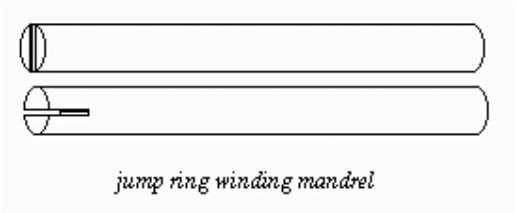
Jump Ring Notes

Jump rings may be made most easily by using a small hand drill with various sizes of mandrel.

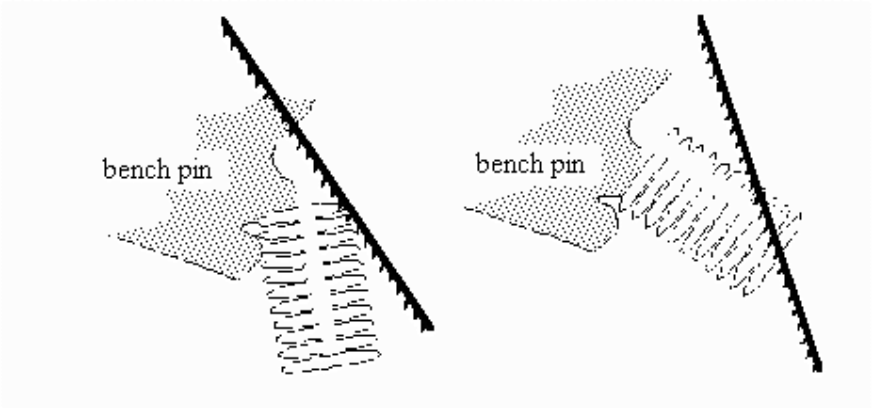
Take a broken burr, old needle file handles or a piece of drill rod and make a slit near the end. (I would use a separating disc to do this). Or one may drill a hole through the rod. Then it may be set into a hand drill or a flex shaft handpiece. By inserting a wire in the hole or slit and feeding the wire onto the rod as the flex shaft is slowly operated one can mass-produce jump rings. The same tool used with a hand drill is safer and requires less skill.



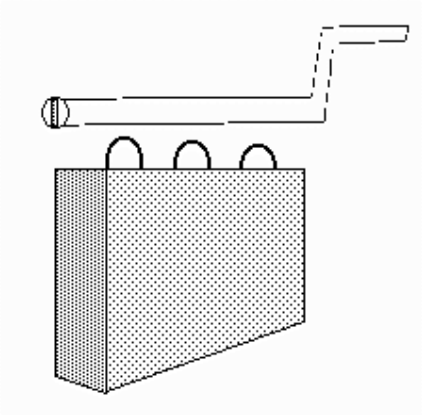
jump ring winding mandrel

If feeding wire onto a mandrel using a flex shaft handpiece be aware that with most standard ones it is difficult to get the feeding speed slow enough to be useful. One needs annealed wire and also needs to have tension on the wire being fed. Do not feed the wire on by hand as it is dangerous. Instead feed the wire through the jaws of a pair of round nose pliers or other tension creating device.
It is important to use a metal mandrel such as steel to wind jump rings on. Winding onto wooden rods for instance leads to loose, sloppy jump rings while on a metal mandrel they wind tight and do not release or spring back when the tension of winding is removed. This is one reason I like to use the smooth part of drill bits to wind jump rings with. One winds short sections, perhaps a centimeter or so long so as to be able to hold them easily while cutting them.

When I make jump rings I wind only a short section and saw them by hand. If the section is long and a little wiggly I will hold them as on the left of the diagram, if short and stiff enough as on the right (fingers not shown). In both cases they catch onto a little wooden nub I quickly cut into the bench pin. I also have a pair of locking, grooved pliers to grip them with while cutting.

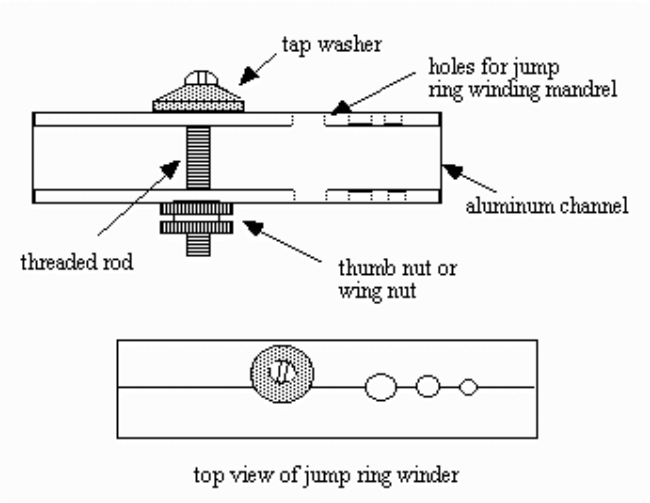


One may take a board and hammer in staples or crossed nails on the top edge. The board is now clamped in a vise. A long piece of drill rod is clamped in the hand drill. A hole or slot has been made through the end of the rod to insert the wire in. The drill rod is now inserted into two or more staples on the board and the drill handle turned to make the jump rings. With this arrangement one can also make different sized drill rod mandrels and

