New Jersey Blacksmiths Association
"EAGLE"

N.J.B.A.

NJBA Volume 28, Issue 1   01/20/25
.http://www.njblacksmiths.org

Upcoming Events

No events currently scheduled.
Will notify by email when scheduled

Editor change

I decided to start doing the newsletter again. I did it for many years and had to stop a few years ago for family reasons.
I was hoping to get more issues out last year but it didn't happen, hopefully this year goes better.

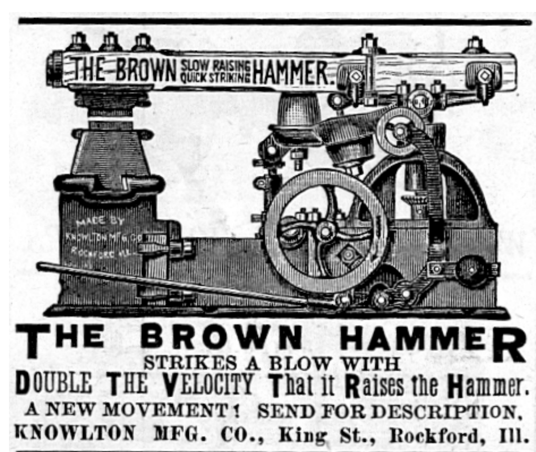
NJBA Future

We need members to step up and help take NJBA into the future.

Bruce Freeman is acting as treasurer and membership, our agent to the State and the insurance companies and has been for years.
Marshall runs open forge meets nearly weekly (with help from Tom Santomauro and Mark Morrow) and has opened his shop to run numerous events since the beginning of NJBA.
So basically at this point there are five of us holding the organization together, two on the paperwork end and none of us are spring chickens.

We need to have members step up if we want NJBA to continue. Just because others have been doing it doesn't mean that they have the jobs for life. When NJBA started there more people wanting to be involved and the work load was much lighter. A few members stepping up to help can keep NJBA here. It cannot always be expected that someone else will do it or that everything should be free. Sometimes you have to work to make thing happen. Years ago we held more meets and workshops because people were involved in making the events happen, many hands made light work, being involved can be rewarding!

If you want to be a director, have ideas for a meet, a meet location or a workshop, step forward and talk or contact one of the directors



If you have not renewed your membership, please renew now and help NJBA survive!
Remember it's OUR organization!

NJBA Board of Directors

Not available on line

New Jersey Blacksmiths Newsletter

Official NJBA Address
NJBA, P.O. Box 224
Farmingdale, NJ 07727-9998
NJBA's Website:
http://www.njblacksmiths.org
NJBA's Facebook Page:
https://www.facebook.com/njblacksmiths/

Open Forge Meets

Anyone 18 years or older is welcome to try their hand one time at our open forge meets. NJBA members may participate any time the forge is open. (The application form is on the last page of this newsletter)

Monday Night Open Forge, Howell, NJ
NJBA Director Marshall Bienstock hosts an open forge meet every Monday evening at 7 PM, except major holidays. (Please call ahead on holidays to make sure the forge will be open.) 732-221-3015

Participation in Hands-On Events

Participation in NJBA-sponsored hands-on events is limited to adults (i.e., 18 years or older).

This rule was effected as of December 2016, when NJBA was having problems with its insurance coverage (which has since replaced).

This policy applies to workshops, open forge meets, demonstrations, etc.

This policy does not apply to open forge meets and similar events that are sponsored by youth-oriented organizations such as scouts or schools with the aid of NJBA equipment and members.

NJBA Newsletter:

njblacksmiths.org/archive/index.htm
or use the link on the NJBA web site for the current newsletter.

Mild Steel vs Carbon Steel: What is the Difference?

Published by Metal Supermarkets
Metal Man News 4/6/2023

Steel is the most used material in construction, manufacturing and industry. Two of the most used types of steel are mild steel and carbon steel.

