Photo Locket

By: Thomas J. Tessier

Equipment Used:

1. 50 - 60 gms of fine silver metal clay – I'm using Art Clay Silver products.
2. Small amount of Art Clay Paste Type
3. Art Clay Syringe type with a medium nozzle (green)
4. #2 flat artist brush
5. #2 round artist brush
6. 150mm metric metal ruler
7. Non-stick work surface – Teflon, Tuff Card, Ceramic Tile, or other
8. Roller frames, plastic slates, or playing cards
9. Clay roller of your choice
10. Clay pick for cutting clay
11. Clay cutter
12. Hobby knife
13. Pair of small scissors
14. Ultra Fine Sharpie marker
15. 220 grit wet/dry sandpaper
16. 400, 600, & 1200 grit wet/dry sandpaper
17. Course/Medium, & Fine sanding sticks
18. ¾ X 4 inch diameter wooden dowel or a set of reamers
19. 1mm drill bit and power drill (e.g. foredom flex shaft motor)
20. Hand drill and bits
21. Tweezers

22. Rubber Block & Sanding Tray
23. Digital metric calipers
24. Heat source to dry clay – food dehydrator or air dry dryer
25. Heat source to sinter the clay – programable kiln
26. Means to burnish project – magnetic burnisher, burnishing tumbler, etc.
27. Set of small diamond files – 150 grit
28. Circle template
29. Heart template
30. 1 inch 1.0 sterling silver wire
31. 1 inch 0.8 sterling silver wire
32. Sterling Silver Snap-On Pendant Bail (Art Clay World)
33. Large (2.5 mm) Fine Silver Embeddable Eyelet (Art Clay World)
34. Small cardboard box or other small container & sugar or salt to fill it
35. 2 Bench anvils
36. Texture plate
37. Jeweler's pliers – chain-nose to bend wire
38. Side cutters to cut wire
39. Jeweler's Saw with a 3/0 blade
40. Release – Badger Balm, Nature's Touch, CoolSlip, pure olive oil, etc.
41. Plastic sheet protector
42. 1 inch masking tape
43. A means of reducing the size of a photo (e.g. Photoshop, Snapseed, PS Express, etc.)

Optional:

44. Reaming tools – large & small
45. Medium silver solder and soldering equipment
46. 2 X 2 X 2 Inch Angle Plate
47. Foredom Hammer Handpiece
48. Jeweler's small ball peen hammer
49. Gold plating pen system
50. Steel files: #0, #2, #4, #6
51. 3M Sanding Pads
52. Princeton 12/0 Angular Shader Brush

Overview

The purpose of this article is to discuss the fabrication of a photo locket (figure 1). This is an advanced and challenging project. This project is not recommended for a beginning student.

Figure 1

I will be using Art Clay Fine Silver to make most of this locket. You could of course use sterling silver as an alternate. Just keep in mind the two clay types shrink differently. Also, I have listed 50 – 60 grams of clay. This locket will end up using about 41 grams. You need the extra clay in order to roll the clay out and then cut pieces out. This will become more apparent as you start using up the clay.

Step 1 – Make the outer surfaces of the locket.

Roll out some clay on to a textured surface 1.0 mm thick (4 cards) (figure 2), then remove the clay from the texture and place it textured side up on your work surface (figure 3). Don't forget to add release to your textured surface, tile, and roller so the clay won't stick. I like using 6 inch square ceramic tiles for my work surface. They're stiff, scratch proof and heat proof. I buy them from Home Depot for about 50 cents each. Using a circle template cut out two 36 mm disks (figure 4). I bought my metric circle templates from Rio Grande.

Figure 2

Figure 3

Figure 4

These will be the outside walls of your locket. How can we curve these two disks, so the textured surface is on the outside? Perhaps lay them on to something spherical? How about a light bulb? I went to Home Depot and bought two light bulb sockets at a price of $1.50 each. I screwed them on to a piece of scrap wood and actually wired them up, so the bulbs would light up and create a warm drying surface (figure 5). I found that 60 watt LED bulbs create a surface temperature of 80-85ºF. You can easily touch them after an hour without any chance of getting burned. After one hour the clay will become firm enough to slide off and keeps it's curvature. At that point you can transfer them into your food dehydrator to finish the drying or just leave them on the bulbs to dry. You'll also notice that I custom built a cardboard box to cover the bulbs (figure 6). This concentrates the heat and eliminates the bright lights on in your studio, which is very distracting.

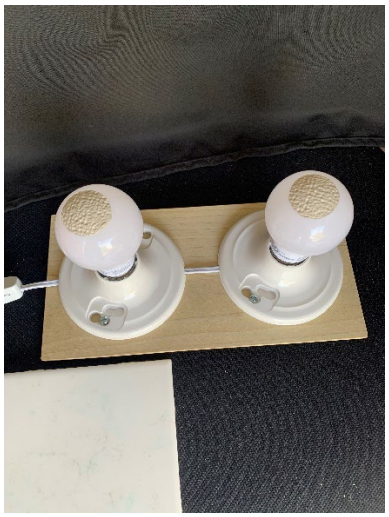

Figure 5

Figure 6

Step 2 – Cut out the backing plates

The backing plates are the main inside surfaces of the locket that hold the bezels. The two backing plates look like large washers (figure 7). I found by trial and error the backing plates and the bezels are easiest to work with the clay rolled out to 1.5mm (6 cards). Figure 8 was one

