Filed Cuff Bracelet

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If you have comments or suggestions about this project, please feel free to email me. I would love to hear from you.

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Files and Filing

Filing is an art in itself. Whether it's a ring, a bangle bracelet, or this elegant cuff, the process is the same. With a minimum amount of equipment and no prior experience, creating this cuff bracelet will provide a successful experience for all skill levels.

Appealing to men and women alike, the bracelet is extremely comfortable to wear. Creating this piece will provide an opportunity to experience the use of files in an intimate way.

I learned this technique from Master Metalsmith, Elliott Pujol, at Kansas State University. It was one of the first projects assigned in a beginning metals class, and the best ever for learning to file. Here is my version of the project.

What You Will Need

Materials:

- Sterling silver wire: 4-gauge square dead soft, 7-inch

Tools and Supplies:

- Ruler
- Jeweler's saw, #2 blade
- Bench pin
- Steel block or anvil (optional)
- Hammer (optional)
- Hallmark stamps (optional)
- Rawhide Mallet
- Oval bracelet mandrel
- Soldering station: medium-tip torch, fire resistant surface, pickle pot with pickle, paste flux, copper tongs
- Assortment of Jeweler's files
- Pencil
- Sketch paper
- Permanent felt tip marker: fine point, black
- Metal gauge
- Sandpaper: 220, 400 and 600 grit
- Tripoli and rouge polish (optional)
- Polishing machine / and or Flex shaft (optional)
- Brass brush / Steel wool (optional)
- Dishwashing Soap

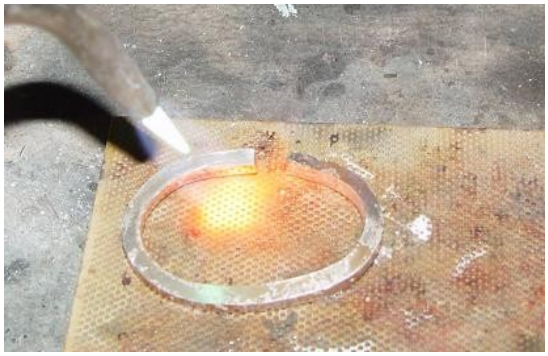
Let's Get Started

1. For a medium-sized cuff bracelet, cut to length a 6 1/2-inch piece of 4-gage, square sterling silver wire with a jeweler's saw.

Sizing Information: A 61/2-inch piece will yield an internal bracelet circumference of approximately 5 7/8-inch not including the gap. For a small wrist, a 6-inch piece will work fine and will yield an internal measurement of about 5 3/8 -inch and for a larger arm, a 7-inch piece should be adequate. If you have a cuff bracelet that fits you, measure the inside circumference and adjust the length accordingly.

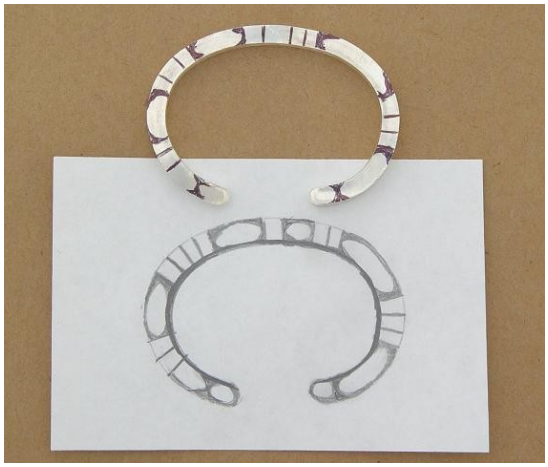
2. If you are planning to stamp the piece, it should be done at this time. Place the wire on a hard metal surface such as an anvil or steel block. Select a sterling or 925 stamp and align it in the center of the piece. While holding the stamp firmly in place, use a heavy hammer and strike the punch firmly, one time. The stamp should make a clear single impression with an even depth all over. If using a signature mark, repeat the procedure with that punch.

3. Use a rawhide mallet to form the piece around an oval bracelet mandrel. At some point it may be necessary to anneal the wire. If it becomes difficult to bend, the wire has work hardened and annealing the metal at this time will restore its flexibility.



4. If annealing is necessary, coat the surface of the metal with borax based flux or a non-fire-scale product. This will help avoid oxidation. Then, use a medium tipped torch to heat the metal. The wire will turn a dull red when the correct temperature has been reached. Also, the flux will turn to a clear glaze. Once the silver has reached temperature, allow it to cool, quench it in pickle, rinse thoroughly and dry completely. Then finish forming the bracelet.

