



HANDMAKING CHERRY BLOSSOM EARRINGS, FROM START TO FINISH

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INTRODUCTION

The cherry tree is a deciduous tree that blooms in the spring between April and May in the Northern Hemisphere. There are various species with different colors of bark and flowers.

The bark can be brown, like on the *Prunus avium* or the European cherry tree, or reddish brown, like on the *Prunus Tibetica*, or even almost black, like on the *Prunus serotina*, also known as the black cherry tree.

The flowers also come in different colors depending on the type of tree. In general, they are white with pink tones, like on the *Prunus serrulata* or Japanese cherry tree, also known as the Sakura. In some cases they are light yellow or greenish, however, the color can change depending on which bloom stage the tree is in.

In general, the flowers tend to have five petals, although there are some types of cherry trees with more petals. The petals are oval-shaped and slightly elongated, and the flowers tend to bloom in groups of two to five.

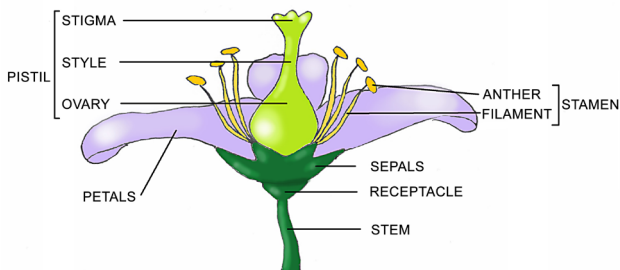
In this paper I will demonstrate how to make these earrings:





PARTS OF THE FLOWER

Let's take a look at the different parts of the flower:



On all cherry blossoms, we can observe the following parts: the stem, receptacle, five sepals, five petals, the stamens (formed by filaments and anthers), and the pistil (formed by the ovary, stigma, and style).

MATERIALS

The materials needed are:

- Titanium and zirconium alloy for the branches and stems
- Grade-1 titanium for the petals
- Yellow gold for the receptacle, sepals, stamens, pistil and omega closure
- Pink sapphires for the petals (and some diamonds for the edges of the petals and the stigmas of the pistils)
- Yellow sapphires for the ovary

Making the petals with titanium allows us to anodize them with a pinkish tone, and using a titanium-zirconium alloy will give the branches a blackish finish, imitating the colors of the darkest cherry tree species.

DESIGN

After a few sketches, I decided on a three-flower design.



I start with a big flower on the top part of the pendant, where the branch comes out and where the closure fits on the back. The branch continues with the second and third flowers, each one getting smaller. The third flower is a closed bud at the end of the branch.

I add hinges to the branches between each flower to allow the pendant to move freely. Two hinges are more than enough to give the pendant free movement. I considered making the design in the opposite way, with the flowers getting bigger as they descend. However, this design would not have been as realistic.

MATERIAL TESTING

Once I have a final sketch, I can start making the piece. Before this, it's always a good idea to do some tests when working with unfamiliar materials. Since I had never worked with a titanium-zirconium alloy, I decided to do some basic tests.

Since this alloy is considerably harder than other titanium alloys I had used before, I decided to saw and file it. I found that it's hard to file and even harder to saw.

I found the biggest challenge was rolling the alloy into sheets. They have to be made thinner gradually, by reducing the thickness in small amounts, three or four times. However, if you reduce the thickness too much or you roll the alloy too many times, it will crack into pieces. In my tests, I found it was impossible to roll into a bar.



These limitations forced me to adapt my methods when making the branches of the pendant.

I did welding tests and found that the material welds very easily. It yields clean, strong joints with hardly any impurities or residues in the welded areas. I also did polishing tests and found that it's slightly more difficult to polish than other materials like gold or silver. However, we can achieve good results with patience and by alternating the polish pattern.

I chose this alloy because of a special effect that happens when treated in the kiln or with a torch. After applying heat, the alloy produces a very dark top layer, especially when polished before heating. Also, this layer is very resistant to scrapes and scratches.

For this reason, I did a heat test to ensure this reaction takes place and also to check the color, shine, and hardness of the top layer.

MAKING THE TITANIUM PETALS AND BUDS

Use a grade-1 titanium sheet to make the six flowers of the earrings.

Use a 2-mm-thick sheet for the top flowers for three reasons:

First: We will set sapphires of up to 2.5 mm in diameter (0.098 in.), and it's important to keep the culets of the stones from sticking out from the back surface.

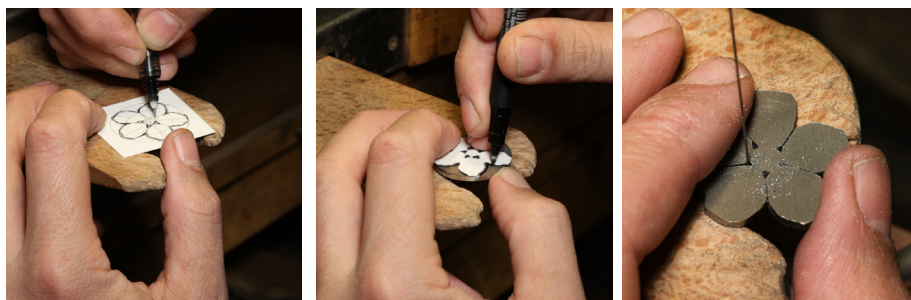
Second: While shaping the petals, the surface will get scratched or marked, and some thickness will be lost when removing these marks.

Third: We will set a really tight pave on the petals. This type of pave makes the pieces quite weak if thin sheets are used to make the petals.

Saw a 6x3-cm (2.36x1.18 in.) rectangle from the 2-mm-thick (0.078 in.) titanium sheet. Saw it in half to get two 3x3-cm (1.18x1.18 in.) squares. Saw the corners to form two circles and then even out the edges with a file.



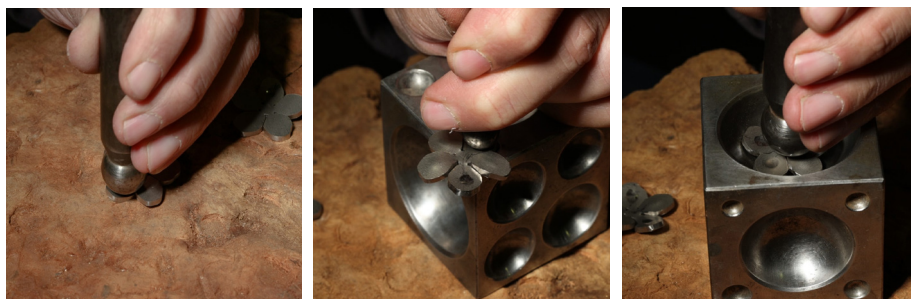
Make a stencil in the shape of a five-petal flower, and then transfer it onto the titanium circles. To get two symmetrical reflected shapes, flip the stencil over onto the other piece and then saw the petals.



