

## Easy-Peasy Riveting An Introduction to Riveting Essentials Riveting Tools & Rivet Gauges<sup>†</sup>

By Gwen Youngblood

Riveting Essentials<sup>†</sup> are a unique set of patent-pending riveting tools designed by Gwen Youngblood to make riveting easy-peasy and foolproof. Rivets are formed with short pieces of wire, which are passed through holes in the jewelry pieces and the ends of the wire are flattened to secure the pieces in place. The wire used to form the rivet must be of the proper diameter, fitting snugly in the holes. And more importantly, the wire must be cut to the proper length—too short and the rivet will not be secure, too long and the wire will bend instead of flatten. Learning to cut the rivet wire to the correct length to form the rivet properly has been the “trickiest” part of learning to rivet, usually requiring a great deal of practice. In this tutorial, students will learn to use the Riveting Essentials<sup>†</sup> Rivet Gauges to cut the rivet wire to the correct length every time to make riveting easy-peasy. A variety of spacers will be riveted to layered metals to create a funky, fun pair of earrings. In addition, students will learn some simple metal working techniques. The tools can be found here: <https://www.etsy.com/listing/156844948>.



### Materials List

- Copper and silver sheet metal, 24 or 26 gauge
- Variety of spacers—this can be anything with a hole that will accommodate 14 gauge round wire, 16 gauge round wire or 18 gauge round wire
- 4 inches of 14 gauge round wire
- 4 inches of 16 gauge round wire
- 4 inches of 18 gauge round wire
- Ear wires

### Tool List

- Riveting Essentials<sup>†</sup> riveting tools
- Chasing hammer
- Plastic mallet or rawhide mallet
- Bench block with pad
- Shape template(s)
- Permanent marker (fine tip Sharpie)
- Wubbers Classic Medium Flat Nose Pliers
- Safety glasses
- Pro-Polish Pads
- Flat #2 hand file
- Center punch
- Utility/household hammer
- Metal shears or jeweler's saw with 4/0 saw blades for 24 gauge metal or 6/0 saw blades for 26 gauge metal
- Texture hammer(s)
- Drill (Hand drill, Dremel or Flexshaft) with #52, #56 and #60 drill bits
- Hole punching pliers, 1.8mm
- Liver of sulfur
- Sandpaper, 300 grit or finer
- Round diamond needle file
- Plastic fork
- Flush cutters rated for at least 14 gauge wire

## Project Steps

**Step 1.** Gather two contrasting metals, a template and a permanent marker, such as a Sharpie. In this tutorial, 26 gauge copper and sterling silver are used.

Templates are available from a variety of sources, such as office supply stores, hobby stores and online sources. The ones used in this tutorial are templates used by precious metal clay (PMC) artists to shape PMC.



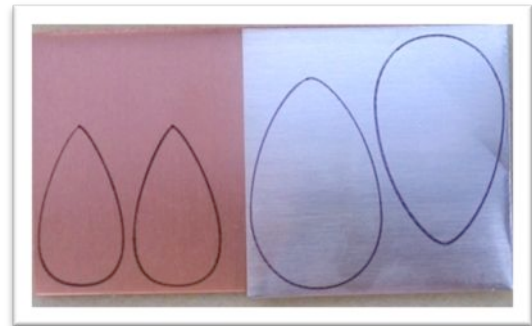
**Step 2.** Using the template and the permanent marker, trace the shape onto the metal.

Using either metal shears or a jeweler's saw, cut the traced shape from the metal.

If using a jeweler's saw, size 4/0 saw blades are needed to saw 24 gauge metal. Size 6/0 saw blades are recommended to saw 26 gauge metal.

Pro-polish Pads can be used to remove any remaining permanent marker from the metal.

If there are any sharp places on the edge of the metal, use the flat hand file to gently file the edge to remove the rough spots and refine the shape. Hold the edge of the metal flat against the surface of the file. Push the file away from you to remove the offending metal. NOTE: Jeweler's files only work on the "push"—no need to work the file back and forth.



**IMPORTANT SAFETY TIP: ALWAYS wear safety glasses when cutting wire and metal—small pieces of wire or metal can fly into unprotected eyes.**

**Step 3.** Many methods exist to texture metal. For this project, two different texture hammers are used to impart added interest to the earrings.