5. After the piece has been formed, round the ends using a course flat file. To do this, hold the file at an angle and file in a circular motion around the ends of the metal. When the ends are rounded and smooth, try the bracelet on for size and make any final adjustments on the mandrel.



6. Trace an outline around the bracelet onto a piece of paper. Think about how you want your bracelet to look and then sketch some designs. Darken areas where the metal is to be removed. Think about balancing the high areas with the cut outs. This will provide a more even distribution of weight. For a beginner, it is much easier to choose a design with asymmetrical balance. Once a design is chosen, transfer the image to the silver bracelet blank using a (permanent) black fine tipped pen. It works best to draw the design on three sides, leaving the inner surface clean. Don't worry if the match is not exact as you can correct the design as you file.

Filing Tips

Use an efficient cutting stroke. This involves filing from near the tip of the file toward the handle until you reach the end of the file. Some like to lift the file at that point and begin at the tip of the file again. Others will gently slide the file back across the surface and continue with the next stroke. Filing at a diagonal to the filing surface, with a long smooth stroke works best. Develop a rhythm that works for you utilizing the full length of the file as much as possible.

File handles are necessary. Always have a handle on your file when working to avoid injury to your hand, for efficiency, and for comfort during use.

Check your work as you go. Pay close attention to the process and check your work constantly to avoid removing more metal than desired.

Clean your files regularly. The use of a file card is recommended for cleaning files. One can also rub chalk on the file to prevent it from clogging.

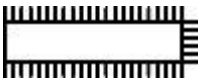
Brace your work against the bench pin, workbench, or a solid surface. When holding the metal in your hand it is necessary to brace it against a solid surface for support.

Press firmly and evenly on the file. It is not necessary to press hard with the file. The file will do the work for you. Some beginners tend to press so hard on the file that their files break A firm stoke is required, but pay attention to your grip and the pressure you are applying to the metal.

The edge shape affects the variety of reflections in the final finished piece. Curve shapes reflect differently than flat surfaces and more dramatic reflections can be achieved with a variety of shapes and edges.

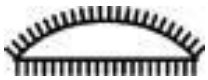
Information About Files

Files come in a number of cuts with #00 as the coarsest and progress through to a size 8 cut. The size 8 file creates the finest mark and is used in the last phase of filing to smooth the piece. There are many, many file choices available in numerous sizes and an abundance of shapes. It is difficult to make a choice. What files should you choose? Well, that depends on who you ask. For the beginner, the following files are most often recommended and packaged in sets. Course, Medium and Smooth files in these shapes will accomplish most filing needs.

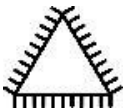


Flat

Barrette

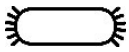


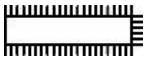
1/2 Round / 1/2 Round Ring



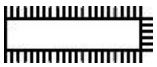
3 Square

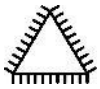
For this project, I used the following files:

5 ½-inch .8mm joint edged file, 

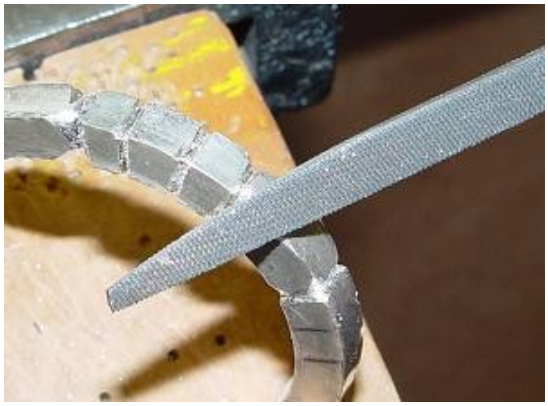
6-inch flat files  .