Figure 7

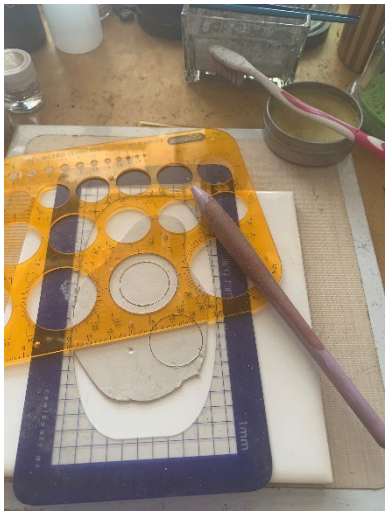

Figure 8

of my earlier photos when I was using 1.0mm (4 cards). It's too thin to take heavy sanding and reaming. Notice in Figure 8 how the template can be supported by a rolling frame and hold down the clay. This prevents the circles from getting distorted while cutting.

The diameter of these circles is 36mm for the outside circle, and 27mm for the inside circle. To keep these backing plates nice and round I found that if you cut the smaller circle first and while keeping the template in place to hold it down, remove the clay in the smaller circle. Then switch to the larger circle. Doing the larger circle second makes it much easier to get concentric circles. Remove the excess clay and place the backing plates into the dryer. If either backing plate isn't exactly concentric, pull up the clay and start over. If the outer perimeter and the inner circle aren't exactly concentric, it will look funny when everything gets assembled. The human eye will detect the problem immediately

Step 3 – Making the bezels

The bezels require several steps to make. First make two "washers" like you did above, except make the outside diameter 28mm and the inside 21mm. Again, make these out of 1.5mm (6 card) clay. Place them into the dryer.

Next make a tube (flat ring), which will become the sides of the bezel, which will slip down into the hole in the backing plate. We know the outside diameter of the bezel is 28mm. That means the outside diameter of the tube needs to be 28mm. Since were using 1.5mm (6 card) clay, the inside diameter of this tube needs to be 25mm (28mm minus (2 X 1.5mm)). What can we wrap the clay around that is 25mm? The first thing that comes to my mind are ring mandrels. Using your digital calipers find a mandrel that is 25mm in diameter (figure 9). Looks like a size 14 wooden ring mandrel will work.

Roll out some more clay to 1.5mm (6 card) thick and cut a 7-8mm wide strip (figure 10) that is long enough to go all the way around the ring mandrel and overlap. Figure 10 was also from an earlier photo shoot. Be sure and roll the clay out to 1.5mm, not 1.0mm. I used a metal ruler, laid on top of the rolling frame and a double blade utility knife to cut the strip. You don't need the double blade utility knife, it just guarantees that the two cut lines are exactly parallel. This doesn't have to be perfect, just close. Cut a piece of flexible non-stick ring strip to around 15-20mm in width. Wrap it around the outer end of the #14 ring mandrel (figure 11).

Figure 9

Figure 10

Figure 11

Place a small piece of scotch tape above where the clay strip will lay, taping the two ends together and against the mandrel so the paper can't slide on the mandrel (figure 11). Wrap the clay strip around the mandrel. Overlap the ends of the strip. Use a utility knife and cut through both pieces of clay on an approximately 45 degree angle, just like making a ring. Remove the excess clay and apply paste type to the ends and push them together forming a flat ring (figure 12). Place the mandrel, sticking straight up, like in figure 12 into the dehydrator on top of a ceramic tile. Don't leave it in for more than 5-8 minutes. The clay should have started drying and shrinking. If you leave it in there any longer the clay will shrink and pull the join apart. Take the mandrel out of the dehydrator, remove the scotch tape and slide the paper and clay strip off onto a ceramic tile. Use a pair of tweezers to remove the paper from the center of the tube. If the join did pull apart, just fill in the join with more paste or syringe and redry for a shorter amount of time. Don't worry about too much syringe or paste. It will sand off easy later. Dry the tube thoroughly in the dehydrator.

Figure 12

Figure 13

Figure 14

Step 4 – Start Assembly

The next step is to start assembling the various pieces we just made. Before we do, we will need a large flat sanding area. I use a 9 X 9 X ¼ inch piece of plexiglass which I bought at Tap Plastics (figure 13). I spray it and the back of the sandpaper with a LIGHT coat of 3M Super 77 Multipurpose Adhesive. The adhesive is available on Amazon. It's not cheap, but will last you forever. I've been using the same can for about 10 years. A little goes a long way. I attached a sheet of 400 grit 3M Wet & Dry Sandpaper to both sides of the plexiglass. You could of course put one grit (like 400) on one side, and another grit (like 600) on the other side. Your choice.