Select the pieces that will be the bottom layer of the earrings—in the example, these are the sterling silver pieces. Select one of the texture hammers.



**Step 4.** Place the pieces, one at a time, onto the bench block and randomly hammer with the texture hammer.



**Step 5.** A different texture will be imparted to the pieces comprising the top layer of the earrings. These are the copper pieces in the example.

Select the top (copper) pieces and the chasing hammer. The small, peen side of the chasing hammer will be used to texture the copper.

Place the copper pieces, one at a time, on top of the bench block. Hammer randomly with the small, peen side of the chasing hammer.



**Step 6.** The act of cutting the metal, especially with metal shears, and/or texturing the metal may cause the metal to warp. To flatten the metal pieces, place on the bench block and tap the surface of the metal with a plastic or rawhide mallet.



The metal pieces are much more interesting with the added texture. They are flattened and ready for the next step.



**Step 7.** Additional interest can be added by using a chemical patina, Liver of Sulfur, to “age” the metal.

Add a small amount of Liver of Sulfur (either gel or rocks) to a bowl of warm water. Do this in a well-ventilated area. Liver of Sulfur smells like rotten eggs. Avoid getting the Liver of Sulfur on your skin/hands.

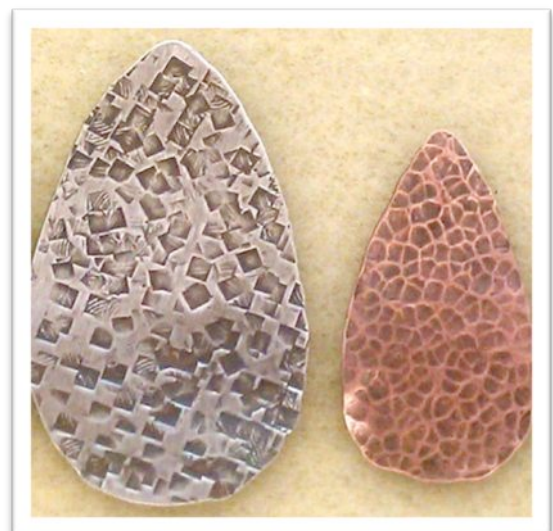
Prepare a second bowl of plain water to serve as a rinsing bowl for the patinaed pieces.

Dip each piece individually into the Liver of Sulfur (LOS) solution. When the desired level of patina is achieved, remove and rinse in the plain water. A plastic fork is a good tool to use for this process.

Copper and sterling silver react differently to the LOS. Copper will patina much quicker than sterling silver. Because of this difference in reaction time, it is a good idea to patina metals separately whenever possible.



**Step 8.** Using the fine grit (greater than 300 grit) sandpaper, polish-off some of the patina from the surface of the metal pieces. This process removes the patina from the “high” spots of the texture, while leaving the patina in the “low” spots of the texture. This action highlights the texture. Remove as much or as little of the patina as desired.



**Step 9.** Select the spacers to be riveted onto the layered metal pieces.

Determine which gauge of round wire fits snugly through the hole of each spacer. The wire should fit snugly in the hole of the spacer. The wire should not “wobble” around in the hole.

Occasionally, a spacer will have a hole that is too large for one wire, but too small for the next larger diameter of wire. In these situations, use the round diamond needle file to enlarge the hole in the spacer. Twist the diamond file back and forth in the hole until the hole is enlarged just enough to accommodate the larger wire. NOTE: Diamond files work in all directions.

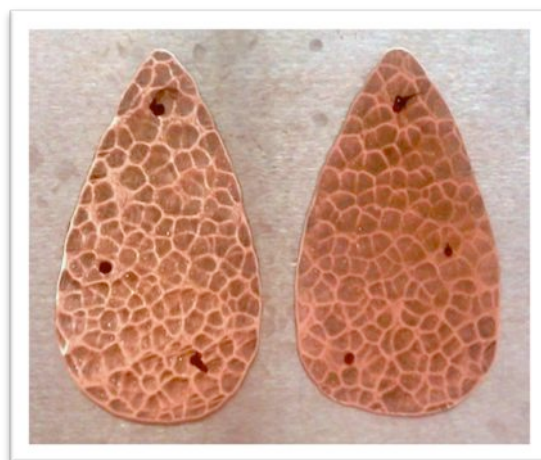
Make a note of which spacer uses which gauge of wire. This will be important when it is time to drill holes for the rivets.