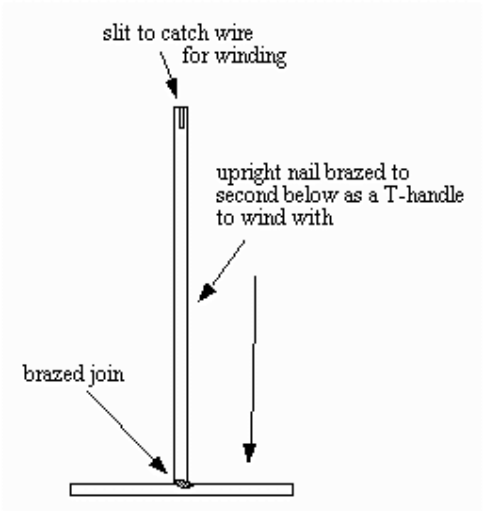


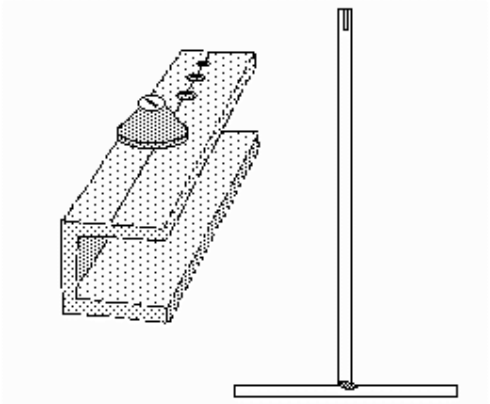
bend one end to make a crank to turn. It is important to provide tension onto the wire being wound whether by pulling against it while winding or by running the wire through a leather or rubber clamp of some kind as it is wound on.

Here is a jump ring winding tool I came up with. It uses extruded aluminum window channel. The slit in the end of the rod catches the wire and allows it to be wound. The wire is fed under the washer which is clamped tight. This keeps tension on the wire and makes for good jump rings. When one is ready to remove them one turns the mandrel the other direction which disengages it and allow the mandrel to be withdrawn allowing the jump rings to easily slide off it as it is pulled out. The mandrel itself is made from common nails which gives one the opportunity to make different sizes.



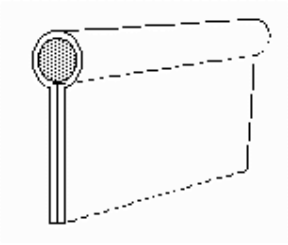
top view of jump ring winder





jump ring winder

In another approach, one makes a little brass "hinge section", which is clamped in the vise, the drill rod inserted and turned. This is simpler to store than the board and staples version and does not require as long a piece of drill rod. In all cases if one can feed wire up under a faucet washer clamp the winding proceeds much better with the wire under tension.

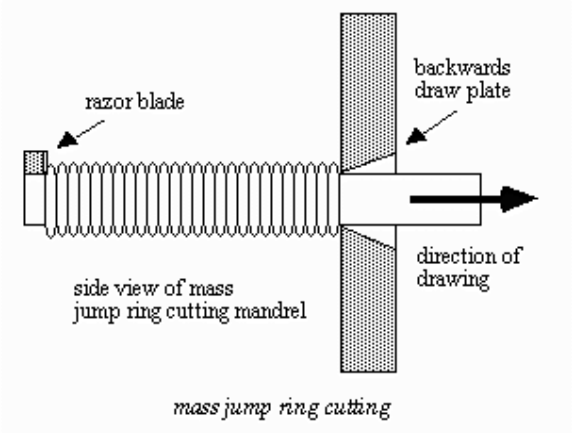


Sometimes the drill rod will be sawn up through the middle for some distance in the manner of the emery mandrel to allow the jump rings to be easily cut off. The rod should be well hardened and tempered for this approach.

Some people wrap paper around the drill rod prior to winding jump rings, anneal the whole thing after winding and remove the rings. I find it more useful to keep the rings work hardened for easier cutting, but there might be a time to use it. Carol Campbell in Calgary wraps tape around her wound jump rings to keep them together while cutting them.