How do you cut up your sandpaper? Scissors, ruler, shear? I discovered a great way to cut sheets of sandpaper up into small (or large) pieces very quickly. I made a sandpaper tearing jig from a piece of ¾ inch pine board and an old hack saw blade (10 inch) (figure 14). The board is 11 ¼ X 11 ¼ inches square. I attached the saw blade by laying it on top of a small washer (one at each end). Laying the blade on top and placing a second small washer on top of the blade. I then used a wood screw to fasten, through the washers and blade the blade to the board. I drew a line in ½ inch in from the right side. That was my reference line that the smooth side of the blade (cutting edge) would line up with. I then drew a line perpendicular to that line, to be used to line-up line the sandpaper. It's 1 ¼ inch down from the top of the jig. When the sandpaper is lined up with this line we know the sandpaper is exactly 90 degrees to the cutting blade. I then drew lines across the board, measuring from the cutting edge of the blade at 8 ½, 5 ½, 4 ½, 2 3/4, 2 ¼ inches. In the photo you'll see I also put a mark at 9 inches on my top reference line. A sheet of sandpaper is 9 X 11 inches. If I place the sheet into the jig as you see in figure 14 and line up the sandpaper with the top reference line and the 9 inch mark, then the sandpaper will be exactly 9 X 9 inches when I cut it.

To cut a sheet of sandpaper, I use my left thumb and forefinger to firmly hold down the blade against the sandpaper, then I use my right fingers to rip the sandpaper from the top.

To make a stack of 2 ¼ X 2 ¾ inch pieces (convenient size for working with metal clay), simply insert the sheet of sandpaper into the jig. The longest side ALWAYS lines up with the top reference line. The sheet is 9 X 11 inches, so the 11 inch side would be lined up on the top reference line. Pull the sandpaper to the right until it appears that the middle of the sheet is under the cutting edge of the blade (right side). Half of 11 is 5 ½, and you'll notice that the left edge of your sandpaper is on the 5 ½ mark line. Tear the sandpaper. You'll now have two pieces of sandpaper that are 9 X 5 ½ inches. Keep repeating the process. You don't need to do any math in your head. Just keep placing the longest edge of the piece along the top reference line. Eyeball the center under the cutting edge of the blade and it will be obvious which mark you have to be lined up with. One whole sheet of sandpaper can be turned into 16 small sheets in about 2 minutes. I store these in 3 X 4 inch zip storage bags that I purchased from Rio Grande a few years ago. As you can see in figure 14, I write the grit# on the outside of the bag with a Sharpie. Before I place all the cut pieces into the bag, I also write the grit on the back of each piece of sandpaper. Wet and dry sandpaper can be used over multiple times. Simply wash the sandpaper in running water and rub with a small nylon brush. Same thing goes for the large 9 X 9 sanding board. Just sweep off the loose power clay into a container for recycling later into paste, then wash the board in your sink under running water and scrub it with a nylon brush. It will dry looking like new, just like you do with your sanding sticks (or should be doing).

Before we start sanding and assembling we need to true up the holes in our washers. Remember there are two sets of washers. One set is the backing plates and the other are the bezels. Here are two different ways to do it. One is to use reamers (figure 15 & 16). Figure 15 shows a single reamer that is being held in a vise on my workbench. You simply have to slide the washer on to the reamer and carefully turn it clockwise. The perfectly placed cutting blades will create a perfect circular hole in your washer. This particular set of reamers (figure 16) I purchased through Amazon. This is a set of 8 "Expanding Adjustable Hand Reamers". The sizes are 15/32 through 1 1/16 inch. The cost currently is $50. They are made in India and when I ordered them, I was told it would be 5-6 weeks to arrive. They arrived 1 ½ weeks later to my pleasant surprise. The description on Amazon says they come in a storage box. They arrived only in the cardboard shipping box, there was no storage box. So, I made my own out of a wooden cigar box (figure 16).

One other way to true up the washers' holes is to use a wooden dowel, wrapped with sandpaper (figure 17). Wrap the paper tightly again a wooden dowel and sand the inside of the washer. Just like sanding the inside of a ring. You want to turn the dowel one way, while turning the washer the other. You don't want to sand in just one place at any time or back and forth through the hole. You'll dig an unwanted grove into the side of the hole. The dowel should be as large as possible to fit into the hole and allow room for the sandpaper. The larger the dowel, the closer the curvature of it will match the curvature of the hole. I keep a whole set of different sized wooden dowels in my studio for doing just this. They're great for cleaning the inside of rings or any circular hole.

Figure 15

Figure 16

Figure 17

Once all the holes are trued up we're ready to sand and start assembling. First sand flat the inner edges of the curved pieces. Set the pieces on the dry sanding board and sand the inside edges on the sanding paper by sliding the piece in a circular 8 pattern. You only have to bear down lightly. Let the sandpaper do the work. The dry greenware is soft compared to the sandpaper. Not much sanding will be required. Look at the curved pieces in figure 18. Notice that the curved piece on the right has been sanded just enough to leave a 1mm flat surface on the outer rim. When you can see this you're done. Next carefully sand just one side of each large washer the same way. Again, this should only take a minute or so. Don't over sand. If the washer's side that you just sanded has some minor scratches or dings it's okay.

Next moisten the sanded rim of one of the curved pieces lightly with water on a small paint brush. Also moisten the outer edge of one of the washers. Apply syringe type to the inner edge of the curved piece (figure 19). Place the curved piece on to the sanded side of the washer. Lightly squeeze the two pieces together and slightly twist the curved surface on the washer to evenly distribute the syringe between the two pieces. Look from the curved piece side to verify that the outer edges of the curved surface is exactly concentric with of the outer edge of the backup plate. Clean up any visible excess syringe with a moist paint brush.

Repeat the process for the other curved surface and backing plate. When finished, put them into the dehydrator to dry.

