Jewelry Fabrication 1 Lesson 3
Piercing & Filing
By John Sartin

Piercing is the technique that is used to saw out a design in the field of a sheet of metal, without cutting through the sides of the sheet. It utilizes both of the skills of sawing and drilling. This tutorial will show you this technique and will include several templates on which to practice. This technique can yield some amazing results with practice.

Filing is the first step in the finishing process. It removes the saw marks that are created during the piercing process and prepares the surface for polishing and buffing, it can also be used to create dimension in the design.

Safety Tips to Follow

Always wear safety glasses

Always be mentally present and know where your hands and fingers are at all times

Always secure loose hair and clothing

Materials List

- 5 pieces of 22 gauge yellow brass 2” x 2” each.
- Glue stick or rubber cement

Tool List – Don’t forget Safety Glasses!

- Jeweler’s saw
- #5/0 saw blades
- Bench Pin
- Center punch
- Set of #2 Swiss cut needle files
- Small ball peen hammer
- Flex shaft or rotary tool
- #55 & #69 drill bits
- Bees wax or Bur-Life®
- Small anvil block

Intro to Drill Bits and Saw Blades

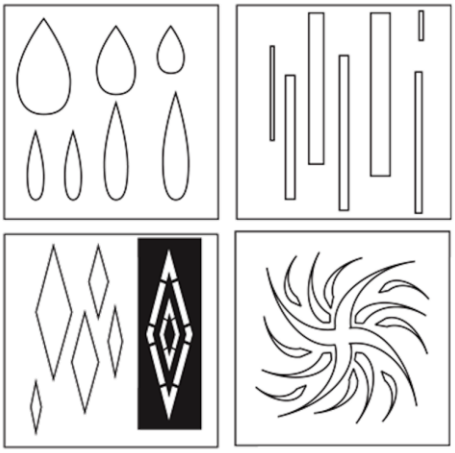
In the Sawing and Drilling tutorial it was mentioned that saw blades come in 16 different sizes but it was not mentioned why that is. The short answer is that different gauges (thickness) of metal require a different size saw blade to achieve smooth accurate cuts. If a saw blade is too big for the gauge of metal it will leave very jagged, uneven cuts with bent edges. If it is too small for the gauge of metal, it will take extreme effort and a long time to cut and the saw blade will wander off course easily.

Drill bits also come in many sizes, as you can imagine. They are found in either millimeter sizes or a drill bit gauge number like #55, the higher the drill bit gauge number the smaller the drill bit.

Piercing

Step One

Prepare your practice samples by printing out the Piercing PDF on WubbersU.com, cut out the designs and adhere them to the 2" x 2" x 22 gauge pieces of yellow brass.



Step Two

Start with the teardrop designs and begin with the largest one. Using a # 55 drill bit and a flex shaft or rotary tool, drill a hole, close to and inside of the line, but not ON the line. Remember to lube your drill bit with bees wax or Bur-Life® and center punch where you want to drill the hole (see Sawing and Drilling tutorial).

Step Three

If a saw blade is already strung in your saw frame you will need to apply pressure to the frame as you did when you strung it to relive the tension and loosen the bottom saw blade clamp screw. Carefully thread the saw blade through the hole you drilled, insert the blade into the bottom clamp, apply pressure to the saw frame and tighten the clamp screw to secure the blade.

TIP: Move the metal to the extreme end of the saw blade, opposite of the loose end. This will give you a tighter tension and may keep the blade from breaking.

