

July 2008



*The Florida*

# Clinker Breaker

Florida Artist Blacksmith Association - Established May 18, 1985

## *President's Corner*

*Rex Anderson*

Once again, I have decided to give Steve a break. Folks, we all take for granted the great work that Steve invests into our Clinker Breaker. If we burn him out, who will pick up the torch? I suggest we all make an effort to contribute to the newsletter.



I must admit, before becoming Prez I never wrote anything for the Clinker. Mainly because there are so many members out there with far more experience and, frankly, their skills blow me away. However, you guys and gals don't realize that subtle things you do such as the way you set your shop up or possibly the way you approach a task are unique. When you demo or write about an experience people will pick up on at least one point and build from the idea.

Recently I had a conversation with Don Shedlock from our Southeast Region. He told me about a railing job that he was working on. As part of the project he hammered brass discs into bowl shapes. To do so, he used a wood stump that he had turned on a lathe by a bowl maker. He said this as a trivial point in describing the whole concept. Later as I mulled over the conversation in my head, it occurred to me what a great idea using a lathe was. I use stumps that I have gouged, burned and ground for various projects. But, between the stumps and my swage blocks, I never seem to have the perfect shape. I can see me finding a lathe at a swap meet in the near future! You know every time a blacksmith starts a new project he must make a tool, jig or learn a new skill.

On to another subject. I hope everyone is giving some thought as to what they are making or contributing to the annual auction. Y'all know the revenues from the auction are what make the annual conference and other events possible. If you don't contribute, remember what may be more important is those who buy the items for a ridiculous amount thanks to that sweet talkin' Col. Tim Ryan. Please make an extra effort this year. We hope to finance some extra things in the near future.

In July, we will have a quarterly meeting by conference call. I invite anyone who would like to listen in to

do so. I hope to hear from our committee for tee shirt sales. They are trying to make possible selling tee shirts at other events besides the annual conference. Also, I hope to hear from our Program Chair that all is well with plans for the annual conference in Barberville.

Folks, it's getting hot. Drink plenty of water. Yes, I said water. If you stop sweating it is not a miracle. You better cool off quick. Everyone be careful, wear your eye protection (which I must work on). Don't worry, our Vice-Prez, Charles (Hippee) will remind you, forcefully. Think fire safety. Are their fire extinguishers and are they the correct type for the materials you are messing with? Is there a water hose easily available? How are you going to put yourself out? I have a pond next to my shop. Eric Velleca, I think your pond is too far away to sprint for while on fire!

Well, that's all I have to say. I'll try to come up with more to say by next month, but it's dicey. Please write something to help Steve and take the pressure off the Prez, who does not have the gift of gab.

## *-----Conference Update - Mark Stone -----*

Demonstrators for the conference are Edgar Chattin for the Bladesmith Demo and Luis Riggelman for the Traditional Demonstration. We will have Charles "Hippie" Pate doing two of the four Intermediate Classes making Slits and Drifts. Keith Ivey will be teaching two of the four Beginning Classes. Ron Childers will be teaching one class on Friday afternoon on Railroad Spike Knives with a twist. Ron will be assisting Edgar Chattin during his demonstration and will only offer the one Friday PM class. The Family Programs will include Vince Labolito teaching Leather Crafting making a leather knife sheath, Rick Jay and his Copper Flowers Class, and Jeff and Brooke Mohr teaching Broom Tying.

We are looking for one or two more Family Program instructors and instructors for the remaining two classes for the Beginning and Intermediate classes. Also, we are in need of volunteers to help man the various other activities going on during the conference. The more volunteers we have, the less time each volunteer will need to contribute. If you are interested in volunteering or being an instructor, contact Mark Stone at markham62@comcast.net or call 850-339-6010.

