SCROLLED FAN HEADBOARD

I'm going to tell you how I did this headboard for my daughter. I've been trying to make something nice and lasting for each of my offspring. There are eight, and now grand children are putting in orders for wedding presents. I like to do something that hopefully will become an heirloom and grant me a measure of immortality. The concept for this design, I saw on a transom grill over a doorway at an exclusive Mainline school.

To start, I sketched the design and determined the critical dimensions, height, width, etc. Next I made a full sized layout on my layout table. My table top is 1/2" X 3' X 4' set on a machinist cabinet with four heavy casters. This is convenient to move about to accommodate whatever work is being done and can be locked in place by dropping a horseshoe around two of the casters. I rounded the corners for safety. There is a four inch overhang all around to accommodate "C" clamps. I burned a hardy hole in two corners which are very useful to mount any hardy tool, scroll form, bending fork, etc. at the work station. Another very useful accessory is a vise that mounts in the table hardy hole with a "U" clip and wedge.

The table was only long enough for about 2/3 of the whole layout but that was ample. The arc is an ellipse. I laid out a base line for the ellipse long diameter across the table then a vertical centerline at a suitable distance from the side. To draw the ellipse I used the old looped string and pin method. With a board clamped to my table and the baseline transferred to the board I experimented with long radius pins (nail distances from center) and string lengths until I found the combination that suited the height, width and shape that pleased me. Then I drew the half ellipse. Next I laid out the top horizontal rail. The ellipse arc was divided into eight equal spaces per side and circles drawn to define the spaces to be filled by the large scroll ends, then eight equal spaces for the small scroll ends. Luckily I had scroll jigs on hand from other projects that worked well with these dimensions and I knew the length of material needed for each.

With an ample length of material for the shortest scrolls I made one large and one small end. I measured the amount of material needed for each scroll end and center punched a witness mark on the back edge of the bar, this would serve as a dimension control mark. The ends were drawn out 1 1/2 inches to a "lambs tongue" for the scroll start. I marked the side of my anvil with soap stone for a convenient reference for the draw out length. Remember the witness mark? Both scrolls were made and these used to determine the material needed for the others. I laid the large and small scroll each within it's boundary with their handles parallel, measured the distance between the witness marks and added this to the length for each scroll end. Now the material could be cut, witness marked and the lambs tongues drawn out. I now grooved the edge to enhance eye appeal. I used a grooving chisel with a guide welded to it. This guide is just a piece of 1/8 by 1/2 slightly longer than the chisel end welded to the side behind the tempered zone. It can be bent to control a groove at different dimensions. Mine has had a lot of use and owes me nothing if it should eventually break.

To hold the bar on edge I cobbled up a simple jig from scrap; two pieces of 1/2 square welded to a piece of heavy flat bar that the 3/8 scroll bar nests between and a hardy stake. The bar tends to roll up as you crease it. The jig was made leaving about 1/3 of the anvil face exposed, to straighten the bar as I progressed. I find that an adjustable jack stand is almost a necessity when working a long piece alone. The scrolls were made in matching pairs and placed on the layout as I finished them. If any errors were detected they could be corrected then and not compounded. After all the

scrolls were made they were laid aside while the frame was worked on.

The one inch square stock was cut to length with one inch extra for each leg, to be cut accurately as a last step, this for insurance in case of material creep. Steel, in small amounts, is cheaper than time. I wanted a hammered chamfer on the facing corners and started to do this hot but soon realized the time bother and fuel needed, so I turned to doing it cold with a heavier hammer which worked well and helped to pop off mill scale.

To bend the frame ellipse I tack welded stops about every two inches along the layout line on the table. I punch marked the center of the bar and secured it on the layout center. Then I welded a stop at the outside of the bend about one foot to the left of center. Now I was ready to bend.

