



March 2009

The Florida

Clinker Breaker

Florida Artist Blacksmith Association - Established May 18, 1985

Editorial Musings & Projects

Steve Bloom

Well...I warned you - if you don't contribute, you get whatever I'm working on and this month, it's fit and finish on daggers (yup. it's Medieval Faire time again).

Assume you have a dagger blade that needs a handle. The major pain with daggers is that they are symmetrical and the human eye is *really* good at detecting deviations from symmetry (hence one of the cardinal rules of smithing is never make anything with two of the same elements!).

We can divide the handle into three elements, the guard, the handle, and the pommel. There is a saying that if all you have is a hammer, everything looks like a nail. As applied to this project, I have a lathe and the equivalent of a full-size Bridgeport mill, so everything looks like a machining project.

Typically, the guard will be soldered to the blade, so the fit of the guard has to be at the level you would expect on any blade, i.e., within a capillary distance. While I know some folks are good enough with a file to achieve that clearance, I have a mill. If I elect not to cast the guard from silver or bronze, I have to select a material that can be crushed around the tang to achieve the necessary tight fit. The options are either brass (which looks cheap) or nickel silver (which is pricey but looks nice). Stainless steel looks fine but just doesn't like to crush down, so it's out for guard material.

So - saw out a block of material, mill a slot that is as close as possible to the widest and thickest dimensions of the tang where the guard is destined to live, anneal the material and (with a big hammer) mash it to fit the tang. The result is a wrinkled block of material that fits. Hammer the wrinkles out (thus making the slot slightly undersized.



Drive it back onto the tang to get the final fit. By now, the slot is probably not perfectly in the middle of the block, so scribe the guard shape onto the block using the blade as a centering guide. Saw out the guard. The wrinkles now need to be removed, so there needs to be some way to hold the guard when grinding and polishing. I've



used machinist's clamps, hard wood wedges driven into the slot and an altered cheap drill press vise (below, left). I replaced the thin vise jaws from a 2.5" Harbor Freight vise with blocks of mild steel. The blocks were drilled and threaded to accept 8x32 cap screws. The guard can be laid down between the cap screws and the vise closed to hold the guard securely. It's then off to the surface grinder, belt grinder and/or buffing wheel to get the guard into the final polish.

The next step is to curve the guard. It isn't easy to free-form the same exact curve on both limbs, so I welded up the jig shown above. It's a section of pipe of the right outer diameter with a bar of steel running at right angles to the pipe. The pipe is flattened at the location of the block and is sized to match the usual tang width (about 1"). The bar is drilled and tapped for 1/4x20 cap screws. When a block of steel with matching holes is bolted down, the guard can be securely captured between that block and the pipe. I welded two other blocks of steel inside the pipe - one to fit between the jaws of a machinist vise and one that extends out under the blocks on the jaws of the vise. When the vise is closed, the jig is securely clamped. I then use a heavy brass rod (3/4" diameter) as a punch and hammer the wings of the guard down to the pipe surface. The result is a smoothly curved guard with a polished surface towards the blade. The marks from the hammering are easily removed and the guard is soldered in place using the

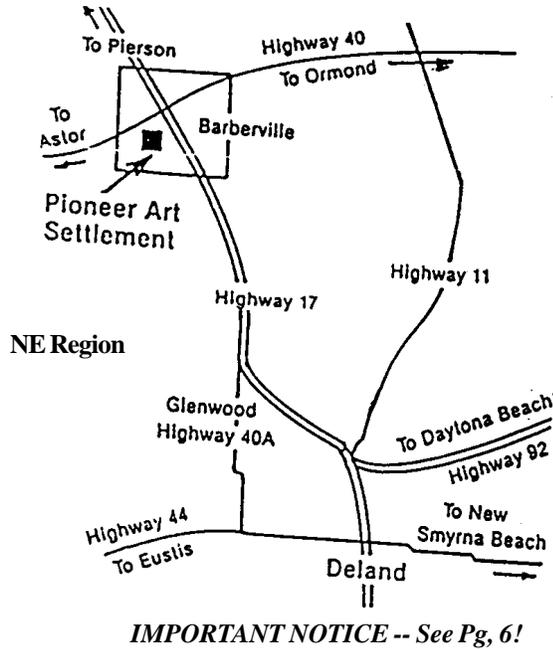
Upcoming Events

The calendar includes events of interest to the blacksmithing community. The regions have no boundaries - everyone is welcome everywhere. Come to more than one if you can. We hold regular meetings in each region on the following Saturdays of each month: NE-1st, NW-2nd, SE-3rd, SW-4th except for quarterly Statewide meetings. The actual dates vary so check the schedule below. Our meetings are informal gatherings around the forge. Prospective members are always welcome. Come for all or any part of a meeting, bring your tools or just watch. Most meetings run from 9AM to 4PM and you'll need to bring lunch if not otherwise noted. If you have any questions about meetings, please contact the Regional Coordinators:

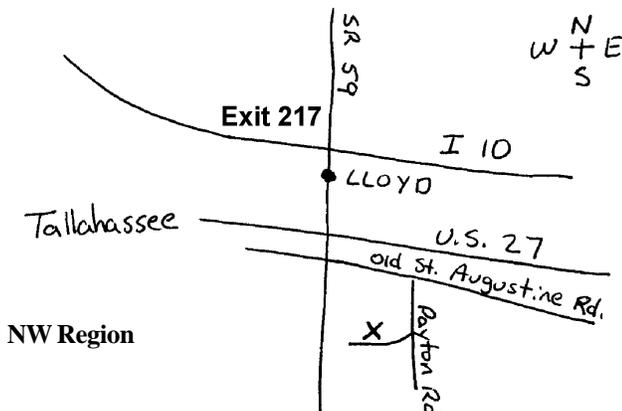
Northeast Region Ken Knight	352-339-0629	Ironken@AOL.com
Northwest Region Billy Christie	850-421-1386	chriswoodforge@embarqmail.com
Southeast Region Ed Aaron	561-748-9824	edaaron9824@bellsouth.net
Southwest Region Jerry Wolfe	941-355-5615	wolfforge@hotmail.com

March 2009

- NE 07 Barberville - open forges
- SW 07 Boy Scouts at Wimauma - Metal Merit Badge
- NW 14 Clyde Payton, Monticello, FL (see pg.3)
- NE 14 Gas forge workshop - near Archer at Steve Bloom's shop (IronFlower Forge) - see Notices
- SE 21 Ann & Ray Reynolds
- SW 28 Open house for a new forge at Trez Cole's - 5674 Bee Ridge Extension; Sarasota (see SW report)



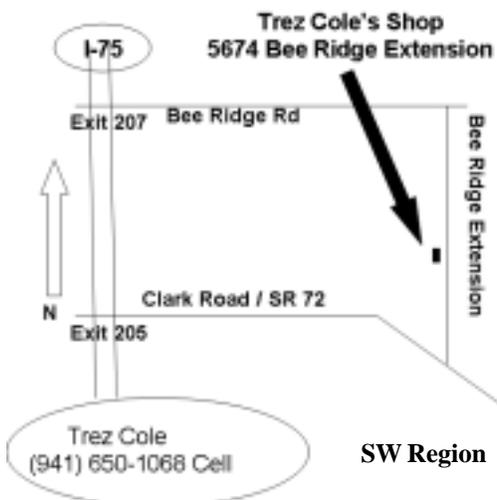
IMPORTANT NOTICE -- See Pg, 6!



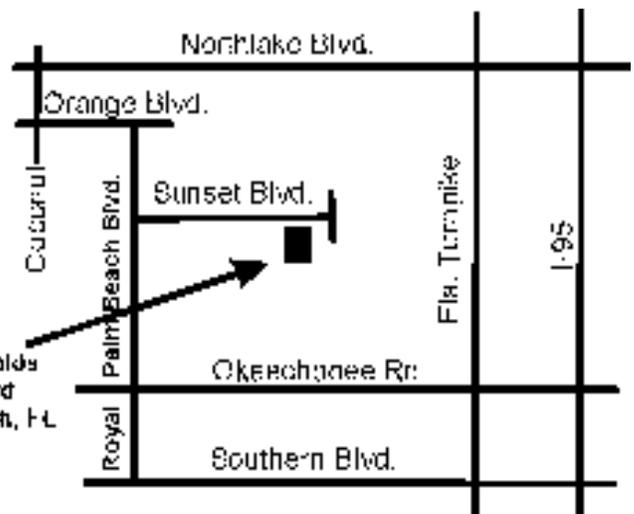
From I-10, take **Exit 217** (SR59) south past Lloyd and Highway 27. Turn east on Old St. Augustine Rd, the next road south of Highway 27. Go about a mile east, then turn south on Payton Road (unpaved). Head south about a half mile, and watch for the anvil on the right.