Even out the edges on the two pieces by using a carbide bur for the edges, and a diamond disc for the spaces between petals.



Shape the petals with steel dapping punches over a soft piece of wood, which makes the titanium bend smoothly on wide areas of the petals. Continue shaping the petals over the dapping block to achieve more pronounced bends in specific places. Finally, bend the whole piece in order to make the center deeper.

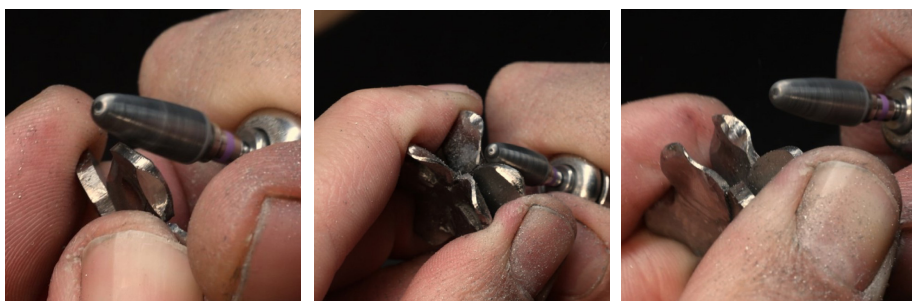


Now, we have a base shape for our petals. Before continuing, check if the bends of the petals are symmetrical on the two pieces and correct any imperfections with pliers if necessary. Using a 2-mm-

thick (0.078 in.) sheet will allow us to enhance the curves of the edges. To do this, mark the parts we want to enhance.



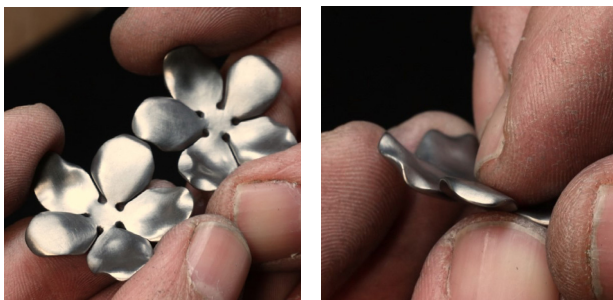
Cut the marked curves with a carbide bur and ensure that both pieces are symmetrical. Putting the reference piece behind it is a good way to achieve this.



To finish the petals and give them a smooth finish, get rid of all the marks made during the whole process, using grinding wheels, mandrels with emery paper, and a satin wheel.



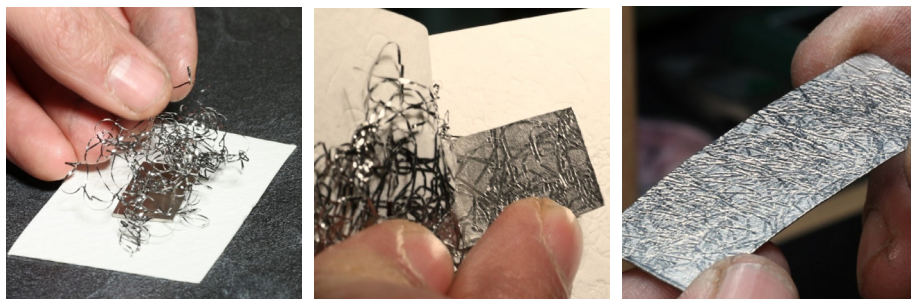
Detail of the finished petals and the enhanced edge curves:



Repeat the same process for the middle flowers. Start with a 16x16 mm (0.63x0.63 in.) square piece but with a 1-mm-thick (0.04 in.) titanium sheet. Detail of the middle petals:



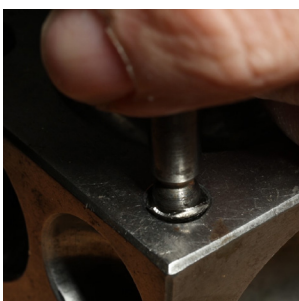
For the third flower style, which is small buds, roll a 1-mm-thick (0.04 in.) titanium sheet with a few wires from a steel-wool pad. Roll it between thick cardstock to avoid damaging the rolling mill. After a few passes, we will have a nice texture and achieve a thickness of about 0.3 mm (0.012 in.) with this rolled piece.



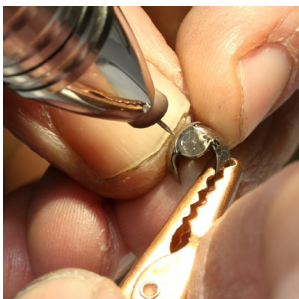
Cut this sheet into two strips and, with stencils, saw three petals for each bud.



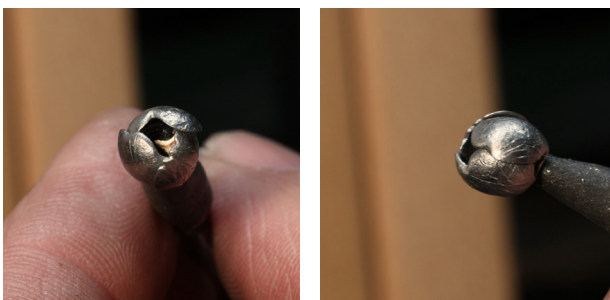
Bend them with the steel dapping punch and block.



Weld the three petals to a small, round titanium piece. Each petal needs to overlap a little bit over the next one.



Once done, make the edges smooth and ensure that the surface is uniform.

