New Jersey Blacksmiths Association "EAGLE"

N.J.B.A. Newsletter

Volume 4, Number 3 December 1999

December Holiday Party

Marshall Bienstock will be hosting the **December Holiday Party on December 12th.** Marshall and Jan will be hosting the **party and pot-luck** in their home located at **301 Casino Drive, Howell, N.J.** The party will be starting at **2pm** (ph# 732-938-6577). Please bring a covered dish (enough for 6-8 servings), drinks and some of your work to show off.

Directions; Take any N-S route to Rte. I-195 or Rt. 33 and from there to Rt. 9. Go North from I-195 or South from Rt. 33 to Casino Dr. Travel about 3 Miles to #301

Year 2000 Meetings;

January; To be announced by flier

February; Possibly at the Orange County Farm Museum or at Greg Phillips shop. Confirmation and details to follow.

March; Joint meet with Furnace Town Blacksmiths Guild, MD Date to be announced. Possible meet in Long Island details will follow.

April; Joint meet with PABA in Doylestown, PA

Contact Doug Learn, date and details to follow.

Future; Doug Learn is looking for suggestions as to a demonstrator or a topic for a possible October meet.

The Scholarship Program

The NJBA Scholarship program is on hold for the year of 2000. We instead are going to try to bring in demonstrators from outside of the group to educate the whole group. We will also be trying to organize workshops to improve our tools and abilities. Peters Valley may offer scholarships to us and ABANA has them available for members (could easily offset the cost of joining) Contact ; Dave Macauley for info on these programs, (732) 206-1568, (732)949-8422

Report on the October Meeting

The October 24th meeting began at 10:00 am at **Dan Cruzan's** shop. **Al Stephens** started things off with a demonstration on tongs. He talked about the importance of making your own tongs and used the power hammer.

Dan Cruzan followed with a talk on the importance of art in blacksmithing. Dan demonstrated how to use mathematical tools such as the golden mean to make the difference between stuff and art. At 12:00 the meeting broke for lunch. Dan provided some delicious soup and the NJBA provided sandwiches. The Iron in the Hat and tailgate sale was held at this time.

The meeting resumed at 1:30 with **Tim Suter**. Tim gave a great demonstration on a headboard and the various tools and jigs he used to construct it. **Marshall Bienstock** concluded the day with his brazing technique that got oohs & ahhs and literally got everyone up out of their seat. Marshall then showed how brazing was applied to make his "Betsy Lamp". There was a large turnout and everyone took home a head full of ideas.

Report by; **Steve Rhoades**

Open Forges

Monday Night Open Forge in N.J.

We want to encourage all to join us at ;Marshall Bienstock's shop on 7 pm almost every Monday night(Plaease call aheadd on holidays to make sure (732)780-0871)

Monday Night open forge in Orange County

Greg Phillips will be hosting an open forge in his shop in Orange Co., NY. For more information contact: Greg Phillips, Acorn Forge, 937 Route 17k, Montgomery, NY 12549, (914) 457-5671, suresign@frontiernet.net

Tuesday Night Open Forge on L.I.

Starting Tuesday, November 16, 1999 an open forge will be available at Jon Folk's shop in Central Islip. The forge is open to N.J.B.A. members only every Tuesday from 3:00 pm to 8:00 pm.
Questions call (516) 625-5667 or e-mail me at; blacksmith@alumni.sunysb.edu

Blacksmithing Workshops and Classes:

Peters Valley Craft Education Center
19 Kuhn Rd., Layton, NJ 07851 (973)948-5200
pv@warwick.net Http://www.pvcrafts.org/

Academy of Traditional Arts
Carrol County Farm Museum
500 South Center St. Westminster, MD 21157
(410)848-7775 (410)876-2667

Touchstone Center for Crafts
R.D.#1, Box 60, Farmington, PA 15437
(724)329-1370 Fax: (724)329-1371

Unclassified ad:

Wanted for my collection, eventually to be displayed with the **Fisher & Norris archives**:
Any Fisher & Norris anvils or vises.
Will buy outright or trade for post vises.
Over 20 post vises to choose from.
Contact **Joshua Kavett**
732-431-2152 E-mail: jakavett@aol.com

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osan@netlabs.net

Hello, From the New Editor

Hi, I would like to introduce myself. My name is Larry Brown. I have taken over the position of editor from Bruce Freeman. I started working with metal when I was about 19. I started by welding and finding a need to heat large pieces, started looking for information and advice on forges and forging. I worked for many years with very little in the way of information and resources about blacksmithing. The only books I was able to get were the Weygers' book, The Modern Blacksmith, and Richardsons', Practical Blacksmithing. I also had no luck finding anyone in my area to learn from other than your average railing shops.

In 1985 I found about ABANA, from a friend who had seen an Anvil's Ring. From joining ABANA I learned of other more local organizations. I joined New York State Designer Blacksmiths and later Northeast Blacksmiths.

I heard about the New Jersey Blacksmiths while at the ABANA conference in Alfred, NY. I joined right away, being happy to find a group closer to home and have been a member ever since.

I have taken the position of editor as I strongly feel that a newsletter is an important part of an organization such as this. I believe that a newsletter provides a common element between a very diverse group of members, where events can be posted and reported on, items sold and tips and techniques learned.

I feel that a news letter is like the glue that holds an organization together and that it is an important part of the whole.

You are able to reach me at;
Larry Brown
90 William Ave.
Staten Island, N.Y.
10308
(718) 967-4776 brownln@hotmail.com

The NJBA Newsletter

Some thoughts I would like to express about the newsletter itself are; that this is **our** newsletter, not the board of directors' newsletter or Larry Browns' newsletter.
This newsletter belongs to the dues paying membership of the **NJBA**. I would like to use material that pertains to us, and that we are interested in. If there is a subject you are interested in get in touch with me, and I will try to answer your questions in the newsletter or find information on the subjects that you are interested in.

We don't need long write-ups of events (I think most people don't read them if they are too long) A paragraph or two written by someone at the event or at an event outside of NJBA is all that is needed. If more than one person writes up an event that's great too, as different people remember things differently. If you attend an event out side of NJBA and can share your experience, we'd like to hear about it, others may have considered going and would if they knew more about it.

The tips and techniques section is comprised of articles from other newsletters from all around the country, written by people just like us. We can write some of our own, to share with them, also. If you have a jig in your shop and would like to share it, or a method you use to make something and would like to share it, let me know and I will try to help you put your ideas in print. Elaborate write-ups and drawings are not necessary. If you send me a quick sketch, I will get back in touch with you and we can try to get this together for printing. It could be nice to see you ideas on paper helping others.

Remember the more that is contributed the better our newsletter can be! I am able to be reached by telephone, E-mail or mail.

Anvil Repair Workshop Report

As one of the anvil repair workshop participants I would like to thank **Greg Phillips** on behalf of **NJBA** for his outstanding efforts in putting this workshop together .

Report by Greg Phillips;

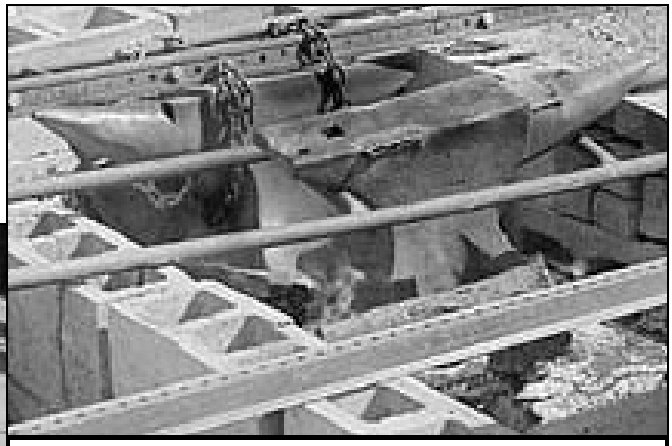
The anvil repair workshop originally scheduled to take place at the Orange County Farmers Museum was held at the the shop of Greg Phillips. It started at about 6 am on Sat. with the starting of the preheat fire. Lunch was served over at the Museum. Saturday afternoon there were as many as four welders operating at a time. There was a brief intermission Saturday night then workshop continued until about 4 pm Sunday afternoon.