Boy Scout Camp: from I-95 exit go east onto Indiantown Rd, go north (left) onto Island Way (1st traffic light). Stay on it until it ends at Country Club Dr. Go left—it ends at the entrance to Boy Scout Camp.

SE Region



Ray & Ann Reynolds
11064 Sunset Blvd
Royal Palm Beach, FL
561-793-2432



Future Events

Batson Blade Symposium - Apr 3-5

NW -Apr 11- Statewide meeting - Blountstown (see NW report)

NE- May 2 - Steve Bloom's, near Archer, Fl

NW- May 9 – Rex & Mary Ellen Anderson, Monticello, FL

Madison Conference - May 14-16

Report from the Northwest

Billy Christie

The Northwest Region of FABA met at Jeff & Brooke Mohr's Mockingbird Forge in Crawfordville, FL. We had a cool start to another great blacksmithing day, with 31 people in attendance. Jeff was the demonstrator and he started out by showing how to make an acorn in his hand made acorn die. He also told everyone how to make the acorn die.

The next project was how to make a tall candle holder. First he made the short candle holder section out of a piece of black iron pipe, which he fullered down in two places so it looked like a ball in the center. Then he flared out the top where the candle goes. This section is then welded to one end of a piece of 3/8" round x 36" long. On the other end he forged out an oak leaf, thinned out the stem and put a loop in it. Then heating the long piece in the center he folded it over and forged it into a short taper. The two arms are then heated and twisted to the desired shape. The base is a piece of 1/4" plate that is 4"x 4". Jeff heats up each corner (one at a time) and forges them out and rolls them under to become the feet. A hole is drilled in the center of the base and the tapered end of the candle holder is put in the hole and welded from the bottom. After making sure that everything is level and straight, it is wire brushed and a coat of Watco Danish Oil is applied, then wiped down and a coat of clear acrylic is sprayed on. It looked great. Clyde Payton auctioned it off and it went for \$100.00. Thanks Mike Bettinger.

The "Iron In The Hat" had some interesting items & brought in \$108.00. Thanks to Lyki-El Jones for drawing the winning tickets. John Watson was kind enough to bring over his custom smoker & cook up some delicious venison sausage for breakfast and smoked chicken, baked beans, & BBQ bread for lunch. With the great covered dishes, no one went away hungry.

After lunch we had several people making things in the three open forges that were going. Thanks Jeff, Brooke, & John for another educational and fun filled meeting. Happy Hammering!

MARCH NORTHWEST REGIONAL MEETING will be held at Clyde and Vi Payton's shop on Saturday, MARCH 14, 2009. We have a very interesting program lined up that will titillate the fancy of quite a few. This full day of activities

will start at 9:00 am sharp and go until 5:00 PM. First on will be Mike Bettinger, a professional welder/ fabricator/forgers who owns his business in Tallahassee, Florida. Mike will demonstrate making FIREPLACE TONGS.

After lunch we will have TWO very interesting exhibitors:

Marty Shimansky in Tallahassee, Florida runs the unique SHIMANSKY SPECIALTY MACHINING, INC. In this shop Marty does conventional fabrications, tool making, models and prototypes of just about anything, and abrasive jet cutting and etchings. His specialty is WATER JET cutting. Marty is going to bring an exhibit of his work and give us a presentation on what can be done with his machines and the various metals used.

2 - *James Levy* is an archeologist and historic conservator who works in the Florida State Museum for the Division of Historical Resources. James is going to bring an exhibit of some authentic early Spanish ironwork that has been dug up and dived up in Florida.

Throughout the day these activities will be going on -- Andy Ellis of Monticello, FL is a fantastic wood carver (and an excellent knife maker). Andy is going to have an exhibit of his American Indian figures. - We will have two BEGINNERS/ INTERMEDIATE blacksmithing stations set up with teachers. Minors must have parental consent and/or supervision. Bring your own eye and ear protection. Phil Pauley - Demo on Twisted wire handle; Bethany Allen-Ford -Demo on a hook; John Wright demonstrating

A SHOW AND TELL table will be available – bring your favorite piece(s) to show off. Bring your own folding table for this if you can.

TAILGATE SALES is always a big feature at this March meeting. Load up your truck with all your surplus "stuff" and bring it. A special area is set aside for tailgaters.

An IRON IN THE HAT raffle is likewise a big feature of this meeting – bring a donation to go on this table. This raffle is the way we pay for the port-a-potty and other meeting expenses.