Figure 18

Figure 19

Next take out the bezel tube you made and the two small washers. Make sure the inside of the tube is relatively smooth with no obvious irregularities. If you can see the seam where the join is, fill it with paste or syringe and re-dry it. Sand the inside with an appropriate size wooden dowel and sandpaper. If you can see the seam, keep working on it until you can't, either on the inside or the outside of the tube. Like working on a ring, a little water or Paste Maker on your small finger can help clean up the inside of the tube.

Once the tube is clean on the inside, sand the ends on the sanding board. They should be perfectly flat. Like before, it shouldn't take much sanding to flatten the ends. Now sand both small washer on one side like you did with the big ones. When ready, moisten one end's edge of the tube with water on a small brush, also the outer edge of one of the washers. Run a bead of syringe type around the tube's edge and squeeze the washer onto the end of the tube (figure 20). Again, twist the washer a little to help set the syringe. Important – look down into the tube from the end opposite the washer that you just installed. Make absolutely sure that the hole in the washer is perfectly concentric with the inside of the tube. If not, fix it now. Make sure at this point that you clean up any syringe that squeezed inside the tube with a moist brush. Place the piece into the dehydrator to dry. Don't try doing both ends at the same time. Invariably one end will get moved while working on the other end. Do one end, dry it, then do the other end. Be sure the holes in the washers are exactly concentric with the inside of the tube! Back into the dehydrator. The tube with both ends on should look something like figure 21. Reminds me of a tire.

Figure 20

Figure 21

Figure 22

Next sand the washer ends of the tube on the sanding board. They should be perfectly flat. Then sand the outside surface of the tube. Put the tube on your finger or place it on a rubber block and start to sand the outside with a sanding stick. Sand on an arc. You don't want any flat spots on the tube. Start with a course or medium grit, depending upon how much you need to remove. So exactly how much do we need to remove? Use your digital calipers and measure the outside diameter of the tube (figure 22). Then measure the inside diameter of your large washer. Use the opposite side of your calipers to measure the inside diameter of something (figure 23). You want the tube to be SLIGHTLY larger than the hole in the large washer. If it feels like the tube will "almost" slip into the large washer, it's right. If you leave the tube too large in diameter you'll end up spending hours filing off the perimeter to make it fit into the hole of the large washer. On the other hand you don't want the tube to actually slip into the hole. Your only option after firing the pieces would be to try and stretch it out on a ring stretcher. My experience is the bezel will rip before being stretched enough. Definitely better slightly too large, than too small.

After you've rough sanded the tube a little, place it on a rubber block and place something that sits perpendicular to it (figures 24 & 25).

Figure 23

Figure 24

Figure 25

I'm using a 2 X 2 X 2 inch steel angel plate (figure 25). Various size angel plates are available from many sources. I purchased this one at Micromark.com. In figure 24 I'm sanding the sides of the tube by drawing it toward me and rotating counter-clockwise against the sandpaper. This will make the sides of the tube perfectly perpendicular to the ends of the tube. Be sure and check the outside diameter of the tube with your calipers often. You don't want to make the tube too small in diameter.

When your done truing up your tube it's time for the next step. The tube is actually two bezels. We need to cut the tube in half to make the two bezels. The easiest way I've found so far is to use a jeweler's saw with a 3/0 blade. You can free hand this on your bench pin or hold it with a small vise (figure 26-28)). I purchased this particular vise from Micromark.com. It's come in handy for many different kind of projects.

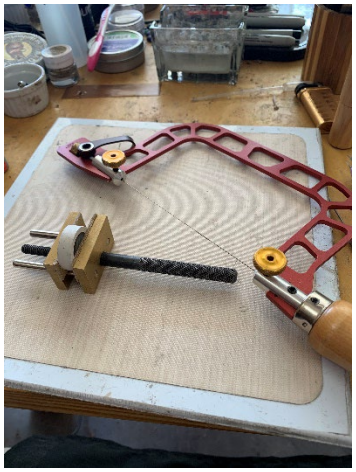

Figure 26

Figure 27

Figure 28

I placed pieces of leather on the inside of the jaws to protect the greenware (figure 28). I cut through the tube, then release it and rotate it toward me around 20 degrees and relock the tube in the jaws. Repeat until your all the way around the tube. After a 360 rotation of the tube it usually just breaks clean along the centerline. Remove the two halves and sand the cut ends on the sanding board. Look and verify that you're sanding this end of the tube parallel to the washer end. So how far down do you want to sand the tube? Take your digital calibers and measure the depth from the outside of the backing plate to the curved inside surface (figure 29). It should be around 2mm. If you haven't used your calipers to measure depth before, you may not have noticed that as you open the jaws of your calipers, that a small strip of metal extends out of the bottom of your calipers (figure 30). The distance from the bottom of your calipers to the end of this rod is exactly the same as the distance between the large jaws and the same as the distance between the outside edges of the smaller jaws that are used to measuring inside diameters.

Figure 29

Figure 30

Step 4 – Final Sanding

At this point we have the two curved locket shells with the backing plates attached and the two bezels. Both backing plates were sanded lightly on the inside before being attached to the curved surfaces and so were the bezels.. Time now to sand the outside of the backing plates on the sanding board, if you haven't already. Then sand the two large backing plates with 600 grit sandpaper on a flat surface, like a large rubber block, then to 1200 grit. The surface should feel very smooth to the touch with no visual detectable flaws on the surface. Next sand the bezel faces with 600, then 1200 grit sandpaper. The sides we won't worry about at this point. After firing we'll probably have to file this surface to get the bezel to fit into the hole in the backing plate.