Thanks to the Herculean efforts of Marshal, Larry, Bruce and others 13 anvils were repaired. Special thanks to those who donated the use of equipment to the effort.

Tom McDonald "McDonald & McDonald Inc.". of Newburgh NY for donating the use of three trucks, 2 welders, a box of rods and who knows what else.

Bob Ewald "Ewalds Logging" of Pine Bush NY for the use of a welder and MIG machine.

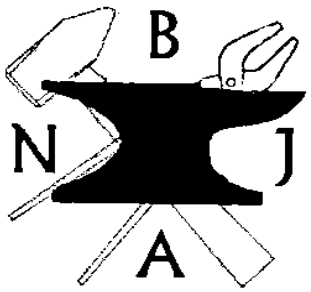
Safety equipment was donated by Dick Polich "Polich Art Works " Rock Tavern NY.



New Logo

I recently created a new logo featuring a Fisher Anvil (Being a New Jersey brand). I would like to know how the membership feels about it. Do we like it or do we stay with the old one? Talk to myself or another board member and tell them how you feel about it.

New Emblem



Old Emblem

Francis Whitaker
11/ 19/ 06— 10/ 23/99

The people who subscribe to the forge list had only recently heard that Francis was ill. They had posted an address to send cards to, I was still picking a card out, much less having sent one when the following post came on the list :

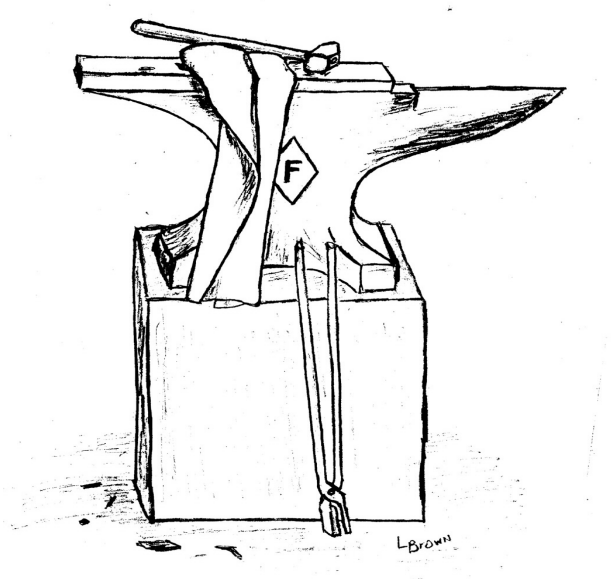
To All:
Francis Whitaker died Saturday 10:00 pm cst.
Tenative memorial at;
Colorado Rocky Mountain School ,
Carbondale, CO
Tuesday Oct 26 at 3:00 pm.
He will be missed by all of us who knew him.
Lou Mueller

So I never bought or sent a card, from myself or anyone else, and it's too late to say good-bye that way. Francis held to the traditional ways of forging iron and working metal. I feel that this was because he had seen the craft disappear once in his life time and felt that if people were to follow the old ways it wouldn't be lost again. I feel that Francis shared what he remembered in the hope that we won't forget.

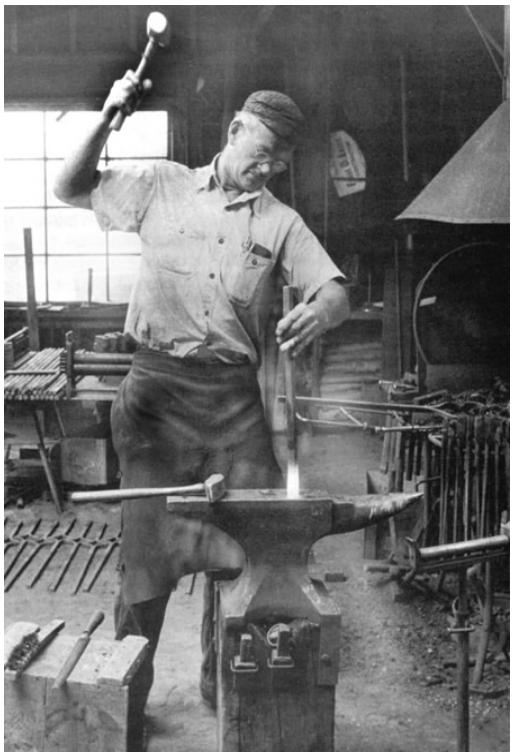
Here's his bio from the National Heritage Fellowship web site:

Francis Whitaker
Blacksmith/Ornamental Ironworker,
Carbondale, Colorado
Age 90, Born 11/19/06
(Extended Biography)

Tradition flows from a sense of community, a sense of shared destiny shaped over time from common activities, values, and lot in life. In the traditional arts, occupations, particularly those founded on the informal passing on of work skills, are an important kind of community. The bonds of work undergird mutual standards of behavior, ethics, and aesthetic expectations. A fine example is the occupation of ornamental blacksmithing, in which apprenticed learning and a strong feeling of dedication to a mutual sense of beauty and skillful excellence forge strong communal ties. Often referred to as "the dean of American blacksmiths," Francis Whitaker more than any other has strengthened the ties of tradition among blacksmiths across the United States.



Anvil at Rest



Some say it is difficult to tell whether he chose blacksmithing or blacksmithing chose him. Born in Woburn, Massachusetts in 1906, Francis Whitaker dropped out of high school at the age of 16 to apprentice with the premier ornamental blacksmith of the day, Samuel Yellin, in Philadelphia.

"The first time I took a piece of hot iron out of the fire and started to beat it with a hammer, I was hooked," says Whitaker. "There s a fascination to it that I have never lost. there s a magic to it, taking something, a stubborn material, and doing what you want with it." After a second apprenticeship in Berlin with the German master Julius Schramm, he returned to the United States during the 20th-century heyday of ornamental ironwork and settled in Carmel, California in 1927. It was the era of the Spanish Revival in California design, and work was plentiful. After working for a general contractor for seven years, he opened his own shop in 1933, during the depths of the Depression. Though times were difficult, "The Depression . . taught me that if you re dedicated to your work and do good work and are uncompromising about it, there will always be a place for you in society. The others can fall by the wayside, the second-raters." This iron-willed dedication to excellence marked his entire career, spanning nearly three quarters of a century. During his California years, he became friends with John Steinbeck, who used him as a model for a character in "The Long Valley"; his later writer/ acquaintance, Leon Uris, would base the heroic character Conner Larkin in his novel "Trinity" on Whitaker.

In 1963, he moved his shop to Aspen, Colorado. As interest in ornamental
ironwork revived, his mastery was sought out by younger blacksmiths hungry for the specialized techniques, skills, and knowledge that had been seriously eclipsed during the economic downturn of the Depression, the disruption of World War II, and the changing styles of American architecture. Then In 1976 I received the call . . . a mission in life ... I realized that I was a link between the heyday of wrought ironwork in the early years of this century and the present renaissance of blacksmithing. He spent the next 20 years selflessly devoting himself to passing on his knowledge to the next generation, teaching widely across the United States and founding the Francis Whitaker Blacksmith Schools at the Rocky Mountain School and the John C. Campbell Folk School in North Carolina. He has received numerous awards, including the 1995 Colorado Governor s Award for Excellence in Arts and an Honorary Doctorate in Humane Letters from the University of Colorado.
Jim McCarty
Father Helias Forge, Taos, MO
Editor, The Anvil's Ring
BAM Newsletter

I believe the biggest effect he had on me was seeing the effect he had on others. I only met him twice, once in R.I. And once at the Alfred Conference. Both times I watched him talk and share ideas with all who asked and have a profound effect on those around him. He will be missed by all. L.B.