LUNCH will be served promptly at 12:00 noon – please bring a covered dish to add to the table.

PAYTON FORGE is at 250 Payton Road, Monticello, FL 32344. For further information or directions call 850-997-3627 or 850-210-5177. Or www.blacksmithing.org and look up the March 2008 issue of the CLINKER BREAKER Hope to see you.

Northwest Region April Statewide meeting -

Saturday, April 11, 2009
Panhandle Pioneer Settlement -Blountstown,
Florida

Elmer Roush will be our featured demonstrator. Elmer will show us how to forge and fire-braze a 10th century Viking lock.

Elmer specializes in the making of hand forged tools - high quality and finely finished tools as they were made by blacksmiths before the industrial revolution churned everything out from factories and highly skilled hand-work was

sidelined. Elmer began blacksmithing in 1970. In 1985 he became a full-time blacksmith and has made his living forging custom items for clients ever since. His work covers a wide range of blacksmithing from custom tools, colonial ware, 10th century Viking iron reproductions, knives, architectural projects, and furniture to name but a few.

Elmer has taught blacksmithing at a number of schools including Peters Valley, Touchstone, and the Appalachian Center for Crafts. He was a studio monitor at the Haystack School of Crafts and the resident artist at the John C. Campbell Folk School in North Carolina for eight years. Elmer also assisted in setting up the Cearta Inneona blacksmithing school in Ireland in 1999 (where he learned about Viking locks) and was invited to teach and demonstrate at the yearly blacksmiths' gathering near Brisbane in Australia in 2001.

To learn more about Elmer and his highly talented artist-blacksmith/jeweler wife, Lynda Metcalfe, visit their web site at www.melcalferoush.com

Don't forget to bring your iron-in-the- hat donations, show & tell and tailgate items.



Hoof Pick, used to clean the hooves of horses. Sarah had her own rig on site and only required the homey companionship of fellow blacksmith types and was kind enough to share some tips and techniques for working Horse Shoes. Jason worked

on some basic skills requiring pounding on hot steel and tool safety. Ed demonstrated his Treadle Hammer and the making of Acorns (squirrels probably will not like them) and the use of a thru punch. Lunch was provided through the graciousness of Ed's grill.

P.S. I'm no longer the S.E. Regional Coordinator. At this time, I can't attend meetings and offer quality work, but will do whatever I can to help someone else do the job. Thanks, Ed Aaron.

Report from the Southwest
Jerry Wolfe

March 7 -The SW Region will host a Boy Scout Metal Merit Badge training session on March 7th at Masonic Park & Youth Camp near Little Manatee State Park in Wimauma, Exit 240 on I-75. We need "many volunteers", so please reserve that day to help train the scouts, you will enjoy it. Call me or email and let me know you are coming - Jerry Wolfe wolfeforge@hotmail.com or 941 702 1719

March 28 -Trez will be demonstrating making scrolling tongs from railroad spikes. Also will demonstrate how to make a twisted pick up tong from 1/4" x 3/4" stock as well as information about a variety of style tongs. Bring spikes if you want to make your own pair.

Second demonstration will be making a trammel hook. Demonstration starts at 10AM, come for informal hammering starting at 9AM.

We will have our normal Iron in the Hat and a pot luck dinner - Bring a dish to share.

Directions: From I-75 Exit 207 - Go east on Bee Ridge to corner, then south to 5674 Bee Ridge Extension. (West side - Brick mailbox) (Just across street from Misty Creek Country Club)

Report from the Southeast
Danny Cunniff and Ed Aarons

January's monthly meeting of The Florida Blacksmiths Association was conducted at Ed Aaron's place. What a great host! In attendance were Ed, Danny (New guy) Jason (Young new guy) Jan and Sarah. Jan and Danny learned how to make a Ball on the end on a piece of stock requiring Upsetting a piece of stock. This was accomplished on a forge furnished by Ed and under his supervision: good teacher. Danny made a Dragon motif handle for his gas forge (under construction) and Jan made a hook with a ball and balance pivot for a basket. 2 or 3 of the 6 major skills a blacksmith employs were used and shared. Sarah made a Horse Head

Notices, For Sales & Want-Ads

Gas Forge Workshop

Last call --There are six slots, three are filled and two are tentative, so if you're interested, it's time to commit. Description of the project are on the FABA website under "Notices". Costs range from \$10 to \$200 depending on whether you're building a burner or a complete forge with LP plumbing. March 14 is the day and money needs to be in my hands by the end of February.