While both are used for similar purposes, there are several key differences between the two that make them better suited for different applications.

In this article, we will take a closer look at mild steel and carbon steel and examine the differences between them, including their carbon content, mechanical properties, and manufacturing and finishing processes.

What is mild steel?
Mild steel is a type of carbon steel with a low amount of carbon (typically 0.05% to 0.25%); these are also known as "low carbon steels." Low carbon steel is considered a relatively inexpensive and versatile material that is commonly used in various construction and manufacturing applications.

The low carbon content makes mild steel more ductile and easier to shape, form and weld than other types of steel. Mild steel has good machinability and can be easily drilled, cut, and fabricated into various shapes and sizes.
In addition, low carbon steel has a relatively high tensile strength, making it suitable for use in high-stress applications such as beams, columns and machinery components. It's versatility and affordability make it a popular choice for a wide range of applications.

What is carbon steel?
Carbon steel is a type of steel that contains carbon as the main alloying element, with other elements present in smaller amounts. This metal is commonly used in the manufacturing of many products and structures due to its high strength and low cost.

Carbon steel can be further classified into various grades based on its chemical composition and mechanical properties, such as low carbon steel (mild steel), medium carbon steel, high carbon steel and ultra high carbon steel. Each grade has its own specific uses and applications, depending on the desired properties of the final product.

Medium to high carbon steel is commonly used to make machinery components, such as gears, crankshafts and shafts. Its high strength, and particularly high hardness make it an ideal choice for a wide range of tooling applications

Low carbon steel
Also known as "mild steel," this type of steel is more ductile and easier to shape, form and weld compared to other carbon steel types. This makes mild steel a popular choice over higher-carbon steels when it comes to construction and manufacturing applications.

Medium carbon steel
Contains 0.3% to 0.6% carbon content, making it stronger and harder than low-carbon steel but also more brittle. It is often used in applications that require both strength and ductility, such as machinery components, automotive parts and building frames.

High carbon steel
High carbon steel contains 0.6% to 1.5% carbon content and is known for its high strength

and hardness, but high carbon steel is even more brittle than medium-carbon steel. High carbon steel is used in applications that require high strength such as knife blades, hand tools and springs.

Mild Steel vs Carbon Steel: What Is the Difference?

Manufacturing process

The manufacturing process for mild steel and carbon steel varies depending on the type of steel and the intended qualities for the final product. The manufacturing process is often divided into three stages:

Primary processes

Steel can be created entirely from recycled material or from a mix of recycled and virgin steel using the Basic Oxygen Furnace (BOF) process.

Mild and carbon steel are commonly produced using the basic oxygen furnace (BOF) method, which involves the transformation of raw materials such as iron ore and coke into liquid steel.

The liquid steel is poured into molds to produce slabs or ingots. Pure oxygen is pushed through the liquid steel to oxidize the extra carbon, resulting in a finished product with a carbon content of up to 0.5%.

Secondary processes

Market needs for higher-quality steel products with more consistent characteristics fueled the development of secondary steelmaking processes. This allows manufacturers to alter the carbon content to produce the resulting low carbon steel, medium carbon steel, high carbon steel or ultra-high carbon steel.

Electric Arc Furnace (EAF)

In an electric arc furnace, steel composition is changed by adding or removing specific components or by manipulating the temperature. EAF processes involve:

Stirring – Separating non-metallic impurities guarantees a homogenous combination and composition of the steel.

Ladle furnace – Enables precise temperature control and the measured injection of alloy components.

Ladle injection – Inert gas is injected into the bottom of the steel bath to achieve a stirring effect.

Degassing – Removes hydrogen, oxygen and nitrogen while also lowering the product's sulfur content.

Composition adjustment – Crucial to achieve stirring (by sealed argon bubbling with oxygen blowing — CAS-OB).

Deoxidizing steel

The elimination of oxygen is a vital step in secondary steelmaking. As molten steel begins to solidify, the presence of oxygen causes a reaction with carbon, producing carbon monoxide gas.

