Rocky Forge News

Volume 7, issue 5 – May, 2008

Next Meeting/Building Done

By Ted Stout

It's done!!! Stage one of our club's blacksmith shop is finished and it looks great. Come over to the Illiana Show grounds on May 10th to see it for yourself. We will have our meeting in the club house and do some cleanup around the new building before lighting our forges. Bring a shovel and rake so we can clean up the dirt from the post holes. That should not take us very long. Then we can light the fire and do some forging under roof. We will test the smoke dissipation.

Bring iron in the hat items because we need some really good revenue to pay off the loan. More on that at the meeting. Also, bring your sack lunch and we will eat in the club house. A lawn chair might also be a handy thing to have.

Any questions give me a call on 491-2194. See a bunch of you on the 10 of May.

Ted

Smoke and Noise

Articles from e-mail and the Internet

Compiled by David Childress

Here is a project that I know has to be harder than it sounds. If a few of you could try maybe a salable project would result or we may find the problem in making a striker this way. DEC

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From: Peter Hirst
Date: Apr 13, 2008 5:24 PM
Subject  [TheForge] Fire Steel redux
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I saw an exapmle to day of the fire striker with the steeled edge I am being asked to reproduce. Pretty amazing. The steeled part consists of seam barely wide enough to see slit into the 3/16 striking face, with a strip perhaps 1/8 wide and .005 or .010 thick set edgwise into it. That little sliver of steel is all that's required to provide the spark. Now that's economy. Not a $75 job at all. Maybe 25. The whole thing is perhaps 3" long (fits 3 fingers) and the striking edge is perhaps 2". so begin with a piece of 3/16 x 1/2, draw out a pair of horns, slit the edge 1/8 deep, insert the steel (piano wire?) and forge closed.

Keziah

Here is a bit on forge welding, flux, etc. Forge welding seems to be one of the rites of passage to being considered a "real" blacksmith. DEC

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From: David Seigrist
Date: Apr 16, 2008 12:42 PM
Subject: RE: [TheForge] welding without
  flux
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I just saw that video about a month ago. I believe his name is Mark Pearce and his shop does restorative work and must forge weld without flux. He said the flux could leach out later causing a white streak to run down the iron work. It was cold enough where he was that you could clearly see him breathing fog. A couple of points about his forge welding:

1) the metal was upset quite a bit, even after he welded there was still a big bulge in the bar that would have to be hammered down, 2) he took a small shovel of hot coke and placed it on the anvil prior to welding, preheating the anvil, 3) the scarfs to be welded were placed face down in the fire to prevent ash or debris from getting on the faces to be welded, 4) when moving to the anvil he did a quick slinging action to get the weld clean, 5) after slinging off debris he rotated the metal in his right hand 180 degrees so the scarfs were face to face on the anvil. Steps 4 and 5 were done on the way to the anvil with a smooth motion and focused purpose. After the initial weld he took it back up to welding heat a time or two to "wash" the weld and blend in the lines. I tried the same method on a 1/2" square bar and it worked fine. Your time to weld is limited so you must move with a purpose.

David

From: "bamablacksmith@comcast.net"
Date: Apr 16, 2008 3:19 PM
Subject: RE: [TheForge] welding without flux

One of the things I see newbies do the most is to not upset enough. Its easy to stretch it out but really tough to add metal when you get it too thin.

I use flux all the time. Not cuz I have to, but because it is more forgiving. If you have a good clean reducing fire you can weld without flux, however if everything is not right it wont stick. Flux just widens the allowable tolerances of the various parameters. I've welded with EZ Weld, Cherry Weld, silica sand, dirt dauber nests, borax, and borax with iron powder, ad nauseum. All work to varying degrees but all require a good fire with plenty of heat.

The other thing I see newbies doing is not getting the heat all the way through the pieces. I bring them up to just under welding temp, then cut the fire and let the pieces soak to get the heat all the way thru. This is especially important on thicker material. If the middle is not at welding temp it will not stick well. Remember flux is not a glue, all it does is help move the oxides and slag away from the joint.