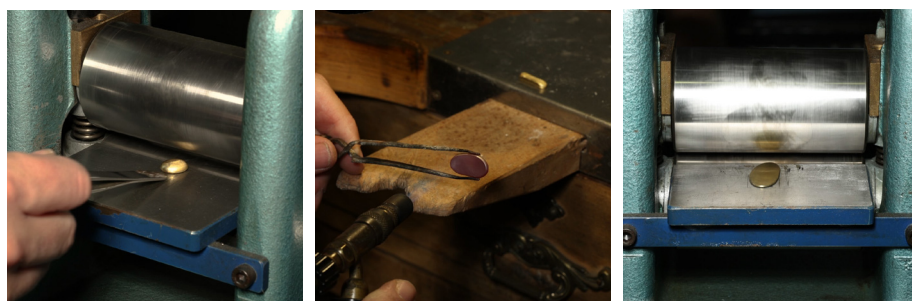


MAKING THE GOLD PISTILS AND STAMENS

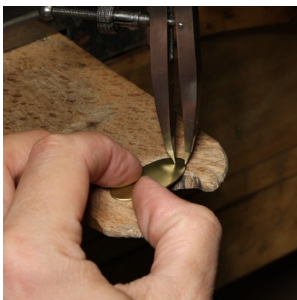
To make the stamens and pistils, melt fine gold with the correct amount of alloy to get 18K (750) yellow gold. Then, melt 7 grams (0.25 oz.) to get a nugget of gold and then another 7 grams (0.25 oz.) into a bar to make wires of different gauges.



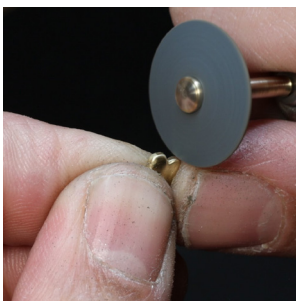
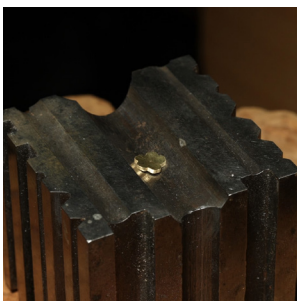
Roll the gold nugget into a 1.2-mm-thick (0.05 in.) sheet, annealing it every time we reduce the thickness by half.



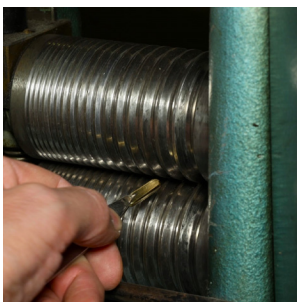
Outline two circles and saw them. Then, make five lobe shapes around the edge with a file. This part will be the ovary of the pistil for the top flower.



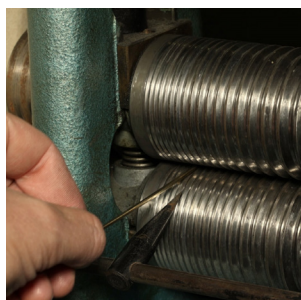
Bend these parts with a block and the steel dapping punches and make the edges nice and smooth with a grinding wheel.



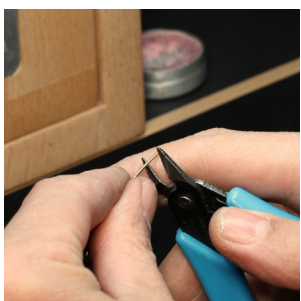
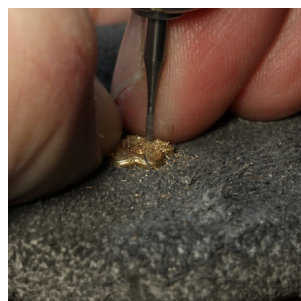
Roll the bar of gold a few times until we have a square rod about 3-mm (0.12 in.) thick. Then, from this square rod, saw four pieces off, each one 2.5-mm (0.10 in) thick.



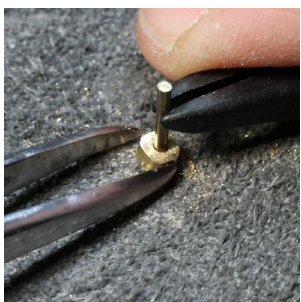
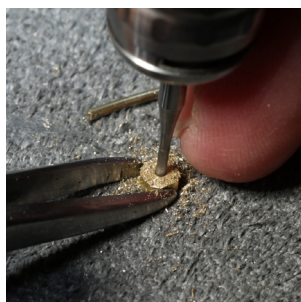
Continue rolling the rod to the thinnest size the rolling mill allows, always annealing it when we reduce the thickness by half. Make a sharp tip on one edge to insert it into the drawplate of the draw bench. Draw wires to 1.5 mm (0.06 in), 1 mm (0.04 in), and 0.4 mm (0.016 in) and keep them on the side.



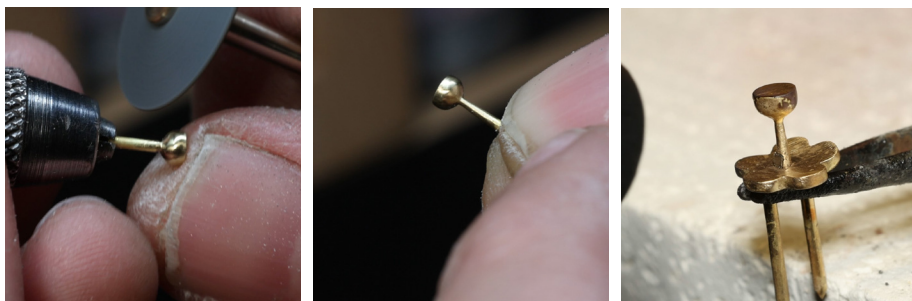
Continuing with the pistils, drill two holes in the back part of the ovary, slightly above the center of the piece. With the 1-mm-gauge (0.04 in.) wire, make two posts and solder them to the piece with hard yellow-gold solder. Always use flux before and pickle after each solder. These posts will hold our earrings together.



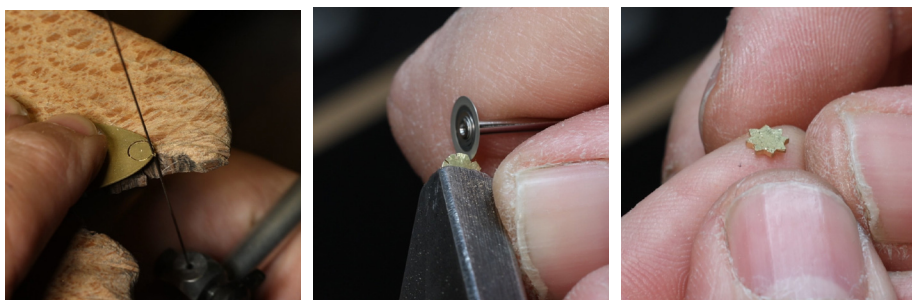
With two of the previous 3x2.5-mm (0.12x0.10 in.) square pieces and two posts of 1.5-mm (0.06 in.) wire, make the stigmas and the styles. Solder them together with hard yellow-gold solder.