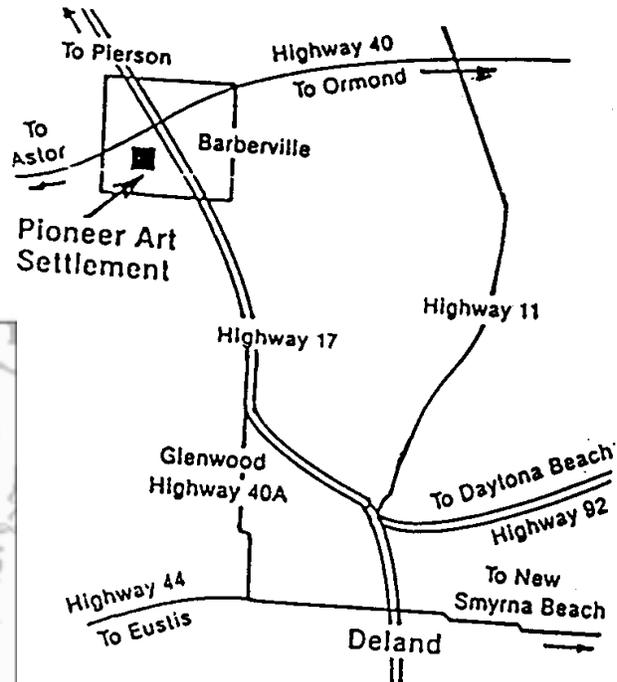
## Upcoming Events

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	wolfeforge@juno.com

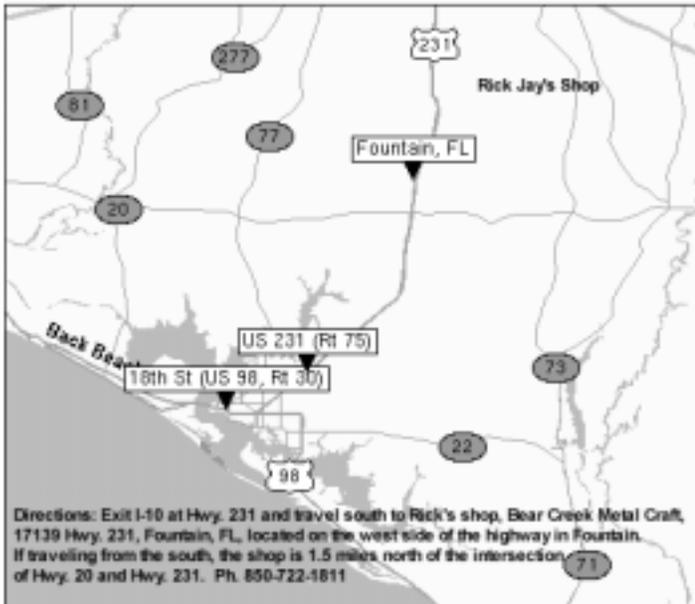
### July 2008

- NE 05** Barberville -work on still (see Pg.3 - NE report)
- NW 12** Rick and Joyce Jay, Fountain, FL
- SE 19** Until further notice-Tanah Keeta
- SW 26** Tandova, Inc.; 6010 N. Armenia Avenue, Tampa, FL, 33604 - Welded sculptures by Greg Ecenia and Lash Oberst.



NE Region

NW Region



SW Region



SE Region

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.

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## Current Events

**SE** - Jul 26 - Tandova, Inc Welded sculptures by Greg Ecenia and Lash Oberst. We will see a welded dinosaur sculpture and other creations of this full-service theatrical scenery and props shop. \*\*\*No sandals or flip-flops, please!!!\*\*\* Maybe we can learn to "make our own creation" !!! Demo starting at 9AM, Lunch - Bring a dish to share and BRING an Iron in the HAT item. Lisa Ann will also have a "glass-bead station" for anyone who would like to learn a new craft.

## Future Events

**NE** - Aug 02 - Barberville (see NE report)

**NW** - Aug 09 - Mike Bettinger's Welding, 3440 Garber Drive, Tallahassee, FL. Mike will be demonstrating his new C & C Plasma Torch system along with his new power hammer techniques that he learned in Uri Offi's class. We are going to be having a CNC Plasma cutter demo, FAB CAD demo on designing gates and handrails and a forging demo on making a wine holder. We are also going to be providing a BBQ lunch.

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## Nattering from the Editor

*Steve Bloom*

As you might remember (because I keep bringing it up), the newsletter is available digitally as an option that gets you the newsletter faster, in color, and saves FAB money. So far, 25 folks have signed up - thus saving us approximately \$625 annually. You might also note that the mill I was selling is gone -- getting the ads first just might get you the items you want/need before most of the membership checks their snail mail.