**Step 10.** Lay out the spacer design on the stacked metal pieces.



**Step 11.** Mark the position of the spacers on the top (copper) piece. Depending on the size of the hole, a fine tip Sharpie may fit in the hole of the spacer to mark on the top (copper) piece.



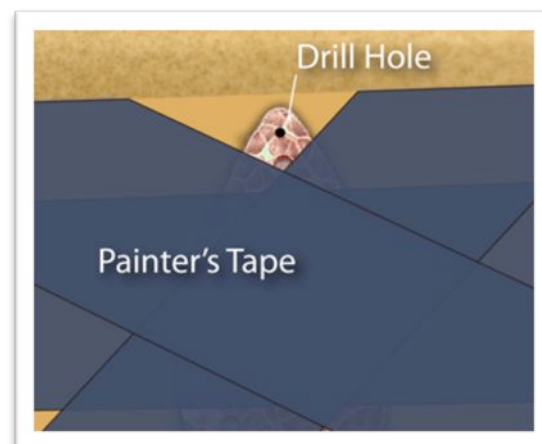
**Step 12.** Using the center punch, mark each rivet spot with a divot. Place the metal piece on the bench block. Position the pointed tip of the center punch on the rivet spots. Tap the end of the center punch with the utility/household hammer to make a small divot in the metal.

The small divot will provide a place to rest the tip of the drill bit when drilling a hole. The divot prevents the drill bit from “skipping” across the surface of the metal.



The easiest way to drill the holes is to tape the metal piece to a wooden block. Use painter’s tape for this job. It does not leave a residue on the metal.

Double-check the wire gauge prior to drilling the rivet holes with calipers or a wire gauge tool.



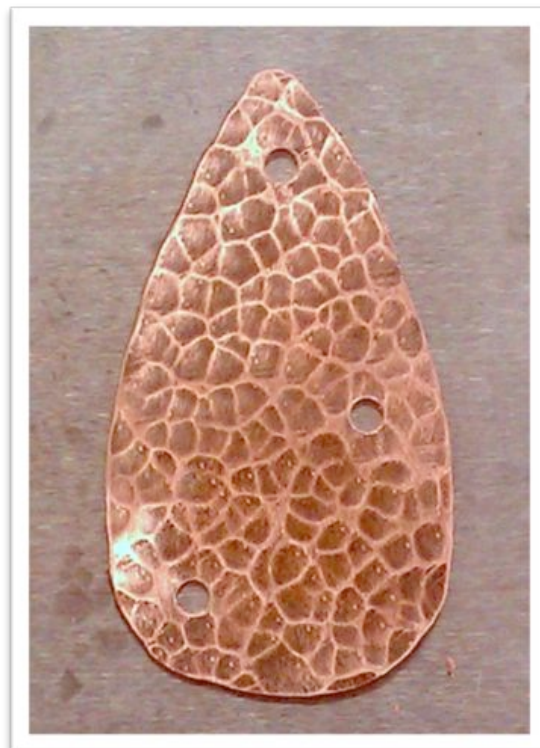
**TOOL TIP:** The rivet wire will pass through the spacer and both layers of metal. The holes drilled in the metal layers must be the same diameter as the spacer. The hole in the spacer determines the gauge of wire used to form the rivet and also determines the size hole drilled in the metal layers.

If the spacer accommodates a 14 gauge wire, use a #52 drill bit in the drill to drill the holes in the metal layers; a #56 drill bit for 16 gauge wire, or a #60 for 18 gauge wire.

**Step 13.** Rest the tip of the drill bit in the divot created by the center punch.

Drill the holes in the top (copper) piece for the rivets at the spots marked. The diameter of the hole must match the diameter of the rivet wire that will pass through the spacer and through the metal pieces.

The holes for the bottom (silver) piece will be drilled next.