Then, make them nice and smooth, and solder them to the ovary piece using hard yellow-gold solder. Here, we have our top pistils.



Meanwhile, make the pistils for the middle flowers. Saw two circles from a 1-mm-thick (0.04 in.) gold sheet. With a saw, file or diamond disc, make eight points on the edge.



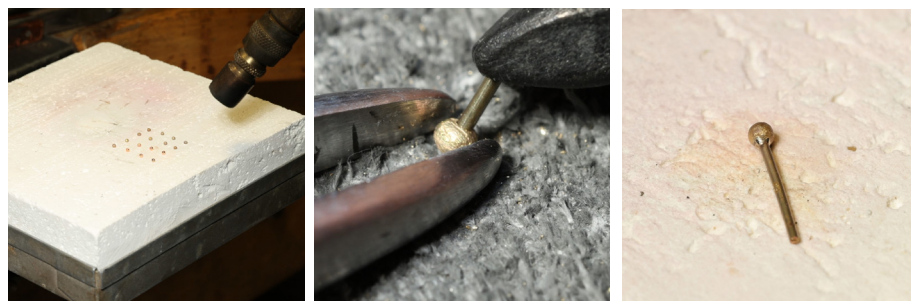
Repeat the same process as the top pistils for the middle pistils. Drill two holes and solder the 1-mm-gauge (0.04 in.) posts. Make slightly shorter styles and stigmas and solder them to the middle ovaries using hard yellow-gold solder.



Now it's time to make the stamens. To make the anthers, cut 42 pieces from a 1-mm-gauge (0.04 in.) wire, each about 1.2-mm (0.05 in.) long. To make the filaments, cut 42 posts from a 0.4-mm-gauge (0.016 in.) wire, each one about 9-mm (0.35 in.) long.



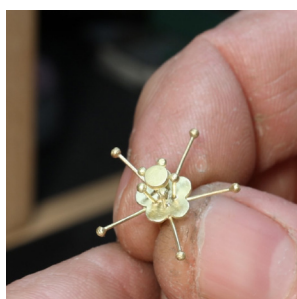
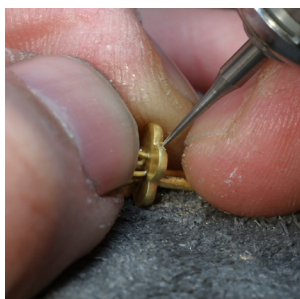
With a torch, melt the 1.2-mm (0.05 in.) pieces to make balls. Drill a hole in each ball and solder them to the filaments using hard yellow-gold solder.



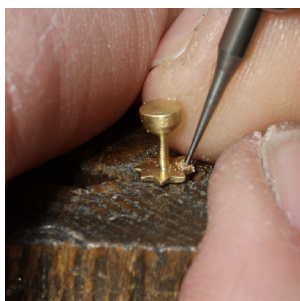
Drill and solder the stamens to the top pistil, one by one. For this, switch to easy yellow-gold solder and use a hydrogen torch system. By using the thinnest flame possible and exercising caution, we will not melt the previous solderings. Place five stamens on the top part of the ovary at each indent.



Add five more stamens on the outside edge, at each indent. Keep the stamens straight. Later, we will set stones on the ovary and will need room to do it.



In the middle pistils, solder eight slightly shortened stamens, all on the top part and using the same method. For these pieces, bend the stamens with round pliers.

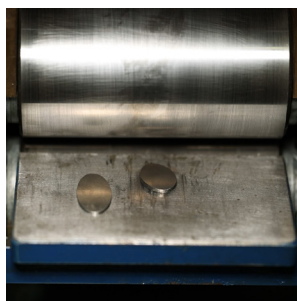
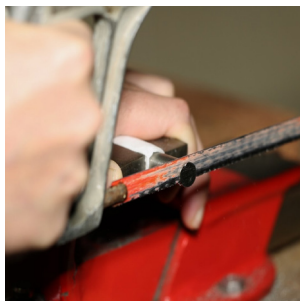


For the pistils of the flower buds, use a 0.5-mm-thick (0.02 in.) gold rectangle. Notice that this rectangle needs to pass through the gap of the bud. Solder two 1-mm-gauge (0.04 in.) posts on the bottom and three stamens of different lengths on the top.



MAKING THE TITANIUM-ZIRCONIUM BRANCHES

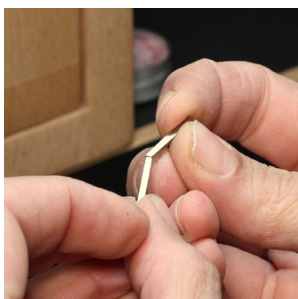
The branches are made of three sections with one hinge between the top flower and the middle flower, and another hinge between the middle flower and the bud. Use a titanium-zirconium alloy to make them. Slice off three pieces from a premade rod, each with a different thickness, and carefully roll them in the rolling mill, no more than three to four times.



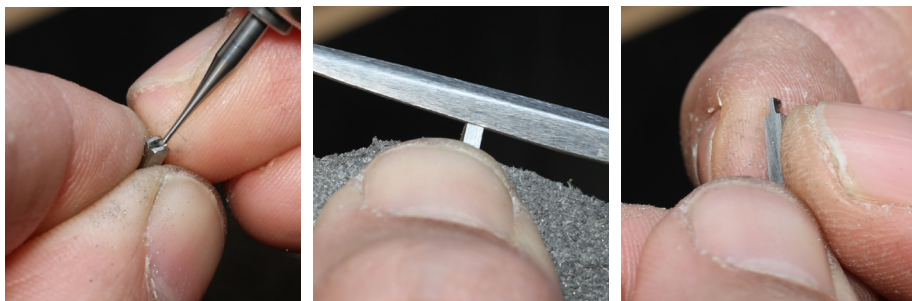
Split each rolled slice in half and extract square rods from them by sawing. Even it out with a file and emery paper.



Let's take a look at how to make the hinges. We will need to make a hinge between these two parts.



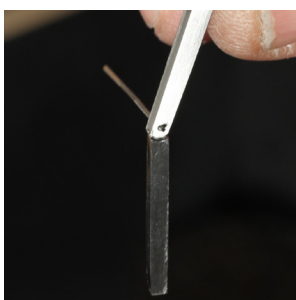
To make this, drill a long hole into the female end, and file both top sides of the male end.



