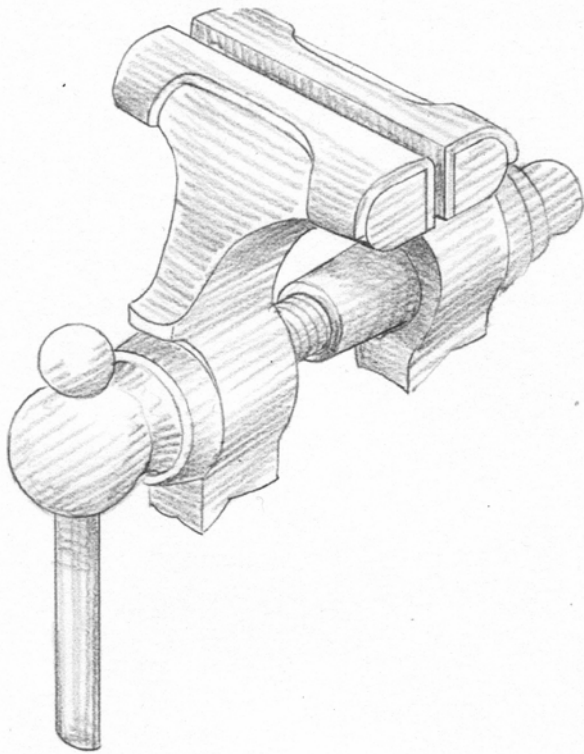
TAPER JAWS

Taper jaws hold a variety of tapered items securely, while automatically adjusting to their taper.



1.

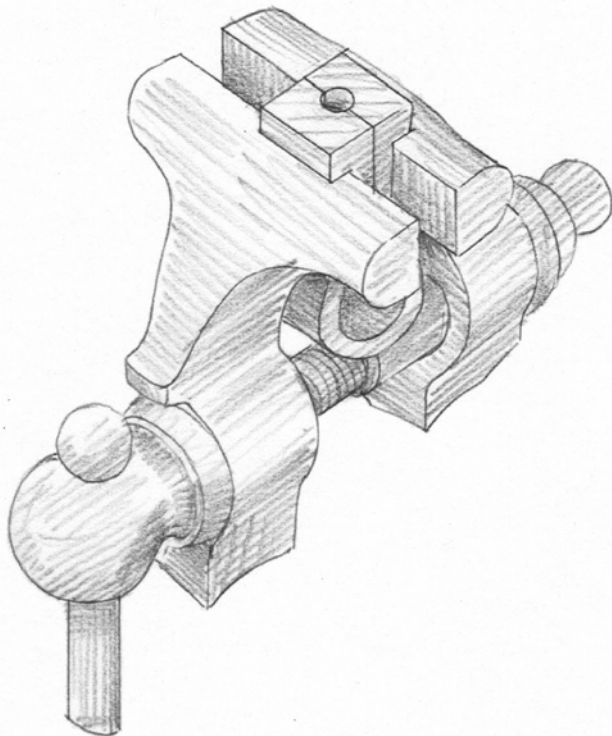
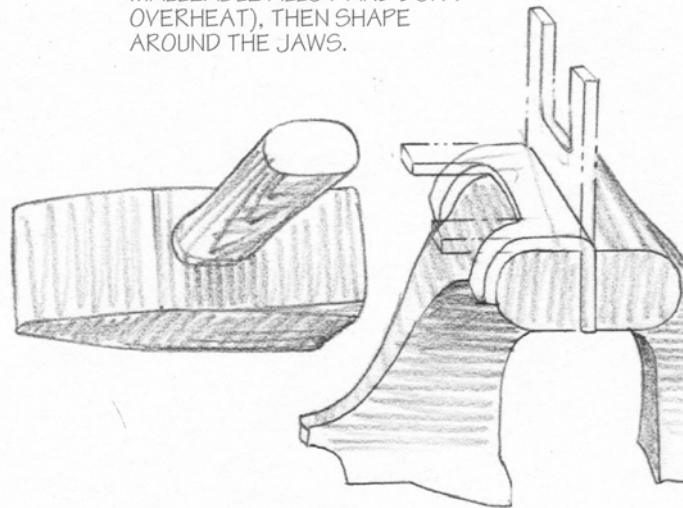
2.



SOFT JAWS

Soft jaws fit over existing vise jaws to prevent marking stock as it's being worked. They are commonly made out of a soft material such as brass or bronze.