Controlling deoxidation can be used to change the material properties of the final product and hence the steel's suitability for various de-

Comparison	Mild Steel	Carbon Steel
Carbon Content	Low	Medium to Ultra-High
Mechanical Strength	Moderate	High
Ductility	High	Moderate – Low
Corrosion resistance	Poor	Poor
Weldability	Good	Generally not suitable
Cost	Inexpensive	Slightly higher per weight

sired applications. Deoxidizing steel processes involve:
Rimming steels – Non-deoxidized or partially deoxidized steels.
Capped steels – Initially comparable to rimming, but the mold is capped to prevent the creation of carbon monoxide.
Semi-killed steels – Partially deoxidized and have a carbon content in the range of 0.15–0.3%.
Killed steels – Totally deoxidized to the point where no carbon monoxide is produced during solidification.

Casting
Traditional casting methods entail pouring molten steel into individual molds positioned on rail cars. Continuous casting of molten steel into shapes more appropriate for downstream processing is possible with casting machines. Ingots are moved to soaking pits to be reheated for hot rolling. In a continuous casting machine, steel is produced into slabs, blooms or billets.

Finishing processes of mild steel and carbon steel
The finishing procedure for mild steel and carbon steel can have a significant impact on the end product's appearance and performance. Carbon steel is finished using:

Rolling
Solid cast ingots must be rolled into more usable shapes and sizes, similar to continuous casting ingots. The rolls rotate faster than the steel as it enters the machine, propelling it forward and compressing it.

Hot forming
To break up the as-cast microstructure, steel is heated above the recrystallization temperature. This results in a more uniform grain size and an even carbon distribution throughout the steel.

Cold forming
Cold forming is done at temperatures lower than the recrystallization temperature. This procedure improves the finish while increasing the strength by up to 20% through strain hardening. In a rolling mill, semi-finished materials are further processed into intermediate products. They are then ready for downstream industries to manufacture and process them.

Heat treatment
The goal of heat-treating steel is to change the distribution of carbon in the product and the interior microstructure which modifies its mechanical properties. When the mechanical qualities of steel are changed by heat treatments, an increase in ductility leads to a decrease in hardness and strength (and vice versa).

Normalizing
Steel is heated to approximately 55 °C (130 °F) over its top critical temperature. The upper critical temperature is maintained until the entire product has been uniformly heated, at which point it is air-cooled. This is the most frequent type of heat treatment, and it imparts exceptional strength and hardness to steel.

Annealing
Steel is heated to a solid solution temperature for one hour before cooling at a rate of 21 °C (70 °F) per hour. Internal tensions are eliminated, resulting in soft and ductile steel.

Quenching
This is similar to normalizing heat treatment, except that cooling is expedited by quenching the steel in water, brine or oil. The resulting material is extremely hard but extremely brit-

tle, leaving it prone to breaking and cracking. As a result, for exact control of the steel's properties, it is usually followed by a controlled cooling rate down to room temperature in a process known as tempering or stress relief.

Surface treatment
Approximately one-third of all steel manufactured is surface coated to prevent corrosion and increase weldability and paintability.

Hot dip galvanizing
Galvanizing is the application of a zinc surface layer to steel. The steel is heated before entering a zinc bath, where liquid zinc coats the product's surface. Gas-knives are used to adjust the coating thickness. A small amount of aluminum is added to the zinc solution to prevent the zinc coating from breaking.

Electrolytic galvanizing
Electrolytic galvanizing is another method for putting a zinc layer on steel goods. By regulating the current in an electrolyte solution, zinc is deposited onto the surface of the steel. This approach allows for more precise control of coating thickness.

Downstream secondary processing
Steel raw materials are further processed by downstream companies into the desired finished products. Various processing procedures, such as machining and joining, which include uniformly removing surface metal with machine tools and welding, are common.