Thoughts Behind Hammer Selection

©1998 Jerry Frost, Meadow Lakes, Alaska

Efficient metal working of any kind is more dependent on accuracy of tool use than strength and power. Choosing the most appropriate hammer weight means different things to different people, situations and materials. Using a six-pound hammer on ½" stock may do the rough work faster than a half-pound hammer, but the finish work will take longer and a misblow with six pounds may ruin it altogether.

On ⅜" stock or less, I notice little difference between a 32-oz. and a 24-oz. hammer, so I tend to use the lighter for accuracy and my arm's sake. It's easier to control a lighter hammer, and control takes energy, too. On the other side, if I were to try using a 10-oz. hammer I'd wear myself out swinging it and not get much done.

When you forge iron, you flatten and stretch the molecules; the laminar structure is what makes forgings so strong. It is this action that allows us to work the metal way over the temperatures where grain growth normally starts damaging it – the reason being that we are continually compressing it, controlling grain growth.

When you work heavier cross section material, the physics of how metal moves under crushing forces becomes more apparent. When the hammer hits, the molecules slide off each other and away from the center of impact in a compression wave front, and (hopefully) in the desired direction. The depth of movement depends on the combined inertia of the hammer, the anvil and the metal being worked, as well as the velocity of movement.

A light, fast hammer blow may have the same energy at impact, but there are real differences in the effects of that energy. The surface molecules accelerate away from the hammer rapidly, encountering increasing resistance from molecules farther in and ultimately the anvil itself. Like everything in nature, they take the path of least resistance. The molecules slide sideways fastest at the surface, where there is the least resistance.

The heavier, slower hammer blow gives the molecules more time to transfer energy to the next molecule in line. The greater inertia is harder to deflect, so the metal tends to move in the same direction as the blow until it encounters greater resistance.

Here are three easily reproduced examples to support this:

Strike a single blow from different weight ball peens; then lay a straight edge across the dimples. You will see a raised rim, just like an impact crater. You won't see much, if any, movement on the opposing side. The ratio of the raised rim to the depth of the dimple decreases as the weight of the hammer increases, until there is very little rim and the metal is deformed through to the opposing face.

It can also be seen when upsetting. A light hammer mushrooms the end of the stock. A heavy hammer causes it to bulge farther in from the point of impact.

Another easily seen example is to flatten the ends of two pieces of ½" square stock. Use the same heat and two very different weight hammers, such as a two-pound and a 12-oz. Flatten the bars just a little, and to the same degree. Strike one or two blows from the heavy hammer centered ½" from the end of the stock. Then strike as many blows from the light hammer as necessary to make the same draw. Compare the ends of the bars and you will see the heavy hammer caused the center of the bar to bulge out, convex; the lighter hammer caused the surface to overhang the center, concave.

Regardless of the physics involved, there are other things to consider when selecting hammers for a job. First of all, it must be comfortable to use and it can't be too heavy to control or cause injury to your arm. It must be appropriate for the job at hand.

You can't overwork a hammer; what you need is a strategy to get the most efficient work out of an arm. My strategy is to start with the heaviest hammer appropriate for the job and as my arm tires, progressively switch to lighter hammers. In a production job, this means doing the heavy, rough forging early in the day and the lighter finish work later as you tire.

Jerry Frost has been involved with metalworking since he was 12 years old. His work for the Alaska Dept. of Transportation as a remote area driller tested his skills to the maximum. This article began as a post on "theforge," the ABANA-sponsored email forum. It was edited and submitted by Carl Sharpenberg of Chino Hills, California. ♣

New Feature???

Many of us travel around a lot and we see a lot of ironwork in our travels that we really don't consider or mention. I'd like us to try this, if you see an interesting piece of ironwork, perhaps a traditional piece or just a real nice design write down its location and send it to me. Whenever we have a few locations to list I will put them in the newsletter. This way if we are traveling around we might know of interesting items that we might otherwise drive by.

I can start by listing a gate that I came across in Long Island, in a park called the Planting Fields, there is a large iron gate I believe imported from England made in the 1700's. I came across this gate quite by accident while I was in the park taking pictures of my children. I also saw a gate that I haven't been able to find again in Fairlawn, NJ while driving around lost. It was opposite an expressway, at the entrance to a cemetery. The next time I went there I couldn't get lost the same way and find it again (any members from around there know the gate I am referring to?) What I am trying to say is that there is a lot of iron out there that we take for granted that others might like to know about, so drop me a line!

Rates for photocopy ready advertisements

Photocopy ready advertisements must not contain photographs, solid backgrounds, etc and NJBA cannot be responsible if submitted copy does not reproduce well when photocopied.

Send all copy to Larry Brown (see directors list)

Size	Measurements (WxH, less margins)	Price
Full page	7" x9"	$50
Half page, Vertical	3.4" x9"	$30
Half page, Horizontal	7" x 4.4"	$30
Quarter page	3.4" x4.4"	$20
Business card	3.3" x 2" overall	$10
Business card (NJBA members)	"	$ 5

Rates for unclassified advertisements

Unclassified advertisements must be legible, preferably typed text or sent by e-mail

Type and size of ad Price	
12 lines (about 100 words)	$15
6 lines (about 50 words)	$10
NJBA members, 12 lines	$ 5
NJBA members, 6 lines	*Free*

Forge Hood Plans

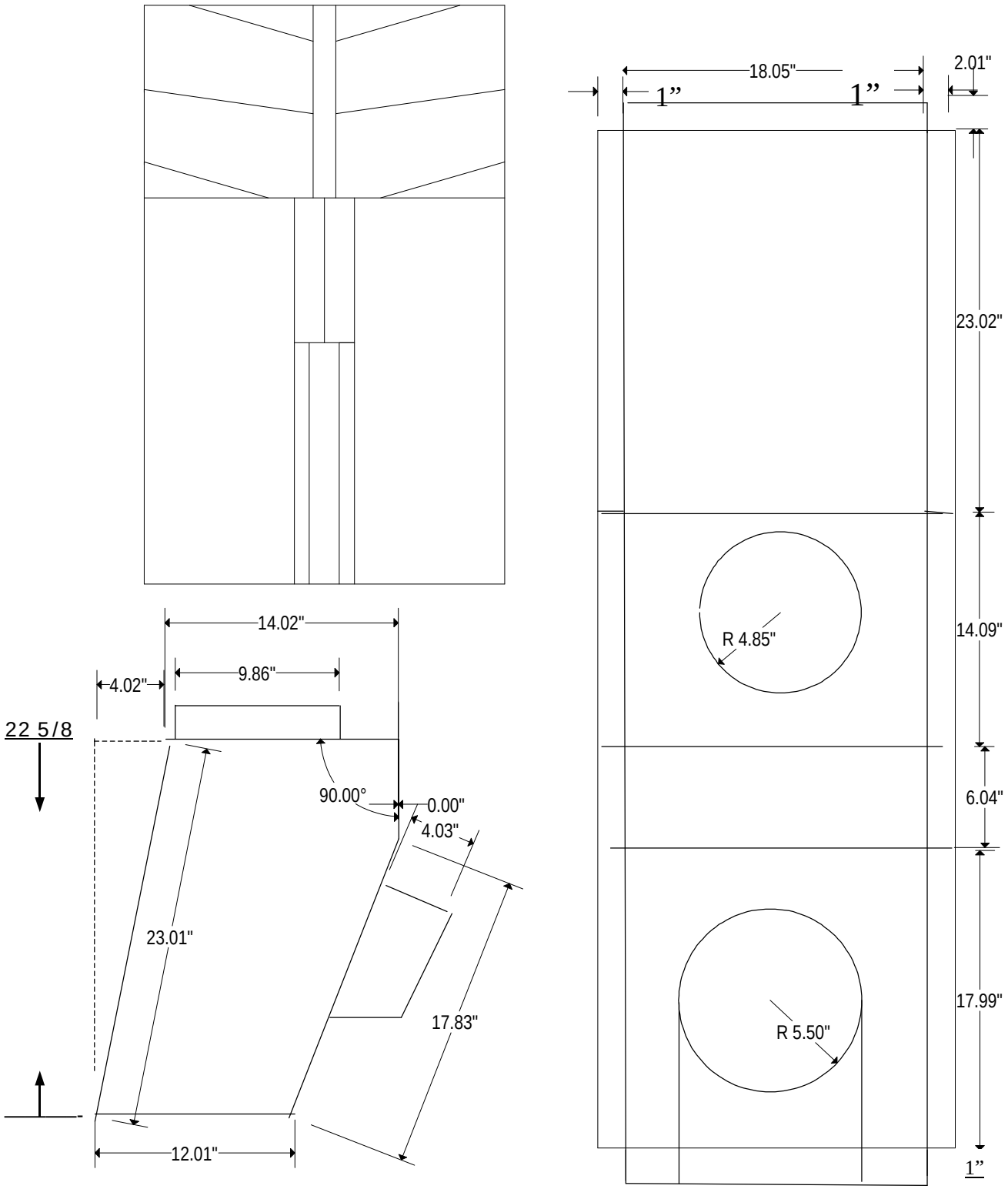
The forge hoods were designed so that 2 hoods could be made out of one sheet of 4'x8' 14 ga iron sheet. These forge hood plans were designed to be cut on a shear and folded on a large finger brake. The sides are designed to be pop riveted on. Adapt the plans to suit your own construction techniques.

