

MISSISSIPPI FORGE COUNCIL



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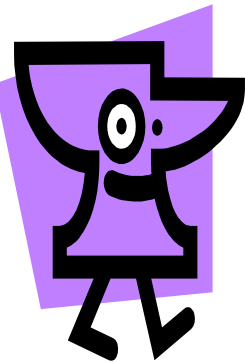
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**Presidents Message**

From my perspective, this has been a good year for the MFC. One of the major reasons is we have had good participation from a good many of our members. Next year can only be better if we continue doing our part to promote blacksmithing and the MFC. Taking part in demonstrations only helps strengthen both of the above.

The October meeting was a good one as anybody who was there can attest. Randal Minton did an exceptional job of demonstrating the making of tongs, hinges and the process of forge welding. Thanks go to him for taking time to do this for the group.

The end of October saw us demonstrating for Halloween at the Ag Museum. We had a good turnout and had a good time with good attendance from the public. Our November meeting coincided with Harvest Festival. We had good demo turnout overall and I want to say thank you for those of you who took time to participate. We always have a good time at Harvest Fest and this year was no exception. Several new members signed up so when you see a new face at the meetings make sure they know they are welcomed.

Part of our mission is to teach and preserve blacksmithing. If you have a chance to work with new members please do so. You will be rewarded knowing you have helped someone learn a new skill and I have found that you learn about as much as you teach.

I am looking forward to the December meeting because we will be meeting at James Monday's shop. This is always a good meeting because the James and Laura are such good hosts. Please bring something for the pot luck lunch. We will have our regular meeting at this time. Also, please bring an item for 'Iron in the Hat,' this helps put a few dollars into our bank account.

Ernie Dorrill, Jim Pigott and I demonstrated at Madison Middle School on Nov. 18. We had fun and a good response from the students.

Looking ahead to next year, the first thing that comes to mind is our conference at the end of May. This is our most important gathering and we have already done some preliminary planning. Dr. Jim Batson has agreed to be our demonstrator. We are fortunate to have a man of his stature to come and share his knowledge with us. Let's start thinking what each of us can do to make it a success. Items for the auction and 'Iron in the Hat' are the first things that come to mind. Start now deciding what you can contribute.

The format will be about the same as last year. An additional thing I am going to do is to invite some other craftsmen to demonstrate and or display their crafts. Also, we will be having some classes for those that are interested. Some suggestions that have come up are a copper lantern and a Stacy Stegall hummingbird feeder. Any suggestions from you would be welcome. Please contact me and let me know what you want.

I look forward to seeing each of you at the December meeting.

Warmest,
Bill

Directions to the Christmas Party can be found on page 14 of this publication and on the MFC website www.msforgecouncil.com Hope we see you there. Please contact Ardell Hinton to see what we may need in the way of food or supplies. Her number is 601-856-2314

‘They were the best of times, they were the worst of times,’ adequately describes what is happening with the MFC and it’s membership. The best of times speaks to the support from members during the early fall/winter season. We had a great showing from members and real good times at the Halloween Demos and the Harvest Festival. During those days we had more than 7,000 people, maybe 90% being school aged children, exposed to the forge fire. More and more members are enjoying the benefits from demonstrating for the public. Thank you all for your interest, your support and your friendship. Let the officers know what we can do for you.

‘The worst of times’ does not, cannot, adequately describe what two of our members have experienced lately. Stacey Stegall and Ray Robinson lost their wives recently, Mary Robinson to cancer, after more than a two year battle, and Melinda Stegall, suddenly, in an automobile accident.

Now, words fail me.





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September 9, 2005

Dear ABANA and Affiliate Members,

John Steel, president of the Pittsburgh Area Artist-Blacksmiths Association proposed that ABANA establish a disaster relief fund for blacksmiths impacted by hurricane Katrina. After evaluating John's proposal an ABANA Disaster Relief Fund is now in place. ABANA members, ABANA Affiliates and members of the public may contribute to this fund.

Donations should be by check, US Postal Money Order or Canadian Postal Money Order made out to "ABANA Relief Fund". ABANA will provide a receipt for all donations of \$250 or more. Please address your donation to

ABANA Relief Fund
P O Box 816
Farmington, GA 30638

Canadian, Mexican and international donations are welcome, but please make sure your check is drawn on a US bank in US funds and contains a nine-digit routing number on the bottom of the check. US banks have great difficulty processing checks without this routing number, even though the check may say US funds. Please do not send cash. No credit cards please!

LeeAnn Mitchell Arts, Inc. and staff volunteered their time to record all transactions and make deposits to the fund. One hundred percent of the funds will be distributed to affected ABANA Affiliates or, if necessary, to other public charities. Dispersal and distribution of the funds must be based on need and not on any affiliation to ABANA or an ABANA Affiliate.

People donating money may suggest where they think the need is greatest. The final distribution of funds, however, must be made by ABANA. If it is critical for you to donate to a person or ABANA Affiliate, that donation should be made directly to the person or Affiliate and not to the ABANA Disaster Relief Fund. If you know of people in need, please pass that information on to a local Affiliate and not to ABANA. The reason is a local Affiliate will distribute all funds to individuals. Affected affiliates are asked to tell their membership about this resource. Please distribute this letter to others you think may help.

Toby Hickman of the California Blacksmith's Association and John Steel of the Pittsburgh Area Artist-Blacksmiths Association will work with the affected affiliates to establish an equitable means to disperse the ABANA Disaster Relief Funds

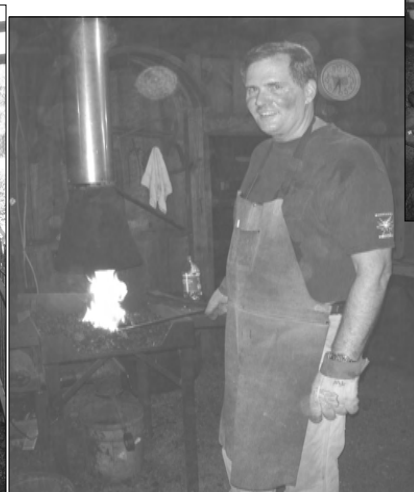
Distribution will begin no later than October 14, 2005 and the last distribution will be made no later than March 15, 2006. The cost of this mailing was underwritten by private individuals and no ABANA funds were used in this project. Please take a moment and contribute what you can and never underestimate the power of human kindness.

Sincerely,
Don Kemper, President



Randal Minton, shown on right with checkered shirt, demonstrated and answered questions all day when he was our meeting demonstrator in October. Randal has the ability to do and teach and is more than willing to share what he knows. Thanks for the great day Randal.

We have had a few busy days lately. Below are some of the members that donated their time for Halloween and Harvest Festival demonstrations. Without your energy and input we wouldn't be the group we are, Thanks.



This article was reprinted from The Hot Iron Sparkle, Mar.-Apr. 1995 issue.
I believe it was originally published by the California Blacksmith.

YOUR LIFE... Preserve it with Safety

This is a copy of Harris Safety Guidelines. Harris Calorific is a division of The Lincoln Electric Company. We are not aware of any other company that makes torches for propane (alternate fuels) that work — that correctly mix propane and oxygen to give you more heat through acetylene at a lower price.

BLOWN REGULATORS

... illustrate the type of serious accidents which can cause injury, lost time, liability, property damage, and administrative headaches. This is a typical accident that frequently occurs and can be prevented. Gases incorrectly mixed within the regulator and hose create an explosive mixture which can ignite.

The subsequent explosion is violent and injuries come from both the flames as well as the disintegrating metal.

THE EXPLOSIVE FORCE

... resulting from the incorrectly mixed gases which are lighted can be tremendous. Regulators can rupture. The Safety News Letter, reprinted here, describes an accident where an oxygen cylinder exploded.

"A recent explosion of a single oxygen bottle killed three men and injured thirty others. The top of the bottle was found high in the plant roof; the bottom was buried deep in the ground. The center portion disintegrated in the form of shrapnel ... blowing off arms, legs and a head."

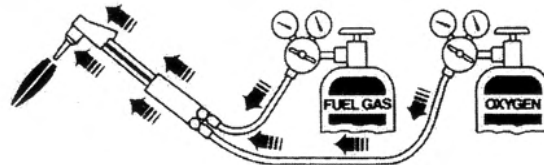


More frequently, the incorrectly mixed gases ignite in the hose; the injury then is a burn only. However, oxygen and fuel gas burn at 4000° - 6000°F, so the burn injury frequently is severe.

SAFETY IS A FULL-TIME RESPONSIBILITY

The accidents described so far could all have been prevented if the oxygen and fuel gas had been kept separated. The gases cannot cause trouble when

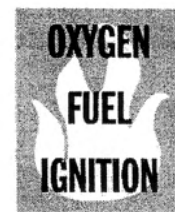
correctly used. For example, each travels from its cylinder through its regulator and hose into the torch, and only becomes mixed in either of a specially designed mixing chamber within the torch itself or in the tip. Danger occurs only when mixing takes place in some area other than the correct location.



TO START A FIRE ...