The Board has expressed a desire NOT to have micro-demonstrations at the next conference under the rationale that you would be distracted from the major demonstrators. We have a board meeting coming up, so look over the preview of the conference on page 1. Are you going to be watching the demonstrators or are you going to be just wandering the tool sales? Do you want to have a third "demonstrator" composed of a bunch of volunteers doing a series of an hour or so demos? As an example, I could demo the use of lead hammers and annealing to make reflectors for candle holders. The cost is zip and the schedule would be posted at the conference. If you think you would like to see and/or participate, let me know ASAP (before the Board meeting). If I don't hear from you, I'll have to assume that there is no interest and the idea will die. It's up to you.

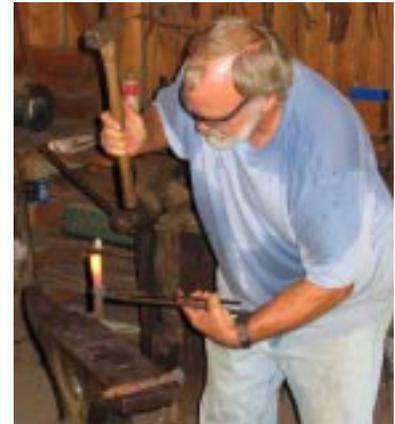
Progress on the teaching trailer is creeping along. Hippie donated a bunch of materials, I acquired some stainless plate to make the forge pots and Ben Rogers has graciously agreed to fire up his plasma cutter. I expect to start the initial strip down/build up on the trailer this month.

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## Report from the Northeast

*Ken Knight*

June 7th was a delightfully hot muggy day to be sure. Ben's demonstration was most interesting in that it reminds one that forethought must proceed every project, no matter how simple the thing might seem. Thanks Ben!



**Ben demonstrating**

Ronnie caught em, Allen cooked em, we ate em and they were good!!!

Ross Lishen the new Executive Director of the Pioneer Settlement spoke to us Saturday about cutbacks in the budget. They need volunteers and money. If anyone would like to sponsor a can of paint \$20.00 or help



**Allen & Ben cooking**

out in some way please call Ross at his office 386-749-2959 or cell 386-785-9711 or e-mail Ross@pioneersettlement.org When I asked Ross to pass his hat around to the 38 members on hand I was expecting we could raise 40 bucks toured the paint. You folks dug deep and came up with \$201.00! I was impressed and Ross was tearing up when we spoke later. A big THANKS to one and all !!

We blacksmiths have taken on the task of repairing / restoring the Turpentine Still next to our shop at the Settlement. In July I would like us to jack up, level, and shim the base timbers of the wooden cooling tank. Anyone with jacks, leveling equipment, and knowledge of same please come and bring what you can. We will meet at the settlement again on 2 August and at that time I would like us to be able to plump the tank and tighten the bands.

July 5th meeting will be in Barberville where we will have an old fashion Independence Day picnic with hot dogs and hamburgers. Please bring a covered dish. I'll have plates, utensils and water this time. We will be pouring lead hammer

heads so bring those handles that you picked up in June. Also bring all those wheel balancing weights and old fishing sinkers you've got laying around the shop. I'll do my best to get my foundry repaired and we might pour a few brass heads. Any old brass plumping fixture would be appreciated.

Now before I forget, Melanie Owen would like all the women members to attend this meeting to discuss projects that are of interest to you.

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### **Report from the Northwest** *Billy Christie*

May 10, 2008 was a fine-looking, searing day at Hippie's Forge, home of Nellie and Charles (AKA Hippie) Pate in Lamont, Florida. This was our first meeting (& hopefully not out last) at Hippie's new and improved forge. Signing in were 23 blacksmiths.

Hippie started off the day by demonstrating how to make one of Bill Epps (BillEpps@anvilfire.com) \$20 souvenir key chain anvil out of 1/2" square bar stock. It turned out fine! He had several step-by-step printouts available and several different variations of key chain anvils on hand to inspect.

Our next demonstrator was John Butler who, in no time at all, forged out a knife that looked striking.

Our "Iron In The Hat" drawing brought in \$90. Thanks to those who brought in a variety of objects from RR track to an anvil sign. A special thanks to Dot Butler for helping to sell and draw the winning tickets.