The first cut on the sheet is to make 2 pieces, 64"x 48" and 32"x 48". The next cuts were on the 64" piece to make two pieces 64"x 20" and one piece 64"x 8". The large pieces are to be the front, top and back sides of the hood. Mark the fold lines out on the body panels.

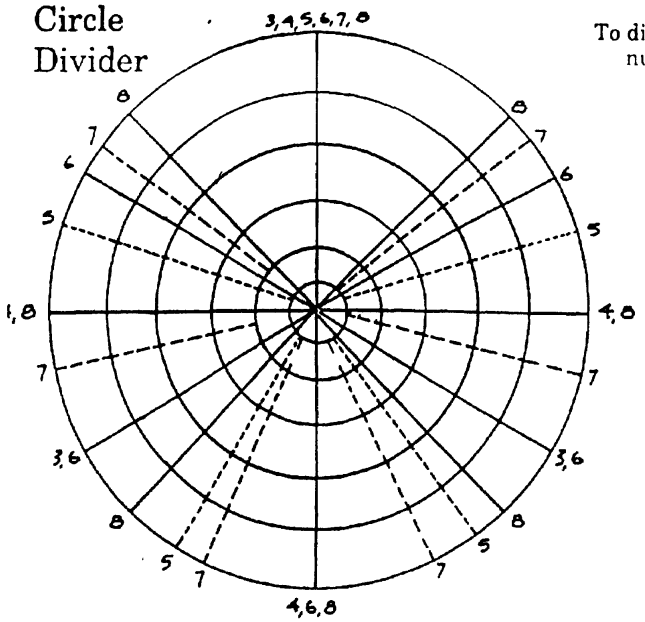
Lay out the four side panels out on the 32"x 48" piece, A cardboard template might help. By using a compass you can bisect the angles and find out the size of the notches to cut in the sides of the main panel for the flanges. This is helpful when you bend the main panels as the notches will act as stops to help you gauge how much to bend each bend.

Bend the edges on the large sheets after cutting notches. Then bend the bottom front, turn the work around to the other end and bend the bottom back. Then bend the back to top bend. Then the top to front bend. Then the front face bend. After bending lay out and cut he front opening and the top cutout. The top ring was MIG welded on our design. The inside could be cut out later.

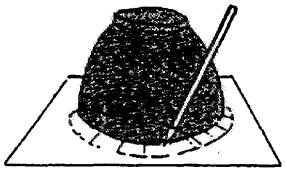
Cut two pieces out of the 8"x 64" piece, approximately 2"x 30 7/8" and two pieces 4"x 24". Roll the 2" wide pieces to form the rings to attach the 10" stove pipe the top. Drill a 3/16 hole in the hood front 1/2 " above the front opening. Slide small piece of 3/16 rod through hole MIG weld back and bend front into hook. Cut corners on the 4" wide pieces and bend around 6 1/2" radius from center to form the removable front piece. Lay the hoods on their sides line up the side panels and pop rivet on with rivets every 2" or so. Place the bottom front near firepot and try not to get sucked up the stack.


18.05"
2.01"
1”
1”
23.02"
14.09"
6.04"
17.99"
1”
R 4.85"
R 5.50"
14.02"
9.86"
4.02"
22 5/8
90.00°
0.00"
4.03"
23.01"
17.83"
12.01"

Circle Divider

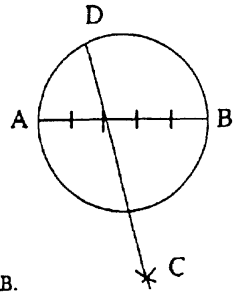


To divide a circle into a given number of parts, connect all points marked with that number. For instance, to divide a bowl into 5 segments, center it on the template and mark at every line that has a 5.



It might be helpful to enlarge this by photocopying it.

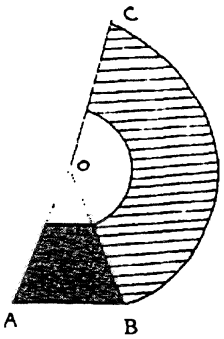
To Divide a Circle into a Number of Equal Parts



1. Draw diameter AB.
2. With A as center and AB as radius, describe an arc. With B as the center and the same radius, describe another arc crossing at C.
3. With a ruler, divide AB into as many parts as you wish to make, in this case five.
4. Draw a line from C through the second division, regardless of the number of parts being divided.
5. Step the distance AD around the circle with a compass to determine equidistant points.

Making a Cone Pattern

1. Draw the side view of the cone exactly as you want it.
2. If making a frustrum (shaded), extend lines to meet at o.
3. Set compass with radius ob and draw arc.
4. Multiply ab times pi (3.14). Mark this distance on the arc with a wire or string to find c.
5. Connect oc. The striped area is the pattern.



Useful Geometry

Here are a few tips on dividing up a circle to get the right spacing on your three leg stands or to space out the five hooks to hold your fireplace tools on the stand. They are taken from THE COMPLETE METALSMITH, An Illustrated Handbook, Revised Edition, Tim McCreight I found the book in the craft store at JCCFS. Most of it pertains to jewelry work but there is lots of neat stuff on all types of metal working I photocopied the Circle Divider, glued it to a sheet of 16 gauge brass and used a straight edge and scribe to cut in all the lines and points. It now sits in my tool box ready for use and won't get lost, dirty, or bend up like a piece of paper. Doug Merkel

The Mysterious Hammer

By Jim Converse

As I watch most of the people who are interested in taking at swing at this mysterious art of blacksmithing, I notice the same thing over and over again. There is something that holds them back. It slows them down. In a very real way, it frightens them. What do you do with all that power, that creative force that terrible destructive energy that is in a moving hammer?

It might help the beginner to know that those of us who started "way back when" had the same problems he is having now. The old man says, 'Use the 2-112 pound hammer. Don't choke up on the handle. Get a hold way out on the end and lift the hammer way up by your head. Come down hard and square."

So the beginner does as he is told but somehow, while that hammer is coming down like a bolt of lightning out of hell, he panics. He thinks, "My God, how do I stop this thing? It's going to wreck everything around here!' The beginner is afraid of that hammer and he should be. By the time he has got it going fast enough to do any good he has lost control of it. He does not have any real idea of where it is going to land or what it's going to do when it gets there.