Is carbon steel better than mild steel?
Both types of carbon steel have their own unique properties and advantages that make them more suitable for some applications than others. Which one is better typically comes down to your specific requirements.

Mild steel is better used for low-stress applications due to its ease of fabrication and low cost, while carbon steel (from medium carbon steel to ultra high carbon steel) is better used for high-strength applications due to its high carbon content and strength.

Carbon steel has a significant advantage over mild steel in terms of strength. Carbon steel can be up to 20% stronger than mild steel, making it an excellent choice for high-strength applications or where high hardness is required.

One of the most significant disadvantages of carbon steel is its high cost. Because of its increased carbon content, carbon steel is often more expensive than mild steel.

Furthermore, carbon steel is more difficult to weld than mild steel, making it less appropriate for welding applications.

From Central Virginia Blacksmith Guild

Cool Tool of the Month: Tong Clips

By Bruce Manson

Tong clips can be useful aids in the forge. They eliminate the need to concentrate on clamping the workpiece tightly and can relieve much of the muscle tension in your lower arm. That way, you can focus on properly positioning the workpiece and hammer control without the workpiece moving in the tongs. Of course, selecting the proper size and shape of the tong jaws to securely fit and hold the workpiece is still critical, but a tight grip is one thing you don't have to worry about. This can be very helpful in teaching new blacksmiths – it elimi-

nates one thing they have to think about. Also, clips can help reduce muscle fatigue during long forging sessions. And…..as I am learning and many of you will someday face…..they help reduce pain from cramping and arthritis.

Here are some simple ways to make tong clips from scrap you probably have lying around your shop:

Cut some thin rings from different size pipe and square tubing. Mash the pipe slightly into a nice oval shape. Mash the square tubing on the diagonal and you have two different size tong clips (or you can rotate the clip on the tong reins to allow positioning it at a different location along the reins to get the best fit).

Another simple tong clip idea is to use chain links that will fit over the ends of your tong reins.

A third simple tong clip is merely a piece of small (say ¼” diameter) rod, bent into the shape of a letter “C”. Make several sizes.

An old rake makes a good place to store your tong clips near your working tong rack.

Shop Tips: Get a Grip

By Bruce Manson

As blacksmiths, we all have our vices (…er, vises…), but sometimes getting a secure grip can be tricky. Here are some simple ideas that might help – made from materials you have lying around your shop.

Are your vise jaws a little uneven? Place two pieces of angle iron over the jaws to provide a level, square grip.

This will also provide a sharp, square corner for bending and avoid 'over-bending' due to the curvature of the vise jaws.

Need to grip something that is tapered, or the two sides are not parallel? Weld a round or half -round bar on the inside of a piece of angle iron. This allows the angle to pivot against the vise jaw and provide a secure grip. 9

From the Central Virginia Blacksmith Guild

Ever tried to grip a round object? How did that work out? Using a V-block made from angle

STEEL: FACTS AND FIVE FALLACIES BY DON KLESSER

Don Klesser became interested in metallurgy at a young age – hand forging knife blades from old files. He went on to finish his BS-Metallurgy and hired into the local Pittsburgh steel industry. An early assignment was over-sight of an oil country tubular quench and tem-per line. He recently retired from a 40+ year career that included a MS-Metallurgical Engi-neering degree and additional expe-rience in steelmaking, foundry, cold drawing, as well as titanium metals.

FACTS

Steel is an iron-based material that contains carbon. Carbon in steel is comparatively low; by definition, steel has less than 2% carbon, but commonly available steels are less than 0.4% in car-bon content. The softness and hardness of steel is frequently related to how the blacksmith controls the physical nature of carbon in steel.