Digital Newsletter

You can receive the newsletter in color as a pdf document about two weeks before the hard copy makes it into members hands by just sending a request to smith@blacksmithing.org. Currently, we have about 18% of the members on the digital distribution list and that saves FABA about \$200 annually.

BLACKSMITH COAL

\$35 per 100 lb bag (Pickup only) & details - Pioneer Settlement, contact the Settlement at 386-749-3353 (direct line to Gudrun in bookkeeping) or mail your order with payment to PSCA/COAL, P.O. Box 6, Barberville, FL 32105. Accepted forms of payment: cash, money orders, checks, MasterCard and Visa.

For sale - Post Vises I still have a couple of post vises left. Call Bill Robertson at 850-668-2876 if you are looking for one.

Free Information available:

Metallurgy of Steel for Bladesmiths & Others who Heat Treat and Forge Steel by John D. Verhoeven
<http://www.feine-klingen.de/PDFs/verhoeven.pdf>. 201 pgs

The Twenty-first Annual Batson Bladesmithing Symposium, Knife Show & Rendezvous April 3-5, 2009

Mike Linn-Artisan Blacksmith-McCalla, AL
 TANNEHILL IRONWORKS at Exit 100 off I-20, 11 miles West of Bessemer, Alabama

The On-Site Registration fee is \$65 per person. The Pre-Registration Fee received by 30 March is \$55 per person.
 Please pre-register. Send your name, address, and phone number with registration fee and how many people that will attend the Demonstrators Dinner on Thursday evening to:
 Judd Clem, 111 Yorkshire Dr, Athens, AL 35613,
 or contact by phone 256/232-2645, or by e-mail ajc665@peoplepc.com

Your Park fee is paid by the Alabama Forge Council.

The featured *Demonstrators* Master Bladesmiths; *Dan Petersen* from Auburn, Kansas, *Tim Hancock* from Scottsdale, Arizona and *James Rodebaugh* from Carpenter, Wyoming. *Cousin William White* from Morgantown, Kentucky will be the featured demonstrator of Early American hand made knives.

Old Timey Rendezvous Area with period dress, tents, trade blankets, demos, etc Contact Billy Watson, 334/365-1482, or Jim Batson, 256/971-6860, for details.

Adult & Youth Hands-On Forging Sites for Boy Scouts and other youths.

We should have the best Knife Show ever. Your table fee is

free to paid participants.

Bring your best knife for the Cutting Contest and a knife for the Railroad Spike Knife Contest. Bring items for the Auction. There will be Knife Suppliers, Tail Gate Sales and Tool Venders.

FEATURING:

- Damascus Steel James Rodebaugh
- Blade Forging & Knife Design Dan Petersen
- Handles, Guards & Blade Grinding Tim Hancock
- Forging Buckskinner's Knives William White
- Lock Back Folders Alex Daniels
- Heat Treating & Filework Joseph Keeslar
- Hammer & Graver Engraving Billy Bates
- Liner Lock Folders Melvin Pardue
- Abs Knife Judging B R Hughes
- Auction Colonel Tim Ryan
- Surprise Steve Schwarzer
- Self Promotion & Marketing Carolyn Hughes
- Silver Wire Inlay Ron "bowie" Claiborne
- Hands-On Bladesmithing Harry Brock, Dale Huckabee & Glynn Holmes
- Cutting Competition B R Hughes & James Batson
- Learn To Scrimshaw Mary Bailey
- Rendezvous Sheaths Tom Sterns
- Leather Sheaths Kenny Rowe
- Music Peggy & Chuck Patrick

TAIL GATE & KNIFE SUPPLY SALES

AGENDA

- Thursday, April 2, 2009
- 2 to 6 pm.....Check-in
- 6 to 8 pm.....Demonstrators Dinner
- Friday, April 3, 2009
- 7-8 am.....Check-in
- 8-12 noon.....Demonstrations Lunch.
- 1-5 pm.....Hands-on Seminars
- 7-9 pm.....Cutting Competition
- Saturday, April 4, 2009
- 7-8 am.....Check-in
- 8-12 noon.....Demonstrations Lunch
- 1-3 pm.....Knife Show & Collectors Exhibition
- 3-6 pm.....Auction
- 7-10 pmMusic & Round Table
- Sunday, April 5, 2009
- 8-12 noon.....Demonstrations
- Departure

(See blaksmithing.org - Conferences - Batson for details on location and lodging)

Barberville Parking

Northeast meetings are held at the Pioneer Settlement in and around the blacksmith shop. Because another event is taking place at the same time we have been asked to enter the area from the gate on Lemmon Road. All parking must be inside the gate. If there is no available parking close to the shop please park along the area where the woodshop is located. Parking is also available behind the church. At no time should the roads inside the gate be blocked. There is a \$6.00 charge if you choose to enter the site through the front gate. This is the amount that participants in the other program must pay to enter. Blacksmiths entering through the back gate are not charged.