Mike

From: Peter Hirst
Date: Apr 16, 2008 5:34 PM
Subject: Re: [TheForge] welding without flux

As it happens, the first forge weld I ever did was without flux. About 35 years a go, and I still have it. It's a double hook on my fireplace, where the tongs hang. It was two 40d cut nails. My forge was an old laundry stove with the top burner plate removed, and I was burning of all things anthracite. I just heated em up till they sparked, hit em hard, sparks went everywhere and started a pile of leaves on fire, but there it was, my double hook. Beginner's luck. I have never done it again, but I keep tryin.

Keziah

From: "williamsiron@comcast.net"
Date: Apr 17, 2008 10:30 AM
Subject: RE: [TheForge] welding without flux

Bob Patrick was at Flagstaff in 2000 and at St Louis in 1994. I agree he is excellent at forge welding. In St Louis in 95+ heat, we sat under a tent and watch Bob weld stuff for 3 hours, clean fires and dirty fires and once he threw copper slugs in the fire and still made the weld. He said it was more a state of mind and of experience.

I have done some forge welding. I've used Borax, EZ weld, Cresent Weld, Black Magic flux, and a couple of concoctions of unknown composition. They all work.

Mark Williams

Snow Hill, Maryland

From: Peter Hirst
Date: Apr 14, 2008 6:04 PM
Subject: [TheForge] New Discoveries: Ersatz EZ Weld

The epoxy solvent series was so much fun I thought I'd contribute my own discovery. I need a bunch of EZ Weld for an upcoming project, and seem to recall it is just borax with iron filings. SO I have been pondering what might be a cheap easy source of iron filings. Filing iron, as it turns out, is not it. As I was pondering, a pad of 2-aught steel wool popped into my hand and AHA! says I, one step away from cheap easy iron filings! After a couple of different tries at ways to pulverize steel wool that were so fruitless I think I'll save myself the embarrassment of sharing them, I hit upon the Ideal Steel Wool Pulverizing Technology. A grain mill. That old steel cutter grain mill from my home made beer and granola days is just the thing. Unroll a coupla pads o' double aught, feed it right in the hopper, and quicker n you can say falafel a nice neat pile o' shiny new iron granules. Mixed with raw outta the box borax, it made about a quart of Ersatz EZ Weld. Now I suppoze if I took the time to dehydrate the borax I could grind it in the same device and have Even Less Ersatz EZ Weld.

Now here's the thing: I've read somewhere that what you can' use for iron in Ersatz EZ Weld is grinder dust, cause its just iron oxide. But in

checking up my EEZW formula, I just read the Material Safety Data Sheet on the Real EZW and guess what: it's 45-55 percent "slag/FeO, Fe_2O_3 and Fe_3O_4" how bout that? So do I throw a bunch of scale or grinder dust in with the borax and steel shavings?

I'm just gonna stick with the borax and shavings for now. I figure I made about 30 bucks worth of EEZW for about a buck in borax and steel wool. I'll let ya know how the next coupla thousand forge welds turn out. ;-)

As I am sure you know one of my favorite topics is steel and wrought iron and maybe useful or useless info about such. So I bring you some more. DEC

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From: Ekaterina Harrison
Sent: Friday, March 28, 2008 12:50 AM
Subject: [TheForge] Re: File Making,
  sniffing up wrought iron
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Hi All,

I must admit that some of this is going over my head. <sigh> Perhaps this was already answered and I missed it.

I have spent a few years working in various foundries and have poured some ductile iron. However, I really did not get a chance to find out as much as I had wanted to about the various aspects of iron. Perhaps somebody here can answer this - What is the difference between iron that is cast and what you are referring to as pure iron?