... you must have three things: fuel, oxygen and ignition. No two will burn alone.

For example, a popular fire extinguisher is filled with carbon dioxide. It puts out a fire by smothering it. Smothering means it prevents atmospheric air, which has a 21% oxygen content, from getting to the flames. Without the oxygen, the fire extinguishes itself.



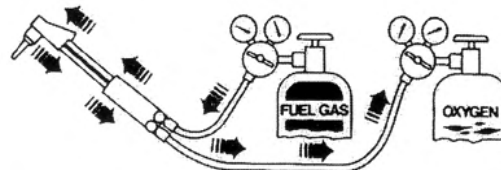
And you can't have a fire without fuel. An automobile won't run on an empty gas tank. Finally, a combustible mixture isn't dangerous until it's lighted. Mixed gases in a hose or regulator aren't hazardous until they are lighted. This ignition can occur in several ways.

REVERSE FLOW CAUSES ...

Reverse flow caused by unequal pressures can result in mixed gases in hoses and regulators.

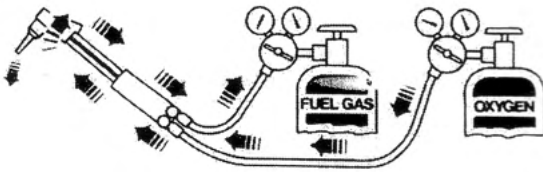
Reverse flow can happen in the following cases:

1. The oxygen cylinder empties when in use. With the oxygen needle valve on the torch opened, fuel gas can reverse flow into the oxygen hose and regulator.

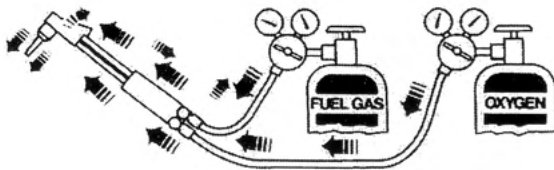


2. Both cylinder valves are closed with unequal pressures in the regulators and the torch valves closed. If the operator opens both torch needle valves to bleed off the oxygen and fuel gas, the lower pressure fuel gas will bleed off first. Oxygen can then reverse flow into the fuel gas hose and regulator.

Welding Safety (cont.)



3. The operator opens both torch valves and attempts to light both gases at once. If more oxygen is flowing than can flow through the tip, the system is back-pressured and oxygen can reverse flow into the fuel gas hose and regulator.

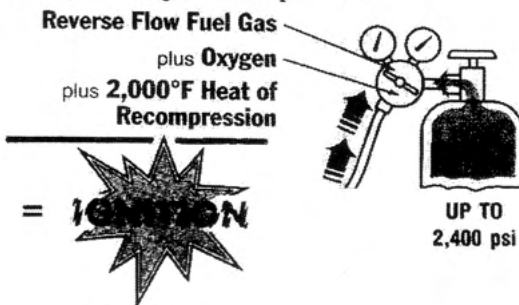


With reverse flow, two of the three ingredients necessary for a fire are present. All that is lacking is the source of ignition.

IF REVERSE FLOW . . .

. . . puts mixed gases into the oxygen hose and regulator, an explosive mixture may result, causing possible serious personal injury or fire.

1. The oxygen torch valve is opened and the mixed gases meet the fuel gas flame.
2. The cylinder valve of an oxygen regulator with pressure up to 2,400 psi is quickly opened and the "heat of recompression" (approx. 2,000°F) raises the mixed gases to ignition temperature.



IF REVERSE FLOW . . .

. . . has put mixed gases into the fuel gas hose and regulator, a dangerous explosion can occur when:

1. The fuel gas torch valve is opened and gases are lighted before the mixed gases are completely bled off. With a small tip this can take several seconds.

THESE ACCIDENTS . . .

. . . can be prevented if the equipment is properly used.

1. An oxygen cylinder never should be completely emptied. It should be considered empty when the pressure drops to approximately 50 psi.
2. The operator should always independently bleed his hoses before lighting the torch, thus eliminating any combustible mixture that may be present.
3. The operator should never light both gases at once. The only exception is a universal pressure torch. Universal pressure equipment is designed to prevent reverse flow, except when the tip is obstructed.
4. Equipment must be in good condition. If a torch tip is plugged, the higher pressure gas will always back up into the lower pressure line.

IF TORCHES ARE CORRECTLY USED . . .

. . . accidents won't happen. However, all of us occasionally are careless. Many years of field experience have shown the various oxy-fuel gas torches to be reliably safe pieces of equipment when operated in accordance with the instructions recommended by the manufacturer. Under certain circumstances, the users fail to follow these instructions. Failure to follow these instructions can cause the backflow of unwanted gas into the hose lines.

"Flashguard" check valves can provide a measure of protection to prevent reverse flow. To maintain this protection, a routine inspection program must be followed to ensure that the check valves are still functional. These are available in two styles. The torch type is mounted on the torch and fits any torch with standard hose connections. Their large capacity flows enough volume to cut 12" steel plate or handle Harris' largest heating torch. These are preferred for stopping reverse flow at the point of origin. They are easily tested and easily seen.

FLASH GUARD® CHECK VALVES



TORCH TYPE

REGULATOR TYPE

The regulator type is mounted on the regulator outlet nipple. They have the same capacity as the torch type, and their effective service life is expected to be longer than the torch type, because they are subject to less abuse and installed in a clean area (upstream of the hoses). They effectively prevent reverse flow into the

Welding Safety (cont.)

regulator and cylinder and prevent dangerous quantities of mixed gases from entering into the hoses. These are preferred for the practical value of longer service life.

Harris check valves open wide for full flow at only four ounces of pressure; but if reverse flow starts, the valve closes instantly. Each valve is individually tested at the Harris factory for positive shut-off at only 10 ounces of back-pressure.

HOW THEY WORK



Normal Flow - Valve Opens Reverse Flow - Valve Closes

Check valves are designed to stop reverse flow. They are not designed to stop a flame. However, many equipment fires and explosions are caused by reverse flow. Check valves stop trouble before it starts by stopping reverse flow the moment it begins. Pipeline systems using oxygen and fuel gases in accordance with NFPA-51 will additionally require back flow check valves.

EXTERNAL CHECK VALVES . . .

We are frequently asked why check valves are not built into the torches. The reason is that Harris Flash-Guard Check Valves are manufactured for a recommended five years of service life and carry Underwriters' Laboratory Listing.

However, careless usage, dirt or abuse can shorten the service life. They should be checked regularly, at least every six months. They should be replaced if found defective.

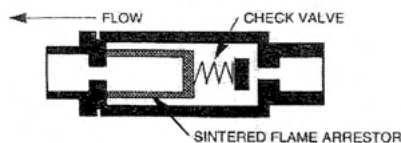


GASES . . . Separate - Safe.
Combined - Hazardous!

FOR ADDITIONAL PROTECTION . . .

especially in situations where check valves fail to function properly due to abuse or failure to perform periodic inspection and maintenance, Harris Flashguard® Flashback Arrestors should be installed. Flashback arrestors offer an additional measure of protection from accidents caused by reverse flow.

FLASH GUARD® FLASHBACK ARRESTORS



TWO SAFETY FEATURES IN ONE UNIT . . .

give the added measure of safety. First, flashback arrestors include a built-in check valve to prevent reverse flow, the major cause of flashback explosion. Second, they have incorporated, in the same unit, a metal filter to extinguish the flame should a flashback occur due to the failure of a check valve or some other such unpreventable condition.

REGULAR OR TORCH-MOUNTED . . .

versions of flashback arrestors are available. Torch types are mounted on the torch inlets and fit any torch with standard "B" type hose connections. These types are preferred because they offer protection at the most common point of origin. They are easily seen and offer protection from hose explosions, a very common occurrence in equipment of this type.

The regulator type is mounted on the regulator outlet nipple. The effective service life of this type is generally longer because they are subject to less abuse, and are installed in the clean area upstream of the hoses. They are sometimes preferred when the extra weight and/or inconvenience of the torch type cannot be tolerated. They effectively protect the regulator and the gas supply system and in some instances prevent dangerous quantities of mixed gases from entering the hose.

FLOW CAPACITIES . . .

of Harris Flashguard® Flashback Arrestors are high enough to cut up to 10" of steel plate when used properly. *Operating pressures must be increased slightly, however, to compensate for pressure drops through the arrestor.*

CAUTION SHOULD BE USED . . .

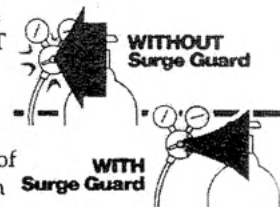
when selecting or using any device such as flashback arrestors on oxy-fuel equipment requiring large volumes of gases to work properly and safely. Large cutting tips and heavy heating equipment are extremely sensitive to flow restrictions created by add-on equipment. Always remember to read the manufacturer's instructions and/or contact a properly trained representative when using this type of equipment.

TEST FLASHBACK ARRESTORS AT REGULAR INTERVALS . . .

for body leakage and for leaks across the check valve. Dirt and contaminants should be kept from building up on the flame arrestor filter. This condition further restricts flow and it cannot safely be cleaned or repaired and the flashback arrestor must be replaced.