Contributions from Members

Drill numbers, pens, and slabs

Steve Bloom

The following is an edited dialog between myself (normal type) and a FABA member (in italics) about drill sizes and full tang knife finishing. I thought that some of you might find it useful (and it does fill the space!).

I met a guy at the Alafia that makes trade knives (acid etched?). I bought a couple of his blanks so I could practice putting on handles. Here is his recipe....

- (1) Glue one handle blank (tang holes pre-drilled)*
- (2) When glue dries, drill through existing hole in tang through blank with #44 or #47 bit.*
- (3) Glue 2nd blank, let dry, drill back through from 1st blank.*

His pin of choice is a 3/32" brass welding rod. That is why he said he uses the #44 or #47 bit. Long way around to a short question. What the "fractional" size of a #44 or #47?? It is obviously less than 3/32".

Google "number drill decimal equivalent" - first listing = <http://www.smithbearing.com/pdf/ENG-FractionalChart.pdf> - download it, print it out and leave it in your shop. I have the equivalent taped over my wall cabinets.

#44 to #47 is 0.0860 .. 0.0785 while 3/32 = 0.09375, so even a hole made by a #44 will be too small. You need a #41. Typically over drill the hole in the tang, like using a 4/32=1/8". Then glue and drill in the center of the tang hole with a 3/32. Glue the 2nd side, then drill through all with the 3/32. The reason for the over drill is that the angle of the bit when drilling through may not be perfect, so having a tad of room so that the pin doesn't catch on the tang is a good idea. I typically use 1/8" (0.125) pins and use a #30 drill on the tang (0.1285). If you're just inserting pins and not working with fragile grip material, you can grind a slight point on the pin, start it by hand and then use a vise to press the pin through the handle (put some soft wood on the far side of the handle so that the pins have something to push into and the wood keeps the far

side from splintering out. It may anyway - one of the joys of knife making, which is why I do the pins when there is still excess material on the grips that will eventually get ground off. This means your pins are a bit overlong to begin with since you'll have to grind off the points. By using overlong pins in a grip that needs some more material removed from the sides, you'll be able to grind down to a non-splintered surface and reveal circular pins that are flush with the grip. If you're going to rivet the pins in place, be sure to drill a slight cone depression where the pins emerge from the handle. Anneal the pin material, grind off the edge of the ends (prevents spauling), and rivet them carefully - it's real easy to split the handle material. A bit of scrap steel with a slight hole the size of the pin makes this easier - the far side of the pin goes into the hole and you can start the head on the near side without driving the pin flush with the surface of the grip.

I thought part of the "hold" was the fact that the hole was smaller than the pin diameter, but completely understand the "splintering out" thing. I won't likely rivet them, a level of complexity I don't need at this point. I am planning on using overlong pins, however.

You obviously haven't tried to force a brass (or even steel) pin through a hole even a couple of thousands too small - won't go, bends, keeeerack! High precision machinists typically ream 0.002 over to allow a pin to fit. Given our usual sloppy drill bits and the tolerance on pin stock, pins drop through on one blade and need a major push from a vise on the other. To be sure when I do it, I hand fit the pins, grease the pins with quick set epoxy and dab some epoxy in the far side holes, then on to the vise to push them home. I've used a 1-ton arbor press but the old machinist vise seems to be a better tool because I stand above the jaws and look down onto the pins as they drive in -- making sure that they are not getting out of perpendicular. The epoxy between the tang and the slabs acts against the slabs lifting off but the epoxy is weak under shear forces, The addition of the pins insures that shear forces can't break the epoxy bond, hence the combination gives a strong handle. Riveting (IMHO) is really needed

One pin at a time? I would think it would be very tricky to manage 5 or 6 pins at once in the vise.....

It's not too bad to do all in one pass -- I hand start all pins (not mosaic pins - just the ones that run through the handle) - maybe give a tap with a tiny ball pein hammer (the head is maybe 0.75" long!). Grease them with epoxy and hop over to the vise. Usually I hang onto the blade, so the last pin in the handle gets the squeeze, then the next and the next -- all well within the 5 minute setup time for the epoxy. My usual handle has curves, so squeezing them all simultaneously doesn't work that well.