Using a burning torch with a large tip I started to heat at the center and carefully progressed the bend, taking care to keep the bar touching all stops without flat spots or bulges. Where needed I welded on stops and used a wedge to keep the shape tight. When the first side was done I returned to the center and completed the bend on the rest of the layout. The bend, thus far, was held in position until it cooled. When cool the piece was turned over centers matched and secured together and the rest of the bend completed and held until cool.

Next came the laying out and making of the mortise and tenons. Three 11/32 holes were drilled close together, chiseled out and filed to make the mortise, a slight countersink was made on the inside and outside. A proper tenon should have a slight fillet at it's base. The counter sink accommodates this. I find that tenons and rivets tighten up better with some countersink inside and outside. I used 3/4 inch of stock for the tenon and when drawn out I had nearly two inches of tenon which I cut off to one and 5/8, better to long than to short. Rather than make a monkey tool I trued the tenons up with a file.

FITTING

Next the stops were broken off the table and weld burrs ground off. The frame was spread open about 1 & 3/4 inches and the tenons of the top rail inserted, the frame placed accurately on the layout and secured. Now all the scrolls were put in place, this required considerable tweaking and adjusting to get them nested correctly and the proper length. A bending fork in the hardy hole on the table was handy. No matter how many scrolls you make the same, no two will be identical. The scrolls were set with about 1/16 space separating them.

HOLE LAYOUT

When I was satisfied with the whole assembly I laid out the rivet holes. Because of the curve of the ellipse and rotation of the scrolls each hole was at a different angle. This was eye balled and a line struck clear across the scroll as a drill course reference. When all the scrolls were marked the line was carried around the scrolls and frame to the drilling.

DRILLING

I have a bench mounted drill press and the frame was just under four feet high, I could drill, at best, three holes with this set up. The answer, put the drill press on the floor. I have an "H" beam and trolley with a chain fall. The piece was hung "U" up and adjusted with chokers for each hole, a drill vice held the piece secure on the drill table. Each scroll presented it's own problem to position and hold to drill at the proper angle. The holes on the under side of the bottom bar were deeply countersunk so the rivets could be upset flush.

RIVETING

With the drilling completed just the top horizontal bar was put back in and all the scrolls bolted up tight. This to assure fit up and resist any distortion from rivet heat. If holes didn't quite line

up a drill was run through them. Apiece of 3/8 X 1 was welded to the long edge of the table with about three inches protruding and another, to be adjustable, was "C" clamped in like manner about three feet away. The head board could then be hung up side down on the horizontal bar with the welded lug being the rivet back up. Now the problem, how to get a 1 3/4 rivet into a hole with only 3/4 clearance. Easy, pick the most advantageous spot, heat a narrow band across the scroll to red and with a bending wrench bend it out of the way, insert the rivet and bend back to where it was, one heat. Unbolt and make one rivet at a time. With all the rivets done on the horizontal bar the bottom six bolts on each side of the arc were removed, the frame expanded the other horizontal inserted and the frame re-bolted.