USE SURGE GUARD® FOR PROTECTION FROM HEAT IGNITION FIRES

The Surge Guard has been developed to prevent the conditions that result in heat of recompression fires in oxygen regulators. A patented device



Welding Safety (cont.)

within the Surge Guard prolongs the pressure surge inside the regulator cavity when the cylinder valve is opened.

By prolonging the pressure surge, the regulator has time to dissipate heat from its internal parts before the cylinder pressure buildup occurs.

Without Surge Guard Protection. Quickly opened cylinder valves can subject the regulators to 2,400 psig, generating a heat of recompression that can exceed 2000°F.

With Surge Guard Protection. No matter how fast the cylinder valve is opened, the Surge Guard automatically prolongs the pressure surge into the regulator . . . virtually eliminating the chance that recompression heat could reach dangerous levels.

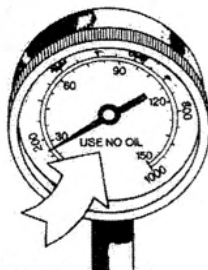
HEAT OF RECOMPRESSION FIRES

As mentioned above, mixed gases can reach ignition temperature because of the heat of recompression when the oxygen cylinder valve is opened quickly. However, mixed gases are only one type of flammable that can ignite within a regulator when subjected to the high temperature following a sudden exposure to extreme pressure. Combustible contaminants can be present inside a regulator and cause a fire when subjected to recompression heat and oxygen.

SAFETY IS A FULL-TIME RESPONSIBILITY . . .

. . . and we urge you always to follow these simple rules:

1. Chain cylinders to prevent their falling over. An oxygen cylinder with over 2,000 psi in it becomes a lethal projectile if it falls over and its cylinder valve is sheared.
2. Vent the oxygen regulator valve before attaching the regulator to the cylinder. This blows any dust or dirt (which may be combustible) off the cylinder valve. Dust and dirt in the regulator inlet provides the fuel that can be ignited by the heat of recompression in an oxygen atmosphere. Inspect the filter in the regulator inlet to ensure it is in place and is clean.
3. Open the oxygen cylinder valve slowly, and always stand to one side while doing this. This prevents the sudden pressure surge which is accompanied by substantial heat, and also prevents unnecessary strain on the regulator.
4. Purge the system by bleeding off each hose independently. If reverse flow has occurred, this precaution safely bleeds off the mixed gases.
5. Light the fuel gas first. This prevents back-pressuring the acetylene with the higher pressure oxygen.
6. Use the correct tip size and pressure. Each tip is designed to operate at a specific pressure. If too much pressure is used, the system can be



back-pressured and reverse flow occurs. If too little pressure is used, the tip will sputter and pop and perhaps encourage backfire or flashback.

7. Keep heat and flames away from combustibles. Obviously, if torch flames and sparks are around combustible materials, they can be ignited easily.
8. Do not use oxygen as a substitute for air. If clothing is blown off with oxygen, the clothing will absorb the oxygen. Then if a spark or other source of ignition touches the clothing, the three necessary ingredients for a fire are present. Combustible material burns more vigorously in an oxygen-enriched atmosphere than in air. Serious injury may result.
9. The expression "use no oil" is printed on every regulator gauge. Oil is a combustible material with an extremely low flash point. An oxygen regulator frequently has two of the three necessary ingredients for a fire. If the cylinder valve is opened quickly, the heat of recompression creates an ignition temperature.

Oxygen is present, and if oil is also in the area, a combustion triangle is complete and a dangerous explosion can occur.

DO NOT attempt to repair or substitute parts on equipment, particularly the regulators. Special tools and techniques are needed to safely repair oxy-fuel gas welding and cutting apparatus.

DO NOT handle oxygen regulators, oxygen cylinders, valves or any other equipment with oily or greasy hands or gloves. Oxygen will react with oil and grease in such a manner that will easily result in fire or explosion.

DO NOT lay or store oxygen regulators or other oxygen equipment on oily or greasy surfaces. The equipment can become contaminated with oil or grease which might result in a fire or explosion.

DO NOT use acetylene pressure above 15 psig. Acetylene pressures above 15 psig can result in a fire.

DO NOT empty the oxygen cylinder below 25-50 psig. If the oxygen cylinder becomes completely empty, it will lose its positive pressure and contamination may enter the cylinder, creating an unsafe condition.

DO NOT change regulators from one gas service to another or replace a pressure gauge with one taken from any other service. Contamination resulting in a fire or explosion can take place by changing pressure gauges or regulators from one service to the other.

DO NOT leave pressure on a regulator when not used.

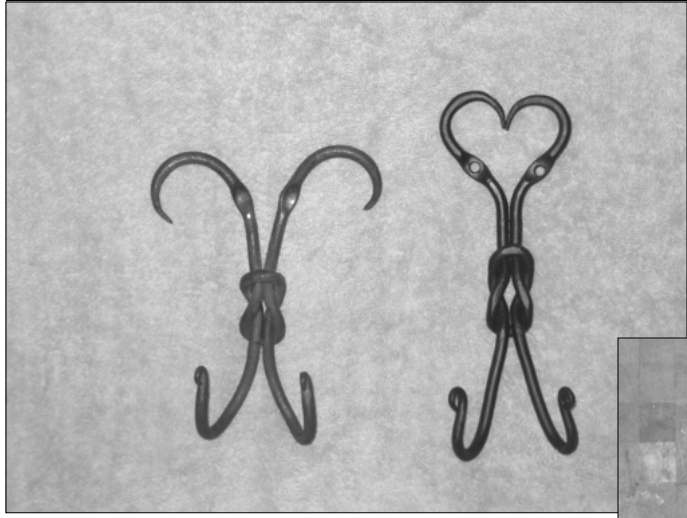
IN CONCLUSION . . .

Follow these suggestions! Treat your gas apparatus with respect. All manufacturers try to produce the safest equipment possible, but when it is not properly used, serious accidents occur. Make sure check valves are on every torch. They'll help you during those times when your hands are working, but your head isn't. □

Silly Forge Tricks

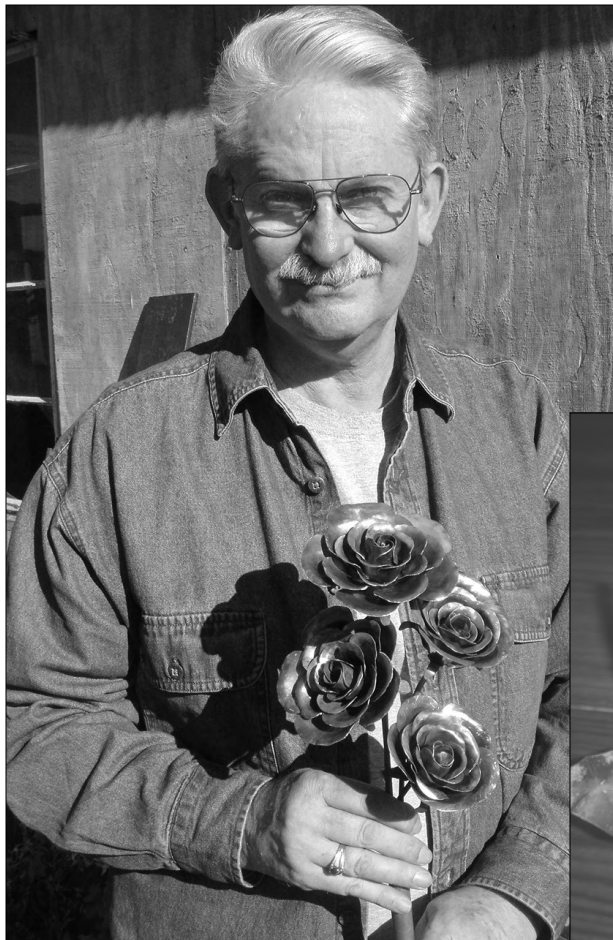


An interesting day at the forge for Benny Crevitt.
*note- no mandrels were harmed filming this stunt..



Bill Furter, from Glassboro, NJ sent this picture. He did these variations of the 'friendship knot' from the article by Tommy Ward. Thanks for sending this Bill. Nice work.

Below are a fork and spoon by Steven Walker. Steven is a new member to the MFC and is off and running with his work.



Ray Robinson shows off some of his recent copper work. Each rose takes about 3 hours when made as a candleholder, see close up, above right.

Beginner's Corner

By Albin Drzewianowski

Physical Conditioning

As you have come to learn, blacksmithing is a fairly physical activity. Between swinging a 2½ to 3 pound hammer with one hand and tightly holding a pair of tongs with the other hand for a couple of hours can be really hard on the old body; especially if you are a hobbyist who can only forge once in a while. Just like many golfers and tennis players, we are susceptible to the "weekend warrior syndrome". This is a physical problem that afflicts normally sedentary people who go all out on the weekend and then regret it come Monday.