We had our usual lunch of delicious, mouth-watering dishes. Thanks Nellie for all you did to feed us!!

Once again the meeting was fun, interesting, and educational. Until next time, happy hammering!

For our July 12th NW meeting, we will be at Rick and Joyce Jay's, Bear Creek Metalcraft in Fountain, Florida. Hope to see you there! :)

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### **Report from the Southeast** *Ed Aarons*

Our May 17th Meeting was held at Tanak Keeta with 6 in attendance. One was visiting from N. Ga., near Chattanooga. I worked and didn't attend which is getting to be the norm for me..

Jan Dion and I traveled to Ft. Lauderdale to provide blacksmith demonstrators for a Civil War Era Re-enactment. It was too far to drive for the number of people that came through..(May 10th). It was at Old Ft. Lauderdale, on the New River which was neat. I took too much stuff down there.

Anyone from anywhere interested in instructing the Boy Scouts to obtain their Blacksmithing portion of the Metal Working Merit Badge can contact me via phone-561-748-9824 or email..It starts June 23rd and lasts till the end of July.

If anyone has any ideas about a demonstration that they'd like to see at our future meetings, let me know.. I think Ralph N. mentioned that we will try to get some shelves built and organize our shed at our next meeting, June 21st at the boyscout camp.

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### **Report from the Southwest** *Jerry Wolfe*

The May 24th meeting was held at Phil Pauley's shop in Port Charlotte. A disappointing attendance of 4 but that did not stop Phil from demonstrating twists and a leaf veining die. Several leaves were made and it seemed like it was a hit.

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### **Notices, For Sales & Want-Ads**

#### **BLACKSMITH COAL**

\$22 per 100 lb bag (Pickup only) - Pioneer Settlement, Barberville, FL - Call for details: 386-749-2959 - [www.PioneerSettlement.org](http://www.PioneerSettlement.org)

To help answer "Where do you get coal?". Here is another source that was supplied by Sarah McMurray.

Bar K Blacksmith Supply in Zephyrhills is offering 100 lb at \$18. Contact Kim at 1-800-800-2023.

#### **News Coverage on one of our own**

Steve Kalb has gotten some print time - check out:  
<http://www.news-press.com/apps/pbcs.dll/article?AID=/200805140110/NEWS0115/805140345>

*Ram's Head  
by Mark Pearce*



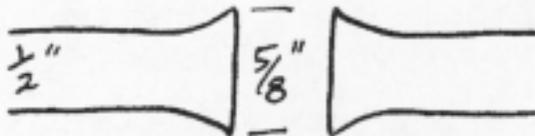
## Forge Welding with Mark Pearce

notes and drawings by Jesse Ellingson, from Mark's demo at the Spring Conference, April 2005

Important: The coal and iron must be very clean.

### Butt Weld:

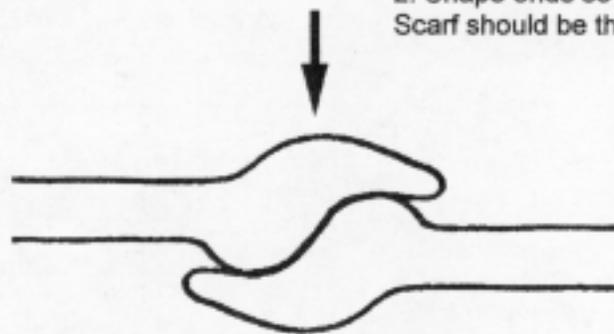
Welding 2 pieces of 1/2 inch stock.



1. First build up material on each end to be welding by upsetting the ends.



2. Shape ends so they will 'scarf' together. Scarf should be thin but not too thin.



3. Snug the pieces up and tap them together to tack them in place.

After heating pieces weld side down, to keep joint clean.

Quickly bring iron to the anvil, giving them a good shake to clean of the scale. Use a lighter hammer to tap the joint together more quickly and accurately.

Reheat - shake - complete weld.