MAKE A PATTERN OUT OF HEAVY PAPER, TRANSFER IT TO 1/8" THICK BRASS OR BRONZE AND CUT IT OUT. CLAMP IN THE VISE, HEAT WITH A TORCH (CHOOSE A MALLEABLE ALLOY AND DON'T OVERHEAT), THEN SHAPE AROUND THE JAWS.



UPSET TOOL

Use this tool in the vise for upsetting and bending round and square stock—especially useful for bolt and rivet heads.

MAKE SEPARATE TOOLS FOR ROUND AND SQUARE, AND FOR EACH SIZE.



EDITOR'S NOTE: There certainly has been a lot of "big-doings" at ABANA these days – lots of resignations, and lots of new officers and board members. If anyone "in the know" wishes to write an article about the situation please submit it to your editor. ABANA has new a new president, and since my last newsletter he has written three President's Letters. We only have room for the first of these, however. We may catch up in future issues.

ABANA President's Message November 2007

Well, with enough coffee, doughnuts and BBQ to satisfy any craving for quite a while, the Fall 2007 meeting of the ABANA Board of Directors is history. Now the work truly begins. I'd like to express our deep gratitude to each of the outgoing board members for the service they have given: Clare Yellin, Eric Lander, Bob Jacoby, James Viste, Murray Lowe, and Dave Mudge. Thank you all! I'd also like to thank Bobby Floyd, who has resigned from the board, but has been a major motivating force behind the upcoming Membership Survey. More thanks go to our hosts at the Metal Museum, and the members of the River Bluff Forge Council, who remind us all of why we volunteer. This is going to be a long message, but there is a lot to relate.

At the meeting we welcomed several new members to the board: Paul Boulay, Wayne Coe, Rome Huchings, Kim Saliba, and Linda Tanner. Each brings dedication and unique skills to the Board, and we look forward to serving ABANA. together. If you are counting, this all means we are still short one board member as I write. According to the ABANA By-Laws, the vacancy created by the resignation of Bobby Floyd will be filled by board appointment and the appointee will serve the remainder of the vacated term, but while we're on the subject, it is never too early to begin thinking about the next election cycle. Plenty of you have strong opinions about ABANA and have expressed them. If you are willing to serve, and willing to work together for the good of blacksmithing, we'd love to have you. All you need is ten signatures of ABANA members, a candidate's statement, and a recent photo, and you'll be on the ballot. Even if you aren't interested in running for the board, please look for the upcoming Survey, and take a few minutes to fill it out. We want your input as we guide ABANA into the future.

I wish you could all have been at the meeting to see how this board is working. There are many different opinions among us, but we recognize that we share a common goal, and have shown a remarkable willingness to listen and create consensus about where we need to start to make ABANA into an organization that serves the whole of the blacksmithing community. As board members, we support ABANA's mission to promote and preserve blacksmithing. We are not here to promote and preserve ABANA except as a vehicle for that mission. ABANA can't, and really shouldn't survive unless it can provide real benefits to members. Those benefits need to compliment, rather than compete with the services of affiliates, and we want your input! Keep in mind that ABANA has a diverse constituency. For example, if we removed everything that generated a complaint in the Anvil's Ring, we'd shortly have nothing left to print. We don't think that would serve the future of blacksmithing. So bear with us, you may not like everything you see, but we are devoted to improving publications and serving all of the membership.

There is too much to report the substance of all of our discussions here, but I look forward to the opportunity over the coming months to share our conversations and goals with you through the publications and web site. I would like to report that the board expressed a unanimous desire to provide National Conferences. We are currently working to discover and define a conference that will be both accessible to the membership, and provide a national forum, offering a unique and distinct experience from regional events. We realize that to many of our members, ABANA is conferences and publications. At the same time, it is common knowledge that membership traditionally rises during conference years, because membership is required for conference attendance. What this tells me is that we are failing significant portions of the membership's needs with even our core services. While many people are members just for the magazines, and don't get to attend conferences, others join ABANA to attend conferences, and don't renew for the magazines or anything else. We need to do better. We also recognize that we have other services that we need to do a better job of promoting, and need to consider what new services we can and should be offering.