The way to avoid this is to do some exercise during the week, so that when the weekend forging session comes along, your muscles are ready for it. We, as blacksmiths, especially need to concentrate on wrist, arm, and shoulder muscles. I have found that the following exercises have helped me make more of my forging sessions even when they are spread out, with less sore muscles afterwards.

Although the following section primarily focuses on the upper body, a complete body physical conditioning regime would not only be good for general health but will add to your blacksmithing experience. Another area that deserves special focus would be the lower back. We are always picking up heavy stuff and a good back exercise program goes a long way to protecting your back. It is really hard to be a blacksmith if you have a "bad" back.

I have found that high repetition with smaller weights is better than a few repetitions of the exercise with heavy weights. I like to use dumbbells for this kind of conditioning. Start with 5 pounds of weights and work up from there. Once you are up to 3 sets of 20 repetitions, increase the weight.

- **Military press:** Standing or sitting, hold the dumbbells at the shoulder and press straight up. I like to alternate: push right arm up as left arm comes down.
- **Triceps extension:** Holding a dumbbell straight up over head, bend at the elbow

and let the weight come down to the back of the neck, keep the upper arm pointing up, then straighten the arm back up. I like to do one arm and then switch the dumbbell and do the other arm.

- **Curl:** There are many ways to do this exercise. I prefer to sit on a bench, lean over slightly, rest my right hand on my left knee, then rest my left elbow on my right wrist and then curl the weight up from that position. One full set and then switch arms. This strictly isolates the exercise so that the only thing working is the biceps.
- **Wrist curl:** Again sitting on the bench I rest my right arm along my right thigh with my wrist just hanging over my knee, palm up. Let the wrist, holding the weight drop and then curl the wrist up. Do a full set and switch arms.
- **Reverse wrist curl:** The same as the wrist curl but with the palm facing down.

The exercises described above are just a few of the many that will exercise the muscles in question. You could also exercise the same muscles using a barbell instead of a pair of dumbbells. Also there are exercises that use your body weight to strengthen them. The important point is to do some kind of exercise and perform the exercises using good form.

It is important to remember that most muscles operate in opposing pairs: Biceps vs. Triceps, Flexors vs. extensors, etc. So when you do weight training, be sure to always exercise the opposing pairs. If you only work ½ the equation, such as only doing curls without doing triceps extensions, you will get out of balance. I have seen pictures of weight lifters/body builders who over did the curls to the detriment of their triceps and they could not straighten their arms.

If any of my descriptions of exercises above are not clear, get hold of a basic weight-training book and study the sections for exercising the arms and shoulders. Those books usually have good illustrations demonstrating proper form.

Continued next page.

Talking about opposing pairs of muscles: We, as blacksmiths, spend a lot of time squeezing/gripping hammers and tongs. We develop fairly powerful grips. We need to exercise the opposing muscles, the ones in the forearms, which spread open our fingers - the opposite of the muscles that close our fingers and grip the tools. For this, I like to use a heavy rubber band around my fingertips and then try to open my fingers and spread the rubber band. I keep one of these rubber bands by the computer and do this exercise a couple times a day. This exercise has frequently been recommended in blacksmithing forums to help recover from carpenter's/tennis elbow and from carpal tunnel syndrome. I know it has helped me.

Another helpful exercise is to stretch the muscles, tendons and ligaments in the wrist: Keeping the palm flat, gently bending the palm back toward your forearm as far as it will go. Feel the stretch, but stop before any pain. Bend back and hold for a 20 or 30 count. Do the same with the other hand. Then do the opposite, again holding the palm flat and straight bend forward at the wrist towards the forearm. Use one hand to push the other hand into position. Do 2 or 3 sets. I do these exercises every time I do the rubber band exercises and also before I start forging and often during a forging session while I wait for iron to heat up in the fire.

In general, blacksmithing is a physically demanding hobby. Most of our stuff is HEAVY. A regular exercise program even if just twice a week will prepare our bodies to deal with this kind of physical activity. The more sedentary your "day job", the more you need to consider exercise.

Another problem area for beginners is "soft hands". I see this often in my beginners' classes. By the end of Saturday's class, the student has blisters from hammering or holding the tongs. If you don't normally use your hands as we do when blacksmithing, you need to toughen up the hands. Playing video games or driving a compute doesn't count. I think that working with weights as describe above helps with this. But some other kind manual

Blacksmith Guild of Central Maryland

activity with the hands is needed to toughen them up to prevent blisters. Here I am somewhat at a loss of what to suggest, but the beginning blacksmith needs to be aware of this and try to find ways to toughen the hands. Forging once or twice a week, even for just an hour or so can help in this regard.

Bottom line: if we prepare our bodies, when it comes time to forge, things will go better.

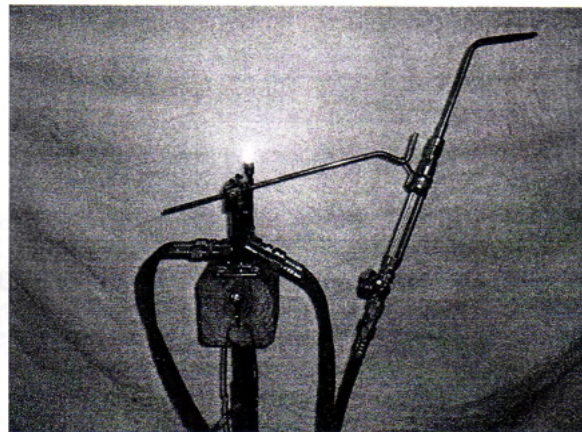
(If you have any questions about what has been presented in the BEGINNERS' CORNER, send them in and I will answer them in the next issue. Also, looking for future topics for THE BEGINNERS' CORNER. What else would the "wannabe" blacksmiths like to see explained in excruciating detail??)



Shop Tips

By Albin Drzewianowski

At Blacksmith Days this past May, one of the featured demonstrators, IRON MASTERS, had a really neat idea. They used a gas-miser (see below if you do not know what a gas-miser is) for their oxy-acetylene torch. They had attached a really big magnet to the base of the gas-miser. This way they could attach it to their steel welding table where ever was most convenient. If you use a stand, you could simply have a steel plate attached to the top of the stand and then be able to move the gas-miser from stand to table as needed. I know I will be looking for an appropriately large magnet to use with my gas-miser.

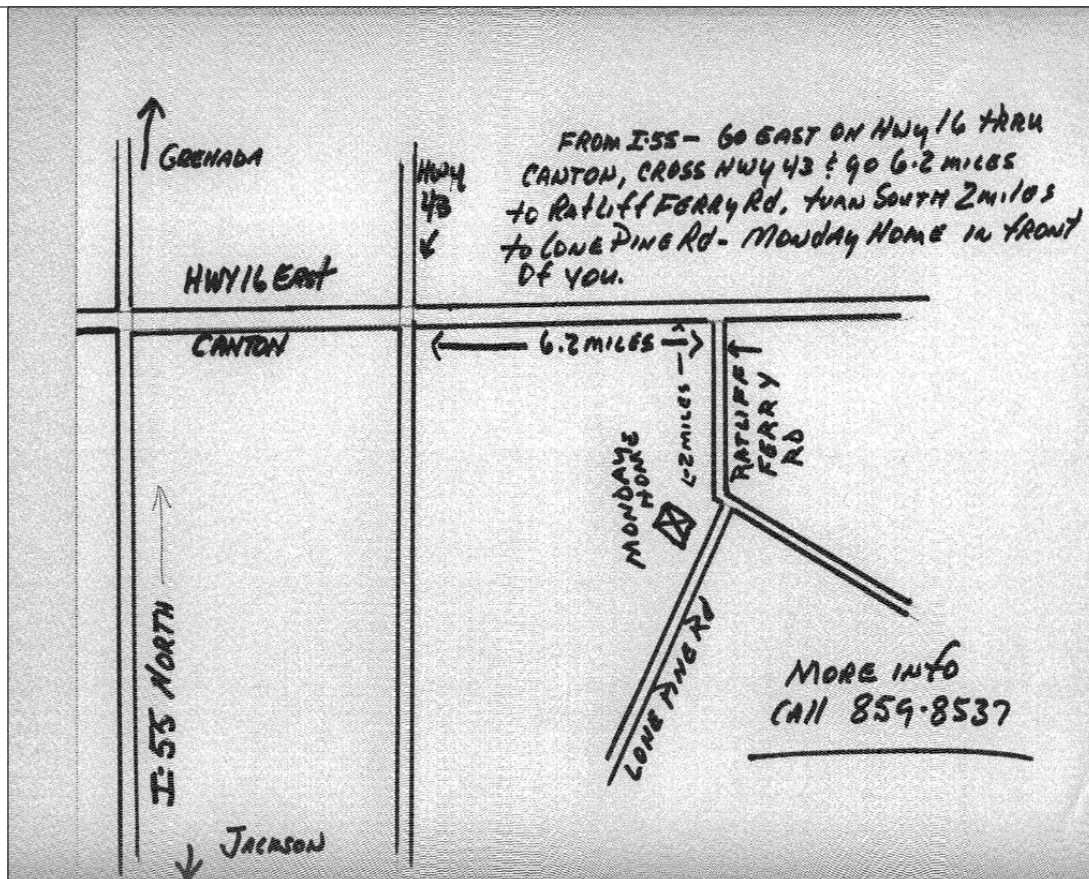


May/June **HAMMER & TONG** 11

CHRISTMAS PARTY, DECEMBER 10 AT LAURA AND JAMES MONDAY'S PLACE IN CANTON.