Then check if the pieces fit in the right place and drill 0.4-mm (0.016 in.) holes on each piece. All 0.4-mm (0.016 in.) holes must be aligned.



Round the edges, insert a 0.4-mm (0.016 in) titanium-zirconium wire into the holes, and check to see if the pieces move freely. If everything moves correctly, our hinge is finished. Notice that the hinge isn't straight, and it remains in a diagonal position even when it's not moving. We achieve this by finding the right balance through the weight of the flowers. Repeat the same process for the second hinge of each branch.



To weld the branch to the top flower in the desired position, cut out a titanium-zirconium circle from a rolled slice and glue it to the back of the flower. Make a tack welding point, detach it, and continue welding all the circles to the branch. We must use laser or micro-arc welding systems to weld the titanium-zirconium alloy.



Drill two 1-mm (0.04 in.) holes in the circle and two more in the flower.



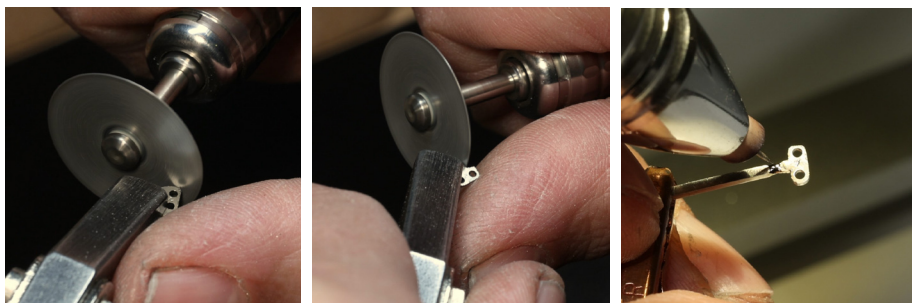
After checking that both pieces are aligned, remove the extra material of the circle around the two holes.



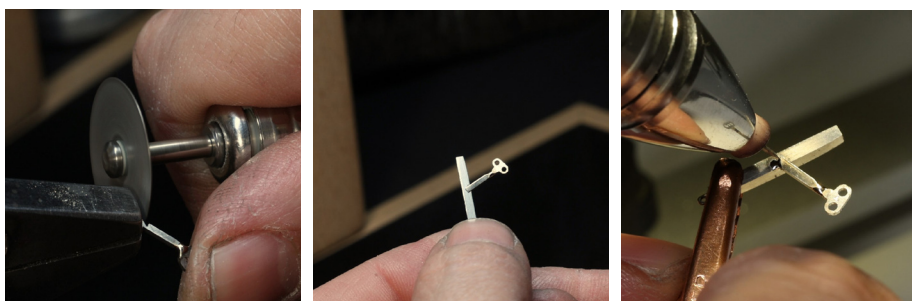
Meanwhile, glue another two titanium-zirconium circles to the back of the middle flowers. Also, drill two 1-mm (0.04 in.) holes in the circles and in the flowers.



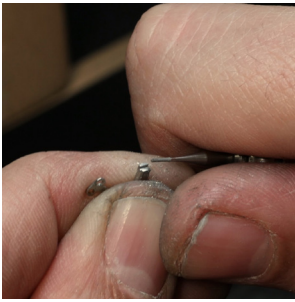
Remove the extra material around the holes of the circle. Then, weld this piece to a square bar.



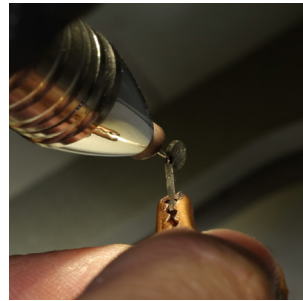
Cut the extra length of the square bar, drill a hole into the middle section of the branch, and weld it.



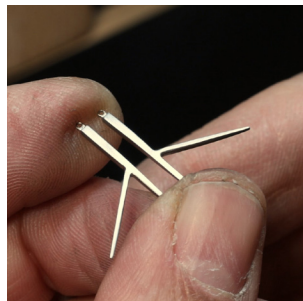
Now, make the second hinge to connect the middle part of the branch to the final part with the bud. Use the same method as we did with the previous hinge.



For the final part of the branch, glue another titanium-zirconium circle to the bud, tack-weld it, detach, and continue welding all the circles to the rod.



Drill two holes on the back of the buds and another two holes in the circles, all of them with a 1-mm diameter (0.04 in.). Weld another square rod to the final part of the branch.



Weld the rod with circles for the buds to this second rod, welded to the final part of the branch. Then, pre-polish all the pieces of the branch.

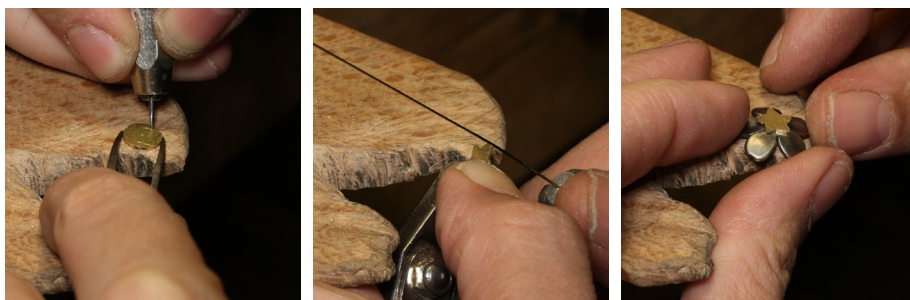


Last, check if all the parts fit well. Cut the extra material of the pins of the hinges and weld them. Once finished, make the surface of the welds smooth, and the branches will be finished.

