

Copper Inlay Guide



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Preparing Copper Or Brass inlay wire.

The Copper or Brass wire which is used with this inlay technique is flat. The wire can be purchased from Internet vendors or it can be flattened at home in your shop.

Two methods for flattening are hammering or flattening with a Jewelers Mill.

Method 1: Flattening wire with a Hammer and Anvil.

1) Start by stripping the insulation from 14 gauge solid conduct electrical wire. (if you do not have 14 gauge use whatever gauge wire you have available; this will change the requirements for the kerf cutting tool).



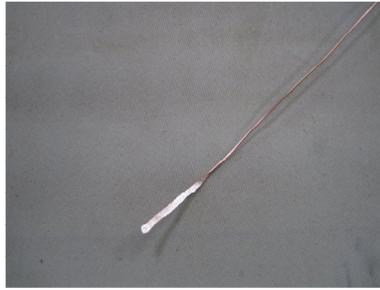
2) Using a Hammer and Anvil.

Flatten the wire to about .018 (if you do not have calipers and you are using 14 gauge wire, .018 would be equal to flattening the wire to about ¼ inch wide).

Flatten about 1 or 2 inches and measure with calipers. Once it's .018 or about ¼ inch wide continue to flatten the entire length of the wire to about the same width.

This will produce a flattened wire that will be within a few thousands from the .018 desired thickness. Take your time and try to be as accurate as possible to get consistently flat wire.

Once the wire is flattened it will be very stiff and springy and will need to be annealed to soften it.



3) The resulting wire will look like this.



Method 2: Flattening wire with a Jewelers Rolling Mill.

- 1) Start by stripping the insulation from 14 gauge solid conduct electrical wire (if you do not have 14 gauge use what ever gauge wire you have available).
- 2) Place the wire between the rollers of the mill and flatten it until the wire is .018. Once the wire is flattened it will need to be annealed to soften it.



This is a Pepe 188.20 Rolling Mill. It will roll flat, square and half round wire from round wire. Other rolling mills with similar functions can be found on eBay.

The mill can be used to form square wire from round giving more control over the thickness and width of the wire. See Table 1 for wire of different dimensions (square value) and thicknesses with the same width.

Square	Thickness	Width
.045	→ .010	= .100
.050	→ .015	= .100
.062	→ .025	= .100

Table 1

3) The resulting wire will look like this.

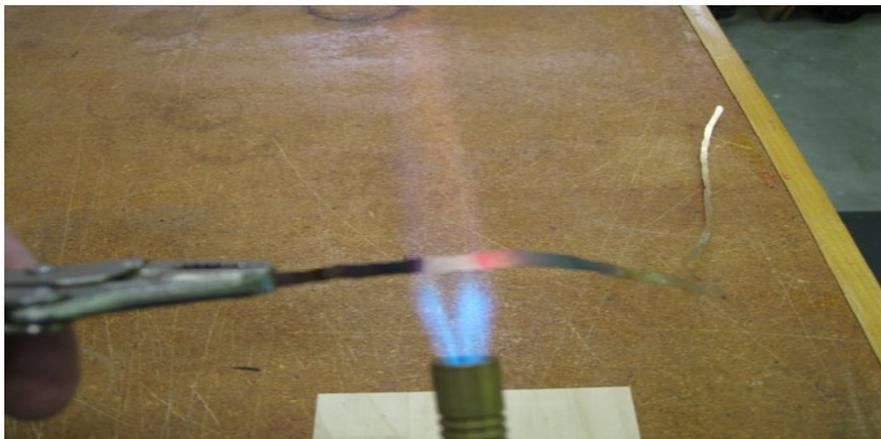


The next step is annealing the wire. The reason that the wire needs to be annealed is that once it is flattened it becomes work hardened. It would be very difficult to inlay the hardened wire.

THIS IS A VERY IMPORTANT STEP DO NOT SKIP

1) Annealing the wire will require a Bernzomatic torch and a pair of vise grips or other pliers to hold the wire.

2) While holding the wire with vise grips move the torch along the length of the wire heating it to a dull red color.



3) Once the entire wire has been heated place it in water to cool.



Wire dropped into water



Wire after annealing

4) Once the wire has been cooled and removed from the water it needs to be dried and straightened.

Holding the wire with vise grips in one hand and with a folded paper towel in the other squeeze the wire with the paper towel and pull the wire through a few times.

This will clean and straighten the wire.

The following step is not needed but it will make the wire cleaner by removing oxidation from the heating process.

5. Place the wire in salt water for a few hours. Or placing the wire in The Works toilet bowl cleaner will work much quicker but is dangerous. Be sure to wear eye protection and gloves.



Preparing to straighten wire



Wire after being straightened

6) Annealing is required for both rolled and hammered wire. Once it has been annealed it is ready for use.