The final sanding will be the edges of the locket. Place the two halves of the locket together. Rotate the two halves to line up the way you want. If you used a simple asymmetrical texture, it probably won't matter. If you used a symmetrical pattern, then how the two halves align might make a visual difference. Either way, once you have the two sides lined up, determine where the top will be. While holding the two halves together use a Sharpie to mark the top on both sides. Just a dot of Sharpie will do. Then place similar dots on the right & left sides. The top mark will mark where the embeddable eyelet will go. The mark on the left side will mark where the hinge will be placed and the right mark will be where the latch will be located.

Using your sanding sticks, sand the edge of the locket to remove and shape the edge. I usually sand with the outside curvature and angle the sanding stick at a 45 degree angle to the center plane of the locket. Keep the two halves firmly together and rotate the locket to go 360 degrees around the perimeter while sanding. The finish sanding of the outside perimeter of the locket is personal. You could simply sand it flat, sand on a curve, or anywhere in between. I personally like the curve that matches the curvature of the locket. Use finer & finer sanding sticks to finish the surface. In the alternative you could use fine 3M sanding pads. They come in a whole range of grits, from fine to ultra-fine. These pads are great for curved surfaces.

Step 5 – Adding the hardware

At this point determine which is going to be the front of the locket. If one side has some minor imperfection that you want to hide make that the backside of the locket. We will next install the embeddable eyelet into the top of the back panel. Remember you placed marks on both halves of the locket at the top, right, & left sides of the locket.

Take your back locket and place it on a rubber block (figure 31). The right half is the back locket in this photo. We need to drill a hole through the side of the locket, perpendicular to the outer edge and the top of the locket. The outside of the hole needs to be at least 1mm from the closest edge. Starting a hole can be a challenge on a curved surface. The easiest way to start the hole in greenware is with a three-sided scraper (figure 32). Simply put the sharp point of the scraper where you want to start the hole and twist it back and forth. It will start digging a perfect V-shape hole into the greenware. Don't dig in more than a 1mm. Next take your embeddable eyelet and measure the stem's diameter with your digital calibers. It should be 1mm+. Next take out your drills that are in your hand drill's handle and find one that is bigger than the stem's diameter. Put it into the chuck of your drill and hand drill a hole where you started the hole. Take your time and don't rush. Drill a couple of turns at a time, then withdraw the drill to clean the hole of dust (figure 33). When it seems that the depth is about right, or you feel the drill break through into the locket, stop and test fit the eyelet into the hole. If it goes all the way in, up to the eyelet, your good to go. Just add some syringe type into the hole and insert the stem up to the eyelet. Clean up any syringe that squeezed out with a small moist painting brush. Place the locket half into the dryer to dry.

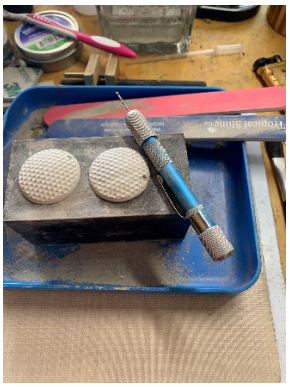

Figure 31

Figure 32

Figure 33

The next step will be to fabricate and install the hinge. To make the hinge we need to start with a piece of 1mm fine silver wire. I've tried sterling silver and steel 1mm rods. The fine silver is easier to work with is the least expensive. Cut off a piece that is about 5cm long. Put it on a firing brick and anneal it with a butane torch for 15-30 seconds. Let it cool to room temperature. Then place it on a bench plate (anvil) (figure 34). The bench anvils in figure 34 are solid steel, 10 X 10 X 2 cm. They are very heavy. Place your piece of wire on one anvil and the other anvil on top. Roll the top anvil over the bottom anvil while pressing down on the top anvil. The wire will roll between the plates and will straighten right out. It only takes a few seconds of rolling. If the wire isn't perfectly straight, roll it for a few more seconds. That's all it should take. If the wire isn't straight after that, then start over and re-anneal the wire. You didn't heat it long enough and/or hot enough on the first go-around.

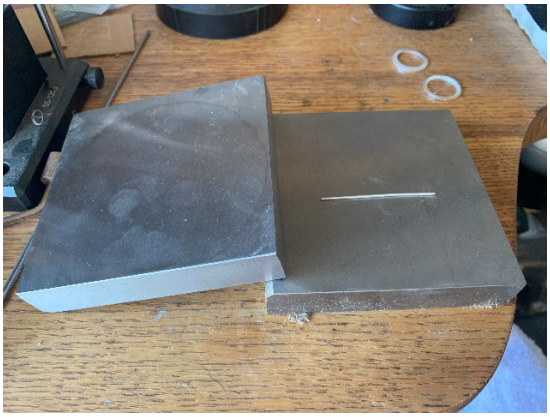

Figure 34

Next let's make the hinge. Take the wire that you just straighten and slide on a small ball of clay (figure 35). Squeeze it and work it with your fingers to stretch it along the length of the wire (figure 36). If there's too much clay, just pull some off with your fingers. The wire is 1mm, we are shooting to make this hinge 2mm in diameter. Roll the clay on the work surface with your fingers to make it round. When it appears that you are getting close, stop using your fingers and switch to a snake roller. That will make it nice and smooth and perfectly round (figure 37).