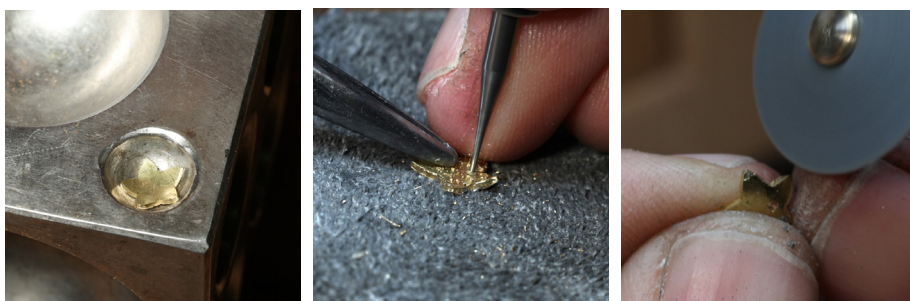


MAKING THE GOLD SEPALS

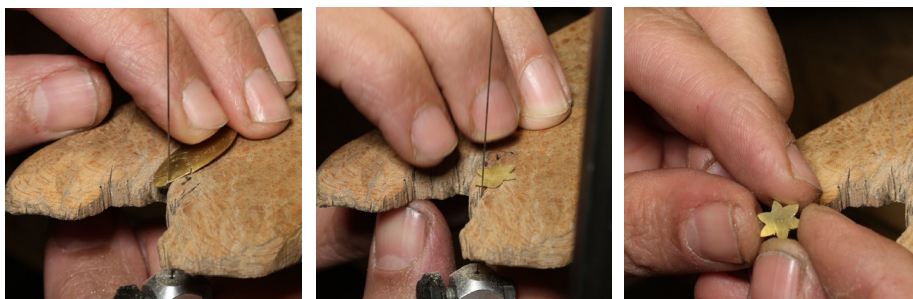
To cover all the attachments, make the sepals. For these, use yellow-gold sheets. For the middle flowers, use a 0.5-mm-thick (0.02 in.) sheet, saw a 0.7-mm (0.03 in.) circle, draw a five-point star, and saw it.



Then, bend it in the draw block, drill two 1-mm (0.04 in.) holes and make the surface nice and smooth.



For the sepals of the buds, we will also use a 0.5-mm-thick (0.02 in.) yellow-gold sheet, draw a 0.9-mm (0.035 in.) circle, then draw a six-point star inside this circle and cut it out.



Then, repeat the previous process, bend it in the draw block, drill two 1-mm (0.04 in) holes and make the surface nice and smooth.



Finally, we will make the sepals for the top flowers. In this case, use a 1.2-mm-thick (0.05 in.) yellow-gold sheet. This sepal will hold the omega closures and bear all the weight of the earrings. It's crucial for the piece to be structurally sound. To make these sepals, draw two 14-mm (0.55 in.) circles, cut them out, draw a five-point star on each one, saw them out, and even out the edges with a file if necessary.

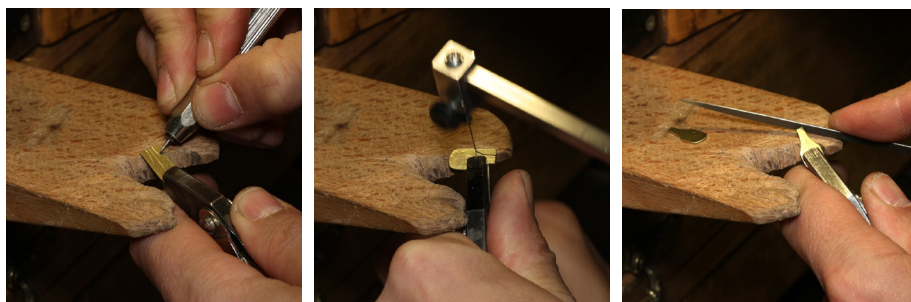


Adapt the shape of the sepals to the back part of the top flowers. To do this, bend each point of the star, one by one, with pliers. Once this is done, check it and make any necessary corrections. Drill two 1-mm (0.04 in.) holes, checking to be sure that they align with the holes of the petals.

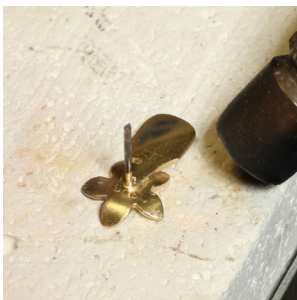


MAKING THE GOLD OMEGA CLOSURES

Start with a rectangle of 1.2-mm-thick (0.05 in.) yellow-gold sheet. Make one side narrow, saw it, and round the tip with a file.



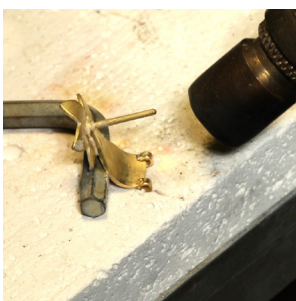
Solder it to the top sepal, just between the two holes, using hard yellow-gold solder. Solder a 10-mm (0.39 in.) post made of a 1-mm-gauge (0.04 in.) wire with hard solder. Finally, bend the end of the rectangle with half-round pliers, which will be the omega yoke.



With a flattened 1-mm-thick (0.04 in.) wire, make four circles with a diameter of 1.1 mm (0.043 in) using round pliers. Close them with flat pliers.



Saw the four circles and solder them, with hard yellow-gold solder, to the corners of the omega yoke. Previously, we had cut out square seats for them on the corners of the yoke.



On a 0.3-mm-thick (0.012 in.) gold sheet, stamp the fineness hallmark, official manufacturing license, and brand name. Cut them out and solder them to the inner part of the omega yoke with easy yellow-gold solder.



Mark a V shape between the circles of the yoke and cut it out to allow the omega wire to move freely.



To make the omega wires, use a gauge wire which is 5-cm (1.97 in.) long and 1.1-mm (0.043 in.) thick. First, make three bends. The first bend will be made in the middle with half-round pliers. Then, a second bend will be made in the middle of each end with flat pliers. Finally, make a third bend at the end of each side, also with flat pliers.



Flatten the curve by hammering only the middle section of the omega wire. This will make the omega wire stronger for movement.

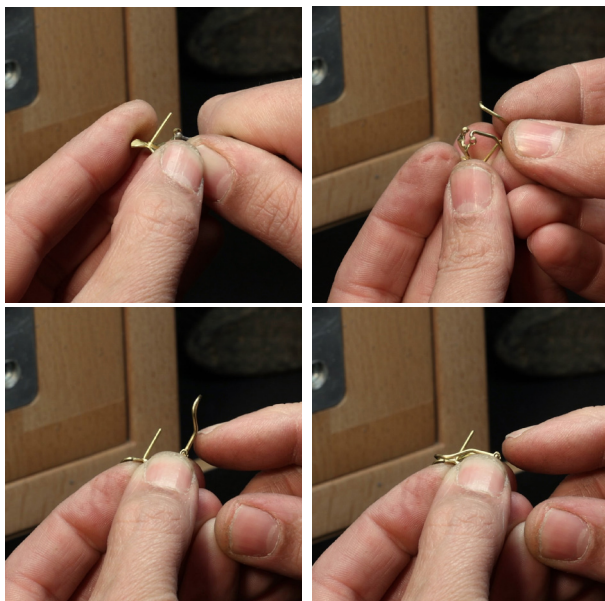


Then, make two more bends. Make the first one with half-round pliers at the top of the curve of the omega. Make the second bend with parallel pliers just in the middle of each side of the wire, in opposite directions of the first bend. Check that both omega wires are equal.