In metallurgy, steel is described as an allo-tropic metal. That is, depending if the metal's tem-perature is low or high, iron atoms arrange themselves in different ways. Below about 1300° F, the lower critical temperature, iron atoms are arranged close together. This is called the ferrite phase. In ferrite, because of the relatively close atom spacing, even a much smaller carbon atom cannot fit within the fer-rite crystal. As a result, carbon chemically combines with some of iron atoms to form a compound – and this compound forms a phase mixture called pearlite. Therefore, unhardened steel is multiphase, containing both ferrite and pearlite phase structures. The term multiphase indicates that its chemical composition varies on the micro-level – having ferrite containing almost no carbon, and pearlite having almost all of the carbon contained by the steel.

As steel is heated above the lower critical tem-perature, the iron atoms absorb heat energy and begin a transformation to its high temperature crystalline arrangement, called austenite. This transformation requires heat and time and is complete as the steel is heated above the upper critical temperature. The upper critical temperature varies with carbon content. The upper critical temperature is very high, above 1600°F, for low carbon steels. Mid to higher carbon steels will transform at lower temperatures. The iron atoms in austenite are further apart, and the small carbon atom can actually fit (dissolve) within the crystalline space. Steel, as austenite, differs from low temperature steel in that it is a single-phase material – its chemistry composition is uniform throughout the material.

Austenite and ferrite are defined as stable crystals because they are unaffected by temperature changes above and below their respective critical temperatures. Steel at temperatures between the lower and upper lower critical temperatures, 1400°F for example, is a mix of both crystalline arrangements – termed the intercritical region.

Steel can be heat treated – that is made soft or hard – by heating it fully above the upper critical temperature; then manipulating its cooling rate below the lower critical temperature, and eventually to room temperature. Again, the proper transformation of steel by cooling, from austenite to ferrite, requires time. Very simply, a 'slow' cooling rate allows austenite iron to completely trans-form to the stable ferrite and pearlite phases. On the other hand, if the steel is cooled very quickly, it is possible to prevent proper transformation of austenite and the dissolved carbon atoms. As a result, a new, very hard structure called martensite is formed. Martensite is a metastable structure be-cause it will change, and soften, as it is heated by tempering.

This entire heat-treating process, involving rapid cooling and subsequent low temperature reheating, is called quench and tempering (or Q&T). The Q&T process is complex relying on many factors – steel chemistry, quench type, desired final hardness – a description beyond the scope of this short article.

FALLACIES:

1. *When steel is heated and becomes non-magnetic, it is ready to be hardened by quenching.*

Martensite only forms during rapid cooling, or quenching, out of the austenite phase. Steel loses its magnetic properties at the Curie Point – approximately 1400°. Note that this is just above the lower critical temperature, and at a temperature where only a small portion of austenite is formed; and only that portion will harden on quenching. It is usually recommended to quench lower carbon steels above 1600Oto 1650O F; medium carbon alloy steels above 1550O or so; and high car-bon (above 0.80C) are recommended 1475O minimum. Heat treat consistency requires tighter temperature control than a magnet provides. Tempiltiks® are an alternative, low-cost indicator of the part temperature. Critical hardening operations should be done using pyromeric temperature measurement.

2. Hot forging occurs as long as the steel is red hot.

Steel is readily forged as austenite because of its ‘roomy’ arrangement of iron atoms, in comparison to the tighter ferrite crystal arrangement. Interestingly, metals that are highly malleable at room temperature, copper, aluminum, and gold as examples, have the same crystal-line arrangement as austenite (steel at high temperature) – this arrangement is termed FCC, and it is amenable to de-formation by pressure.
The color of steel on heating is a result of thermal radiation and is independent of the steel’s crystal-line arrangement. Steel begins to emit a red color, a low frequency color, below the lower critical tem-perature. In blacksmithing terminology, the proper heat for forging would be bright red to orange, when it is austenitic.

All together, steel can be hammer formed whether it is austenitic (orange heat) or ferritic/pearlitic (dark red heat); but the process is called forging at higher temperatures, and cold working at lower, though still very hot, temperatures. Cold working requires more force than forging. Hammering (or cold working) warm steel, that having no color, can cause similar, undesirable residual stresses and cracking as working steel at room temperature.