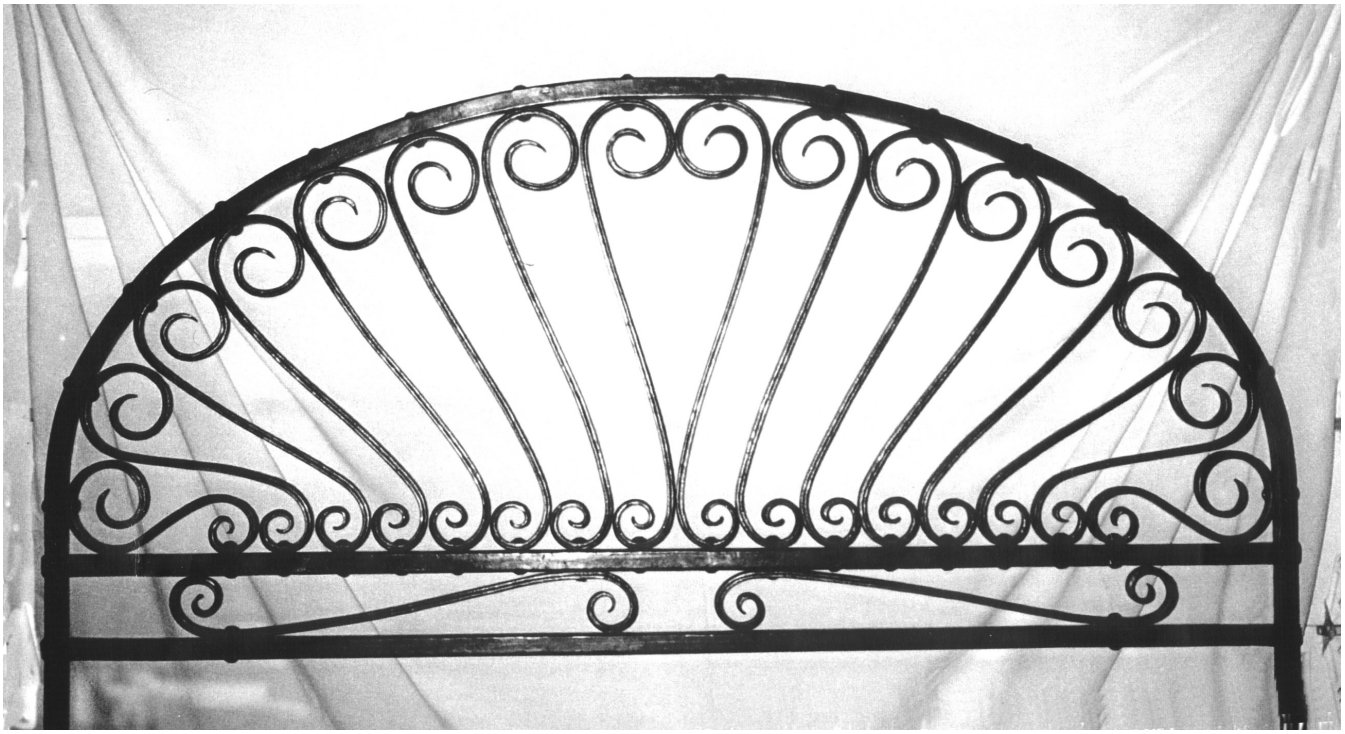
Now the tenons were upset with a ball peen to near done and the flat facets finished with a handled drift, so as to avoid hammer marks on the frame. To do the rivets around the arc I made a simple back up jig that bolted in place. All the rivet heads were finished with a decorative five facet header, which I made.

FINISHING

I did a lot of power brushing to remove scale, from all parts before and after assembly. The finish was my idea and the simplest I have come across yet, for inside work. Black scuff coat shoe polish, well buffed, then Butchers paste wax liberally applied and melted into nooks and crannies with a heat gun and then buffed. It has a pleasant sheen and a color nuance from jet black to steel gray depending upon the texture of the surface in any given area.

Tim Suter
1999

Many thanks to Tim for an excellent write up of this project, Editor



FORGING A SHEET METAL ROSE

Traditionally, roses have been forged by master smiths from a single piece of heavy iron. This was a show of their mastery of smithing. Alex Bealer shows one method for making a rose in this manner an his book 'The Art of Blacksmithing." A simpler method using sheet steel can give very realistic results without requiring great skill.

Obtain 18ga. maleable sheet steel from a steel supplier or use auto body panels. Use a scratch awl to lay out the rose petal blank on the sheet metal. Use compound action aviation snips to cut out the blank. 18 ga. Steel is heavier than aviation snips are designed to cut. Use caution so as to not spring the jaws of the snips. Aviation snips come in both "rights" and "lefts". It is easier to use both for curved cuts.

Cut out a large set of five outer petals, three smaller sets of four petals each, and a bud of three petals. A five—leaved sepal is made for the bottom of the rose.