The old blacksmiths start all Their showin' and talkin' in the middle instead of at the beginning. Most of us old blacksmiths just figure the beginner knows how to use his hammer as if he had been doing it for twenty years. We are comfortable with the darned thing and it seems useless to waste time talking about that. Well, we are going to talk about the hammer and how to make it work, and not waste time talking about blacksmithing.

One of the first things you need to do is change your way of thinking about the hammer in your hand. This will also apply to any other tool in your hand. When you take the Hammer in your hand, adjust it, finger it, roll it around until it feels just right, until it feels like an extension of your arm and hand. Allow yourself to think that you can feel the heat and cold coming right up our arm out of the wooden handle. I have had a hammer in my hand for over forty years and sometimes I think I can feel the work with my hammer as well as my fingers. My hammer does what I tell it to do most of the time. So will yours and here is how you do it.

Go down to the hardware store and buy a brand-new one pound ball-peen hammer with a wooden handle. (Never use any hammer without a wooden handle.) I recommend a Stanley. Look over a bunch and pick out one that has a well finished face, nice curves on the edges and with no flat spots. Check the handle for being true in the head, not crooked or twisted, out of line or bruised up. Pick out the best looking hammer in the bunch -- you are going to be using it for a long time.

Buy a ten or twelve inch bastard cut half-round file, a good one. Pay the price. Never buy a cheap tool! It is no economy. Pick up a sheet of 100 grit sand paper. Next go to the lumber yard and buy a good, clear, hard, dry 2x4, eight feet long. You will find one if you dig around a while. If you don't have a saw, have the yard cut this 2x4 into l6" lengths, then split each length so that you wind up with an armload of 16" 2x2's. Got it? Now, if you do not have your own anvil yet, find a friend that does and tell him to go away. You want to be alone with his anvil. Be serious, because what you are about to do will have a profound effect on your future blacksmithing.

Pick up your hammer so that about 2" stick out beyond your little finger. Shake the hammer around in the air -- talk to it. Tell it, "Hammer, you and I are about to have an affair." Lay the end of one of those sticks on the anvil like you were going to flatten it.

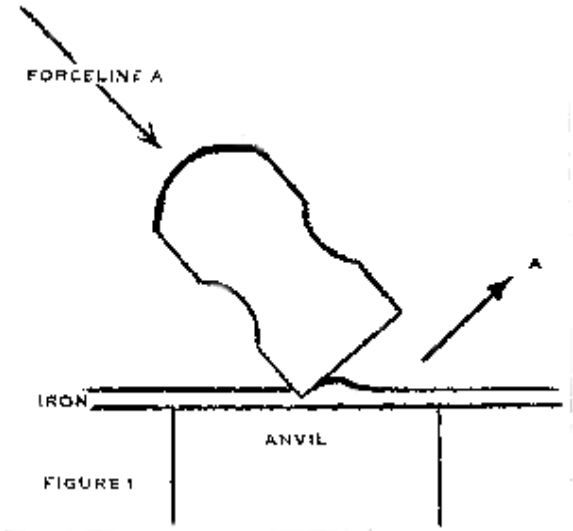


FIGURE 1

Keeping your grip, hit the stick with a fairly light but firm blow, just once. Now, look at the stick. What kind of a mark did it make? Was it a perfect imprint of the face? Was it even all around? Or did it tip a bit this way or that? Try again and, each time, observe what moves or changes must be made to make a perfect mark.

Now, hit harder. Study out each strike you make until you have a good idea of what you have to do and how you must hold the handle. Now, hit several times without stop- ping. Do this in a new spot. What do all those marks tell you now? Practice this for about twenty minutes. Practice to achieve the perfect mark. I will say many times, 'Practice swinging that hammer."

Your wrist is probably tired by now but do this next. Raise your hammer until the head is 18"-20" above your stick. Observe the feel. Now, mark out a circle about the size of a nickel on a new spot on your stick. Raise your hammer up there again and hit that stick hard right in the middle of that circle seven times just as fast as you can swing it. I mean, hit it, fast and hard. Study your marks and your reaction to this sudden attack. What you see and what you felt will tell you how much practicing you have to do.
The blow you are after in all this is one that, just before hitting the work, is traveling straight down in a plumb line. The hammer center line from face center through peen center is perpendicular to the anvil face. There is no sideways or front or back movement. All the energy must be in one line of travel-- practice until you have it. Twenty or thirty minutes a day, diligently spent, will pay off.
Today's hammers are made, first to sell, next to use, and with any given high quality brand, they will be exactly alike. But there are no two hands alike. That's why they make gloves in different sizes.

By now you have probably found that your hammer is alright, you guess, but your grip seems strained. Well, it probably is. So think about it a bit and where would you take off a little wood? This is where your file comes in. Don't file yet!

Go over to a standard table, 30" high, and pretend there is a raw egg sitting on it. Take a working hold of the handle in your regular grip. Step back from the table just a little so you sort of have to reach out and strike that egg. Stop the blow just as the egg cracks. When the hammer comes to a stop on the table, hold it there. Don't move. Does the head lay a little to one side, or tip back, or forward? You may want to repeat this several times until you can begin to feel where that "hump" in the handle is.

Now use the file. Be brave. Take after it. A six pack costs more than that handle did. Dress the handle here and there until there is no tip from side to side each time you swing. Polish it a bit with the sandpaper. Sand off all the painted-on finish in the areas of your grip.

Now, for the fore and back tip. If the tip is forward and the handle is high, put some books under the table to bring it up an inch or two more. If the tip is back and the hand- le is down, then put something under your feet. When you strike you are looking for the handle to be just tipping up. The center line of the handle should be from 1/2" to 3/4" high at the butt end. Remember, you are supposed to be reaching out just a little with this exercise. When you move in toward your work your handle will dip down some. Measure heights you have settled on and that is the correct height for your anvil. It most likely will not

manner you wanted. What you are after in blacksmithing is to have each hammer blow do its share of the work. All the energy that is used in doing that work is coming right out of you so spend it wisely.
If you will note the drawings, I will ex- plain what is happening. Note that the hammer is hitting the work out in the middle of the anvil (Figure 1). It is tipped and coming in from the side. All that will happen here is bad for the beginner. The hammer's edge digs a hole and piles up some misplaced metal along the side of the

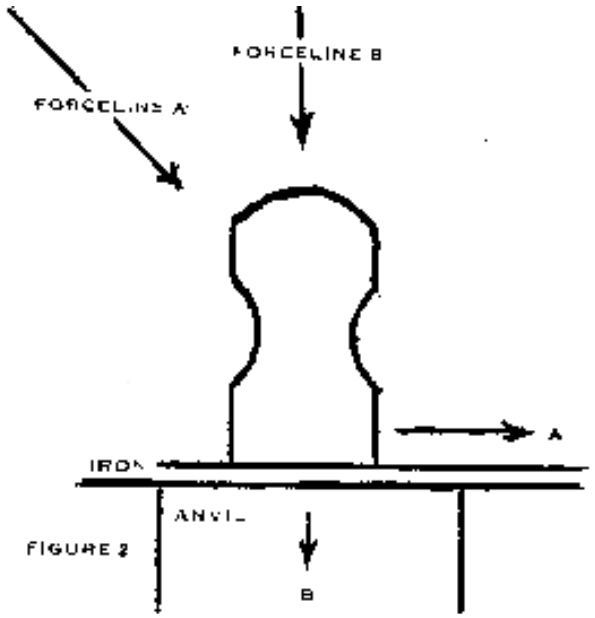


FIGURE 2

hole and it is doubtful that you will be able to save the piece. If this blow is intended, O.K., but plan it carefully. In Figure 2 the line of force is straight down. The metal is thinned in the center of contact and then pushed out evenly in the center. Remember that every time you hit, some metal is moved somewhere. It never goes away unless you cut it away. In a wiping blow (Figure 2) the hammer will crush the metal thinner but it will also drag some of the displaced metal along the direction of the force line, as toward A. These wiping blows are frowned on by some. I have no idea why unless they could not master them. But you will find the wiping blow is one you should master. With this blow you can control the line of force in two directions and two strengths, at once. The wiping blow tends to slide the top of the work only and leaves the bottom unchanged. Keep practicing on your sticks. Get some more if you need them. They are your imaginary hot iron and they receive a mark, good or bad, just like hot iron when you hit them. You are teaching your muscles to place the hammer face exactly where you want it and that is why you practice on the sticks. The wood yields to the blow surprisingly like the hot iron. The stick of wood I describe is big enough to protect the anvil face from being marked up by wild blows. Strike easy, medium, and hard real hard. Practice for perfection. What you are learning you will keep for the rest of your life.