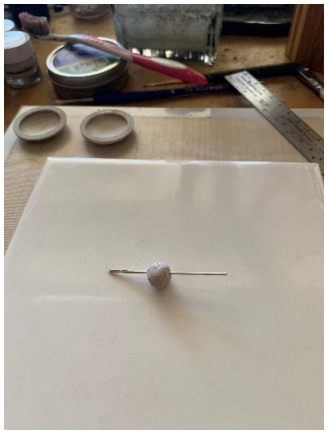

Figure 35

Figure 36

Figure 37

Put this piece into the dryer until it's nice and dry. I usually leave a little wire showing on the ends, then hang it in the dryer across a couple of small kiln blocks.

When dry, place it on to your work surface again with the wire still in place. You'll probably notice that the wire is now slightly loose in the clay. Use a utility knife and roll the clay with the blade of the knife where you want to make a cut. This will create a score line. It usually only takes one revolution to cut the clay. With a little practice you'll figure out how much pressure to push down on the clay with. Let the knife do the work or you'll break the clay (figure 38). Cut your pieces (knuckles) 5mm in length. Pick out three knuckles and carefully sand the ends on the sanding board with your fingers. Sand the ends square and with an overall length of 4mm. Hinges have an odd number of knuckles. This hinge is going to have three knuckles. The center knuckle will be attached to the front half of the locket and the other two outer knuckles with be attach to the back half of the locket (figure 39). The overall length of this hinge will therefore be 12mm, hence our channel that it will sit in needs to be at least 12mm long.

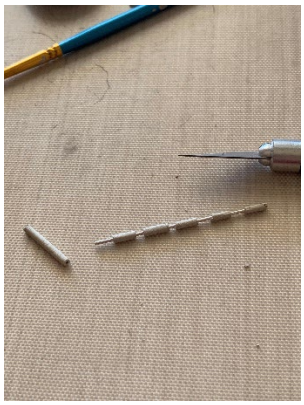

Figure 38

Figure 39

To cut a perfect channel we need to realign the two halves of the locket. Line up the reference marks that you made with the Sharpie. The eyelet obviously should be pointing up and be on the back half on the locket. To cut a perfect channel the two halves can't be moving around. The way that we are going to immobilize them is with masking tape. Cut off about 4 inches of 1 inch masking tape and stick one end to your work bench (figure 40). Use you scissors and cut it lengthwise up the center. Then cut the two halves lengthwise as well, creating 4 quarter inch wide strips (figure 40). Now use these strips to tape the locket shut. Place the first two strips close to the eyelet on the top, followed by the next two slightly further out (figure 41). The tape goes all the way around the locket, then overlaps itself.

Figure 40

Figure 41

To create the channel for the hinge to sit in use the small diamond #150 grit files (figure 42). You can find this file set at numerous outlets. I purchased these on Amazon for around $8.00. They work great on greenware. They don't get plugged up like ordinary steel files and they cut both by pushing them and by pulling them. Very aggressive cutting.

So place your taped up locket on your rubber block in a sanding tray. Place it such that the eyelet is horizonal and pointing to the right. This position places the left side of locket up. Start by using the triangular file. Using one edge of it, start the channel directly between the front & back halves of the locket. Remember these diamond files cut ways by both pushing & pulling. Cut a groove that is parallel to the rubber block about 10mm long. Stop and check your filing often to verify that your grove is running true and even. Next switch to the square file and repeat the procedure. This will widen the channel. Lastly, switch to the round file. Note that this file has parallel sides toward it's handle. Use that part of the file to create a perfect round channel. File until about half of the diameter of the file is below the rim of the locket. Using your metric ruler check the length of the channel. Remember it should be at least 12mm long to accommodate the hinge. When it measures right, test fit the hinge into the channel (figure 43). The fit into the channel in figure 43 looks good.

Figure 42


Figure 43

Next we'll attach the knuckles to the locket. Support the locket so that you can work on the hinge without it moving around. You can simply stand it up in something granular. In figure 43 the locket is being stood up in vermiculite. Just about anything will do, like salt or sugar in a cup or small box. Whatever you use it needs to be able to fit into your dryer.

Start by attaching the center knuckle. Use a small paint brush and carefully put some thick paste between the center knuckle and the locket. Use a very light touch. You don't want to move the knuckles. Then turn the locket around and do the same thing to the outer knuckles. Place the container that you have the locket standing up in, into the dryer. Let it dry very well. Pull it out and inspect the knuckles. Do you need a little more paste to have each knuckle filled in between the knuckle and the locket? If so, do it now and place the whole thing back into the dryer.

Once it's perfectly dry and your joins look good on the outside, it's time to carefully remove the pin that runs through them. If you accidently break a knuckle free, just start over and re-paste it back in place. If the pin come out clean you're ready to move on to the next step.

Before you remove the tape strips, put the locket on your rubber block laying flat. Have the front facing up and the hinge to the left side and eyelet obvious away from you. The right side of the locket is where the catch needs to be. Using one of your sanding sticks create a small flat spot across both halves of the locket. Make the spot around 3mm in diameter. This is where the catch will eventually be positioned.