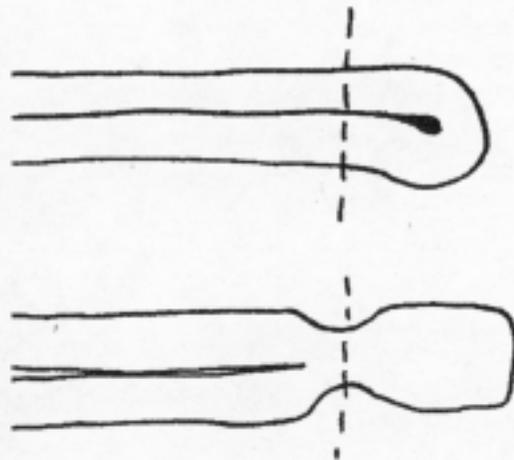
Reheat again to smooth out the weld lump with a final heat to smooth and polish the joint.

### Branch Weld:

Leave slight gap here for the molten steel to flow into. Make weld area slightly thinner so you are welding from the inside out.

Leave enough material to butt weld branches onto another piece.

Heat metal well up on either side of the scarf before welding.





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## Gas Forge Burner Construction & Comparisons

Steve Bloom

It's getting time for me to repair/retrofit some of my shop gas forges, so I've been doing a bit of research. There are a number of designs out there and many claims about efficiency with precious little comparative data. I've listened to folks expound on the "obvious" superiority of blown forges since the gas pressure is far less than venturi systems - ignoring the fact that gas consumption is both a function of pressure and orifice size. Since I'm a fan of venturi systems (no dependency on continued electricity to maintain a safe burn), I decided to play with a couple of standard designs. The idea is to run them side-by-side in the same forge while doing the same work and while monitoring actual fuel consumption.

The burner types are all venturi (or atmospheric) burners. The first is based on the burner design used in the Sandia forges (Fig.1). There is a bell that connects to a narrower delivery pipe and the gas is injected from a delivery tube running perpendicular to the overall burner. The second type is a "T" burner (often referred to as a "T-Rex" burner). It is composed of a pipe T fitting with the delivery pipe as the stem of the "T" (Fig.2) and with the gas delivery tube inserted through the top of the "T" and centered over the delivery pipe. The third design is the sidearm design (Fig.3) with a gas delivery tube equivalent to the "T" unit but with a single lateral air opening.



Figure 1: A "Bell" burner

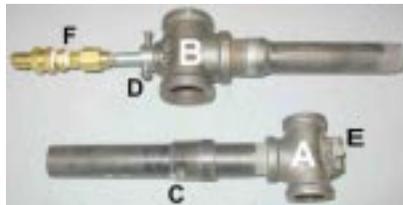


Figure 2: A "T" burner



Figure 3: A Sidearm burner

Before launching into the actual comparison, I'm going to indulge myself with a blow-by-blow account of the fabrication of the units. The Bell-type can be made using pipe-reduction fittings, but that's no fun if you're a smith.

I've equipped my 50lb Little Giant power hammer with a lower

die block with two "ears" (Fig.4). The ears are simply 1" square blocks of steel welded to the sides of the die with 5/8" holes drilled down their centers. There is a 3/8" threaded hole in the outer surface for a lock bolt (not needed) and a 1/2" hole at the base for scale removal (*really* needed). In the best of all worlds, the ears would be positioned outboard of the bottom of the die cavity but, for now, those 1/2" holes will have to do. The swage is shown in Fig.5. Note that the left post is fixed while the right post can slip back and forth -- makes getting the unit mounted a lot easier. Fig.6 shows the unit in operation.



Figure 4: Lower die with hardy holes



Figure 5: "Bell" former swage



Figure 6: Swage in action

Block the end of the pipe with a wet rag (otherwise, it's a chimney), heat the pipe to yellow, slip it (ok - force it) into the swage and start hammering while rotating the pipe. This is, of course, precisely the same operation for making candle sockets when applied to smaller pipe. When you've got a neck forged (and thus two bells), cool the pipe. Saw off the neck close to the bottom of the bells and saw off the bell that is still part of the pipe. Repeat for as many pairs of burners you want. I have made burners out of 1.65 and 2" pipe (ID measurement) welded to 3/4" pipe (more on why one might be better than the other later in this article). Fig. 7 shows the result - a bell.