Please don't miss this meeting, especially you new members, this is the best of the year. Contact Ardell Hinton 601-856-2314 to co-ordinate what foods or supplies we need to bring. We have always had as much fun, food and fellowship at this 'get to' as you can handle. There will be an open forge so we can just do what comes up, so you new members can have a good chance to play around with more guidance than you will want.

Bring your family and friends and don't forget to call Ardell to see what we may need in the way of food or supplies. Deer steaks on biscuits with gravy is my favorite, Laura does a spectacular job with this. There will be a big pot of chili also. Bring your favorite hammer and tongs, your appetite, something for the 'iron in the hat' and your appetite.



Every man owes a part of his time and money to the business or industry in which he is engaged. No man has a moral right to withhold his support from an organization that is striving to improve conditions within his sphere. "

Theodore Roosevelt

Scrolls, Scroll Forms and the Golden Mean



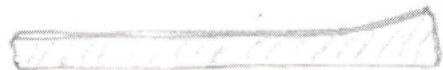
Scrolls are a major part of ornamental-decorative blacksmithing. What makes them "easy on the eye" is the relationship of positive (the black iron) and negative (the "not black iron") space. In a future issue we may be able to get someone to explain the proportion known as the "Golden Mean" but for now, we'll deal with the problem of making a sequence of scrolls all the same.

It doesn't take a beginner very long to realize that after making one of something (and finding it good looking), making a second or third just like it is more of a challenge than first imagined! That was the position one new member found himself in this Spring. He wisely turned to the NEBList for help, and these were some of the suggestions and advice he was grateful to receive.

I've added some drawings, to help you see what was being talked about.



Fishtail



Off-set, then trim

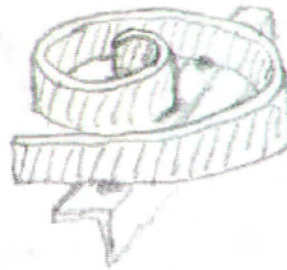


Try as I might, I can't sketch as well as Jerry Hoffmann! FWM

The way I learned to make a scroll jig is as follows: Take a piece of stock heavier than the stock you intend to make the scrolls out of we used 3/8 x 1 1/4 flat stock. Make a 4-5" fish tail end on it, then, holding it flat on the anvil off set the fish tail to one side. This will stick up proud of the finished scroll allowing you to grab the tip of the scrolls you will be making to start turning them. Also the taper will allow you to get in close to the end for

things like halfpenny or if you have a leaf or some other decorative end on your scroll. after you've turned your scroll a tail can be bent at a right angle down from the scroll to grab in the vise or the jig can be welded to a piece of plate or angle. If you are welding to a piece of plate you can start with lighter stock as the plate will prevent distorting your jig. Once you've made your jig if you take a piece of stock and mark the edge in 1" increments before bending around

the jig after it is scrolled it will give you a ruler to determine length of stock for any future scrolls. I leave mine right on the scroll jigs so I can find them down the road.



When laying out

or creating a scroll the key to good-looking scrolls is the negative space. If you hold the scroll up to a light surface like a blank wall or the sky and look at the space between the metal any flat places or kinks in the scroll are more obvious than when you try to look directly at the metal. Also in general a gradual steady increase in the space between the spirals is the most pleasing, although I have seen plenty of scrolls that don't adhere to this rule and still look nice. A scroll jig is just a scroll with its outside dimension equal to the inside dimension of the scroll you want to make. A tapered end that carries the line of the scroll all the way to the tip is one thing that sets forged work apart from work bent in a commercial ribbon jig that typically has a little flat spot at the end where the tip was grabbed by the jig. If its not too overwhelming paying attention to where the scrolls are pointing can help tighten up a design. How the terminations point to the next scroll or in some way refer to the overall design rather than randomly pointing out can make a big difference in the overall effect. All of this is much easier to comprehend with illustrations and examples and I hope I haven't confused you more trying to write it out in an email. **Bob Compton**

Great description! I have had many smiths ask why they need to learn how to make scrolls when they can use a scroll jig. My reply is always, "Who's going to make the scroll jig?" It is very important to learn this skill then the scroll jigs will make better scrolls. Only

thing I can add is that after doing scrolls that required 10 feet of stock to make and walking around the jig and tripping over this or that, that I forgot to move out of the way, I finally made a movable jig plate. Instead of me and the metal walking around the shop, the jig rotates. I originally saw these made using a large ratchet, but I never found one large enough to do the job. It is a handy way to work as it locks into position for pulling the metal against the jig and turns to access the next area on the jig. Instead I just took a flat plate with a hole in the center and 4 holes on a bolt circle, dropped another plate with a pin on center with holes on the same bolt circle that I can drop a pin through to lock in place. I bolt different jigs to this top plate depending on the size and shape scroll I need. There's a drawing of this in "A Blacksmithing Primer", second edition. **Randy McDaniel**



The other approach is to make the scroll first! The dark area represents the scroll you want to replicate. The white area, represents the HOT scroll form stock being driven along the inside of the scroll.

Scroll form: Make an original scroll. Forms are

made to fit the inside dimension of this scroll. Start the form using material heavy enough to withstand its use. Make a tapered scroll end and forge to fit inside the original scroll up to the rat tail, fish tail, or whatever you will have for an end. It is not necessary to make the form go any further than what is necessary to catch the forged end of each new scroll being formed. Take a nice long heat on the new form, start the scroll form enough to lay it inside of the original finished scroll and while still at a forging heat. Hammer the end of this form into the original scroll. Reheat and form any areas not

completely fitting the original scroll. When satisfied with what you have weld a heavy bar at right angles to the plane of the scroll form to be held by the post vise when bending (forming) all of the remaining scrolls. Forms for lighter scrolls can have a leg welded to a portion of the form to be held in the vise. The forms should be stout enough to not change their shape when in use. Having the scroll material at a forging heat when formed will eliminate the bending of the form. These forms can be adjusted when a different shape is needed for another job. **Ed Grove**

Take that nice hand made scroll and build the jig to that scroll.

If I can find the instructions, I'll send them along. (Ed Grove beat me to it!) **Fred Mikkelsen**

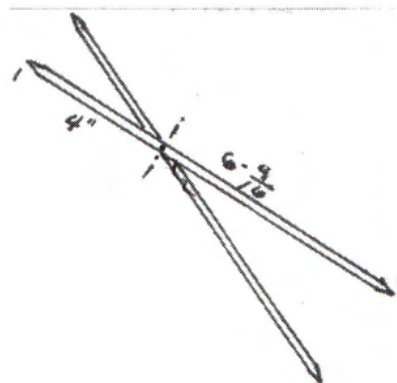
Look at "Hammers Blow" (ABANA) Summer 2002, P.10 &11.

I will also mail you a geometric process that gives you a logarithmic or equiangular spiral which can be used for all scrolls, large or small, depending where you start. As Fred said, you want to be sure that your jig fits inside the drawing you construct.