To forge these blanks, tie your oxyacetylene torch to your anvil's waist with wire. Adjust the torch for a small neutral flame. Hold the blank with ordinary pliers. Heat a petal and hammer with short rapid blows at a rate of 3~4 per second using the ball peen of a 1 lb. hammer. Hammer from the inner part of the petal outwards, making the outer edges thinner than the center. As the petals thin and enlarge, they should overlap.

Thin the leaves of the sepal and trim the edges to the correct shape. To shape the bulbous part of the sepal , a punch and die is required. A 1/2" rod, ground to shape, makes the punch. A piston pin from a *Chevy* engine makes a perfect die for the sepal or use 1/2" ID pipe.

The rose stem can be made heavy wire or 3/16 round that is forged thinner. A hole is drilled in the center of each petal section the size of the stem.

Before assembling the sections on the stem, heat the edges of each petal and tap with a hammer to roll the edges over. Examine an opened rose to match appearances. The two inner sets of petals should not be rolled.

Assemble each section on the stem. Peen the end of the stem. Force the sections tight against the enlarged stem end and clamp. Then braze the sepal to the stem and file smooth. An alternate method is to form a tenon on the end of the stem. Compress the petals against the shoulder and rivet by peening the tenon.

At this point the petals should be in a flattened state, with edges curled, and each petal staggered in relation to those above and below. They should be compressed tightly together.

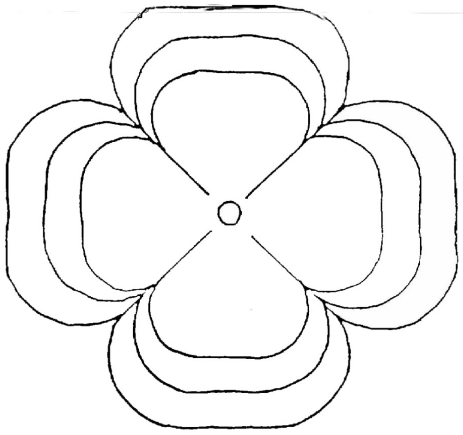
To fold up the petals, heat the small petals and shape with needle nose pliers to form a tight bud. Heat and fold up each succeeding section until you have what looks like a rose. It is easier to do this if the stem is clamped in the vise, and you hold the torch in one hand and shape the petals with the pliers using your other hand. After you shape the petals, fold down the sepal leaves around the stem.

Bend the stem to a natural shape. Cut out leaf blanks from sheet metal. Rose leaves are usually grouped in sets of 3,5 or 7. They should all vary in size according to their place on the stem. You only need to forge the leaf edges thinner. This can be done cold.

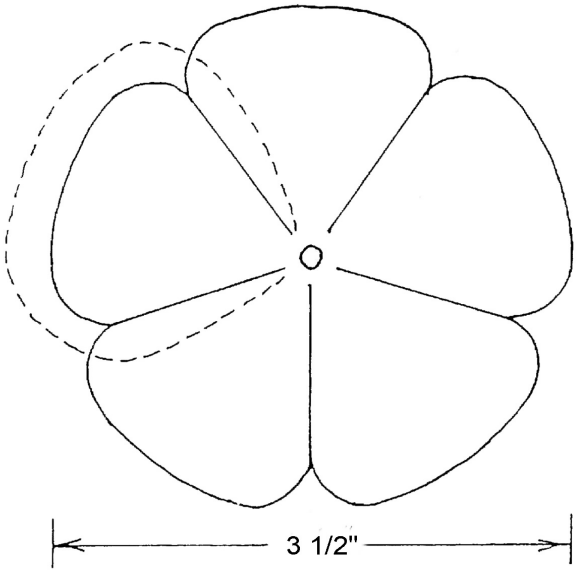
File serrations in the leaf edges using a triangular file. The veining is done cold on a wood or lead block using a rounded chisel edge. Lightly hammer each leaf to impart a natural shape. Weld or braze each leaf to a wire stem. Braze the set of leaves to the main stem. Three sets of leaves on the stem will give a natural appearance.