When I worked in a factory in Pforzheim we would use a specialized jump ring winding tool which was essentially a kind of fancy hand drill with gearing and a Jacobs chuck. We used copper and brass mandrels in the cross section of the required jump ring, ovals, rounds and so on. To cut them we used a kind of miniature table saw, the same design as for wood working but with metal cutting blades and very small. The circular saw was about 2-3 cm across and could be adjusted so that it projected above the table only the height of the jump rings being cut, perhaps a millimeter or so. An adjustable metal fence provided a straight edge against which one pushed the wound mandrel over the saw. You had to do it right the first time because otherwise the jump rings got really chewed up. It worked very well though it was a little scary and there is some potential for building a home made version with a "captive" mounted flexible shaft handpiece and a similar table and saw. I'd suggest two fences, one on each side of the wound mandrel so you could not cut yourself.

A less expensive method of mass-production cutting of jump rings is as follows: one can cut them all at once by taking the drill rod, sawing into the end a bit, soldering in a razor blade or matt knife blade so that it protrudes on one side only (it protrudes only a millimeter or so) and then putting the drill rod through a draw-plate hole of corresponding size, backwards, and drawing it. The drawplate presses the wound rings onto the blade which cuts them. A bottle may be placed around the drill rod to catch them. I learned this one from Christian Gaudernak from Norway.

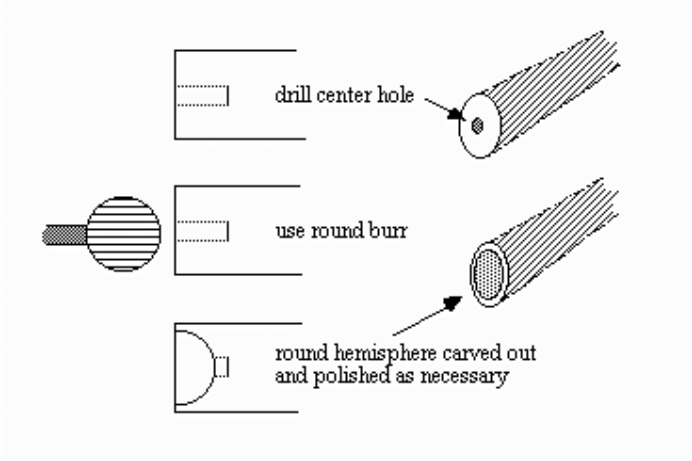


mass jump ring cutting

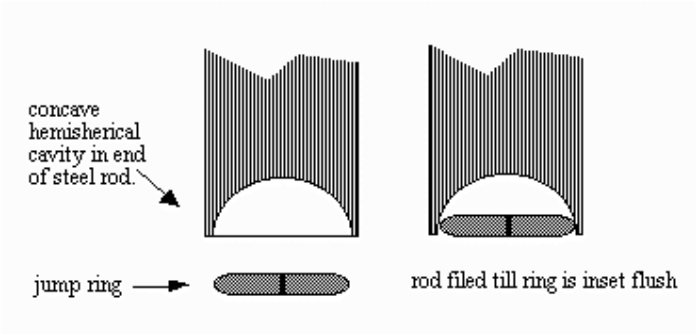
For production closing of jump rings one makes a band for the index finger of the left hand (for right handers) and solders a screw head on it. The other hand holds a pair of pliers which hold the ring in place while it is closed. Some factories use plated steel rings and magnetized pliers to speed the work up. The slot head takes the place of one of the pairs of pliers normally used to open and close jump rings.

production jump ring closing ring

Another factory method of closing lots of jump rings quickly is to use a special punch which is made to fit a specific size of jump ring. One can create a concave domed hole in the end of a piece of steel rod which then just fits over a closed jump ring of the desired size on a surface plate. Just as when making a bezel rocker the end of a round rod is drilled into with a smallish drill bit. When the subsequent concavity is made with the round burr the burr stays centered in the previously drilled hole and the concavity is afterwards polished with a piece of wood and steel polishing compound using the flex shaft. The wood takes the shape of the hemispherical depression while polishing it.



The jump ring size to be closed is chosen and one makes a jump ring. It is set into the concavity and the metal of the rod is filed back until the jump ring lies flush with the end surface of the rod. To close rings in quantity one throws them onto the surface plate or anvil and taps them closed with the punch. Because the punch was made relative to the size of the ring when flush with its end surface it closes them neatly, quickly and securely. The same basic tool form is also used as a setting tool for tube settings and if the edges are sharpened it becomes a "dinking tool" which is used like a punch to cut discs out of sheet metal. In this latter form one tilts it at an angle while hammering it.



Making filigree wire

One of the necessary steps in making filigree is the forming of the wire. It is made by twisting very tightly two pieces of very small silver wire and then flattened. Either sterling or fine grade silver wire may be used. Fine is preferred, even though it is a bit more expensive but because it is more resistant to fire scale and needs much less annealing than sterling.