In chamfering you are doing many things at once, as shown in Figure 3, force line A. This action is crushing the end and pushing some of the iron back into itself (dotted line Y). It also is ramming the work back into your hand. The blow in face line B will crush the end, but in the process it drags the iron toward X. Note the tip of the hammer to the line of force. It will help to reduce most of the jamming of the work back into

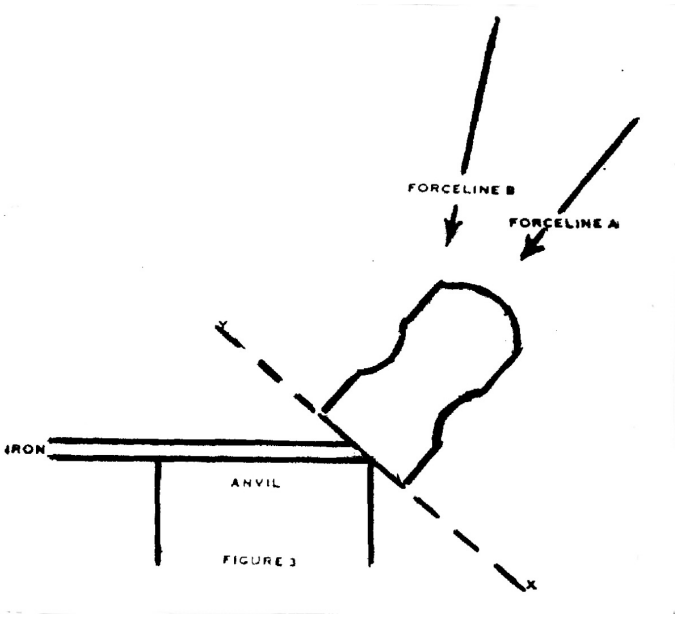


FIGURE 3

your hand and the drag of the anvil will soak up the rest of the shock. Master this blow. Remember to keep the end of the work exactly at the back edge of the anvil (see Figure 3). When the work or metal is located just right and the hammer control is right, all of the energy of the blow will be soaked up just before the hammer strikes the edge of the anvil. Practice this blow. It is one of the more important types. Practice with your stick. It will be a good idea to wear a glove on your stick hand. Smear some grease all over the end of your

hammer and work at this blow. You will find the results very interesting and helpful in learning just what is happening.

In Figure 4, force line A, you have three things happening depending on how hard you hit and where on the edge of the anvil the work is. One is a bottom fullering blow, second an offsetting blow, and third a cutting blow. Be sure of your move before you strike any "over the edge" blow. In Figure 4B you have a wiping blow that is very useful. You are turning your iron down, reducing thickness, and elongating the turned down portion, but the portion of the work on top of the anvil face will not be affected.

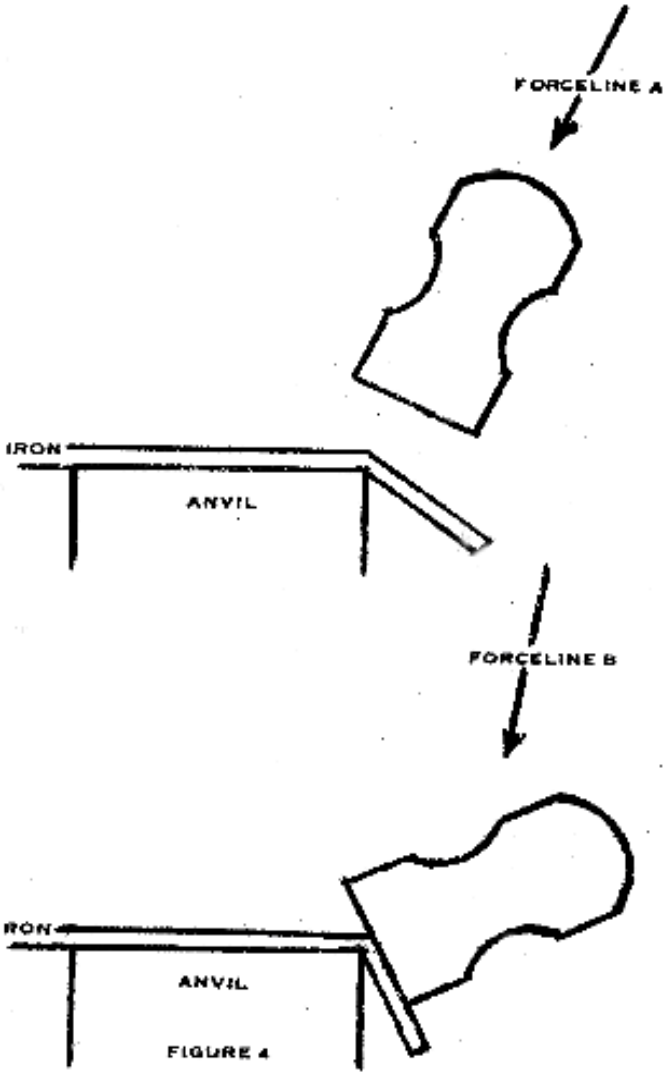


FIGURE 4

There is no limit to the number of ways to strike the work. Each move or blow can be good or bad. Think out what you want to do, which way you want the metal to move. Decide on the direction of the force line, the tip of the hammer if needed, and whether there will be reflected energy to mess up. something. All these things must be thought out before your iron comes out of the fire. By now you have used up most of your sticks and my guess is that you have learned a lot. Now it is time to buy a nice 2-1/2 pound cross-peen hammer with a nice wooden handle. Again, check the face for trueness of grind. The head should be rather stumpy, not a long piece of iron. I have one I bought from Sears and it is a very nice tool. Go back and get some more sticks and start all over again with your new 2-1/2 pounder. Do every step. Study yourself and learn to marry yourself to the hammer when you pick it up. It must be an extension of you and your thoughts. Then you will find that most of the mystery is gone.

Take this rule to heart and do not let any Johnny-come-lately steer you from it: If the last bow did what you wanted it to do, it was right. If it did not do what you wanted, it was wrong.

Now, go heat up some iron and take after it like you meant it. You are the boss now, not the hammer. Reprinted from the July 1981 issue of the Anvil

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I photo copied this article from an Anvil magazine back when it came on newsprint I have done this more than once in my life. Some times when your away from the anvil for awhile or after an injury it helps to be able to re-adjust yourself . I usually use 1x2 or 1x3 furring strip, it helps me to see if I'm back in form. I stepped away from the anvil for a while when I had "tennis elbow", when I stepped back, things weren't working "right", I was babying my elbow and developing bad habits in doing so. The wood is soft and shows what your blows are doing when you hit. Notice at the end he recommends a "stumpy" hammer head like Uri Hoffi's.