On the subject of conferences, I would like to clarify a few financial details. I know there is a lot of misunderstanding out there and a lot of questions about what is going on. For starters, the 2006 Seattle Conference didn't lose money, it just didn't make much, and it's perceived failure isn't the reason for the cancellation of the 2008 conference. More on 2008 in a minute. The figures for the Seattle conferences finances are available in easy to read pie-chart form on the ABANA web site. There is a disputed bill from the University

of Washington. After a line by line review by ABANA staff of the bill we were presented, we determined that many of the charges weren't legitimate. We invited the University staff to sit down and negotiate, or provide a detailed statement of the charges. To date, they have done neither. Without a detailed bill, we would be remiss in our obligations as board members to pay, just as you wouldn't pay a bill that came without any statement of services provided or previous agreement. To be clear, the disputed amount is a small portion of the total bill from the University of Washington, and we have already paid them in excess of \$120,000. We remain prepared to negotiate and settle any legitimate debt.

The 2008 Conference, originally planned for New Paltz, New York was canceled because it was shaping up to be just too expensive, and we the board decided that to offer such a conference presented us with an unacceptable financial risk. The decision we faced was not an easy one, but what we had to consider was the possibility of presenting a scaled back conference which still came with a \$600 ticket. Our break-even number of attendees would have been 650. Now first, 650 attendees would mean that the conference was only serving a small percentage of our membership. Is that a good level of service to our membership or use of our funds and energy? We decided probably not. Then we considered the possibility that we might not even get those 650 attendees. In that case we would be in real financial trouble, with contractual obligations for huge amounts of money undertaken in order to be able to present the conference. We decided that to enter such contracts would not show adequate fiscal responsibility. We considered other venues in the area, but were unable to meet all of our needs. We considered other affiliate hosts and decided that it was already too late to start over. The 2008 ABANA Conference was canceled to give ABANA a chance to restructure its conferences so that we may continue to offer these events in a new format that will make them more accessible, more enjoyable and more memorable. Chances are that you will not see a university hosting more ABANA conferences. The environment has become very restrictive for our kinds of activities, and very expensive. Furthermore, we'd like to offer attendees the chance to choose their levels of service. We'd like you to be able to camp and cook for yourself if that helps you get to see a conference, or drive your RV, or stay in a nicer room than a dorm if you choose. And here's another plug for the survey: you'll get your chance to tell us what you want. Take it and help us all.

I'd like to continue with one other bit of ABANA reality for everyone to consider. At present membership numbers, our publications costs account for about \$49 of each \$55 membership. That doesn't leave much for anything else. Membership has dropped over the last year, but not as dramatically as many people think. It's a constant problem, and not tied to the '06 conference or the '08 lack of conference. Now, I understand that most members don't have a hand in the decisions we make about our budget, so I'd like to add that we are getting a good deal from our publications contractors. The reality of the situation is that we need new members, and we need former members to renew. To make that happen, we need to build an organization that is more valuable to everyone interested in blacksmithing. But also, we need to encourage better use of the services we already offer. To start things off, I'd like to invite each of you to give us a chance. We're having a membership drive! Furthermore, as an incentive, we've come up with something. Several board members, and several members who support ABANA and believe in its value have gotten together to make similar offers: I will give a free day of demonstrating or teaching to any affiliate within 1/2 day's drive of my location in Philadelphia, or my part-time residence in Western North Carolina that will sign up 15-20 new or renewing ABANA members (depending on affiliate base membership.) This is a first come, first serve offer, and not all dates are available, nor can I afford to do this every weekend, but I'll do it, and so will a bunch of other smiths you and your blacksmithing friends might want to see. Stay tuned for other names, locations and details. If you're willing to volunteer, please contact me to get on the list. It is a start, and a personal plea from me to give ABANA another chance. We know it is up to us to take advantage of the chance, but we need all of you.

In short, the rumors of our demise are greatly exaggerated, but the picture ain't all that rosy. ABANA is due for change, and change means difficult decisions and lots of work from volunteers. If you're willing to contribute, join a committee, find something you care about and work for it, or get a friend to sign up. There is plenty of work to go around.

So we begin. Conferences and publications are two huge things for ABANA to work on, but there is more. I hope you'll all stick with us.

Now back to work!