**Step 14.** Position the top (copper) piece on one of the bottom (silver) piece. Using the fine tip Sharpie, mark through one of the holes onto the bottom (silver) piece.

Mark the rivet spot on the bottom (silver) piece with the center punch as previously done on the top (copper) piece.

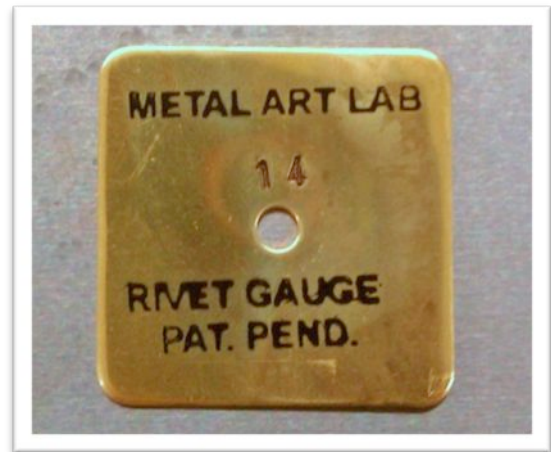
Drill the hole with the appropriate drill bit as previously done on the top (copper) pieces.

For the bottom pieces, one hole at a time will be drilled and the rivet completed before drilling the next hole in the bottom (silver) pieces.



**Step 15.** To start forming the first rivet, place a Rivet Gauge on the bench block. The Rivet Gauge should correspond to the gauge of rivet wire, which corresponds to the size holes drilled in the metal.

Test fit the wire in the holes in the metal pieces. If any of the holes are too small, use the round diamond file to enlarge the holes until the wire just fits through the hole. The wire needs to fit snugly in all the holes through which it passes.



**TOOL TIP:** Rivet Gauges come in pairs and are marked with the wire gauge to which they correspond. Rivet Gauges stamped with a 14 are to be used with 14 gauge rivet wire, those stamped with 16 are to be used with 16 gauge rivet wire and those stamped with 18 are to be used with 18 gauge wire.

**Step 16.** Stack the spacer and two metal layers on top of the rivet gauge, aligning the holes for the first rivet.

Flush cut one end of the rivet wire. A flush cut is achieved by holding the flush cutters so that the flat back of the cutters is pointed towards the length of rivet wire and nip off the end of the wire.

Pass the wire through the holes of the spacer, the two layers of metal and the Rivet Gauge, **making sure the flat end of the wire is firmly against the top of the bench block.**

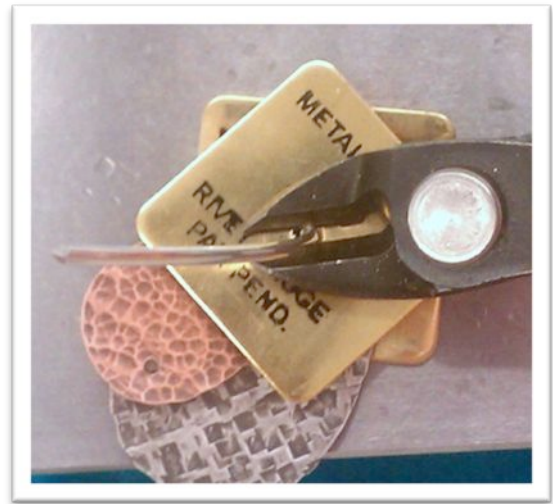


**Step 17.** Thread the second Rivet Gauge over the rivet wire (rivet wire passes through the center hole of the Rivet Gauge) and stack on top of the spacer and metal pieces.





**Step 18.** Cut the rivet wire by placing the flat back of the flush cutters firmly against the top rivet gauge. Cut the wire, being sure to control the wire after it is cut.



**IMPORTANT SAFETY TIP: ALWAYS wear safety glasses when cutting wire and metal—small pieces of wire or metal can fly into unprotected eyes.**

**Step 19.** Remove the top Rivet Gauge, exposing a short stub of wire.

Using the peen side of the chasing hammer, tap on the exposed end of the wire until it begins to spread and flatten.



**Step 20.** Keep tapping the end of the wire until the stub is completely spread and flattened.



**Step 21.** Remove remaining Rivet Gauge from the bench block. Turn the piece over and place the finished front side of the rivet against the bench block. This exposes a small stub of wire on the back of the piece.