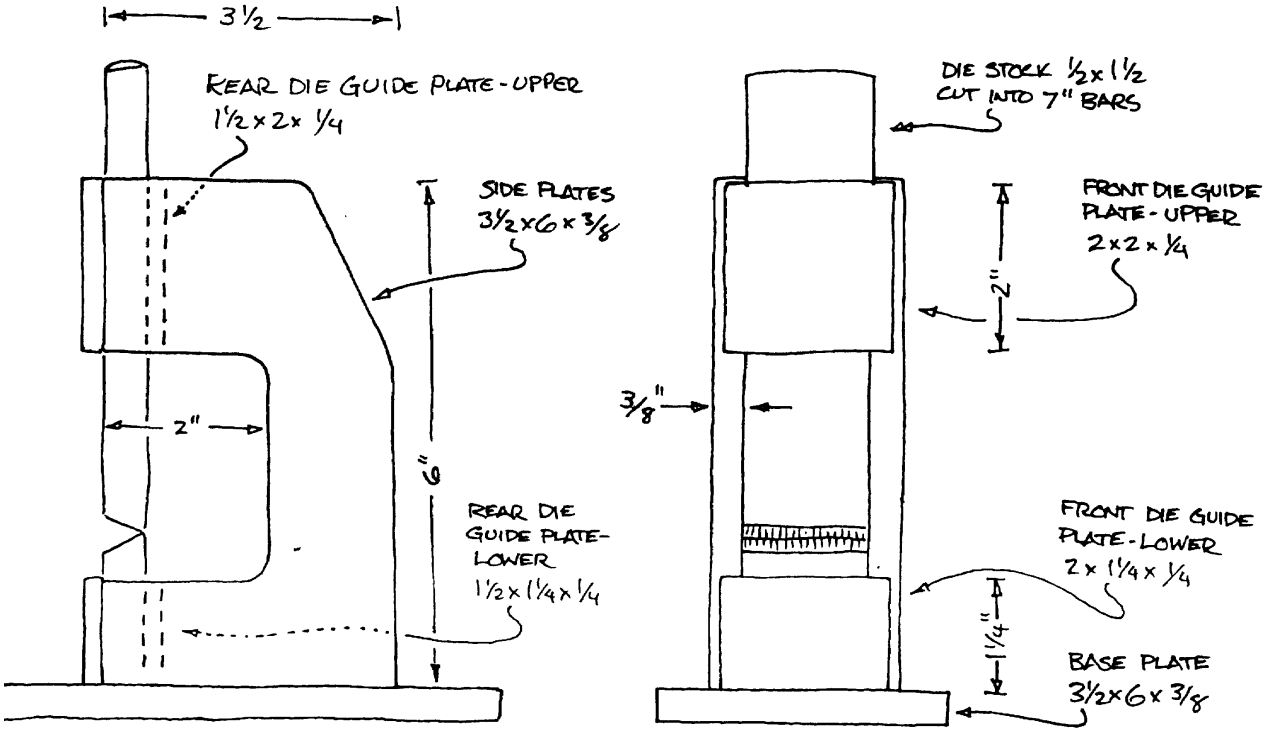
A Blacksmith's Helper

Here's my design for a Blacksmith's Helper. Basically, it's a frame to hold standard 1 1/2"x 1/2" die blocks. I developed this design based on one that Lou Muller uses. Though Lou's design is a more accurate and finer tool, this design is considerably lighter, cheaper, and quicker to make. (See The Blacksmith's Journal, #98)

Whatever you do, remember to start with the die stock and build the holder around it. You can use tool steel for the dies, but I've been using plain old hot rolled for a couple of years, and the results are quite satisfactory.

A cheap harbor freight drill press vise was used to hold the parts together while welding. I wrapped the dies with two layers of newspaper before welding the pieces together, and had to drive out the die blank with a hammer. Still, most of the holders that I built had anywhere from 1/32" to 1/16" wobble. This could be reduced somewhat by using cold rolled steel for the dies and backing plates, but if you need super accuracy, you'll probably need to machine the guide and use bolts and shim stock to assemble it. This design doesn't allow for any of these refinements.It's designed to get the job done with a minimum of fussing around.

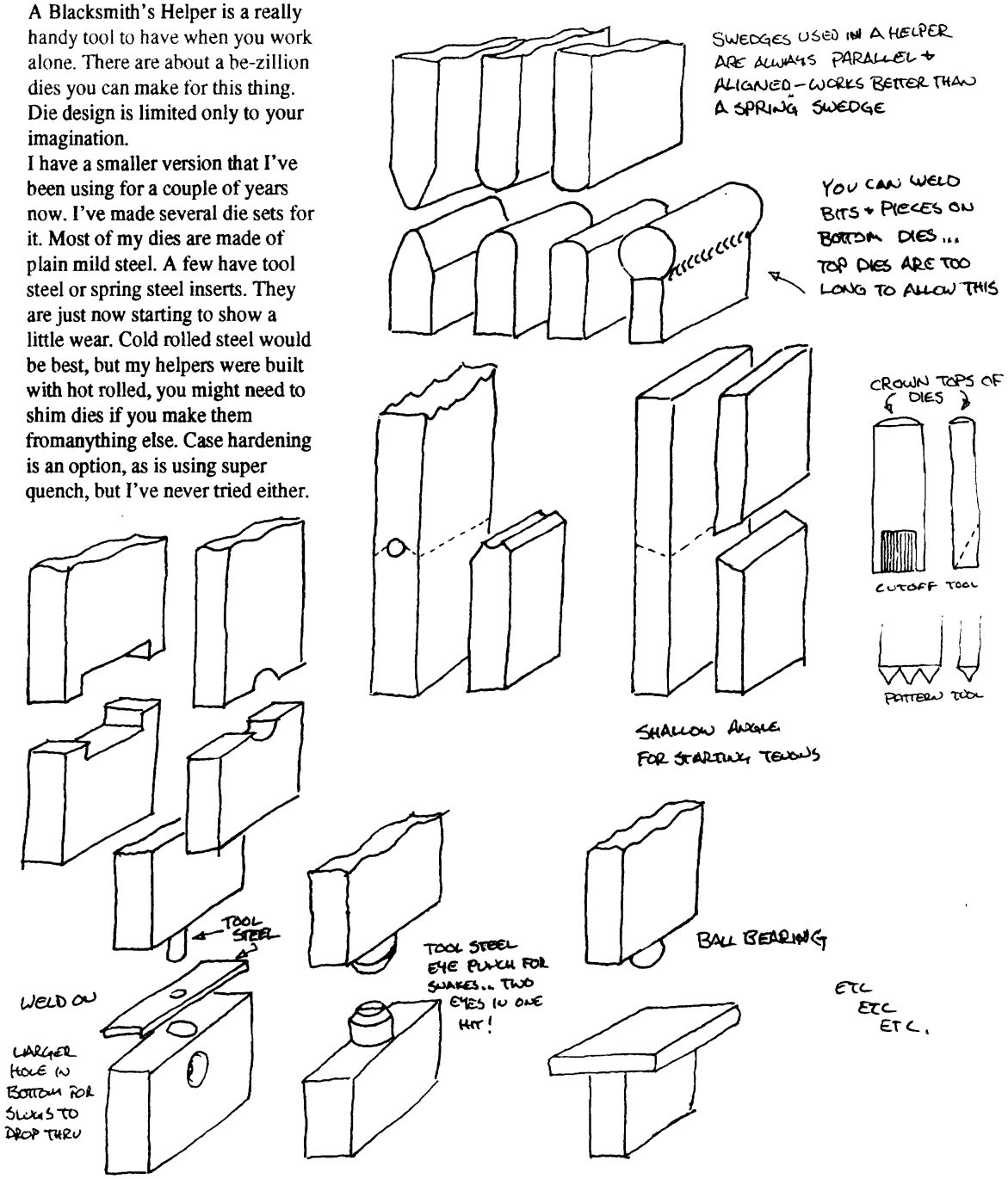
I built several of these to take to the Madison conference for the tailgate sales. Uri Hofi noticed them and said"Is good tool. It will break... here... (the upper weld that guides the forward part of the die) but is good tool." He also said," I give you tip. I make a lot of leaves with serrated edges... like rose leaf. Take a bolt, weld to the top edge and the bottom edge of die, it will make serrated edges in one hit. In Israel, we have split dies. (I've seen antique two piece threading dies... I believe this is what he was referring to) I use them. You don't have this in America. Is good tool for this."