Chris Winterstein, ABANA President

NC ABANA Survey

As secretary and newsletter editor, I get to notice things that perhaps other don't see or don't think about. I see, for example, that the membership seems to be holding its own. We seem to get a fair amount of new members each year but that is offset by the number of members who do not renew. It seems that those who have been a member for only one year are less likely to renew. I guess that makes sense, as they also tend to be new at blacksmithing and their interest in blacksmithing may not last the year. I would be interested in knowing, however, if they are not renewing because they are disappointed in the chapter. I also see that very few members contribute anything to the newsletter. The "Sparkle" does not fulfill a purpose that it could, that of being a forum for discussing blacksmithing issues, chapter issues, or any other issues for that matter. To me the chapter seems to be stalled, it just goes along the same track without new inspiration or ideas. Why are we not doing anything new? Or, are members just happy with the way things are? Finally, why has no one applied for a scholarship for a very, very long time?

I'm hoping your input may help answer these questions. Please answer the questions below, and mail the answers to me. My address is on the last page of this newsletter.

Your name _____

Are you actively blacksmithing or doing other types of metalwork? _____

Is this your first year in NC ABANA? _____

Do you plan to renew your membership when it becomes due? _____

If not, please state why? _____

What do you like about the chapter? _____

What do you dislike? _____

What would you change about the chapter? _____

What new things you would like to see the chapter do? _____

Do you think officers should only be able to serve a limited number of terms? _____

Should there be mandated board meetings? _____

What do you like about the newsletter? _____

What do you dislike about the newsletter? _____

What types of things do you read in the newsletter? _____

What types of things do you skip over in the newsletter? _____

Do you think there should be more news things like births, birthdays, marriages, deaths, etc. in the newsletter? _____

What kinds of information would you like to see in the newsletter that it currently doesn't contain?

Do you read the President's letter, or the Editor's notes, or ABANA information?

If you produce work that you are proud of, why don't you submit photographs of this work to the newsletter? Are you afraid others will copy your ideas? _____

What would you change about the newsletter? _____

Do you attend chapter meetings? _____

What do you like about the chapter meetings? _____

What do you dislike about the chapter meetings? _____

What would you change about the chapter meetings? _____

Would you rather have more demonstrations or more green coal time? _____

What would get you to drive 100 miles to a chapter meeting? _____

Do you attend local meetings? _____

If not, what would get you to go? _____

What do you like about the local meetings? _____

What do you dislike about the local meetings? _____

What would you change about the local meetings? _____

Have you thought about taking advantage of our scholarship program? _____

Why don't you apply for a scholarship? Is it because of the chapter requirements? _____

Blacksmith's Exchange

*Have something for sale, or looking for something?
This is just the place to look.*

Send your "for sale" or "looking for" requests to Marty Lyon (at the address or email address on the back cover). Please include your name and phone number

For Sale

125 pound bullhammer air hammer, in excellent shape and hardly used. Two dies go with it. Need to sell it soon, and would like \$5000 for it. I live in south Asheville. Phone is 828-215-6003. Bill Drake

For Sale

P 6 Flypress bought from The Blacksmith Depot less than a year ago. It has hardly been used. I have some S 7 John Crouquet style tooling that I made which will be included. I will also include the Flypress video. I will be glad to send photos upon request. Concord, NC \$1200. Randy Calhoun, 1224-L Greenoaks Lane, Charlotte, NC 28205. Phone: 704 / 202-7403. e-mail: randycalhoun1976@hotmail.com

Tire Hammer For Sale

\$2,500.00. New never been used. Call 919 772 4111 or cell at 919 818 3036. Parks Low

Ray Clontz Tire Hammer Plans by Clay Spencer

These plans are for a 50 lb. power hammer that uses the rear axle and hub from a front drive car and emergency spare tire and weighs about 700 lbs. It is powered by a 1 hp, 1750 rpm electric motor, 120 or 240 volts, runs about 250 blows per minute and uses a spring toggle mechanism similar to Little Giant hammers. The anvil is 6" solid round (minimum size) by 36" high and the frame is 5" square tubing. The plans are 40 pages, printed front and back on 20 sheets that include parts list, detail and assembly drawings, sources, notes, installation, adjustments and maintenance. Over 200 hammers have been built using these plans. Price is \$30US including postage to US and Canada, \$32US to other countries. Send check or money order to Clay Spencer, 934 Partridge Lane, Murphy, NC 28906. E-mail clayms@brmemc.net for info. Also, lead workshops for chapters or groups to build 15 to 20 hammers and have Tire Hammers for sale, \$2000.