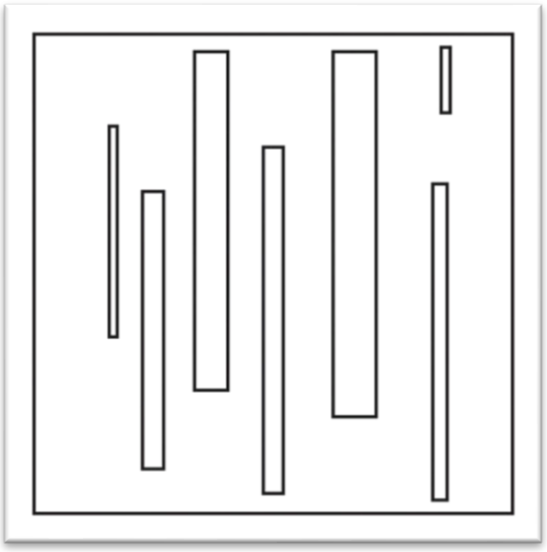
Step Four

Carefully place the piece on the bench pin and begin sawing out the design keeping on the inside of the line, the line should still be visible when the design is cut out. Remember all the sawing tips you learned in the Sawing and Drilling tutorial. Repeat steps 2-4 graduating from largest to smallest.

As you progressed through the sizes you might have notice that the # 55 drill bit becomes rapidly too large for the design. As a design becomes more delicate you will need to reduce the size of the drill bit accordingly. I use a # 78 drill bit even on the larger designs. Because of the drill bits smaller diameter and thus more fragile nature you have to be more diligent when drilling the hole to keep the drill bit properly aligned to reduce the chance of binding and breaking.

Step Five

The next design is the rectangles. You will have to use a #69 drill bit or smaller on the last two.



Step Six

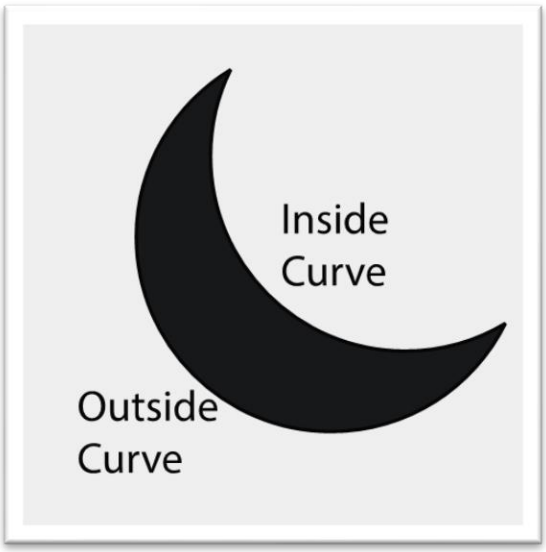
Move on to the diamond design. Saving the one in the black box for last. With the last design cut out only the white portions leaving the black lines that are connecting the design.

Step Seven

And finally this swirl design, not sure what to call it, but it's pretty cool. Remember to keep between the lines.

Filing

There are two rules in filing. The first is files only cut in one direction. The second is outside curves and straight lines require the use of a flat file and inside curves require the use of a rounded file, it's as simple as that. Other than that use whatever shape of file that will do the best job.



Filing inside curves

Starting with the teardrop design and using a half round file and the bench pin for support begin filing the cut edges. Turning your wrist and following the curve will work much better than locking your wrist and filing in a straight line. Let the file do the work and remember files only cut in one direction, away from you, so put slight pressure as you push the file through the cut, then take pressure off of the file, bring it back to the start and repeat. Keeping pressure on the file on the backward stroke will do nothing except ruin a good file. Notice that the curved face of the file matches the contour of the line.

Filing straight lines

Straight lines require the use of a flat-faced file and a slightly different filing motion. You do not turn your wrist as with inside curves. This holds true for outside curves as well. Lock your wrist keeping the face of the file flat and square with the surface, apply slight pressure and file away from you reliving the pressure on the backward stroke.

Filing with a saw blade

The saw blade can be used as a file in very tight spaces. To do this you need to angle the blade very slightly into the cut, apply light pressure against the cut and move the saw blade up and down as if you were sawing. This will slowly remove the sawn edge of the metal and leave it smooth. All of the filing processes progress faster than you might imagine so always keep an eye on your line.