Finally, shape the interior bottom sections of the yoke circles by drilling at an angle. This is an important step in order to ensure that the omega closure moves correctly. Insert the omega wire in

the circles and check if the spring movement takes place. Adjust if necessary.



SETTING THE PETALS

We are going to make a random pave, also known as snow pave, which is used to set stones of different sizes, side by side, over a surface. Also, we are going to make a color gradient, from dark in the center of the petals to clear on the tips of each petal. We are going to use two tones of pink sapphires and a few diamonds for the tips to achieve this effect.

Before starting, mark where the pistils overlap the petals. Then, attach the petals to shellac and start drilling the holes for the stones. It's crucial to have enough stones of each size, and it's better to have too many than too few. We are going to set stones from 1 mm (0.04 in.) to 2.5 mm (0.098 in.) in diameter.



Continue drilling the whole surface. It's recommended to use slow RPMs and lubricate (e.g. wax for burs and drills) when doing this. Start the hole with a drill and adapt the size with a round bur of the desired size. Continue mixing sizes during the entire drilling process.



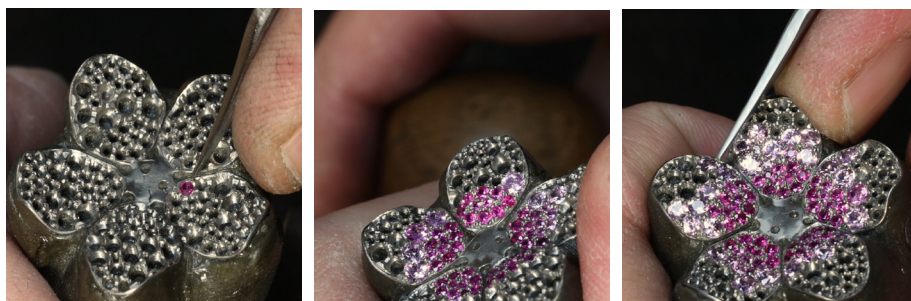
Once all the petals are drilled, open the holes, detach the piece from the shellac, and remove any burs created when drilling. Continue removing any unnecessary material from the petals' back surface.



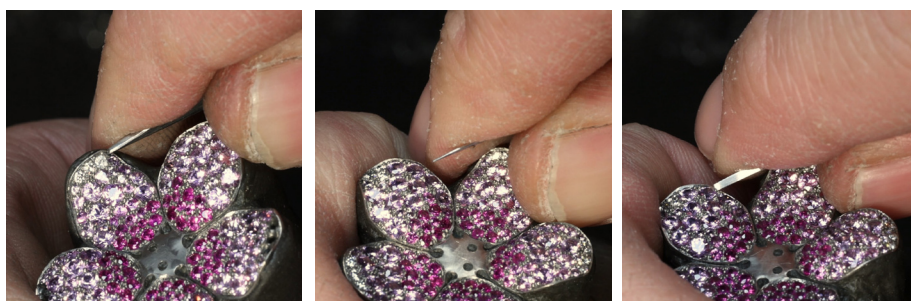
Attach the piece to shellac again and cut the edges of the petals with a cutter bur. Then, remove the material between holes with a round bur.



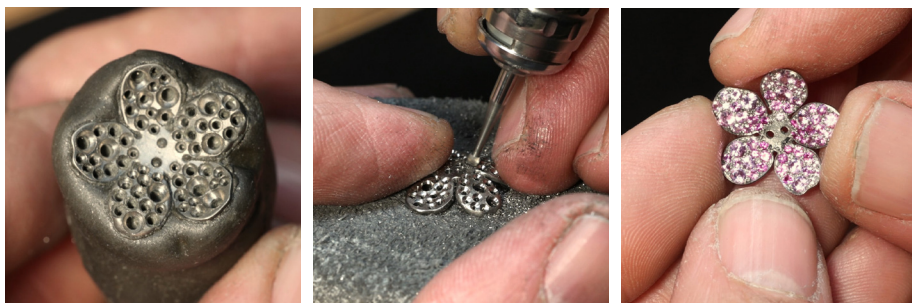
Start setting stones from the inside out, from dark to clear. Although titanium is known for its resistance, it is curiously quite easy to set stones in. Nevertheless, we have to be careful when moving the beads. Use a rounded-tip onglette graver or a tapered round graver depending on personal preference. Also, round the beads with an appropriately sized beading tool.



Continue setting the diamonds on the tips. Once finished, clean all spaces between beads with a knife graver and bright-cut the edges with a polished flat-graver or onglette. The resulting bright-cut finish is not a mirror finish due to the titanium's properties.



Repeat the same process for the middle petals.



SETTING THE PISTILS

Polish the pistils before setting. Then, attach the top pistils to shellac, and drill five holes in the lobes of the ovary. To set the yellow sapphires, make two beads in the inside of each stone and hammer the outside of the lobe to set the stones. Then, bright-cut the edge or burnish it.



Bend the central stamens to the outside and make them slightly curved. Then, lift the shellac to attach the style of the pistil and drill a hole in the stigma.



Drill eight beads with a cylinder- or cone-bur and bright-cut the spaces between them with a polished carbide round graver. Finally, set a 2.4-mm (0.094 in.) diamond by pushing the beads with a beading tool.



Detach the pistils, clean them, and bend the outer stamens. Also, make more bends on the stamens to make them look more natural. The bends also have to be symmetrically reflected on both pieces.



Except for the yellow sapphires, repeat the same process for the middle pistils.