Dave Hageman

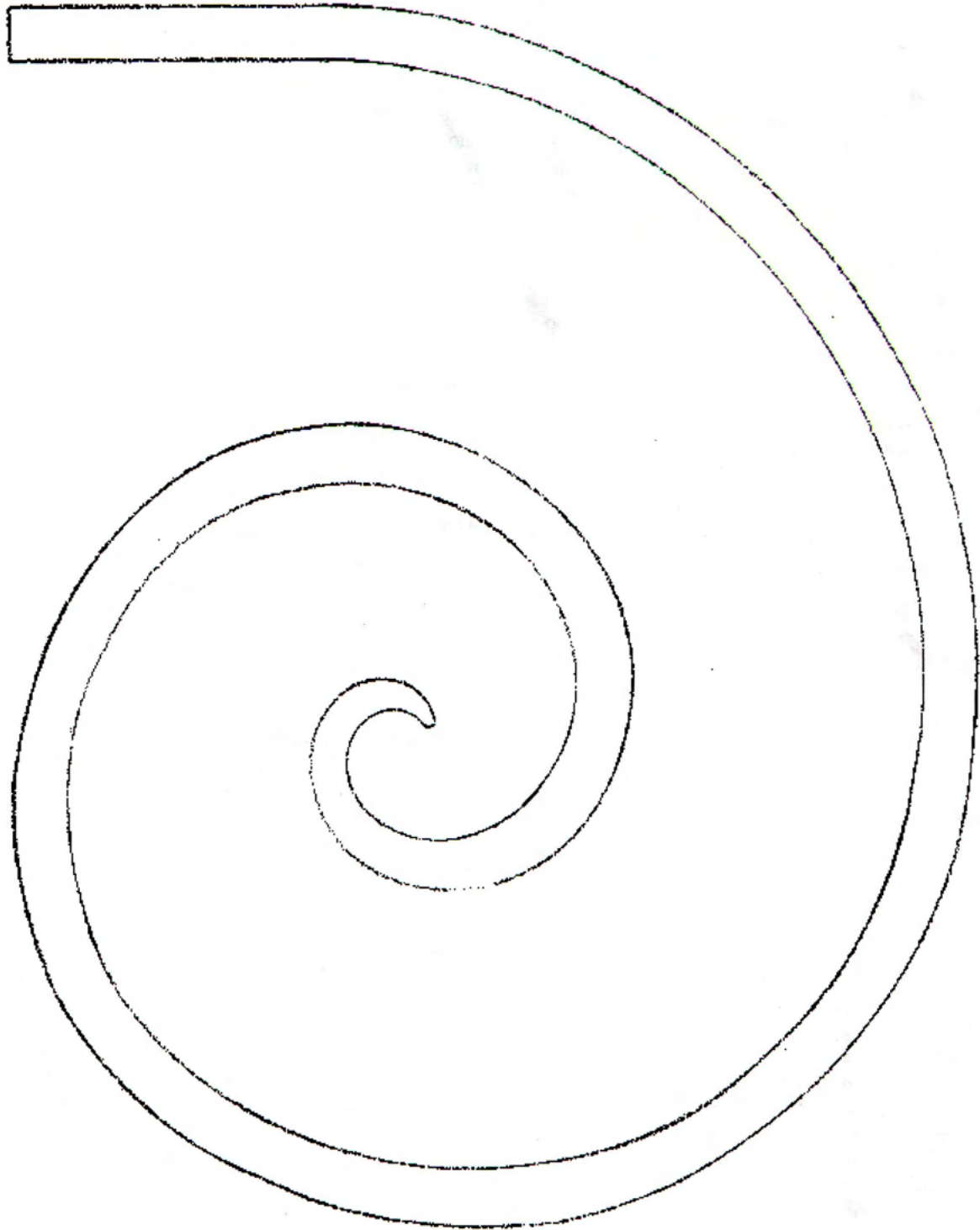
Editor asks: Will Dave send me the "geometric process so I can include it in the next issue?"

RobGunter, was our featured demonstrator in 1993, came up with this neat idea to illustrate the "Golden Ratio" of 1.618 to 1 that those really old guys (Pythagoras for example) thought was most beautiful. There are those who believe it strikes a cord within the human brain.



Make these "divine dividers" of any thing you like. The total length is 10-9/16th" with the pivot at 4". Try this on your credit card and see why it is the size that it is! Curious, hu?

Continued on next page.



Shop Tips

Brazing

*John Emmerling
Gearhart Ironwerks
Gearhart, Oregon*

Several years ago I began to look for alternatives to tig and mig welding in the construction of lighting and components.

Since joinery cleanliness and ease of cleanup is paramount, mig and tig welding did not always work to my advantage. I wanted to use as little filler material as possible and have a strong joint that required minimal cleanup.

So, I began to explore brazing. I first used coated brass rod. The brazing worked well, but I did not like the excess flux on the brass rod while brazing because I couldn't see the joint clearly, its cleanup seemed excessive, and the strength was not up to expectations.

Next, I tried low fuming bronze bare rod and dipped it in the flux as necessary. It worked well and was an improvement over coated brass rod.

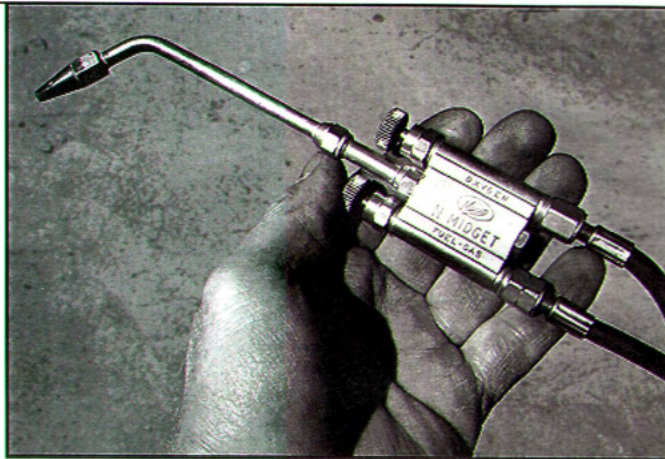
However, there were two drawbacks: one, the strength, while generally adequate, was not always so, and two, if the finish of the piece was to be natural buffed iron, the bronze color was a detriment.

After searching the internet, I found a nickel/silver rod that works well.

Allstate 11 comes in 1/16th and 3/32nd bare rod. Its equivalent is Harris-Welco 17. (Harris-Welco 17 is not available in 3/32nd bare). The strength of these nickel/silver rods is 50% greater than low fuming bronze and the color, while warmer in tone (platinum colored) than buffed iron, blends in nicely when buffed.

Since it is stronger than low fuming bronze, a smaller amount is needed which helps in color blending. Also, these rods have excellent capillary action and tend to follow the heat readily. A fillet can be obtained by simply pulling back on the heat source, adding more filler rod, and gently washing the joint with heat.

Cleanup is minimal.



The mighty Meco Midget torch

The flux used is boric acid. I bought the Allstate recommended flux, read the label that said it was boric acid, and began using the same boric acid I use in mixing forge welding flux. I bought the boric acid at Nuremburg Scientific in Portland, OR. The boric acid is wetted and applied to the parts to be joined with an acid brush. Only a very dilute solution is needed. The flux can be removed with warm water and/or use of a wire wheel.

I also purchased a Henrob torch several years ago and had been using it regularly. Anyone who has used a Henrob to braze with knows that after a period of time the weight of the torch and hose combined with the ergonomics of the pistol grip becomes tiring.

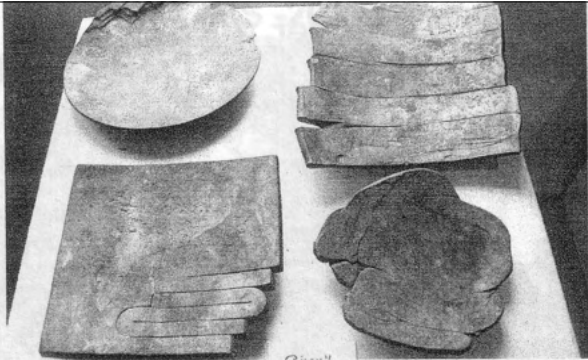
Not long ago I discovered the Meco Midget torch and its lightweight hose. This little torch is amazing for its size, weight (6 oz.), maneuverability, and heating capacity. Tips available go from a zero to #3. I use the #2 and #3 tips most frequently.

Although it will not do everything a Henrob will do, at a cost of \$105.00 for the torch and \$8.00 for each tip, I consider it a good bargain.

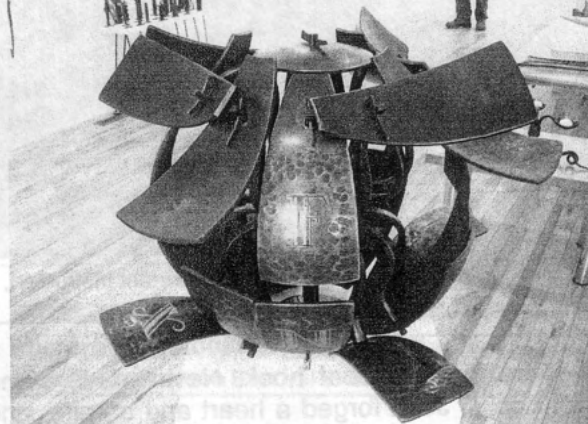
For info on this torch, go to: www.tinmantech.com. The Harris-Welco 17 brazing rods were purchased thru Quimby Welding in Portland, OR. at \$54.00 per 5 pounds of 1/16th bare rod. They are a special order item and can be drop shipped for minimal delay. I use more of the 1/16th in general and occasionally 3/32nd for larger gaps.

Info on Allstate 11 can be found at : www.fredparcycleddesign.com.

