

Riveting

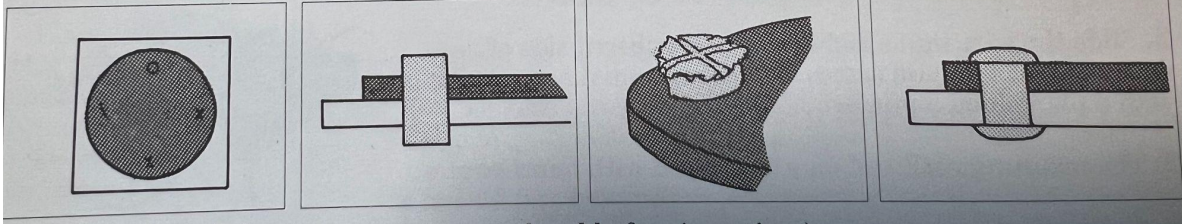
The Complete Metalsmith - Tim McCreight (pp 79-81)

Rivets

This is one member of a large family called *Cold Connections*. Rivets are pieces of rod that are slid through a snug hole and upset or bulged over on each end to lock pieces together.

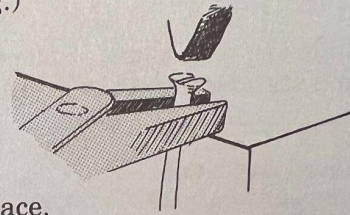
Making a Standard Rivet

1. Drill matching holes in the pieces to be joined. If many rivets are being made, set two before drilling remaining holes. This will prevent the pieces from sliding or rotating.
2. The rivet is made of annealed wire that makes a snug fit in the holes. After being cut and filed flat, this should extend a half a diameter on each side.
3. Holding the assembly slightly above a steel surface, tap the wire with a small cross peen in two directions making a +.
4. As a head develops and the rivet is held in place, use the flat face of a hammer to shape and smooth the rivet.

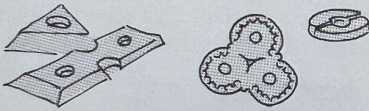


Preparing a Rivet (Forming one head before inserting.)

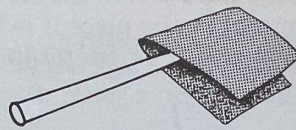
1. Drill holes and select a tight-fitting wire.
2. Hold wire in vise or in pliers supported against the bench. Form a rivet head on one end of the wire, as in #3 above.
3. Slide the wire into the workpiece, tap lightly to seat it, cut off excess wire and form second head to lock the rivet in place.



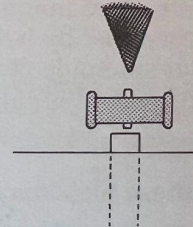
When connecting soft materials such as wood, leather, etc. use a washer to keep the rivet head from pulling through. This can be of almost any shape and offers a good chance for design enhancement.



If the wire on hand is a little too large to fit a rivet hole, sand or file a gradual taper. This is faster than drawing the wire down.



When forming a rivet head in a tight spot, a flat punch held in a vise is a useful anvil.



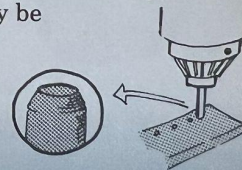
To Allow Movement

When a riveted piece is supposed to swing side-to-side, add a thin piece of cardboard to the assembly and rivet as usual. Remove the cardboard by burning it or soaking in water to provide clearance.



Shaping

Rivet heads can be shaped and burnished by a beading tool set into a drill press. Tools may be made for any size head that is needed. Lubricate the action with a light oil or wax.



Special Rivets

Rivets can be simple or complex, delicate or bulky, dominant or invisible. By understanding all these possibilities, a jeweler enlarges the range of solutions to any particular joining problem.

Nailhead Rivets

This popular variation on the rivet is useful when a larger head is needed, either for the look of it or because the material being held requires a wider grip. It is also handy when

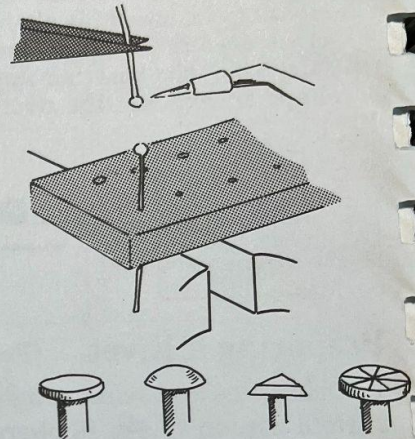
one end of the rivet is difficult to reach, for instance inside a cup, or when the material is fragile enough to warrant minimum hammering.

1. Draw a bead on a wire that fits tightly into the rivet hole. Use a hot, sharp-pointed flame. Gold and silver will form balls more easily than copper or brass.

2. Slide the wire into a tight hole on numbered side of drawplate as it is laid across vise jaws or anvil hole. Strike with a planishing hammer.

3. The resulting nailhead may be shaped with punches or a nail set while still in the drawplate, or removed and filed to a desired shape.

4. Slide the wire through the holes, tap lightly to seat, and form a standard rivet head on the other end.



Nailhead rivets are recommended for 16-24 gauge wire. Smaller wire doesn't leave enough head to show. Heavier wire does not easily form a bead.

Traditional Rosette

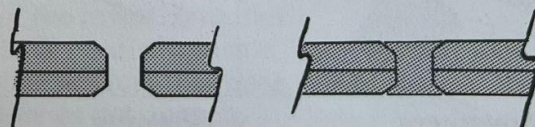
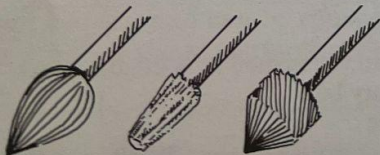
These decorative nailheads are made with four angled blows of a ball peen hammer.



Flush Rivets

These rivets are made as described on the previous page (standard rivets) except that the hole is prepared by beveling so that the swell of the rivet is below the surface. If the rivet is made of the same metal as the piece it is holding, the rivet will blend in completely. This is called a **disappearing** or **invisible** rivet.

Any of these tools may be used.



Either or both ends of a rivet may be made flush.

After forming the rivet head with a small cross peen, file, sand, and finish as usual.

Other Cold Connections

These special kinds of rivets are rather unusual but can provide intriguing design possibilities when considered from the earliest stages of a piece.

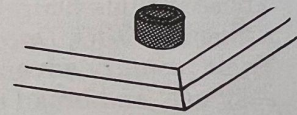
Uses

These "gentle" rivets are recommended when the hammering needed to form a standard rivet head might cause damage. This would include enamels, shells, delicate mechanisms, and stones.

Plastic rivets also add color to a piece, especially where light can be seen through the rivet. Tube rivets can be used to perforate a piece.

Tube Rivets

1. As with other rivets, the first step is to drill a hole through all the pieces being joined. This must make a tight fit with the chosen tube.
2. The tube seam should be soldered and the tube annealed.
3. The tube is slid into position and sawn to leave an amount equal to about half the diameter sticking out on each side.



4. A scribe is set into the tube and swung around to flare out the mouth. This is repeated on the tube's other end.

5. To further curl over the ends of the rivet, set it on a round punch or hammer face and tap or burnish like this.