Cut off the oxygen on your torch and blacken the rose with acetylene soot. Melted parafin wax will hide defects and protect the metal. Your rose is finished except for the thorns. If you can put those on the stem, you have more patience than I do!

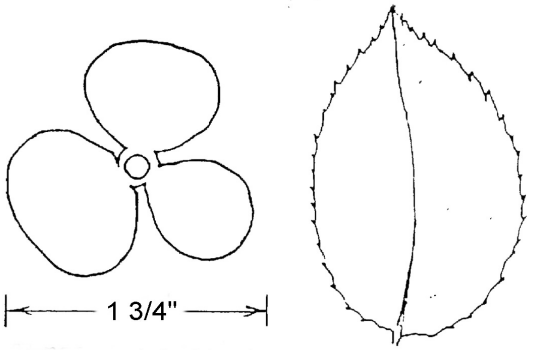
Ned Edelen



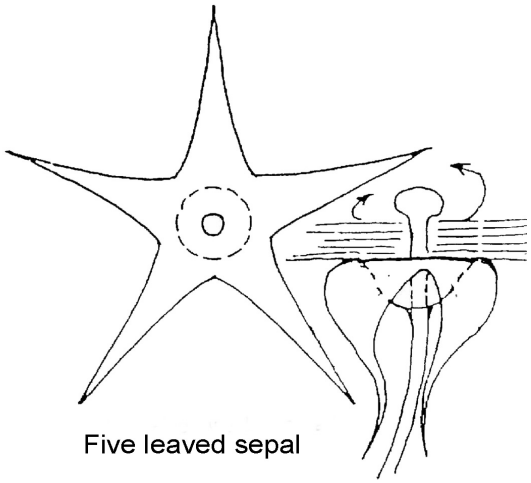
Three sets of inner petals



Outer Petals
Forge each petal blank untill it overlaps adjacent petals, and its edges are thinned. Curl petal edges before final assembly of rose.



Three petaled bud



Five leaved sepal

Reprinted from the Blacksmiths Guild Of the Potomac

Buying for Beauty

A general guide to purchasing ironwork of the Blacksmiths craft

By Dick Green

(See page two, "Beautiful Iron" for sample illustrations)

'Wrought Iron' is a type of metal that is no longer generally available. The products you buy are NOT made of it! The term came to imply a product of strength and quality, commonly used to describe ironwork fences or 'Railings'. Nowdays the term is frequently used to mislead you into falsely thinking you are buying something of strength or quality - anything metal and generally black, from junk to gem is now called 'wrought iron' ! So YOU have to be able to judge for yourself. Armed with a few simple guidelines you will be able to shun the worst of it and identify the better ironwork for yourself.

You buy ironwork for one of 3 reasons:

- for its beauty such as a piece of art work
- to serve a functional purpose such as railings
- a combination of both such as a set of fireplace tools or a bed.

There are 3 ways to make ironwork:

- machine made
- hand made
- a combination of both.

Hand made items are generally much more attractive than machine made so handmade is therefore desirable when buying something for its beauty.

Handmade is generally more expensive.

Machine made items can be produced more economically than handmade, but machine made items are less attractive and are therefore generally used for things such as railings.

Most things that you buy for beauty will be a combination of both - but the more you can afford, the more handwork, quality and beauty you

This educational information is provided to the public and is an opinion expressed by the North Texas Blacksmith's Association. It is our belief that what is expressed here is generally accepted in Metal Art circles. As with any opinion that attempts to be broad in nature, there will be specific situations or products where this opinion may not apply.