That's all folks...

**LEARN HOW TO MAKE YOUR
LITTLE GIANT POWER HAMMER
WORK HARDER THAN EVER!**

Please join us March 20-22, 2009 for our annual Little Giant Rebuilding Seminar!

This class was first taught by our good friend Fred Caylor of Zionsville, Indiana. We carry on his tradition of teaching how to make Little Giants run well and hit hard.

This 2 ½ day class is a hands-on format. You will help transform a 25 LB Little Giant hammer from functional but stoppy condition into a well tuned, quiet, hard working hammer. Sid Suedmeier, owner of Little Giant, will share all his knowledge and experience gained from working with Fred and from 18 years of repairing and rebuilding Little Giants.

An old style 25 LB Little Giant will be rebuilt during the class, and a new style machine will be on hand to demonstrate proper assembly and adjustment of both styles.

The class is held in our shop in historical Nebraska City, Nebraska. The city has a wide variety of cafes, outlets (including Pendleton Woolen Mills), antique and gift shops, orchards, wineries and museums.

**IF YOU HAVE A LITTLE GIANT, THIS
CLASS IS FOR YOU!**

No experience is required to attend this class. Past students have ranged from age 15 to 90, and from all walks of life.

Anyone who wants to learn will benefit from this class. We approach the rebuilding process using tools that can be found in the average home workshop.

If you are in the market to buy a power hammer, this class will make you an educated shopper. If you already own a Little Giant, or any other brand of power hammer, this class will teach you how to get the best performance possible.

The class costs \$95, refundable up to 7 days prior to the class; advance registration is required. We limit the class to 25 participants. The class starts at 9 AM sharp on Friday, and usually ends by Saturday evening. The schedule runs Sunday until noon in case we encounter any exceptional problems in rebuilding, and to answer remaining questions.

When we receive your registration, we will send you a city map, along with travel and hotel information.

Airports are located in Omaha (45 miles north), Lincoln (50 miles west) and Kansas City (125 miles south).

2009 REGISTRATION

Name: _____
Business name: _____
Address: _____
Telephone: _____
Email address: _____

PAYMENT

- Check enclosed
- Visa
- MasterCard
- Discover
- American Express
- Number: _____
- Expiration Date: _____

POWER HAMMER INFO

Brand: _____
Size: _____
Serial Number: _____

Please call or email if you have any questions, or prefer to register by phone. You can reach us at 402.873.6603 or Sid@LittleGiantHammer.com

Little Giant is located at 420 4th Corso, Nebraska City, NE 68410.

(continued on pg.8)

usual procedures that I described in previous articles.

The next step is to fabricate the handle. The design I use is a spindle of stabilized wood captured between two spacers made of material that matches the guard and pommel. The block of wood is center drilled (1/4" hole) and the block can be rectangular. I find that a 4.5" block seems to work best. The ends have to be square to the hole and a decent table saw does that for me. If I was really anal, I could mill the ends and use the Bridgeport to drill the hole but that is overkill (there - you never thought you'd hear me say that!). Once



the block is ready and the spacers cut from flat stock, the pieces are assembled on the mandrel pictures above - basically a piece of 1/4x20 all-thread and two threaded pieces of round stock. One end is set up to accept a live center and the other goes into the three-jaw chuck on my lathe. In place, it looks



like:

By calculation of the length and width of the block, an 8..10 degrees angle on the diagonal feed is selected -- OK, I just guessed at that number and it worked - sue me!. When the spin is over (after flipping the handle over to get the opposite taper), you have a rough (and I mean rough) spindle. If you don't have a lathe, you can saw the crude angles, but what fun is that? Okay- you have a spindle --Stick the narrow end (that's a 3/8" diameter end) into a drill and slip a chunk of wood over the other end - because you don't want to have your paw on the metal piece when we get to the next step.



The setup looks like the one shown above.