3. Carbon in steel causes hard spots.

The carbon level in a steel is well-defined during steelmaking. Carbon is located within the pearlitic areas of steel, separated from the ferritic iron areas, but mostly uniformly distributed throughout. It is possible, but infrequent, for large pearlitic areas to be segregated within the steel – these areas would occur during the steel casting process as steel is solidified from the liquid, and not as a result of any processing that the blacksmith is performing.
Other elements in steel are less well-defined by steel specification and to the steelmaking process. One example is nitrogen. It being a sometime suspected cause of excessive hardness in steel. Modern, commercially available steel shapes – bars, rods, flats, etc. – are routinely melted in electric arc furnaces. Using high energy electrodes, these furnaces ionize nitrogen in the air allowing it to be easily absorbed into the liquid steel.
In summary, the causes for hard spots in steel are very difficult to identify without an understanding of the steel’s mechanical and heat-treating history, and possibly a destructive analysis of the specific site.

4. Readily available carbon steels can be quench hardened.

Hardening of steel due to quenching requires trapping carbon atoms within the iron structure, to drive the formation of martensite. A higher ‘number’ of trapped atoms results in a higher marten-site hardness. Therefore, low carbon steels can only achieve low levels of quenched hardness – a 0.30% carbon content steel might possibly achieve 45 to 50 HRc under ideal conditions. This is relatively soft as a quenched steel.

Note that common A36-standard steels have maximum carbon levels of 0.26% to 0.28%.

5. Carbon can be added to steel by heating in a coal fire.

Carbon can be added or removed steel by a process of diffusion. Diffusion occurs only through the surface of the steel and requires high heat and time. Diffusion will increase carbon content when the steel surface is closely exposed to a much higher concentration of carbon. There are several ways to increase carbon content, also termed carburization. One simple process is pack carburization, whereby steel is surrounded by a high carbon material (activated charcoal, for example) within a sealed container. When the container is heated to high temperatures, the lower carbon steel part pulls additional carbon from the surrounding high carbon materials. Color case hardening, or bone harden-ing of gun metals, is an example of a pack carburized steel part.

Inversely, the carbon level at the surface can be depleted, or decarburized, if the steel is surrounded by an oxidizing atmosphere –the usual chemistry of most common furnace atmospheres containing oxygen and moisture. As an example, coal represents a very high concentration of carbon in relation to the steel. But coal burns by oxidation, forming carbon monoxide and dioxide gases and containing moisture. These hot, oxidizing gases react and readily decarburize the steel surface. Simultaneously, this atmosphere removes iron from the steel surface forming a separate material of different chemistry, called mill scale. The longer the time in the furnace or forge, the deeper the decarburization, and the heavier the scale formation. (Although, there are some highly controlled atmospheres that may create a specific-chemistry surface scale that minimizes decarburization.) As mentioned above, a low carbon chemistry at the steel's surface will reduce quenched hardness – even if the steel base chemistry would indicate a potential for high quenched hardness. Protecting the steel by foil, or heating in an electric oven would minimize surface decarburization and scaling.

Reprinted from the
Pittsburgh Area Artist —
Blacksmiths Association

The Barley Twist

by Dave Smucker
Brasstown, NC

This form has been around a long time – believed to date back to the time of Solomon and called Solomonic column. It is believed to have been used in Solomon's Temple carved in marble. Later it became an important element in Byzantine Architecture. When Catherine of Braganza, from Portugal, became Charles II's Queen in 1662 she brought the design to England. It became a popular form in British furniture especially after English wood turners learned how to produce it in volume. It became known as the "barley sugar twist" or barley twist because a candy was made in this form from barley syrup and sugar. It has descended to us in the form of the candy cane at Christmas.

I could call it a "Garrett Twist" because Paul Garrett, resident blacksmith at John C. Campbell Folk School, worked to figure out a way to make it in mild steel. In form it is basically one half of a double helix structure – made famous because it is the form of DNA of living things. You could also call it a single helix. The double helix is important because you make the Barley Twist by first making a double helix and then removing one of the helixes.