This page was created by David W. Wilson Illustration/Design URL for this site is: http://www.flash.net/~dwwilson/beautifuliron/

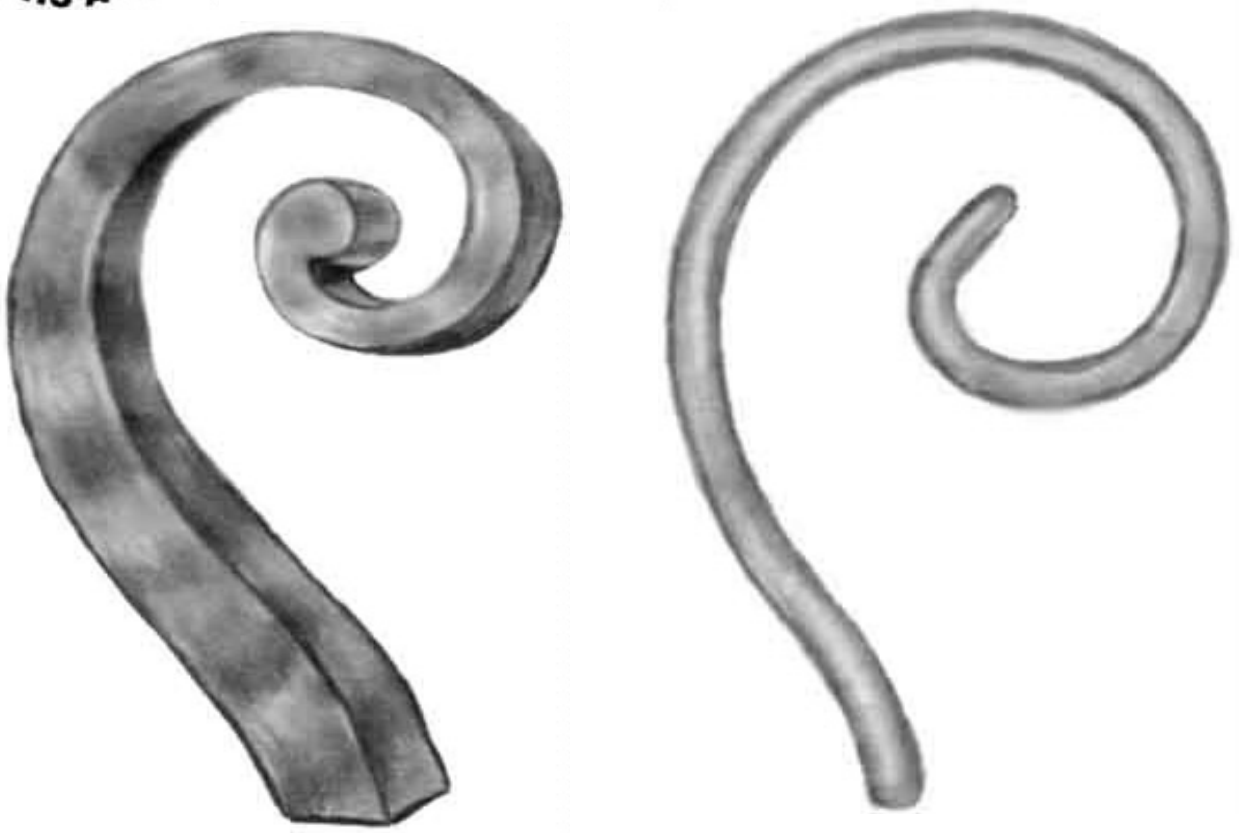
A few of the distinguishing characteristics of handmade versus machine made:

- Variations in texture, color, shape and pattern generally enhance.
- Generally iron work should feel heavy and solid for its size. Flimsy, tinny sounding items are less desirable.
- If its made of tubing (not desirable) it probably should not be called iron!
- If its made of wire (not desirable) it probably should not be called iron!
- The fewer 'weld beads' you see, the better the work.
- Is the surface smooth and uninteresting (less desirable) or does it have an interesting texture (desirable).
- Are the ends of the metal blunt (not desirable) or are they tapered and shaped (desirable) - see illustration of scroll.
- Are there burrs or ugly damage marks (not desirable).
- Is it painted, clear varnish/lacquered or wax finished. Nice textured metal work will be finished to enhance, not hide the metal surface.
- Are repeating shapes or patterns exactly the same (less desirable) or are they subtly different adding interest (desirable).