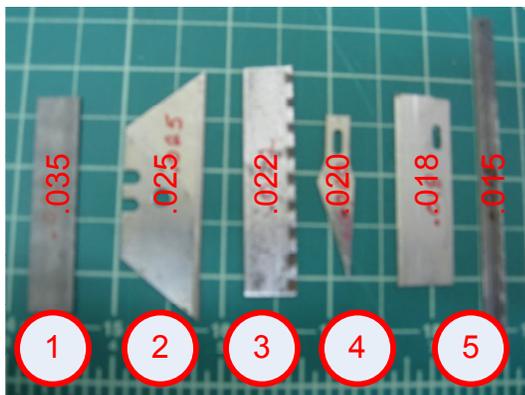
Kerf Cutting Tool

The requirement for the kerf cutting tool is that it needs to be 5 to 6 thousandths thicker than the wire which will be inlaid.

Note: The blade can be selected before flattening the wire and then the wire flattened to accommodate the blade thickness.

Tools can be made from many things, here are a few examples.

1. Band saw blades
2. Utility knife blades
3. Hacksaw blades
4. Exacto blades
5. Small electronic screw driver



Various blades and thicknesses used in the example



Tools made with various blade thicknesses with wooden handles



Replaceable blade tools

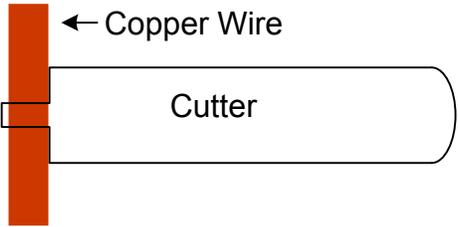
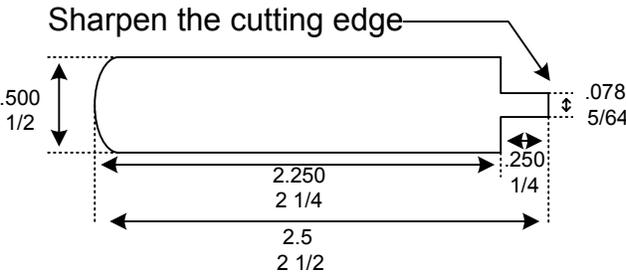


Electronic screw driver tool

Making A Simple Kerf Cutting Tool

1) This tool will be used with flat .018 wire. The length of the cutter needs to match the width of the wire $\frac{1}{4}$.
(Some 18 tooth per inch hacksaw blades are approximately .024 thick which will work well with the .018 wire)

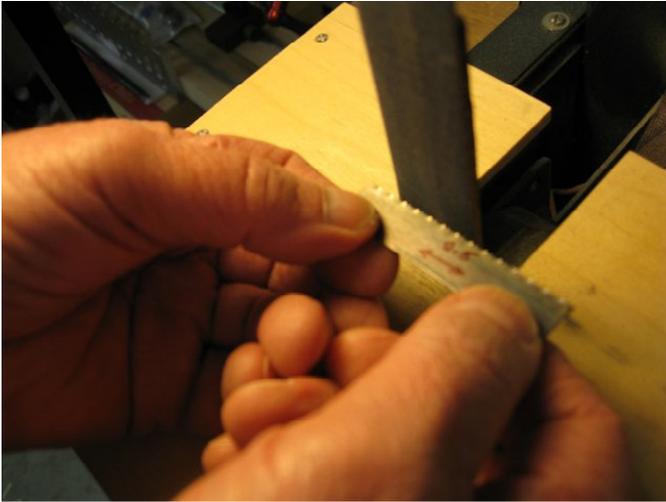
2) Grind off the teeth from the blade; then using a Dremel rotary tool with an abrasive wheel cut the blade to the dimensions shown below.



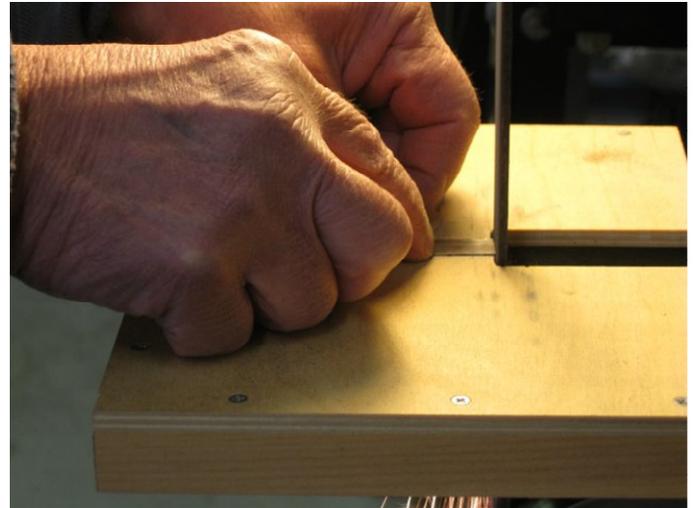
Measure $2 \frac{1}{2}$ inch long piece of Hacksaw blade