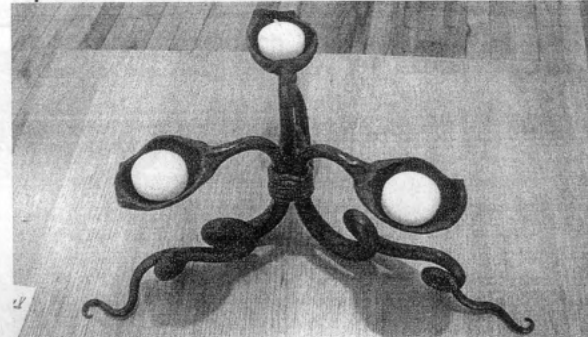
Thought you might like to see some nice work, from our friends, members of the Blacksmith Guild of Central Maryland



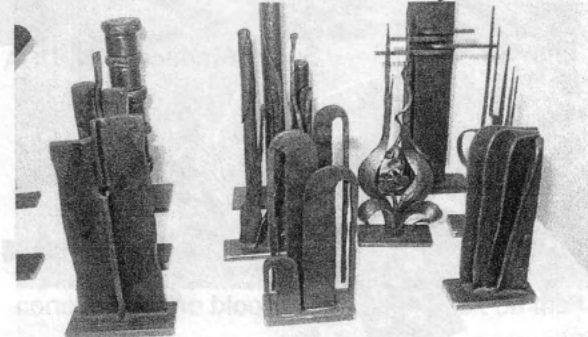
Forge Welded Plates Paul Zimmermann Germany



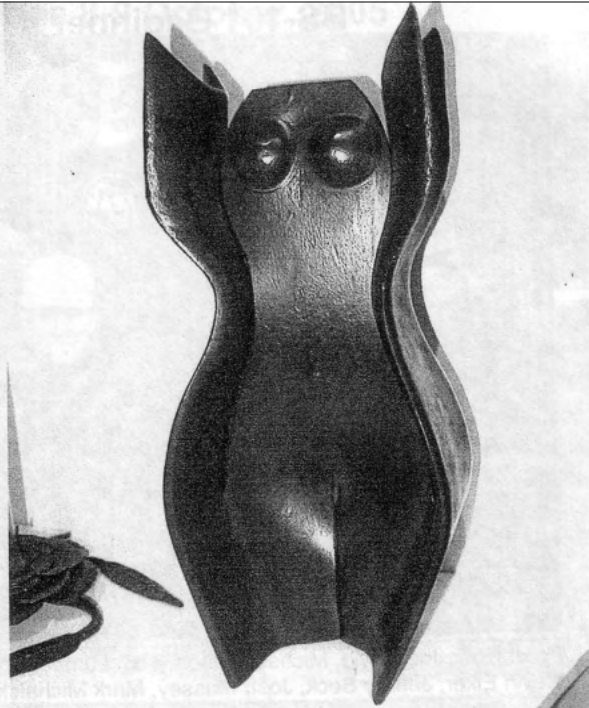
Alphabet Globe David James England



Candle Holder Becky Little NS, CA



Sculpture Studies Christoph Friedrich Switzerland



I Beam Sculpture Craig Campbell SK, CA



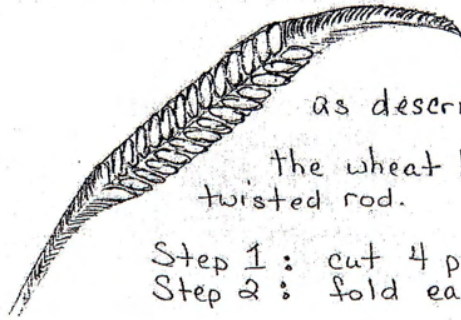
Candle Holder Adrian Legge England

The Fire's Edge - Newsletter of the Great Plains Blacksmith Association



Sketchbook

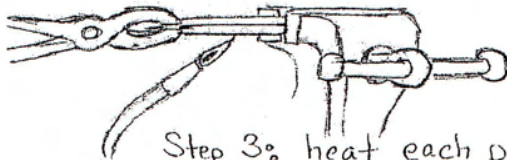
dld



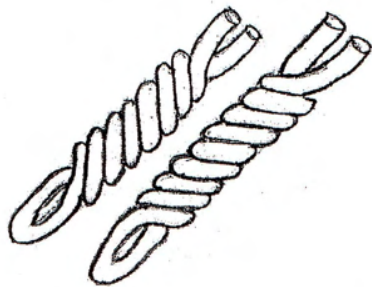
Don Bellah's wheat
as described by Don at Saltfork Conference
Oct, 2002

the wheat head is made from 4 pieces of
twisted rod.

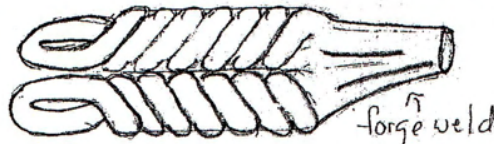
Step 1: cut 4 pieces of $\frac{1}{8}$ " rod 12" long
Step 2: fold each piece in half, make a tight
fold.



Step 3: heat each piece, twist 2 pieces to the
left and 2 to the right. Make sure to twist
each piece the same number of times. Seven
times makes a good even twist.



Step 4: Take one of each
twist and forge weld the
ends together keeping the
twist side by side and flat.



Step 5: Forge weld the other ends together also.
Step 6: Repeat steps 4 and 5 with the other two twist.

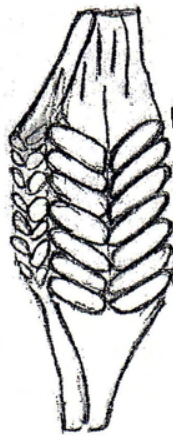
SCABA February 2003

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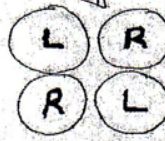
The Fire's Edge - Newsletter of the Great Plains Blacksmith Association

Step 7: you should now have two pieces made up of two twist each.

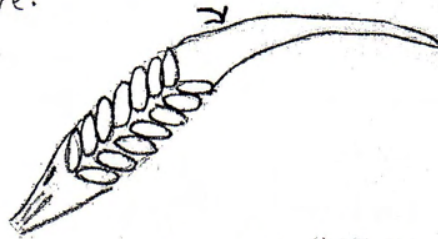
Make sure wheat kernels on front and back aim up; weld the ends of the two pieces together. Your bundle should be made up of this configuration:



keep your bundle square and compact without deforming your twist.



Step 8: taper the top weld into a nice smooth graceful curve.



Step 9: weld the other end to a rod the appropriate size for your wheat head, add a few long taper leaves and you have a stalk of wheat.

Step 10: give your wheat stalk a graceful curve by gently bending it over the horn of the anvil.







Historical Perspectives

A Short History of American Nail Making

Nail Making at Monticello (Reprinted from Monticello.org)

In 1794 Jefferson added a nail making operation to his blacksmith shop on Mulberry Row at Monticello. He hoped it would provide a source of cash income while he restored the depleted soil of his farms. Nail rod was shipped from Philadelphia and hammered into nails ranging in size from six-pennies to twenty-pennies. In 1796 Jefferson acquired a nail cutting machine, which made four-penny brads from hoop iron.

In his Farm Book Jefferson wrote: "Children till 10. years old to serve as nurses. From 10. to 16. the boys make nails, the girls spin. At 16. go into the ground or learn trades." Up to fourteen young male slaves, aged ten to twenty-one, worked at the forges of the nailery. From 1794 to 1796, when he was retired to Monticello, Jefferson calculated the efficiency of the nailers, each day weighing their nailrod and the nails they produced. Most of the slaves who began their working lives in the nailery became tradesmen. Moses Hern and Joe Fossett became blacksmiths; Lewis and Shepherd were carpenters; Barnaby Gillette was a cooper; James Hubbard a charcoal burner; Wormley Hughes a gardener; and Burwell Colbert was Monticello butler as well as a painter and glazier.

| | |
|--|--|
|  | Hand-wrought nail, before ca. 1800. |
|  | Type A cut nail, ca. 1790-1830. |
|  | Type B cut nail, ca. 1820-1900. |
|  | A modern wire nail, ca. 1890 to present. |

The nailery was quite profitable in its early years, supplying nails throughout Albemarle and Augusta counties. Management problems and the competition of cheaper imported nails later made it an only intermittent source of income. Among the information found in the documentary record is the following:

1794-1795:

"I now employ a dozen little boys from 10. to 16. years of age, overlooking all the details of their business myself and drawing from it a profit on which I can get along till I can put my farms into a course of yielding profit. My new trade of nail-making is to me in this country what an additional title of nobility or the ensigns of a new order are in Europe."

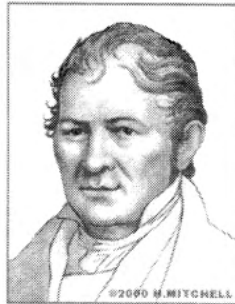
(Jefferson to J. N. Demeunier, 29 April 1795)

"A nailery which I have established with my own negro boys now provides completely for the maintenance of my family, as we make from 8. to 10,000 nails a day and it is on the increase." (Jefferson to James Lyle, 10 July 1795)

1806:

"Those who work in the nailery are Moses, Wormley, Jame Hubbard, Barnaby, Isbel's Davy, Bedford John, Bedford Davy, Phill Hubbard, Bartlet, and Lewis. They are sufficient for 2 fires, five at a fire." (Jefferson's instructions to his overseer, October 1806)

"Jim makes 15 pounds, 20d Nails
 Barnaby makes 10 pounds, 10d do.
 Wagner Davy makes 10 pds, 10d do.
 Bedford John makes 8 pounds, 8d do.
 Bedford Davy makes 6 pounds, 6d do.
 Bartlet makes 6 pounds, 6d do.
 4 Boys makes 8 pounds, 6d
 [total] 63 pounds nails" (Overseer's account of daily task of nailers, c. 1806)



The third best known American inventor of the pre-atomic age, after Thomas Edison and Alexander Graham Bell, is probably Eli Whitney. Whitney certainly transformed the economies of the antebellum North and South. But among invention aficionados, his invention of the cotton gin is a matter of some dispute. Whitney was born in Westboro, Massachusetts in 1765. As a child, he showed an instinct and talent for machinery. He worked as a blacksmith, and invented a nail-making machine. Whitney's dream of attending Yale College was frustrated for some years, because no college then taught or much appreciated the "useful arts."