Beautiful Iron

A general guide to identification
of ironwork of the Blacksmiths craft

Scrolls-Blacksmith made versus machine made



BLACKSMITH SCROLL

- Hammered texture surface.
- Scroll has appealing mass with changes in thickness.
- Gradual decrease of the space enclosed by the scroll.
- One of a kind creation, with each hand crafted piece having unique characteristics.

MACHINE SCROLL

- Smooth, non-textured surface.
- One continuous thickness, frequently made with round rod or flat bar on edge.
- Similar or uneven space enclosed by the scroll.
- Mass production identical look, typically with straight section on end of the shape

This page was created by David W. Wilson, Illustration/Design

URL for this site is: http://www.flash.net/~dwwilson/beautifuliron/bi.html

Anonymous Basket.

Each year the Cambell folk school has a blacksmith work week. In exchange for room and board, smiths from various parts of the country volunteer a weeks labor up-grading the school's blacksmith shop and doing whatever smithing project the school may need.

This past year Dick Geier and John Rousch represented NYSDB. Clay Spencer organized the event and this year under the direction of Bert Smith the ten volunteers constructed five, eight foot sections of handrail to go with a like amount done last year. The rails run from dining hall entrance, down the hill to the gift shop. All wood posts supporting the post vices in the shop we replaced with steel tubing and a number of hand tools were made for the shop.

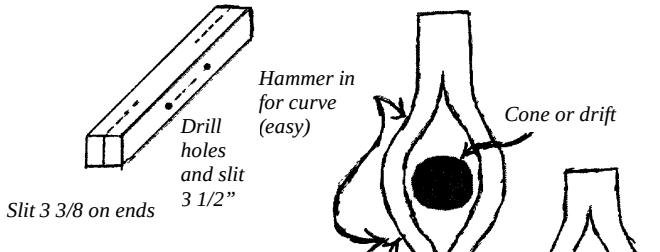
One evening several of us were looking at a collection of photographs taken by Don Neuenschwander of European iron work he had seen during the ABANA tour. One photo was of a unique basket that we all ventured guesses on how it was done. The next morning at breakfast, Allan Kress, an excellent smith from Alabama, announced that he had been in the shop early and using a piece of clay had figured out how it was done.

Following are Allans's notes on how the basket is made.

Don was not aware of who had done this work so if anyone recognizes it let me know so credit can be given,

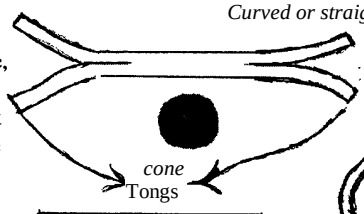
John Rausch

Use stock 5/8" sq x 7" long, slit 3 3/8" on each end, slit 3 1/2" in the middle with 2 small drill holes on each end of the slit.. Slit ends first on band saw, then drill holes for the slit in the middle, use the slitter. If you have trouble with the inside slit, bandsaw the ends last or hot slit the ends.

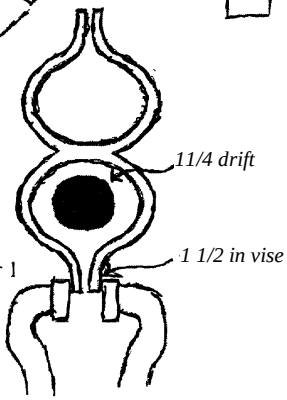


Open the center slit first on cone mandrel, if you can drift 1 1/4" rd pin here to open up the split..

Get a good heat in the middle, pull equally on each end with tongs, next to the cone or drift in vise to open up, then do the other side.