Dies For The Helper

A Blacksmith's Helper is a really handy tool to have when you work alone. There are about a be-zillion dies you can make for this thing. Die design is limited only to your imagination.

I have a smaller version that I've been using for a couple of years now. I've made several die sets for it. Most of my dies are made of plain mild steel. A few have tool steel or spring steel inserts. They are just now starting to show a little wear. Cold rolled steel would be best, but my helpers were built with hot rolled, you might need to shim dies if you make them fromanything else. Case hardening is an option, as is using super quench, but I've never tried either.

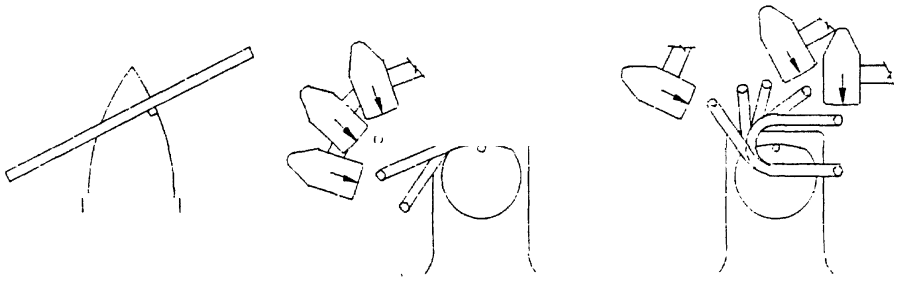


How To Forge A Chain Link

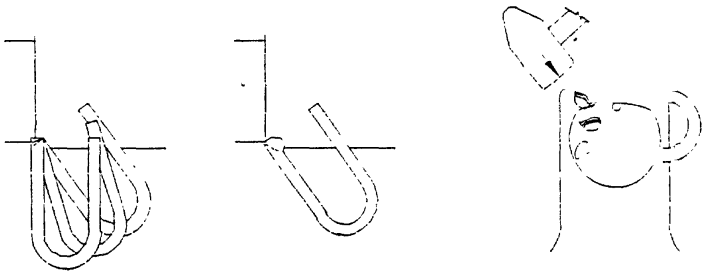
Randy McDaniel has provided us with a summary and variation on chain making from his book "A Blacksmithing Primer, A Course In Basic And Intermediate Blacksmithing" so that you may participate in ABANA's chain link project. It is the perfect project for learning how to forge weld.

"I start with chain to teach forge welding because you only have one piece to hold. You don't have to worry about positioning the pieces that are welded, just forge weld them together.

Heat the center area of the 7" bar. Place the steel on the horn perpendicular to the outside edge and reach past the horn to hammer the bar around. Flip the bar around and hook the bend on the horn. Hammer from this side until the two sides are parallel and the ends line up.



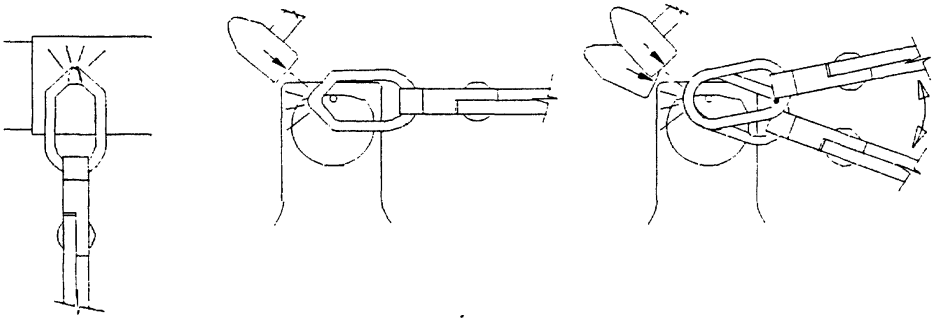
Turn the link around and hold the link with link tongs to forge out the scarfs. Place one end over the near radiused corner. Use half face blows over the corner. Start with the link perpendicular to the back of the anvil and gradually rotate it to the right. This way the left side of the scarf will be the same size as the bar and the far right side of the scarf will be the thinnest area. Only draw out about one third the thickness in order to have enough material to weld. Flip the link over and do the exact same procedure to this side. Both scarfs should be close to the same size.



Heat up both sides behind the scarfs. Place the one scarf past the horn and hammer a straight bend down. Turn the link over, place it over the horn and bend this side down. Do not round up the bends. The two scarfs should overlap each other, with the forged sides together and the flat sides to the outside. Place the scarfs flat on the anvil face and lightly hammer them together to produce a tight fit. You may have to hit behind one side to bend it into the other side. Once it is closed do not hit it again or it may open back up.

Do not let it cool down. Put it back into the fire for the forge weld. Metal expands when heated and contracts when it cools so this could affect this connection. Heat the metal to a bright orange heat, bring it quickly out of the fire, wire brush the scale off, flux both sides with borax, and place it back into the fire. Heat it for a while on one side and then turn it over to heat the other side. Watch the metal's color and surface. When the surface, not the borax, is flowing and the metal is white with a few sparks flying, quickly bring the link flat to the anvil face. Hit it with first a snapping blow, to pop the scale and flux out from between the pieces, and then a full hit to weld the pieces together. This is not a killer blow, but one that will put the pieces together.

Now, before the welding heat is lost, hook the end of the link over the end of the horn and hammer it together there. Quickly, place the link back into the fire.



Bring the link end to a welding heat again and then bring it over the horn. Quickly hammer against the horn while rotating the link up and down. This will weld the inside of the link and round up the link end. Some hammer blows will need to come at an angle to round up the stock back to 3/8" round. You do not need any more flux on the second weld, there is enough there to do the job. On heavier material this could have been done with one weld.

While the metal is at an orange heat or more, wire brush any scale and flux from the link. If you leave the flux on the metal it will show up later as white marks around your weld. Take a look at your weld. Are there big seams in it from not hammering at an angle? Did it pop apart and you couldn't get it back together? There are only two things that can happen if the piece didn't weld. Either it wasn't hot enough to weld or you burned it. Make another one, two or three. It is a perfect practice piece. Or, are you happy with the way it turned out? It really wasn't too bad, was it? Now you can hot punch your touch mark (signature) and do any variation you want for the project."

If you want more information on forge welding and chain making you can purchase Randy's autographed book through Dragonfly Enterprises, at their new address, 3283 State Hill Road, Dept. CL, Sinking Spring, PA 19608. "A Blacksmithing Primer", ISBN 0-9662589-0-8, is $20.00 plus $3.00 shipping & handling, PA residents 6% sales tax. It is also available through the Internet at mindancer.com/primer and through several blacksmithing book dealers.

ABANA 2000 Chain Link Project

The Saltfork Craftsmen Artists-Blacksmiths Association has created and will implement this project. " Every member of every ABANA chapters invited to forge a chain link to be assembled into one ABANA chain linking us all together. The resulting chain will be on display during Conference 2000 and then sold at the auction." "Start with 3/8 round stock 7 inches long, form an oval link and forge weld. You may jazz the link up any way you like, just remember to leave room at the ends of the link for the adjoining links. Don't forget to put your touch mark on your link or use letter stamps to add your name. Also include a tag identifying you and your chapter." Send your link to them as soon as possible, but no later than June 1, 2000. This would make a great chapter project. Why not send the Saltfork Craftsmen a length of chain from your chapter?

Send completed links or chains to:

Pittsburgh Area Artist-Blacksmith Association

Saltfork Craftsmen ABA
1227 4th Street
Alva, OK 73717

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