Now you're ready to carefully remove the tape. Once the tape is off, carefully separate the locket (figure 44). Now you can add paste to the inside of the knuckles and locket. Also look at the ends of the knuckles. If there's visible space under the knuckle add a little syringe, force it under and clean up any excess syringe/paste. I like using a very small brush for this type of work. One that works exceptional well for detailed work is the Princeton 12/0 Angular Shader (figure 45). These are available on Amazon for around $8. They're also available from dickblink.com individually or in sets for about the same price.

Figure 44

Figure 45

Figure 46

Next, we'll make part of the latch assembly. Using a third hand I hung down a piece of 1mm sterling silver wire. I then used a micro-torch to melt the end that was hanging down. When the wire melts it balls up (figure 46). I then flipped the wire over using a pair of jewelry pliers (wire is hot) and melted the other end. This will give an extra ball for another locket or another project. After the wire cools off, take a pair of side cutters and lightly squeeze next to one of the balls. Hold the center of the wire with a pair of jeweler's pliers so it won't spin. Use the side cutters to lightly cut a grove around the wire near the ball. Do this a couple of time withing 2mm from the ball. This wire, that you've now given some "tooth" to, will be embedded in the locket and will give the clay something to grab to. Lastly, cut the wire 2mm from the ball.

Next lay the front half of your locket on a tile, leaving the hinge knuckle hanging over the side of the tile. This will allow the locket to lay perfectly flat. You could also do the same thing using your rubber block.

Make yourself a 3mm knuckle from your left-over knuckles. Run a small line of syringe type along it's length. Push this knuckle against the front locket directly across from the hinge. If need be, clean up any excess. Place into the dryer on the rubber block or tile and dry. After drying, pick up the front locket and inspect the join between the knuckle and the locket. If needed add a little more syringe and work it in with a small brush then re-dry.

Once this knuckle is dry you can reassemble the two locket halves, making sure everything is lining up okay. Directly across from this last knuckle you attached place a small mark with an extra fine Sharpie 1mm in on the back locket half and dead center with the knuckle. This is where your ball will go. Like with the eyelet, use a three-sided scrapper to start a hold that is 1mm in from the edge of the backing plate. Double check the diameter of the wire that is attached to the ball, then find a drill that is larger. Like the eyelet hole, add some syringe and insert the wire up to the ball. Clean any excess clay. Figure 47 is a 10X magnification of what your trying to achieve. This is obviously a finished locket. The top is the front half and the bottom is the back half of the locket. After the greenware has been fired we'll add the 0.8mm sterling silver wire to make the catch.

Figure 47

If you want to add a heart to the front locket, now is the time. Roll out some 1mm (4 card) clay and use a heart template to cut out some hearts. Dry them in the dryer, then clean them up with your sanding sticks (figure 48). Lay the different size hearts on to your front locket and determine which size you like best. Then using a sanding stick, sand a flat spot in the middle of your front locket exactly where you want to place the heart. Make the spot about the size of the heart that you want to attach. Moisten the back of the heart you are going to use and the spot with a small brush. Add syringe to the back of the heart and place it on the sanded spot. Carefully squeeze it against the locket. Use a little more syringe and brush to fill in any gapes under the edge of the heart. Place in dryer to dry. After drying you can use a fine sanding stick and lightly sand the surface of the heart to perfection. Figure 49 is a post-fire view of the locket & bezels before tumbling, and figure 50 is post-fire after tumbling.

Figure 48

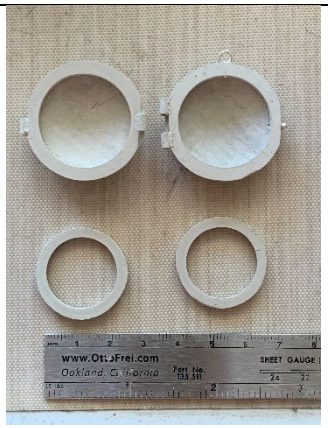
Figure 49


Figure 50

Only a couple more pieces of hardware are required. The pin for the hinge and the wire that makes the catch work.

First the pin. Use 1mm (18 gauge) sterling silver wire to make the pin. I've tried using fine silver, but it's too soft and bends on the first tap with a peen hammer or Foredom Hammer Piece. Cut a piece of sterling silver wire a little longer than the hinge. Put it on a firing brick or charcoal block and anneal it. Bring it up to a salmon color for 30 seconds. It will oxidize and turn somewhat black. If you want to return it to it's silver color you could put it into warm pickle for 20 minutes or so. If you don't want to deal with annealing and pickling, simply buy your wire "dead-soft." It will have been annealed in a kiln without any oxygen in the kiln.

If you try inserting the wire pin into the hinge you'll find it's too big. That's because the knuckles' inside diameter shrank during firing. Easy solution, run a 1+mm drill bit through the hinge. Use a power drill, from one side first, then the other. The pin should easily fit into the hinge now. If it tends to hang up on a bur or something, use a small reamer to clear the hole. You can purchase small reamers from most jewelry supply houses (figure 51). You can also try rounding the end of the wire with a cup bur.