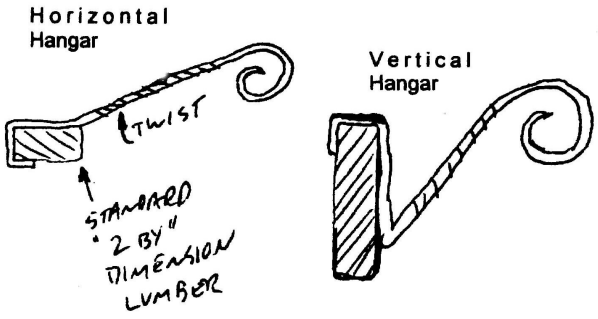


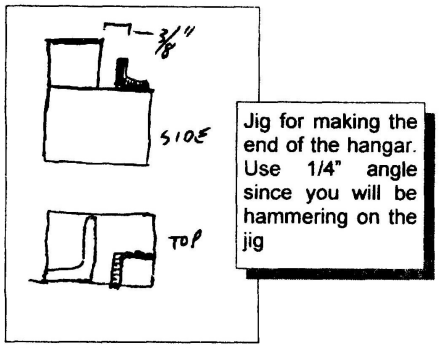
With the ends pulled together put 1 1/2" in the vise then use your 1 1/4" drift to open up evenly.



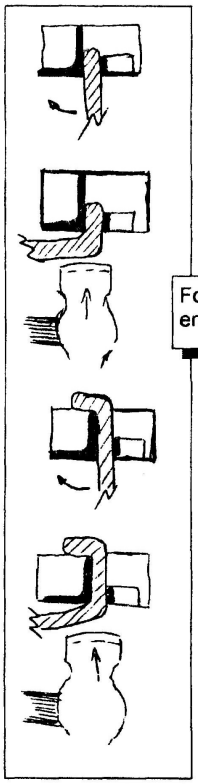
Not to scale

There is no wrong way to do this, since it is all guess work! Bill asked what to call this and since Don had the picture we can call it the Neuenschwander Basket! Don't forget and file any burrs or saw marks off.

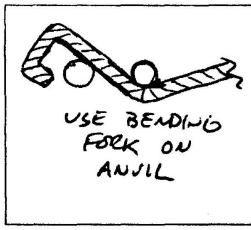




Jig for making the end of the hangar. Use 1/4" angle since you will be hammering on the jig



Forming the 'J' hook end using the jig.



Finishing the end on a bending fork.

Deck Rail Plant Hangers

Matt Balent

I have made quite a few of these over the past three years for sale at craft shows and demonstrations. They are quite popular, especially in the spring. The basic premise is a 3/8" bar which fits over any standard "2 by" dimension lumber (1 & 1/2" thick) with a hook or a loop in the other end to hold a hanging flower basket.

Begin this project by making a jig which will be used for the end which fits over the 2x4. The jig consists of a 1.5" piece of 1.5" x 1.5" x .25" angle iron, a .5" piece of 1.5" x 1.5" x .25", angle iron, and a 4 to 6" piece of 2" x 2" x .5" angle iron.

Weld the 1.5" piece on the center of the 2" angle with one leg flush with the face of the larger piece. Space the .5" piece slightly over 3/8" (slightly more to allow for heat expansion) with one leg up. The diagrams show the construction much clearer than this description.

To make a hangar, take a 30" piece of 3/8" square and taper one end. Make a loop or nice scroll in the tapered end. This is the portion with holds the flower basket Put the end jig in your vice. Heat the opposite end and insert it 3/4" to 1" into the jig and bend a 90 degree angle. True up the corner with a few hammer blows.

Heat the end again and insert it again into the jig, this time with the end angle over the outer leg of the jig. Bend a 90 degree angle and true up with a few hammer blows. You should end up with a J' shaped hook on the end of the piece.
From this point you can decorate the center portion of the hangar in whatever fashion you choose. I put a double twist in mine (half twisted clockwise and half twisted counter clockwise).

Finally bend the hooked end to whatever angle you choose. I use a small angle for horizontal holders and a rather large one for the ones used on vertical rails.

These can be used on any deck, fence, or structure which uses standard dimension lumber. Normally I coat them with exterior grade, rust resistant paint.