Beverly Shear Blades Sharpened. Remove blades from shear and ship to Clay Spencer, 934 Partridge Lane, Murphy, NC 28906. \$35 plus postage, additional cost for deep notches or blades previously sharpened at angle.

Roller Blade Treadle Hammers (Clay Spencer design) for Sale or Workshops led to build hammers. Bob Alexander, e-mail to scruboak4@netzero.com. or call 636-586-5350

For Sale

Blacksmithing/ Knifemaking/ Forging POWER HAMMER - 50# Little Giant

Little Giant 50#, manufactured in 1947, modern style (clutch at rear) excellent condition, Plug and pound! Has drawing dies, 2hp original motor, single phase, runs like a sewing machine can forge up to 2" solid metal. \$3800.00 919 / 444-1665

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Fax: 804-530-0290

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Wanted

Anvil with missing horn. Original weight (with horn) in the 125-175 pound range. Heel of anvil needs to be intact. Prefer something in the Hay-Budden or Peter Wright line, but will consider what you have. I have some trading material available or cash. Thanks, Tal Harris 704-843-5586.

www.BlacksmithsDepot.com



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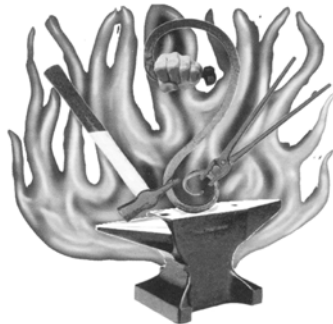
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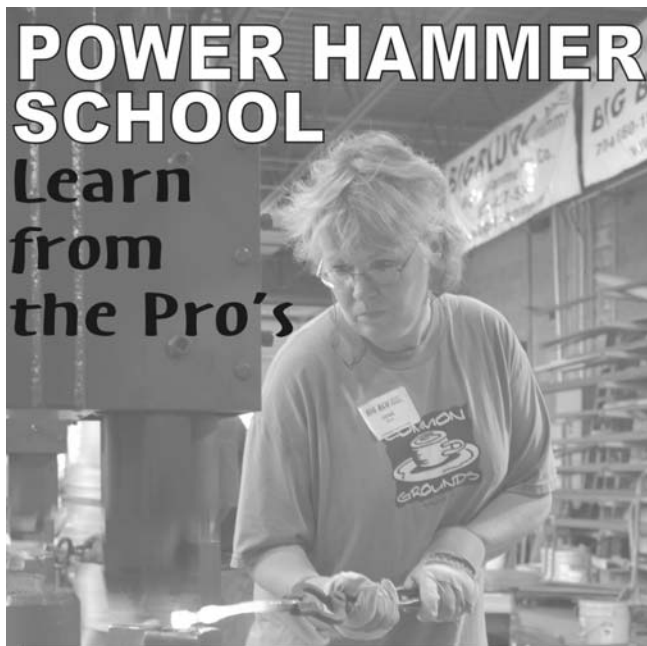
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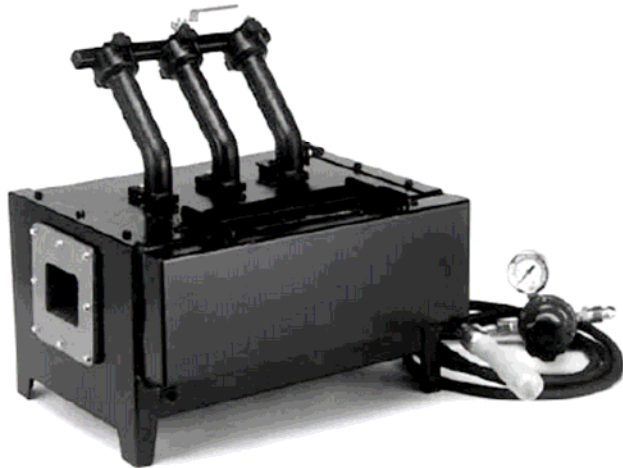
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For sale: 6" Atlas lathe on bench. 3 jaw, 4 jaw chuck, face plate, tail stock chuck, live center. Very good condition. \$600.
New Centaur Forge Vulcan cast iron fire pot, \$150.

Robert Timberlake 336 / 599-5522
ret@phy.duke.edu

I am looking to set up a shared forge in Durham with another craftsperson who works in iron. I'm also looking for some essential equipment such as an anvil, leg vice, and non-electric forge bellows to fit a large coal forge. Please contact me if you have an interest in sharing the space or if you have equipment available.