Ekaterina

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From: "David E. Smucker"
Date: Mar 28, 2008 6:38 AM
Subject: Re: [TheForge] Pure Iron vs.
  Cast Iron
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Ekaterina,

Pure iron is just that plain iron. No alloy and No carbon. (Carbon is really an alloy element but we don't think that way most times.) As we start to add carbon to iron we get steel. Low carbon is around 0.2 of 1 percent carbon -- mild steel. This is also sometimes called points of carbon or 20 points. Most high carbon steel today is around 1 percent carbon (100 points.) We often also call this a tool steel. W1 for example is 1 percent carbon. Medium carbon steels are around a 1/2 percent carbon 0.5 of 1 percent or 50 points. Steels may also have lots of different alloying elements added greatly changing their strength and other characteristics. Steels can have a maximum of 2 percent carbon -- above 2 percent carbon, we have the cast irons. Up to I believe the max the iron can "hold" is 6.67 percent carbon. Your ductile iron is one form of the "cast irons". Gray cast iron another.

Historically there was a very common product called "wrought iron" sometimes today called "real wrought iron". It like "pure iron" had almost zero carbon, maybe a very small amount. But it did have Silicon Oxide stringers in it from the manufacturing / refining process. To confuse things even more -- it was made from cast iron or pig iron by removing the carbon. Same is true today for the manufacture of raw steel -- it starts out a liquid cast iron from a blast furnace -- also a lot of recycled steel is added.

Hope that helps a little.

Dave Smucker

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From: "David E. Smucker"
Date: Thu, 27 Mar 2008 14:10:52 -0400
Subject: Re: [TheForge] Re: File Making,
  sniffing up wrought iron
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Frosty, I believe the pure iron made today is being made via an electric arc furnace. It is really being produced as "transformer iron" for use in some types of transformer and other magnetic devices. It is produced in sheet form. This is quite a bit of this produced but not as much as some of the other transformer irons with high Si content. (Pure Si, not the oxide.)

The blacksmithing pure iron was (is) produced by taking some heats of this material and running it to bar stock.

To the best of my knowledge there are no Bessemer Furnaces still in operation. (Air Blast) There are a lot of Basic Oxygen Furnaces operating producing about 60 % of the world's raw steel. Some have called BOF the "son of Bessemer" as the blast is now Oxygen vs. Air. The BOF can take a feed of about 1/3 scrap vs. little or no scrap in the Bessemer. In the BOF you don't have to heat the N2, so you can melt scrap instead.

Dave

From: "Jerry Frost"
Sent: Thursday, March 27, 2008 1:27 PM
Subject: Re: [TheForge] Re: File Making, sniffing up wrought iron

This leads me to delve back into the recollections that I was mistaken about regarding when wrought was last produced in the US. (lousy sentence but understandable I hope)

From what I recall reading; after the Bessemer process became wide spread, production of wrought fell off sharply and mild steel became more and more the norm for construction and other things wrought was used for. Still, there was a large market for wrought iron and for a period Bessemer processed pure iron was sold as wrought, later specific amounts of silica was added to make "Bessemer wrought." (I'm using a descriptive phrase here, that's almost certainly not what it was actually called)

Again, my memory is probably not clear so I'm sure details are wrong. I've looked through my bookmarks and read myself cross-eyed but can't find the link I probably lost it in the last crash.

Anyway, I strongly doubt fresh wrought is being produced the way they did it 150 years ago. The ore or scrap is probably refined and purified via the Bessemer process and silica added back in to make up "wrought". It's them refined under rolls rather than hammers.

Pure iron is probably taken out of the process before alloying agents are added and actually requires less labor, materials and fuel to produce. But as all small batch products costs more.

I'll go sit quietly now.

Frosty

If it ain't forged
it ain't real.
Wrought iron is.
The FrostWorks
Meadow Lakes, AK.

From: "Andrew Vida"

The front page is interesting in that me wonders if they have confused pure iron with wrought. To wit, it states: "Pure Iron is a high-purity iron that is very ductile and the preferred material for forging and decorative metal work. While very popular in the first half of the 20th century, its use was reduced by the development of new steel alloys and high production costs."

I do not recall pure iron being popular in the era up to 1950, but perhaps I am mistaken. Also, referring to it as "ductile" rather than malleable leads me to suspect. Wrought iron is ductile (uni-axial deformable) whereas pure iron is malleable (multi-axially deformable).