The Tremont Nail Company

Nails in their crudest form date back to 3000 B.C. The Romans hand-forged them and they have been found in excavations and sunken ships from the period 500 A.D.

When our ancestors first stepped from the Mayflower onto that soil that was to become Plymouth County, they discovered a soil which was essentially sandy and difficult to cultivate. As they plowed for their first crops, they noticed that the earth yielded small deposits of crude iron ore mixed with the ooze of the swampy regions. From this ore and with crude smelters, they separated the metal from the ore and began the fashioning of nails and metal tools they had left behind then when they sailed into the unknown.

Cooking utensils, ship fitters hardware, nails and wagon treads grew from this ore dug in the swamps where the cranberries grow today. As the Massachusetts Bay Colony grew, the residents of Wareham were able to supply newcomers with nails for their homes. The nail industry had been born.

The original factory was established by Issac and Jared Pratt in 1819 on the site of an old cotton mill which had been shelled and burned by the British in the War of 1812. Known originally as Parker Mills Nail Company, it later became known as the Tremont Nail Company. The first cut nail machines appeared during the late 1700's and the first machine to cut and head a nail in one operation was invented by Eze-kiel Reed of Bridgewater, Mass

Nails provide one of the best clues to the age of historic buildings, especially those constructed during the nineteenth century, when nail-making technology advanced rapidly. Until the last decade of the 1700s and the early 1800s, hand-wrought nails typically fastened the sheathing and roof boards on building frames. These nails were made one by one by a blacksmith or nailor from square iron rod. After heating the rod in a forge, the nailor would hammer all four sides of the softened end to form a point. The pointed nail rod was reheated and cut off. Then the nail maker would insert the hot nail into a hole in a nail header or anvil and form a head with several glancing blows of the hammer. The most common shape was the rosehead; however, broad "butterfly" heads and narrow L-heads also were crafted. L-head nails were popular for finish work, trim boards, and flooring.

Between the 1790s and the early 1800s, various machines were invented for making nails from bars of iron. The earliest machines chopped nails off the iron bar like a guillotine, wiggling the bar from side to side with every stroke to produce a tapered shank. These are known as type A cut nails. At first, the heads

Continued

were often made by hand, but soon machines were developed to pound a head on the end. This type of nail was made until the 1830s.

By the 1820s, however, an effective design for a nail making machine was developed: it flipped the iron bar over after each stroke. With the cutter set at an angle, every nail was chopped to a taper. Nails made by this method are known as type B nails.

Cutting the nails leaves a small burr along the edge as the metal is torn apart. By carefully examining the edges for evidence of these burrs, it is possible to distinguish between the earlier type A nails and the later type B nails. Type A nails have burrs on the diagonally opposite edges, while the type B nails have both burrs on the same side. This kind of evidence can be used to establish the approximate period of construction or alteration of a building.

Type B cut nails continued to be the most common through most of the greater part of the nineteenth century. With the rapid development of the Bessemer process for producing inexpensive soft steel during the 1880s, however, the popularity of using iron for nail making quickly waned. By 1886, 10 percent of the nails produced in the United States were made of soft steel wire. Within six years, more steel-wire nails were being produced than iron-cut nails. By 1913, 90 percent were wire nails. Cut nails are still made today, however, with the type B method. These are commonly used for fastening hardwood flooring.

^p ~~Home~~ for the Holidays

The Blacksmiths of the Gulf Region still need our help.

Keep them in your thoughts this holiday season. They will need support rebuilding their shops. The ABANA Hurricane Relief Fund is active, and continues to accept donations.

Donations should be by check, US Postal Money Order or Canadian Postal Money Order made out to "ABANA Relief Fund".

ABANA will provide a receipt for all donations of \$250 or more. Please address your donation to:



**ABANA Relief Fund
P O Box 816
Farmington, GA 30638**



A Blacksmith's Craft

The Legacy of Francis Whitaker Volume 1
by George F. Dixon

Book Review by Dave Smucker

This book is outstanding; I don't know any other way to start this book review. It is 145 pages of "have to have" information for every blacksmith from beginner to professional. Parts of this book will be over the head of the raw beginner but will point the way for their future work. For the advanced smiths parts will be a repeat of things they already know but it will always be a ready reference to review how to do something. One of its important features is a good index.

History on How this Book Came About.

Many of you have heard of Francis Whitaker's first book, that little book with the Red covers "*The Blacksmith's Cookbook*". Some of you as, like me, may be lucky enough to have a copy of this out of print book. It is filled with useful information and notes from conferences and workshops.

Rather than reprint this book, Francis decided to revise and greatly expand it into a form that would provide all levels of blacksmiths with the how-to of

process and techniques. At this time Francis was already in his early 90's and knew it was unlikely he could do this alone. He put together a team of Judy Berger, Tal Harris and George Dixon. George was designated as the author because of his blacksmithing experience along with his writing and illustrating skills. While he was still living, Francis "carefully reviewed, critiqued and approved George's detailed outline." Francis's last request to Judy was to see that the book was published.

The current book is Volume 1 of what is to be a two Volume set. George is hard at work on Volume 2. He said it hoped to see it in print by December of 2006.

What's the Book Like?

A Blacksmith Craft is richly illustrated with George outstanding 3 dimensional drawings. The text does a great job of explaining how to do things. In addition, many sayings and comments from Francis are included, printed in blue ink, a larger size font, and accompanied by Francis's famous Touchmark. There are also a number of photos of Francis's work. As a newsletter editor, I also have to comment on the overall outstanding layout of the book's pages, text and illustrations. If you get the idea I like this book, you are correct.

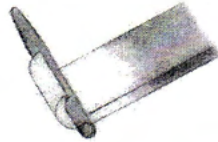
Volume 1

The eleven chapters that make up Volume 1 are:

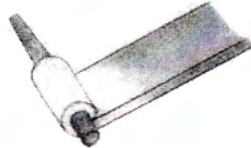
- ❖ 1). The Blacksmith's Shop
- ❖ 2). Blacksmithing Processes
- ❖ 3). Making Hammers, Tongs and Tools
- ❖ 4). Joinery
- ❖ 5). Forging Blanks and Balls
- ❖ 6). The Twisted Bar
- ❖ 7). Scrolls
- ❖ 8). Quatrefoils
- ❖ 9). Animal Heads
- ❖ 10). Mechanics of Basic Design and Drawing
- ❖ 11). Surface Textures, Finishes and Finishing
- ❖ Index.

Continued on next page

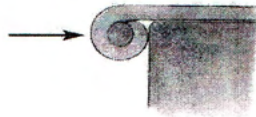
I have scanned and included here a few illustrations from one page of the book. Because of the limitations of scanning from printed halftone illustrations and the limitations of our newsletter printer, these will not be near the quality of those in the book. I still want to give you a feel for what's in the book.



Drop the drift into the curved stock



Continue to roll the hinge stock tightly around the drift. Remove the drift prior to taking a heat and replace it upon taking the stock from the forge.



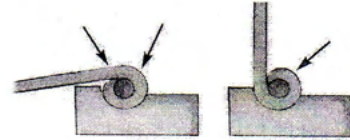
To tighten the forged eye onto the drift, hang the eye over the anvil's edge. Use the side of the anvil to back-up the inside of the rolled eye as the outside of the eye is struck with the hammer.

These illustrations are accompanied by a detailed text explaining the operation, temperature of the metal, and just how to do these operations with hammer, drift and anvil.

However, George is not done here. He continues by giving the reader an alternative way to do this operation.

Another way to keep the hinge stock tight against the drift is to use an offset bottom swage to contain and compress the eye as it is forged around the drift. Start the eye the same way, over the anvil's edge. Form the eye with hammer and anvil until the drift fits loosely, then shift to the offset swage.

And here are the accompanying illustrations of the second method:



Volume 2 will include information or chapters on Angle Iron Bending, Architectural Ironwork, Bronze, Copper and Monel, Candles and Light fixtures, Chase and Chisel, Chasing Tools, Die Making, Fire Use, Fireplace: Hoods, Screens and Tools, Gates and Grilles, Handles and Hinges, heat Treating Tools, Kitchen Iron, Last Questions, Latches and Locks, Leaf work, Patterns, Railings, Repoussé and "more".

The cost of the book is \$42.50. ISBN -9707664-7-5 It can be purchased direct from the publisher for \$42.50 plus \$3.00 shipping and handling.

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You should also be able to purchase this book from the Folk School Craft Shop.

I want to close this review by commenting on how much George Dixon has advanced blacksmithing by meeting the educational needs of blacksmiths. "Is it Right?" as Francis would ask. You Bet! Thanks, George, and all who helped in reviewing the text, illustrations and content. In addition, Thanks, Judy, for getting it published.



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