

Horseshoe Nail Cross

by Bill Clemens, *Hammer & Tong*, March-April 2007, Maryland

I was asked by our minister to repair a cross pendant that he always wears. It appeared to be made of horseshoe nails, but close examination revealed that it was cast of some soft alloy. In preparing to solder the cross back together, I decided that I would first try to make a replacement cross from actual horseshoe nails just in case I couldn't repair his cast cross. What follows are the steps I took to make a cross pendant by forge welding four horseshoe nails together. So far, I've only made three crosses, and I've learned something with each one. If you make one, I'd love to hear about it and any refinements to these instructions you may discover.

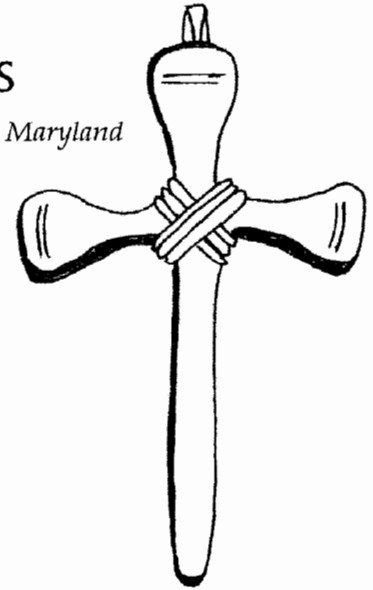
I started with four number 16 Mustad horseshoe nails. Three nails make up the cross, and a fourth one, with the head removed, makes the loop for hanging it. Begin by cutting the head off one of the nails and forming a taper/scarf on the end. Since the nails are tapered along their length and you'll be placing this nail upside down behind the central nail of the cross, you'll need to taper it to match and thin the head end.

Turn the nail over and form the loop. Forming the loop before forge welding it to the back of the central nail gives you a means of positioning the two nails for welding and protects the tapered point while in the forge. Place the loop tightly against and behind the head of a second nail. After the cross is completed you can reposition the loop slightly so that it is not tight against the head.

Hold the nails by the head and loop. I used a pair of round bit farrier's fire tongs that have domed bits that accommodate the head and loop while holding the two nails firmly just below the head. I used a tong clip to hold them securely. You will need a small clean fire and a slow air flow. Place the nails in the forge and heat to orange; brush and flux. After fluxing, insure the nails are in contact along their length. Return to the fire and heat slowly, rotating them to insure uniform heat. At welding heat remove from fire and tap gently. If done right, the pieces have actually welded in the fire, and your gentle taps are just to make sure the weld is complete, any small gaps are closed and any remaining flux is expelled from the weld joint. This is fire welding as opposed to hammer welding, in which the two pieces to be joined are heated separately in the forge fire and joined at the anvil with hammer blows.

Once welded, remove the tongs and place the head and loop end in the fire to complete the weld on the remainder of the shank and at the head. Take care not to burn the thin loop or to distort it with a misplaced hammer blow. These welds exercise both fire management and hammer control. Lay this piece aside.

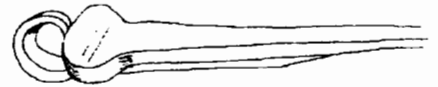
Take the remaining two nails and place them back to back. You might want to practice placing them in a vise (2A) like this



1A



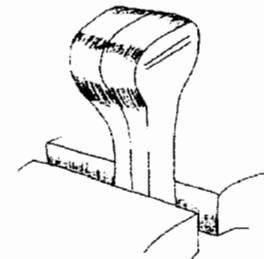
1B



1C



2A



2B



2C



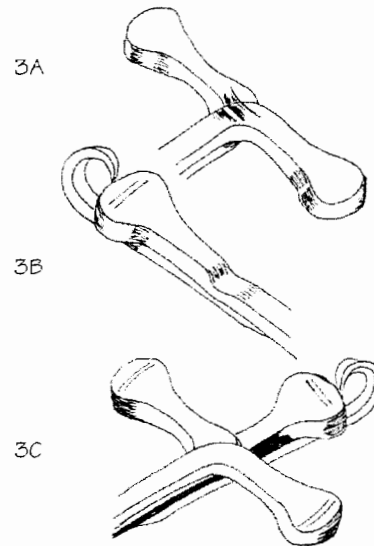
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while still cold. You want about 1" protruding above the vise. With a hammer, form a 90° bend in both nails. By placing them back to back in the vise, you are ensuring that both arms of the cross will be the same length. Square up the bend on each nail independently making the inside corner as tight as possible, but be careful that the length of both arms remains the same. Forge a scarf at the bend of each nail as shown in 2B, with one scarf face up and the other face down, so that when the nails are placed together, both face up with their shanks on top of each other. Their scarfs will overlap, as indicated in 2C. Place the nails in tongs, and weld the points first, following the same procedures as for the central nail and loop.

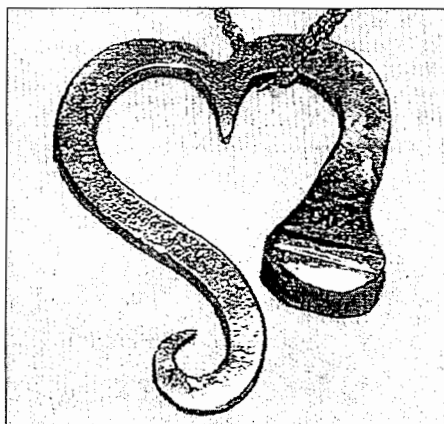
While completing the weld on the top of these nails, forge a scarf from the backside as shown in 3A. First make sure the thin tops of the arms are flush on the front, and then thin the shaft below the arms, leaving a bulge on the lower half of the arms.

Align the arms on the central nail and forge a slight indentation to accept the bulge on the arms. With the arms and central shaft positioned, repeat the forge welding process one last time to join the two parts of the cross together. Again after welding, thin the central shaft of the cross below the arms while maintaining the proper width and cleaning up the sides.

Trim the bottom of the cross to $2\frac{3}{4}$ ", and then upset the bottom end, leaving only a slight taper (if any) in the width and thickness of the bottom of the cross. I think it looks better with a slight swelling at the very bottom. ♣



Horseshoe Heart Pendant



This little heart appeared without fanfare in Hammer and Tong. It seems to be made out of two horseshoe nails, tips forge-welded together, with head removed from one of the nails. Try this with one forge weld before advancing to the cross with three forge welds. — Ed.