Just an observation.

-Andy

From: Peter Hirst
Date: Apr 28, 2008 9:35 PM
Subject: [TheForge] No More Smokin' Hoods

Had an AHA! moment in the shop today. Since I got the forge up and running over the winter, my special custom-designed open hood has failed miserably. It covers the entire area of the forge (2x2) and is only about 18" above the fire. It tapers beautifully to an 8" adapter and is topped by 12 feet of 8" pipe with no cap. Works beautifully on paper. In the shop, hardly at all. Some smoke stays under the hood, and some even goes up the stack, but mostly it just billows and swirls and spills out, even when the pipe itself seems to be drawing well. I have noticed several times that at the joint where the hood meets the pipe, it draws like crazy, and even with a roar when anything flaming is placed near that spot. Even then, smoke is going the wrong way at the edge of the hood. A lot of air goes up that pipe, but it doesn't take much smoke with it. So today, when I couldn't stand it any more, out of sheer desperation I took a spare 4' section of 8" pipe and inserted it up under the hood at the joint into the existing 8". That put the lower end, with about a 30 degree angle at the opening, just a couple inches over the fire. As soon as I connected it, I had a winner. The fire literally roared into the 8" opening, sucking smoke from at least a 12" radius around it. It may just have been because I was paying closer attention, but the fire seemed to burn hotter, cleaner, and more efficiently. Things were suddenly so much better that just for grins, I got a nice clean, hot, deep open coke fire going and dumped a few fat shovels full of green coal on it. No problemo. All that thick, sickly yellow smoke --

and I mean all of it -- disappeared like a wisp into the stack.

So now my entire hood and vent system consists of just 16 feet of 8" pipe with a 30 degree bevel at the bottom. No side draft, no hood, no expansion chamber, smoke shelf, step down, step up, 12 " flue, nothing. Just 16 feet of pipe. It doesn't interfere visually (in fact I can see the work better than with smoke escaping from under the hood) or mechanically with the fire or the work, and if it ever does need it for a particular piece, I can either swing it a few inches in any direction or remove it temporarily and rely on the hood. I was on the verge of ripping out the whole thing and building a side draft with a 12 inch flue from scratch, and investing in about 12 or 16 feet more of 12" duct for the portable rig for shows. Now I'm all set with the shop, and for the portable rig, think I'll just go with the 8" pipe set about 4" over the fire, just like the shop, or maybe resting right on the hearth with the end cut at 45 degrees.

Life just got a whole lot simpler.

Keziah

The following I just add to the category of life is that way. The original topic was the wonders of WD40 and it was an interesting series of Emails. This end struck a chord within me and so I am including it. DEC

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From: Mike Spencer
Date: Apr 16, 2008 4:13 PM
Subject: [TheForge] Re: My latest
  discovery - cleaning up wet epoxy
  cement
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> That's only a problem if you insist on a spritzer with the logo on it. Spritzers can be had in dozens of sizes and shapes.

You're quite right, Aubrey, quite right. I'm just cranky, is all. Things done by chance or nature -- wind, rain, illness, age or whatever -- I can cope with more or less cheerfully. Things done by stupidiy, malice or even just a failure of corporate entities to attend to my personal whims and which I have to expend effort to fix, undo or re-do put me in a cranky snit.

Example: A box of table salt comes with a "convenient" metal pour-spout. But it is so designed (or at least constructed) that opening it is awkward and it tends to pull loose and become unusable early on. To remedy this, one must carefully open a new spout for the first time with a screw driver and then bend it just so with small pliers, after which treatment it serves well for the life of the box. I now do this routinely but it annoys me that it is so.

(That spout is metal so this *might* be construed as a metalwork topic. If you're feeling generous. :-)

- Mike

Announcements

The Rocky Forge News is available by E-mail and on our website (`http://www.rockyforge.org/`). If you wish to receive the newsletter via E-mail sent Dave Childress a note at `trollkeep@gmail.com`, or e-mail directly to `rocky@rockyforge.org`.