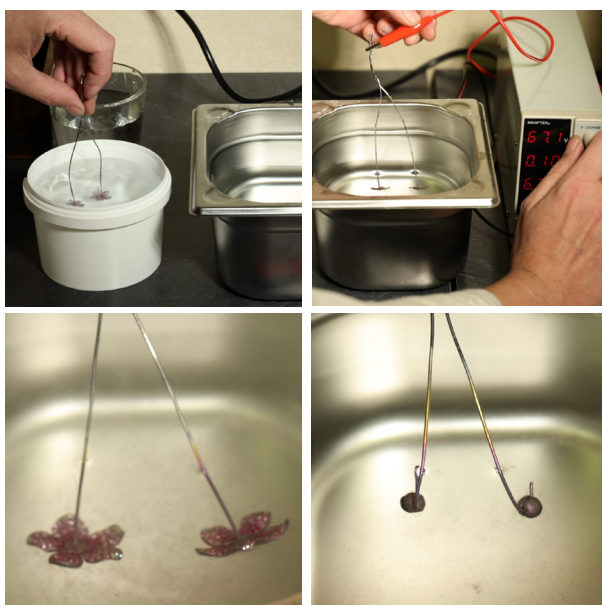


At this point, make a detailed polish of all the pieces except for the petals, which will get a satin finish. Clean all the pieces using an ultrasonic cleaning bath and a steam machine.

ANODIZING TITANIUM PETALS AND DARKENING TITANIUM-ZIRCONIUM BRANCHES

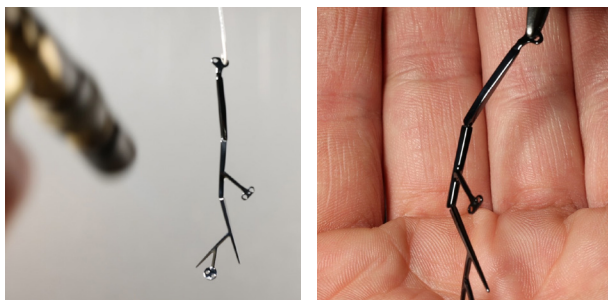
It's crucial to have the pieces as clean as possible and to avoid touching them with bare hands. To anodize the titanium petals, hold them with titanium wire. Etch the surface in a titanium etching solution according to the manufacturer's instructions and rinse the piece with distilled or deionized water immediately. Then, anodize the petals in an electrolytic solution made of 10-15% trisodium phosphate per liter of deionized water, using 67 volts with a constant voltage power supply.

There is more information on this process in my paper: "Titanium and Aluminum: Handling, Soldering and Anodizing for the Production of Handcrafted Jewelry", in *The Jewelry Symposium for the Advancement of Jewelry Manufacturing Technology 2024*.



To darken the branches, start with clean and untouched pieces. Heat-treat each branch with a soft/middle-torch flame until a visible black layer appears. Hanging and turning the piece during

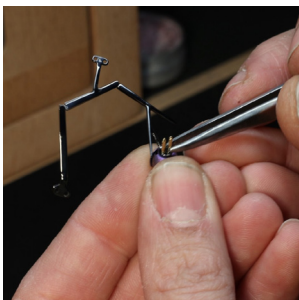
this process will enhance a uniform heat treatment over the whole piece. We can also do this with a kiln.



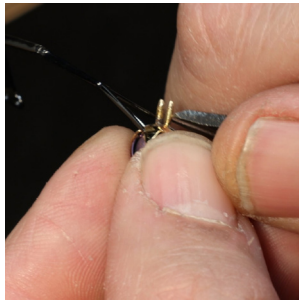
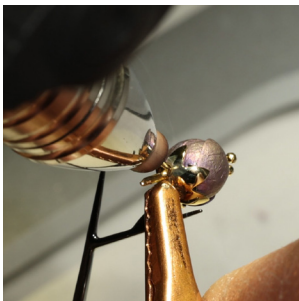
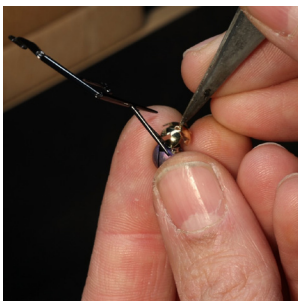
Once all the pieces are anodized, darkened, polished and cleaned, start assembling them.



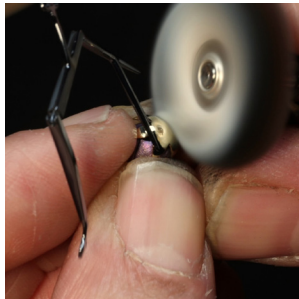
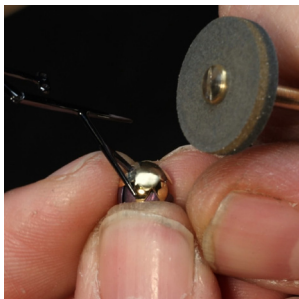
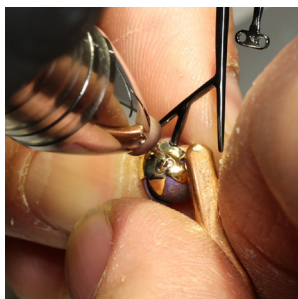
Use the same process to attach each flower to the branch. Attach the pistils to the petals, then to the branch, and tack-weld the petals to the branch.



Then, insert the sepals into the posts of the pistils, tack-weld them, and cut the excess off the posts.



Finally, weld them well, even out the surface, and polish and clean them.



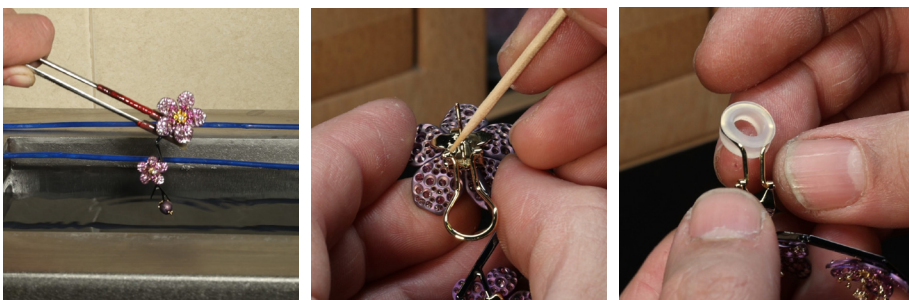
Repeat the same process for the middle flowers.



Finally, repeat the same process for the top flowers. Be especially cautious with these flowers because we will weld them very close to the previously soldered parts of the yoke and ear post.



At the end, clean the earrings in an ultrasonic cleaning bath and steam machine, lubricate the omega wires with synthetic oil, and mount rubber pads for omega closures.



And our earrings are finished.



Here are some detailed pictures of the earrings.



SANFELIX





THE SPECS OF THE EARRINGS

15.44 g total weight

9.2 g of gold

452 total stones

408 pink sapphires with a total weight of 9.80 carats

10 yellow sapphires with a total weight of 0.39 carats

34 diamonds with a total weight of 0.56 carats

Overall size: 71-mm length, 26-mm width.