barrette needle file 

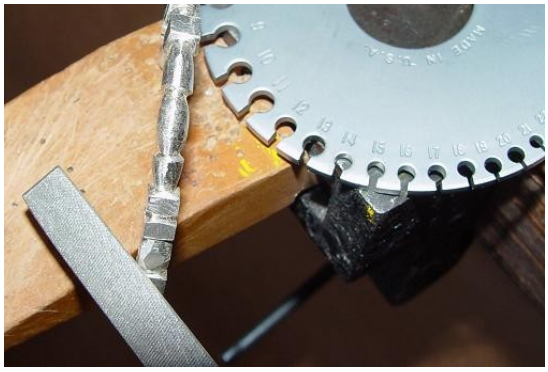
flat needle file 

3 square barrette file 

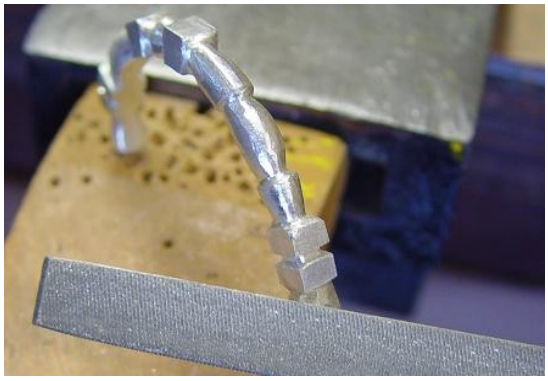
If your design includes concave surfaces, you will also need half round files. Use what works best for you and your design. As with all techniques, every jeweler develops their own individual way of filing and a favorite filing technique that works for them. Be sure to begin with course files and work through to finer cuts.



7. Use a coarse set of files to rough out the design. Be careful not to file too deeply. Round off the curved areas with a flat hand file and use the edge of a three square file or half round file to remove sections of material as indicated on the pattern. Use an efficient cutting stroke, filing from the tip of the file to the handle. File at a diagonal to the surface with the longest and smoothest stroke possible. If you find the permanent marker isn't so permanent, reapply when necessary.



8. As you begin to file deeper grooves into the metal, use a standard wire / sheet metal gauge to check on the thickness of the silver. Do not reduce the wire to less than 10 gage at any point along the way. This will maintain the integrity of the metal and avoid any weak spots that might cause unwanted bending.



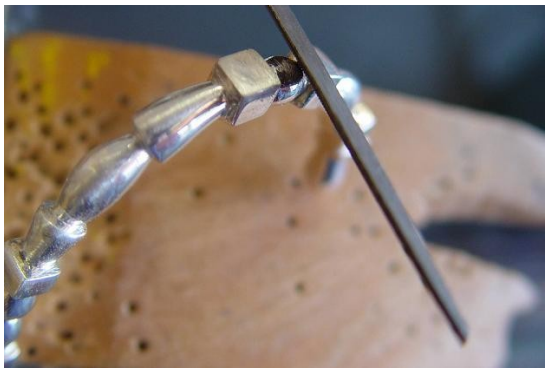
9. Once the design is roughed out, it is time to allow the process to evolve. **Put your sketch away,** and begin to file intuitively around the form, adding detail and dimension to the piece. Use the finer files to smooth each surface and add fine detail. Certain areas might need to be changed or adjusted. Work with the metal and while filing, allow the work to flow. Changes to your original design are inevitable as ideas for detailing the piece are brought to your attention. Continue checking the metal thickness with the gauge.

The end was rounded with the use of #0 and #2, 6-inch flat files. A flat file has one smooth edge, which makes it easier to remove metal without disturbing surrounding areas. The end was finished with a (#4) flat needle file.

The rounded edge next to the square was shaped with a #2, 5 ½-inch 8mm joint edged file to begin the indentation. #2 and #4 barrette needle files were used to round out the curves. This file is smooth on three sides, which makes it easier to avoid encroaching on raised areas.

To achieve this shape, I used a #2, 3 square barrette needle file to mark the grooves and #2 and #4 barrette needle files to round the edges and create the convex curves.