Set up a flex belt on your 2x72 grinder, fire up the grinder and the drill and start pushing the spindle against the belt. Now - see why you want that piece of wood? You can now fine-tune the tapers (be careful not to eat away the wood while leaving the spacers sticking up). The result is:



We now have a nice piece of smooth wood with spacers but the hole in the center is still only 1/4". Unless you're a really poor knifemaker, the tang is a bit more robust than that. You need to enlarge the central hole to correspond to the tang. Typically, the tang thickness is less than 1/4" but the width may taper from 5/8" down to 1/4". The trick here is to drive a 1/4" hard wood dowel down the center and drill in flanking 3/16" holes corresponding to the wedge shape of the tang. Since the universe is perverse, the tang will still not fit even after you remember to drive out that sacrificial dowel. The next step is to reach into the tang drawer and find a chunk of mild steel that pretty well matches the tang, i.e.,



If you don't have one, make it -- you're a smith!. Slap the stand-in a vise, heat it up to yellow with a torch and slide the handle on. With a little luck, the tang will now fit. If the wood was an exotic jungle hardwood, you may find that your lungs stopped working. USE A MASK! or at least a big FAN!

Hokay, the tang fits, but the spacer between the guard and the handle still has a 1/4" hole and it need to fit over the top of the wedge of the tang. What do you do?.....Make a jig. The basic problem is how do you hold on to a circular, tapered washer without crushing it out of shape. The answer simple - squeeze it. As shown in the next picture, take a chunk of steel (about 2" long), drill, tap, and install two bolts. Drill a cap slab to fit over the bolts and drill a largish (note the precision there) hole about 3/8 to 1/2" in the center, through the cap slab and into the underlying chunk. DO NOT drill all

the way through. Continue the hole with a 1/4" bit. Why? Because you can capture the spacer between the slab and the chunk using a 1/4" dowel (OK - an old piece of 1/4" stock) to center the spacer in the larger hole. Toss the assembly on the drill press and drill out the center of the spacer. It may need a bit of filing to fit over the tang wedge but the hard part is down.



You now have a symmetrical guard soldered on the tang and a spacer and a handle that will slip over the tang. But there is something missing -- the pommel has to screw down on something and all we have is the skinny end of the tang. We now enter the realm of 'What If'. IF the tang is 0.25" or more in thickness at the guard, then you could have welded a bolt on to the end of the tang before heat treating. This is a rare event (and a massive dagger). Typically, the tang is a bit over 1/8" at the guard and a bolt of that diameter is dubious (to say the least) with regard to attaching the pommel. My solution is to braze a bolt onto the end of the tang, i.e., the setup is :



It's basically a couple pieces of angle iron welded to a bit of rectangular tubing. The tang is clamped to one side and the bolt to the other. They join in mid air (the bolt is slotted to fit over the tang). A bit of borax and brass with the help of an oxy-propane torch fuses them together. While the heat is way less than welding, it still screws up the grain structure in the tang tip -- SO NORMALIZE!.

You can now slather epoxy over the tang and over the

interfaces of the front spacer to the handle and over the rear spacer and the handle. It really helps to dry fit the pieces and mark them with a magic marker, i.e., a line on the underside of the guard running across the front spacer to the handle. Even given the use of a lathe, there will be a sweet spot to get the guard to align with the sides of the handle and to get the spacer to play nice between the handle and the guard. The time to find out that there are problems is NOT when there is epoxy everywhere including between your fingers! (By the way, Harbor Freight sells really cheap surgical/examination gloves that are worth it to keep the epoxy off your paws -- just a word of wisdom...).

OK - grease that puppy, align the marks and screw it together with a 1/4x20 nut on the bolt sticking out of the end of the handle. Be sure to pack the cavity with the excess epoxy. Wipe off the excess epoxy - acetone really helps here. You should also know about Brownell's black epoxy colorant - basically soot you mix into the epoxy and you get a gloss black epoxy that hides micro-discrepancies in alignments.

You now have only the pommel -- and what a pain that is. The simplest pommel is something radially symmetrically, like a cone or a ball. The worst is something that is bilaterally symmetrically (left to right) and symmetrically front to back -- all while not screwing up the balance of the overall dagger. I like my daggers to balance at the guard, so there is a delicate interplay of the length of the handle, the massiveness of the tang and the pommel. Since the guard is at the balance point, it falls out of the picture. Of course, I elected to use the most difficult version of the pommel. The blade shown to the right has a pommel that started out as a cubic inch of stainless steel. It was milled to remove the metal on the right and left of the pommel and then milled to remove metal from the back and front sides to create a taper from 3/4" to 3/8". The rest was formed using a slack belt on a variable speed grinder. If I had used brass or has a big block of nickel silver, this would have been a LOT easier.

You do not need all the gear I've mentioned here but it helps. Symmetry is a real hurdle and you can jump that with technology or just a lot of practice. Guess which route I took....



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