To begin, measure off about 8 feet of your 26 gauge wire, double it. Put the two ends in a vise and place the loop end in a screw hook which has been inserted in the chuck of a hand drill.

Start winding; if after 15 or 20 turns of the drill, the wire breaks, it indicates the wire you purchased had not been annealed properly. Retrieve the wire and anneal it again. To be safe, it is a good idea to anneal the wire each time you begin to make filigree wire. Don't forget you have the option of using a Foredom tool instead of a hand drill. If, for any reason, you stop winding or are finished winding, don't relieve the tension on the wire. Keep the tension and release the wire by removing one end from the screw hook. Not following this procedure will allow the wire to get tangled.

Start winding carefully, taking care not to put too much "tension" on the wire. Check the length which will shorten as you wind until the wire measures about 40" in length with a diameter of 20-21 gauge. At this point, it is necessary to anneal the wire again which has hardened from the twisting. To anneal, coil the wire tight in a coil (1½"-2" in diameter). Bind it with binding wire. Using a propane torch carefully, heat the coil in a not so bright area until you can see just a small bit of cherry red. At this point, quickly drop the coil in a pyrex dish of water. Be sure you have thoroughly heated the coil of wire. Uncoil your wire, put one end in the vise and pull the wire until it is about 47 to 48" again. Pull the wire carefully; from experience, you will learn by feel how much length you have gained. Don't pull too hard and try not to get too much stretch because you may snap the wire. This will do no harm but will cause you extra work. At this point, the wire should measure approximately 21 gauge with a length of 47" to 50".

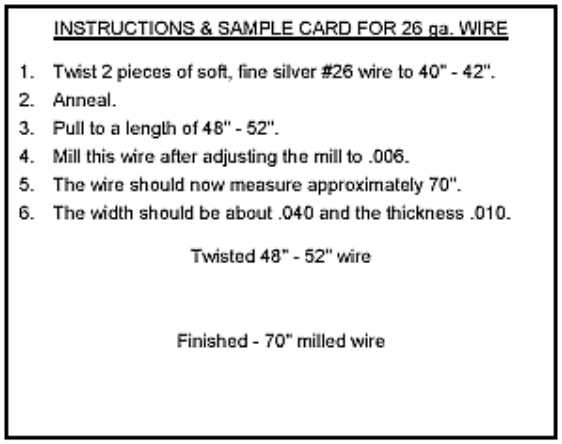
You are now ready for the next step to flatten the wire. There are two ways to do this. Using a fairly heavy ball peen hammer, flatten the wire by striking it with steady, even blows on a vise or steel plate. Try to keep the thickness and width as uniform as possible. Stop often to check your dimensions. The width should be between 18 and 21 ga. and the thickness should be 29 to 30 ga. These dimensions are not too critical. The important thing is that the coils of wire you have assembled should be close to the same dimension. A better way to flatten the wire is to use a rolling mill. This is a tool that is not available to many of us. Hopefully, the Gem Club in your vicinity will have one. It is also possible that you may be able to find a supplier of filigree wire to alleviate the tedious job of making your own wire.

If you are using a mill to flatten your wire, set the mill using a .006" thickness gauge. Run just a short length of wire through the mill and check its dimension before continuing. When the wire has completed its run through the mill, it should measure 30 ga. for thickness and 17 or 18 ga. for width and be approximately 70" in length. At this point it is important to know if your wire is properly annealed. To check this try to make an element as shown in a later chapter. If you have difficulty winding the element it is an indication your wire needs annealing.

As noted above, the dimensions of the completed filigree wire should be 29-30 ga. for the thickness and 17-18 ga. for the width. If you would like a more delicate look to your completed filigree jewelry, you may form your wire as small as 40 ga. for thickness and 21- 22 ga. for width. When you have checked and are satisfied the wire should be pickled and neutralized.

The completed length of wire now should be coiled around a ¾" or 1" dowel, making sure the wire lays flat. Hold the wire in place by drilling small holes through the dowel.

It would be advisable after making several lengths of wire and you are satisfied with them to make a sample card



Sample Card for Filigree Wire

Take a three or four-inch length of the wire at the various stages in making the wire and glue them to a filing card. Refer to this card to insure uniformity as you proceed. To complete the making of filigree wire, it is necessary to pickle and clean the wire as will be explained shortly.

As an aid when twisting the wire, make a hand control if using a Foredom or Dremel tool which will eliminate the use of a foot control. The heart of the controller is an ordinary light dimmer switch available at any hardware store. The unit can be housed in an ordinary electrical outlet box with an electrical plug-in socket in another box or both the controller and socket can be housed in one larger box. Since you will be on your feet and moving around quite a bit, this hand control unit will be advantageous to have.