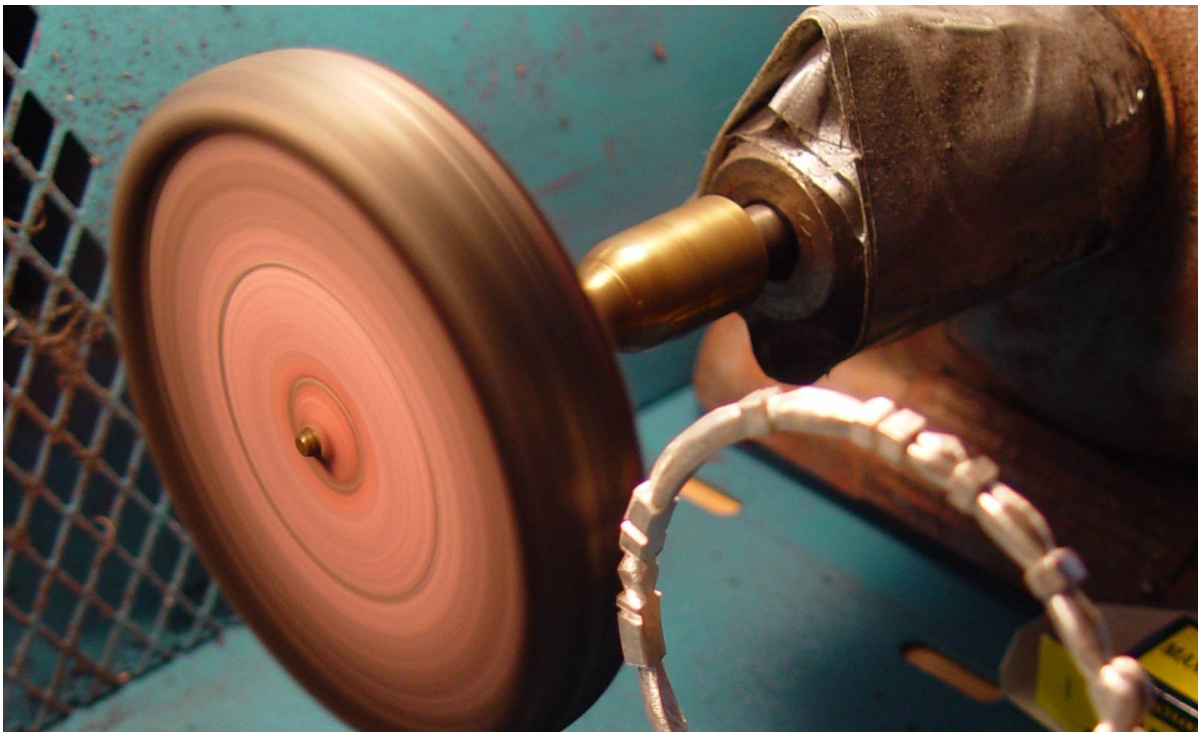
This squared off edge was shaped with the use of a #2, 5 ½-inch .8mm joint edged file. This file creates a nice crisp joint.



10. After the design is firmly established and shaped the way you like it, begin using the finer needle files to smooth the surface, square off edges where you want them square, and round the curved surfaces. This gives the piece definition. When you think you are finished, stop and let the piece rest overnight. Then re-examine your work, and make the final adjustments in preparation for the finishing process.

11. Finish the bracelet. Begin with course sandpaper, #220, on a sanding stick. Smooth as much of the surface as possible with the sanding stick and use smaller sections of paper for the groves. A 2-inch square piece of sandpaper folded in half works best. Move back and forth across the piece, changing sanding directions often. Sand all surfaces of the wire until you have an even surface. Progress through the sandpaper to a fine, 600-grit paper.

Finishing Touches



12. Once you have finished sanding, move to the buffing wheel. First use Tripoli polish to remove any remaining scratches. Apply the compound to a firm, stitched cotton buff dedicated to use with Tripoli. Do not hold the bracelet in any one place for long, and do not press hard against the buff. Allow the compound to do the work. The bracelet should not become too hot to hold in your bare hand. To avoid rounding any square corners, hold the bracelet so only one face of the design touches the buff at a time.

Clean the piece thoroughly with dishwashing soap and water to remove polishing compound residue before using the final polishing compound. When clean and dry, apply rouge to a dedicated muslin buff, and continue buffing to achieve a bright, polished surface. Clean thoroughly and your bracelet is complete and ready to wear.

If you prefer not to polish, or don't have polishing equipment, a steel wool rub makes a nice matt finish. Use a small section of fine steel wool and rub over the entire piece. You could also use a brass brush with soapy water for the final finish.

Tip: With this project there will be plenty of silver dust. If you don't have a jeweler's bench, there are numerous ways of collecting the filings. What works best for me is to place a large metal cake pan on my lap, directly under the bench pin. I use the pan whenever I am filing, sawing, sanding, or drilling to collect the scraps as well as the dust.

Final Thoughts

The above cuff was made from 4 gage square wire, which seems to be the perfect weight for an average woman. For a dainty, lightweight bracelet use 6 gage square wire. For a larger, more masculine piece, 2 gage square wire works well. It is much heavier but one can achieve greater variety in depth.

An average women's size bangle bracelet can be made from a 9-inch length of square wire. Six gage is lightweight and very comfortable. 4 gage can be a bit heavy, but still work. I would not recommend anything larger in size than 4 gage for a bangle bracelet.

The rings were made from sterling rectangle wire size 4x2mm. An adjustable ring is the simplest for beginners and can be completed much faster than a bracelet and with fewer tools. Measure your finger and add the desired amount for overlap, cut to size, form on a ring mandrel, and file away. You could also solder the wire together for a sized ring.

Choose your level of commitment and have fun making it your own work of art.