Figure 51

Once you get the pin to fit, cut the wire 1mm longer than the hinge. That will allow 1/2mm to extend out of each end of the hinge. With the locket halves together and the pin inside the hinge it's time to mushroom the ends of the pin securing the pin in place. Hold the locket to one side of the bench anvil such that the hinge is vertical and one end of the pin resting on the anvil. The pin should be extended slightly above the top of the hinge (figure 52). Lightly tap the top of the pin with cross peen or ball peen hammer and mushroom the end of the pin. In the alternative use a Foredom Hammer Piece with a ball peen head attached. Both methods produce excellent results if you take your time.

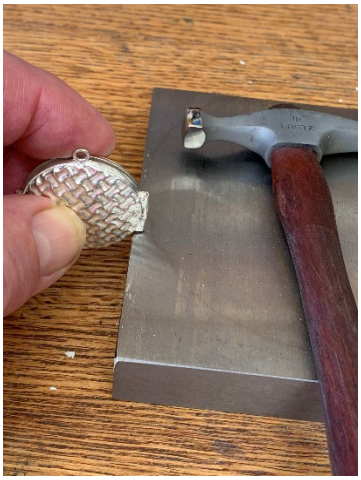

Figure 52

The last step in assembly is to make a triangular wire to act as the catch (figure 21). Use 0.8mm (20 Gauge) sterling silver wire. You won't have to drill out the knuckle. 0.8mm wire will slip right on in. Just use a couple pair of jeweler's chain link pliers to form a small triangle. Bend the ends to insert into the knuckle that is directly across from the ball. Take up the slack in the wire by squeezing the triangle on the outside of the ball. Look carefully at figure 21. See how the lower end of the triangle has been slightly squeezed. Also put a slight bend into the triangle so that it curves with the curve of the locket.

Now for the hard part, fitting the bezels into the backing plates. Try inserting both bezels into the hole of each backing plate. If they both snap into place your unusually lucky. Best case scenario is they are usually both slightly too large. If they drop right into the holes loosely you have a bigger problem. If a bezel is too large you can file down the circumference and custom fit it into the hole. If it's too small, trying to stretch it on a ring stretching machine is just about your only option. From my experience, when you try to stretch the bezel, it tears the bezel instead of stretching it. Stretching a true solid ring works great, but not a bezel. You're better off just making a couple more bezels from scratch.

To file the bezels' circumference, use a #0 flat file. You can follow up with a #2, #4 and #6 if you'd like. The sides of the bezel are out of sight when when inserted into the backing plate.

The other issue you might encounter is that the height of the bezel is too tall so the bezel won't sit flush with the backing plate. Same procedure, just use a large #0 file and file the tube end of the bezel and make it a little shorter.

Step 6 – Final finish

The lockets shown in this article have been highlighted with gold plating on the heart and bezels. That is optional and I've described how to gold plate in an earlier article, so I won't go into the details here.

Step 7 – Final assembly

Now that you have your locket made and custom fitted the bezels, it's time to insert a couple of photos. It's not likely that you're going to have photos laying around that are around 23mm in a circular format. You have to make them. For my lockets I use Photoshop and by trial and error I reduce the images to a size that will work. I use my metric circle template and place the 23mm hole over the photo that I've printed out. By eyeballing it, you can see how the photo is going to appear through the bezel window (figure 53). When you have photo at a desirable size, draw a circle around it using the template and an extra fine Sharpie. Also take a "sheet protector" and draw the same size circles with the template and Sharpie. These will be the "windows" that will protect the photos inside the bezels. Using a small pair of scissors cut out the photos and sheet protector (figure 54). Test fit them and cut them smaller if necessary. Notice in figure 54 that I placed some cotton in the locket. This keeps a little pressure on the photo and window to keep them in place. Also, use a curved burnishing tool to remove the bezels easily from the backing plate (figure 55) and your fingers/thumb nails to push them in.

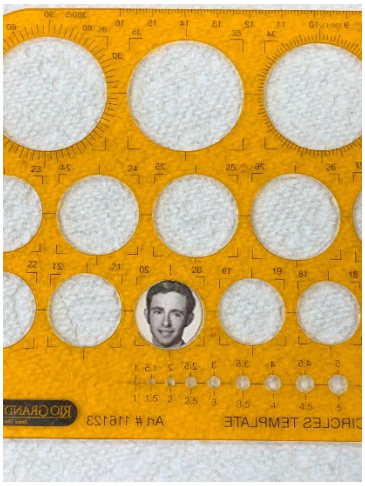

Figure 53

Figure 54

Figure 55

And there you have it. The steps in making a simple photo locket. Have fun and patience!

Author:

Tom studied jewelry art at the Revere Academy of Jewelry Art in San Francisco, California. Subsequent classes were taken at Silvera Jewelry School in Berkeley, California. One of those classes was an introduction to Art Clay, taught by Master Instructor Arlene Mornick. Additional Art Clay classes were taken with Arlene as well. In 2018, Tom received his Level One Certification and Senior Level Certifications. Tom teaches primarily in the Sonoma County area of California, one of the great grape growing areas in northern California. Tom's website and contact information is at: www.tessierjewelry.com

Artist Philosophy:

Discovering metal clay has been one of the greatest joys in my life. I'm just amazed at how easy it is to work with and what beautiful pieces can be created in a relatively short amount of time compared to traditional jewelry. It's like magic. I'm so looking forward to taking more art classes that can be combined with metal clay and teaching what I've learned to others.