NCABANA Member Erin Hammeke
608 / 630-4129
ehammeke@gmail.com

New England School of Metalwork

Winter Session Workshops

2007-2008

November 9-12> Beginners Blacksmithing

November 30-December 4> English Wheel; Build it, Use it

January 4-7> Forged Tools of the Blacksmith

January 25-27> Coal Forge; Build it, Use it

February 9-19> Forged Botanical Forms

March 10-13> Basic Blade Forging

See the website for class details, call to register 1-888-753-7502 or online at www.newenglandschoolofmetalwork.com please direct inquiries to dglaser@newenglandschoolofmetalwork.com

MEMBERSHIP APPLICATION

NORTH CAROLINA CHAPTER OF ABANA

Name: _____
Address: _____
City: _____
State: _____ Zip: _____
Telephone: (_____) _____
E-mail Address: _____

ABANA Member?: Yes No
Blacksmithing Experience: _____

DUES: \$20.00 per year (within USA)
\$30.00 per year (outside USA)
MAKE CHECK PAYABLE TO: NC ABANA
REMIT TO: Marty Lyon
220 Fearington Post
Pittsboro, NC 27312

If you are renewing your membership and your address and phone number have not changed, you do not need to use this form.

ABANA APPLICATION

Name: _____
Address: _____
City: _____
State: _____ Zip: _____
Telephone: (_____) _____
E-mail Address: _____

DUES: ___ Regular (US/Canada/Mexico) \$55.00
___ Senior 65+ (US/Canada/Mexico) \$50.00
___ Student (US/Canada/Mexico) \$45.00
___ Foreign \$65.00
___ Library (US) \$45.00
___ Contributory \$100.00

Make check payable to: ABANA
Credit Card: ___ American Express ___ MC
___ Discover ___ VISA
Card #: _____
Expiration Date: _____
Signature: _____

REMIT TO: ABANA
P.O. Box 816
Farmington, GA 30638-0816

NC ABANA LIBRARY BOOK ORDER FORM

Date of Request: _____
Requested by: (Please Print)
Name: _____
Address: _____
City: _____
State: _____ Zip: _____
Telephone: (_____) _____

Library Code of Item: (if known) _____
Title of Item: _____

Mail this request form to:
Dick Snow, NC ABANA
4222 E.L.G. Road
Efland, NC 27243

If you are a member in good standing of the NC Chapter of ABANA, the book you select will be mailed to you as soon as it is available. You may keep it for up to 30 days and then you must mail it back to the librarian. A return address label will be included when the book is mailed to you. All books must be returned in the condition they were received in or you may be charged for the damages. You may have ONE book (Code BK) or up to THREE Hot Iron Sparkles (Code HIS) or THREE magazines (Code MAG) at any one time. A new copy of this form will be sent with each book.

CHAPTER CALENDAR 2008

JANUARY	☞	<u>REGIONAL MEETINGS</u>
FEBRUARY	☞	<u>REGIONAL MEETINGS</u>
MARCH	☞	<u>REGIONAL MEETINGS</u>
	☞	<u>1ST Quarter Chapter Meeting</u> MARCH 15 , at 9:30 a.m. (Tentative Date) Dean Curfman's, Oak Hill Iron Works Morganton, NC
APRIL	☞	<u>REGIONAL MEETINGS</u>
MAY	☞	<u>REGIONAL MEETINGS</u>
	☞	<u>2ND Quarter Chapter Meeting</u> - JUNE 7 , at 9:30 a.m. To Be Determined
JUNE	☞	<u>REGIONAL MEETINGS</u>
JULY	☞	<u>REGIONAL MEETINGS</u>
AUGUST	☞	<u>REGIONAL MEETINGS</u>
	☞	<u>3RD Quarter Chapter Meeting</u> AUGUST 9 , at 9:30 a.m. (Tentative Date) To Be Determined
SEPTEMBER	☞	<u>REGIONAL MEETINGS</u>
OCTOBER	☞	<u>REGIONAL MEETINGS</u>
	☞	<u>Dixie Classic Fair</u> October 3 – October 12
	☞	<u>North Carolina State Fair</u> October 17 - 26
NOVEMBER	☞	<u>REGIONAL MEETINGS</u>
	☞	<u>BONUS MEETING</u> Nov. 1 at 9:30 a.m. (Tentative Date) J.C. Campbell Folk School, Brasstown
DECEMBER	☞	<u>REGIONAL MEETINGS</u>
	☞	<u>4TH Quarter Chapter Meeting</u> DECEMBER 6 , at 9:30 a.m. (Tentative Date)