Figure 7: "Bell" in progress

The next step is to drill a large hole (~3/4") centered in the bell - not an easy task unless you make a quick tool - a chunk of round stock that will sleeve into the bell that has been drilled to accommodate 3/4" round stock (a lathe or a friend with



Fig. 8: Center drill



Figure 9: Gas delivery tubes

a lathe helps here)(Fig.8). I usually smooth out the lip of the hole in the bell by beveling with a 7/8" bit.

Insert a piece of 3/4" round stock to produce what is shown in the lower left of Fig.1. The rod acts as an alignment device for the 3/4" pipe forming the business end of the burner. Slip an appropriate length of pipe over the rod, butt it against the bottom of the bell and weld it around the entire junction of the two pieces. I've made burners with lengths of 3/4" pipe as little as 4" and as long as 8" and have put a 45 degree bend in some - and all worked fine.

To finish the basic design, drill a hole slightly larger than the gas delivery pipe at right angles to the long axis of the burner somewhere in the bell (more on that later). A 1/4" pipe nipple (2nd from the top in Fig.9) requires a hole a bit larger than 1/2". A mechanism needs to be added to lock the gas pipe in place. For a 1/4 pipe, a 1/2 x 13 hex nut drilled out to slip over the pipe, drilled and taped for a set screw on one of the flats, and welded to the bell makes a decent lock mechanism.

The "T" design is simple - start with a "T" and weld a block of steel opposite the stem opening or use an "X" fitting with a plug (Fig.2), screw in a section of pipe as the stem, chuck the assembly up in a lathe (you *do* have a lathe, no?), and drill a close tolerance hole for the gas delivery pipe. For a 1/4" pipe, I drilled a 1/2" hole and bored it out to a couple thousandths over the pipe diameter. Drill and tap a set screw at right angles to the gas pipe to make a lock mechanism. The sidearm burner is essentially the same with the exception of the major pipe fitting (Fig.3) which ought to have the smooth sweep to the "stem" opening.

A series of gas delivery tubes are shown in Fig.9. For the bell burner, you'll need an orifice somewhere around 0.040" diameter (#60 drill). Cap one end of the pipe, slip it through burner and mark the pipe midway across the bell. You can then: (1) drill a 0.040 or 0.035" hole in the pipe (a collet drill chuck helps here) (top pipe labeled "D"); (2) drill and tap a hole to accept a MIG tip (lower pipe labeled "D"), or (C) drill a 0.150" hole, press fit a TIG tip and drill it. Miller tips are 1/4x28, Lincoln tips are 12x24 and all are ~1/4" soft copper, so it's easy to cut them in half, rethread to 1/4x20 or 1/4x28 (Fig.9

C), and deburr the orifice. For a "T" burner, you can use a 1/8" pipe with a connection fitting and a plug (top pipe, Fig.9 B) or a cap (lower pipe, Fig.9 B) or use a 1/4" pipe (Fig.9 A) - here using a cap and a shortened MIG tip. In all these cases, the orifice has to be located at the center of the cap or plug, so it's back to the lathe again.

The other end of the system is the connection to the gas



Figure 10: Propane quick connects

supply. Your friendly propane/AC retailer (in my case, Tempaco) stocks gas quick connects (Fig.10) which work just like the ones on your compressed air lines. The costs are not too bad and they make the plumbing a lot easier. They typically are 3/8" NPT so a bushing or two may be needed to hook to the gas delivery pipe. If you don't already have one (or two or three), get an adjustable LP regulator with gauge (ran about \$25 last one I bought).

The "T" burner design does not have (nor needs) adjustment



Figure 11: Tuning a bell burner

while the bell burners need tuning. Secure the burner and slip a scrap of fire brick over the end of the burner. The tip ought to be an inch or so inside the brick. Position the orifice in the center of the bell and pointing down the delivery tube. Light off the burner and observe the flame and listen to the burner. If there is a lot of yellow and sputtering (top, Fig.11), you loosen the set screw and move the gas pipe back and forth and rotate it until the flame is blue and the sound resembles a little jet engine (lower, Fig.11). There will be a sweet spot and it's pretty obvious when you find it. When satisfied, lock down the set screw.