Using the peen side of the chasing hammer, tap the end of the wire and watch the wire begin to spread and flatten. Continue tapping the end of the wire until the stump is completely spread and flattened against the back of the piece.

Repeat Steps 15–21 for the second earring.



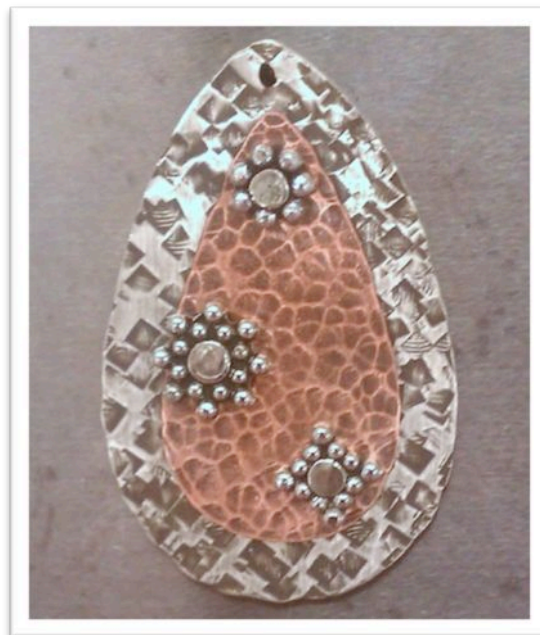
### Attaching the Ear Wire

**Step 22.** To attach an ear wire to each earring, a hole must be made at the top of each earring. A pair of hole-punching pliers (with a small punch on one of the jaws) is used to make a small hole in the metal at the top of each earring.

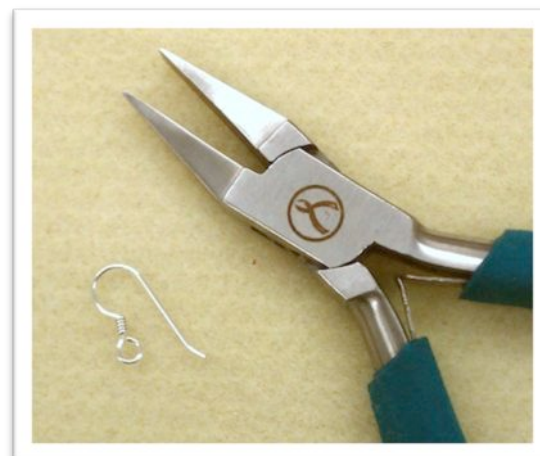
Use the permanent marker to mark the spot for the ear wire hole.



**Step 23.** Place the punch of the hole-punching pliers on the permanent marker mark and gently squeeze the handles of the pliers. The punch will “pop” through the metal, making a hole to accommodate the ear wire.



**Step 24.** The Wubbers Classic Medium Flat Nose Pliers are used to open the loop of the ear wire.



**Step 25.** Grasp the loop of the ear wire with the Wubbers Classic Medium Flat Nose Pliers.



**Step 26.** Open the loop of the ear wire by twisting sideways, like a “gate”.

Thread the finished earring onto the ear wire.

Close the loop of the ear wire like a “gate”.



The earrings are complete and ready to wear!!



### Review Questions

- 1) What size saw blade is used in a jeweler’s saw to cut 24 gauge metal?
  - a) 2/0
  - b) 4/0
  - c) 6/0
  
- 2) Which pliers are used to open the loop of the ear wire?
  - a) Wubbers Medium Round Mandrel Pliers
  - b) Wubbers Classic Medium Flat Nose Pliers
  - c) Wubbers Classic Round Nose Pliers

3) What size drill bit is used to drill the proper diameter hole for 14 gauge rivet wire?

- a) #52
- b) #56
- c) #60

4) What are Rivet Gauges used to measure?

- a) The proper length of the rivet wire to cut
- b) The diameter of the rivet wire
- c) The gauge of the sheet metal

5) What tool is used to enlarge hole to accommodate the rivet wire?

- a) Chasing hammer
- b) Hole punching pliers
- c) Round diamond needle file