I became interested in using this for an element in candle holders. Several stock sizes were tried both round and square. 5/8 round was the base material because that is the size wanted for the vertical element in the candle holder.

I started with a 12 and 1/2 inch length of 5/8 round.as a good size that would fit completely in my gas forge. My second piece was the same length but 5/16 round. This was then welded to the 5/8 on each end.

In the first heat both ends were flattened so that they would hold well in the vise and twisting wrench. On my first test piece I did not get as even of a twist as I would have liked and decided that one end of my forge was hotter than the other. To correct for this I turned the piece end for end in the forge to get an even heat. This worked well.

One problem remained – I couldn't get as much twist as I wanted because of cooling and found that I had to go back in the forge for a second heat. The above photo shows two heats of twisting.

Now a key step – at the end of your basic twisting - back twist (reverse twist) about 3/4 of a turn. This will loosen the smaller dia. piece and make it lift from the twisted 5/8 round. After cooling and cutting off the welded ends you can now remove the small round. If you are real lucky and have a very even twist you can unscrew the two helixes. For me this works about 20% of the time. Otherwise, I saw the 5/16 in several places and it comes right off.

For my candleholder I drill and tap both ends – one for the base and the other for the candle cup. (Real blacksmiths might forge a tenon on each end, but I have a machine shop background.)

There are many other uses for this Barley Twist – you could weld it into a picket for a railing, make handles or anywhere you might want a "different" twist.

I also tried this twist with a 5/8 square – produces an interesting result shown here.

Crane's Head

By Otto Bacon, A MABA member

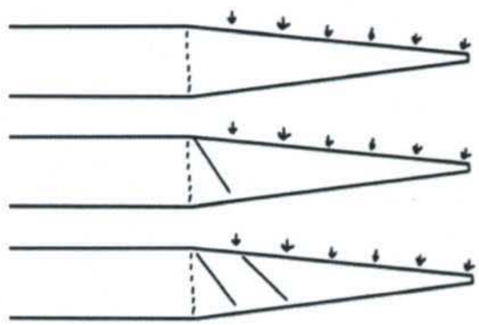
A couple decades ago I visited a historic site in England. The blacksmith was making fire pokers with this crane's head as the handle. He said it was an ancient English pattern and I was welcome to copy it. Over the years, I have used it in several variations on a number of projects.

Start out with 1/2" square rod. Make a chisel mark three inches from the end, and one 5 inches from the end.

Starting at the three inch mark, draw a taper almost to a point. Slightly chamfer the corners of the tapered section with light hammer taps. The length of this taper determines the length of the cranes feathered plume.

Taper with chamfered corners-

Now you need to twist the tapered plume. If you simply heat it up and try to twist by the small end, you will end up with a twist on the first little bit only. You have to do it in stages. Heat the taper to bright red and clamp the bar in your vise right at the base of the taper. Using tongs, grasp the taper about 3/4" to 1" from the vise and twist to your satisfaction. Now do another heat and twist the next 3/4" to 1". As the taper gets smaller, you must twist a shorter section. Make sure the twist on each section matches the previous. There is no "do over" on this.



Twist the taper in several sections as shown by arrows.

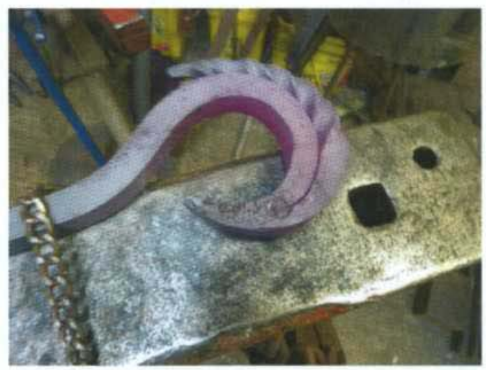
At the 5" mark, completely fold the bar back on itself. Use a wooden mallet to avoid damaging the corners of your twist. (I realize there is a regular hammer in the picture, but I really did use the wooden mallet).