The next step is mounting the burner in a forge. In the past, I've welded plates (or big washers) on the burner tip far enough back that when the plate is welded to the forge or bolted to it, the burner tip is recessed in the refractory brick



Figure 12: Burner mounting hardware

approximately 0.75 to 1.0 inches. This makes pulling a burner difficult and thus makes running a two burner forge on a single burner a pain (since you **do not** want to leave a non-burning burner on a forge to act as a chimney!). My ever so clever solution is shown in Fig. 12 & 13. Get a pipe connector that slips over the burner delivery pipe. Saw it at an angle (to allow the burner to enter the forge at that angle so as to produce a swirl effect) and weld it to the forge. A slug of round stock with a centered hole (lower left, Fig. 12) lets you drill a pilot hole in the refractory. A pass with a slightly undersized spade bit completes the hole. When the second burner is pulled, just screw in a pipe cap. Voila, problem solved.



Figure 13: Mount installed

Now to the experiment. The apparatus (Fig 14) consisted of a vertical gas forge (A), a large pot (B), a variety of burners (C) and a digital pyrometer (D). The scheme was to first bring the forge to operating temperature. Four liters of water were placed in the pot and the temperature is recorded). The 20lb propane bottle is weighed and connected to the burner. The burner is lit, the time noted, and the temperature is monitored. When the water temp hits 200 F, the system is shut down and the propane bottle reweighed. As long as the amount of water is constant and the start and end temperatures are consistent from run to run, then the same amount of work is being done in the same forge, hence the gas consumption (the difference

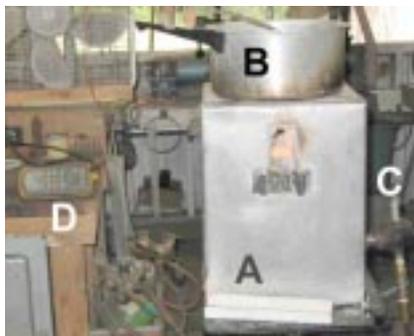


Figure 14: Experimental apparatus

in weights) is a reasonable measure of burner efficiency.

The variations tested were:

(A) burner designs (Bell vs “T” vs sidearm);

(B) area (in<sup>2</sup>) of maximum opening: Bell at 2.0 & 3.55 (1.5 vs 2” pipe); “T” at 1.57 & 2.11 (3/4” vs 1” fitting)

(C) orifice size (0.040 & 0.035) and

(D) location of the orifice relative to the junction of the bell (or “T”) to the delivery pipe (Fig.15). Due to the scale used, the precision of weighing was 0.5 ounces.



Figure 15: A “T” burner with tip 1” from junction

Burner Type	Orifice Diameter (in)	Orifice Distance (in)	Gas Used (rel)	Time to 200F (rel)
Bell-large	0.035	2"	1	1.18
Bell-small	0.035	1"	1.14	1.42
T-small	0.045	1"	1.43	1
T-small	0.035	1"	1.43	1.14
T-small	0.035	0"	1.43	1.29
T-large	0.035	0"	1.43	1.14
Bell-large	0.035	1"	1.43	1.34
Bell-large	0.035	1"	1.43	1.28
T-large	0.035	1"	1.71	1.48
Sidearm	0.035	2"	2.14	1.28

Table 1: Experimental results

The results are given in Table 1, where gas used and time were placed on a relative scale. The least gas used was 0.22 lbs (1st row) and the fastest time was 322 sec. (row 3). As you might expect, orifice size controls speed to termination but for the same amount of work, does not affect gas used (compare row 3 and row 4). If you run a forge for a long time, a smaller orifice is indicated. The best gas consumption was achieved by a large bell burner with the orifice 2” from the junction but note that a small bell with a 1” separation was essentially the same (0.5 oz more - right at the limit of the measurement error). At 20 psi, the smaller burner stopped working correctly while the larger one continued burning, so an argument can be made for a larger bell if you’re pushing the pressure envelope. Moving the orifice closer to the junction for the bell burner (rows 7 & 8) gave consistent but poorer results. The sidearm burner (as configured here) was definitely the tail-end charlie as was the large “T”.

Given the limited amount of replicability and the lack of precision in the gas consumption, the take-home message is that there does not appear to be a head-and-shoulders better burner in the group. Make what is easy to make, A bell allows ease of adding choke plates and/or blower input, so that’s the way I’m going with the mount idea shown here.

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