REGIONS

See map on bottom of the page for approximate locations of each region within North Carolina

(1)

Western North Carolina Blacksmiths

Steve Kayne Candler, NC
(828) 667-8868

2nd Wednesday evening, each month

(2)

Triad Area Blacksmiths

George Manuel Winston-Salem NC
(336) 924-6876

1st Tuesday evening

(3)

Grand Buzzard's Nest

Tal Harris Waxhaw, NC
(704) 843-5586

Last Saturday, even # months

(4)

Southern Foothills Blacksmiths

Steve Barringer Mooresville, NC
(704) 660-1560

2nd Sunday, each month

(5)

Triangle Blacksmith Guild

Randy Stoltz Cary, NC
(919) 481-9263

1st Saturday, even # months

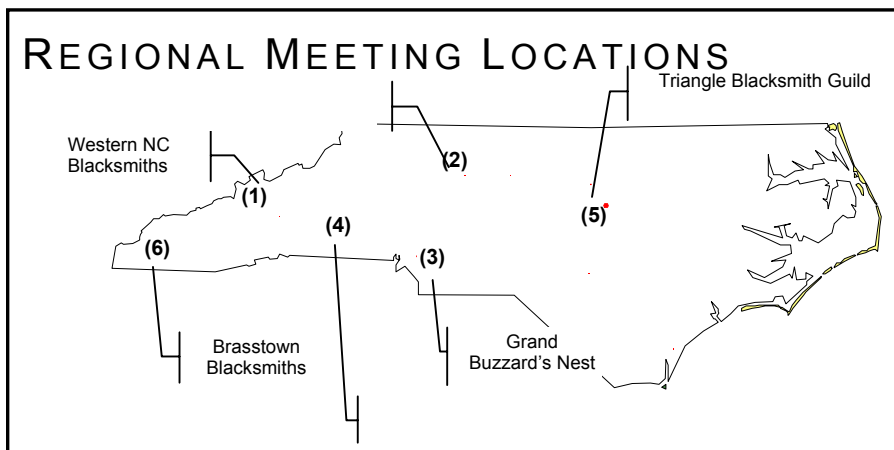
(6)

Brasstown Blacksmiths

Paul Garrett Brasstown, NC
(828) 835-8441

3rd Sunday, each month

Note: Any member is welcome at each of the Regional meetings. Call host to confirm date, time and location.



PRESIDENT

Jimmy Alexander
922 Lakeside Drive
Durham, NC 27712
919 / 684-7820
jima136040@aol.com

VICE-PRESIDENT

Steve Barringer
1154 Bevan Drive
Mooresville, NC 28115
704 / 660-1560
steve@powerhammerschool.com

SECRETARY

Marty Lyon
220 Fearington Post
Pittsboro, NC 27312
919 / 642-0098
NCABANAML@EARTHLINK.NET

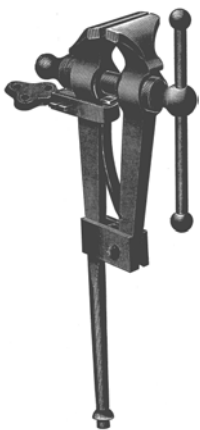
TREASURER

Parks Low
8108 Deermeadow Drive
Apex, NC 27539
919 / 772-4111
P.Lowjr@att.net

PLEASE WELCOME THESE NEW MEMBERS

F. J. Frizzell	Spruce Pine	NC
Kevin A. Byrd	Lexington	NC
Evan Munn	Pittsboro	NC
Chuck Beattie	Oriental	NC
Allan Green	Hillsborough	NC
Justin Coia	Mount Pleasant	NC
Gregory Burazer	Winston-Salem	NC
Dwayne J. Strom	Marshall	NC
Eric Parnell	Winston-Salem	NC
Jerry Hagan	Cashiers	NC
Stuart Dyer	Hillsborough	NC

Don't Forget
2008 1st Quarter Chapter Meeting
March 15, 2008 9:30 AM
Dean Curfman's Shop, Morgantown, NC



**North Carolina Chapter Artist Blacksmith
Association of North America**

THE HOT IRON SPARKLE

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