Draw the folded part out to form the beak.

Now add the nostrils with a pointed punch.

Using a wooden mallet, form the crane's head over the horn of your anvil. (now you can see my well used and abused wooden mallet).

Add the eyes with an eye punch. Be careful to get them lined up from one side to the other. You think it won't show, but it will.



Shape the neck to suit and polish with a wire brush.

Follow Up to Connections

Follow up to “Connections” article in the 2024 May/June Upsetter.

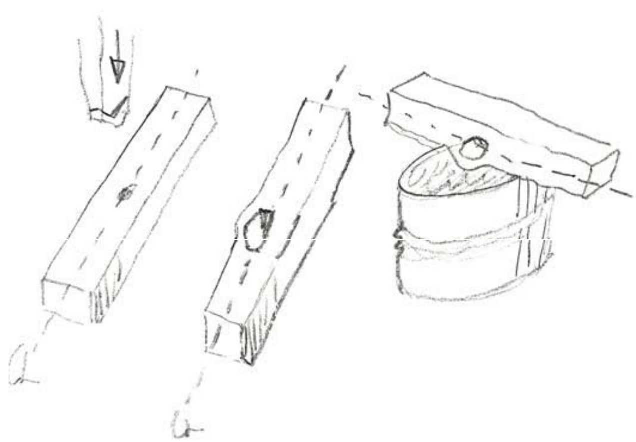
When you punch a hole through a bar and miss the center it can be corrected by cooling the thin side. In jobs where you are punching and drifting the same size, such as half inch through half inch, it is critical that you hit the center. What will happen if you do not, as you drift the thinner side, it will stretch more and the off-center will increase.

A way to prevent the thin side from stretching as you’re drifting is to cool it off. This should be started as soon as you realize you’re off center. With a can full of water right to the very top, most of the time you can touch the bulge on the thin side to the top of the water. You only have to barely touch the water to suck the heat out. So, when you finish your punching and you notice you’re off center begin to correct immediately. Reheat before drifting and with your water close at hand cool the thin side. Drift partially through and check your progress; you may need to repeat several times. If you’re way off remember you can never get the thin side thicker so you may have to start over.

At a meeting held by the late great smith, Dan Nichols, and Derick Bliss when they invited us to Traverse City to see the 200 plus feet of railing they had just finished on a mansion on Mission Point. The railing had all been done in the traditional manner with mortise and tenon joints. So, they had done many punch and drifted holes. They showed us how they correct for off-center punches. I must admit I have never tried their technique so as they drifted their hole as soon as the drift emerged on the far side, they pressed the thin side against the side of the hole they were drifting into swage block and as they drifted, the drift was forced against the thicker side.

This technique may work better with two smiths, one to hold the work tight against the swage block hole and the other to drive the drift.
From Steve Alling.

Reprinted from the
NEWSLETTER OF THE MICHIGAN ARTIST BLACKSMITH ASSOCIATION



New Jersey Blacksmiths Organization
P.O. Box 224,
Farmingdale, NJ 07727-9998

NJBA Membership Renewal and Volunteers' List

Mail completed renewal form along with check for dues, to:
NJBA, P.O. Box 224, Farmingdale, NJ 07727-9998

Name ____

Address____

City, State, Zip ____

Phone Numbers: Day _____________Eve. _____________ Cell ___________

Email address ____

My check is enclosed: [ ] $20 (regular membership dues), or [ ] $40 (business membership dues)

NJBA Volunteers List

"Please put my name on the list of potential volunteers:" (Circle all that apply.)

Availability: Saturdays, Sundays, Weekdays

Interests: Demonstrating, Coaching, Novices, Assisting at Workshops

Experience: Novice, Intermediate, Experienced, Professional