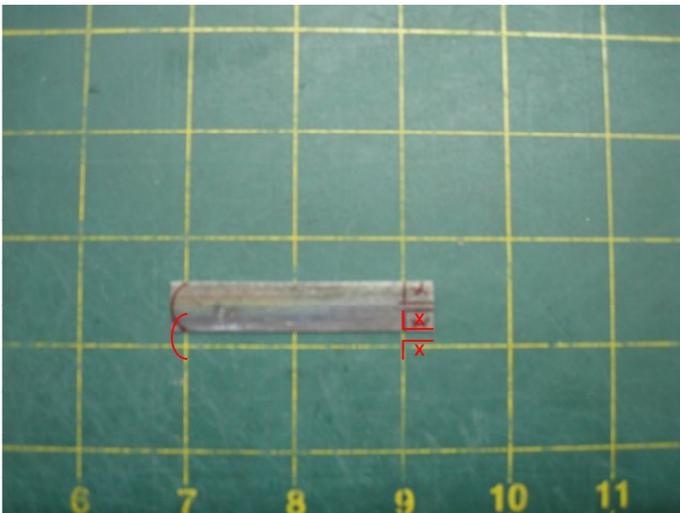
Cutting the hacksaw blade with the Dremel equipped with a cutoff wheel



Grinding the teeth off the hacksaw blade



Squaring the ends of the cutter



Mark the blade with the areas that need to be removed (areas high lighted in red)



Hacksaw blade cut to shape



Cut a piece of leather or other material 1"x $\frac{1}{2}$ " to serve as a bumper



Press the cutter through the center of the leather bumper and tie it with waxed string



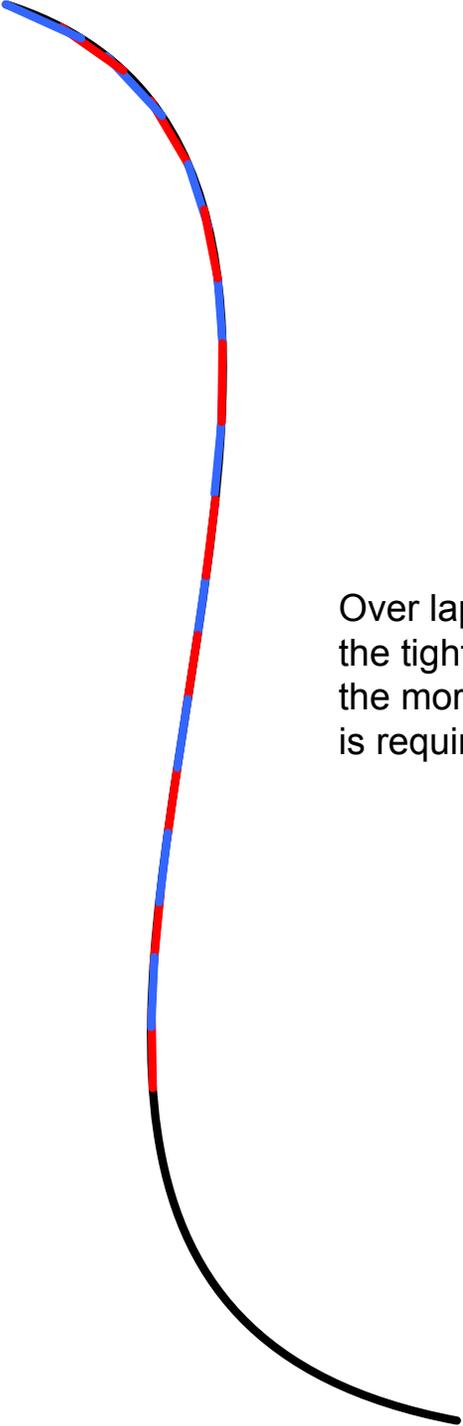
Finished Tool

Tools required to inlay wire



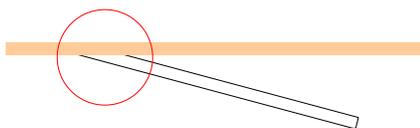
1. Flush cutters
2. Fine cutting flat file
3. Small hammer

Cutting the kerf

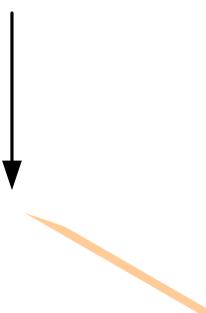


Over lap cuts:
the tighter the curve
the more overlap that
is required

When 2 or more pieces of wire join, as indicated by the red circle, cut the kerf so that it runs along side the wire that has been already inlaid.



Then file a taper at the end of the wire so that it has a smooth transition into the previously inlaid wire.

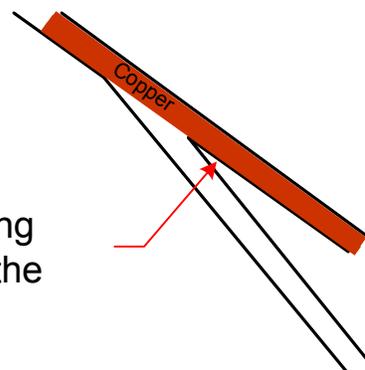


Here is the resulting joint.

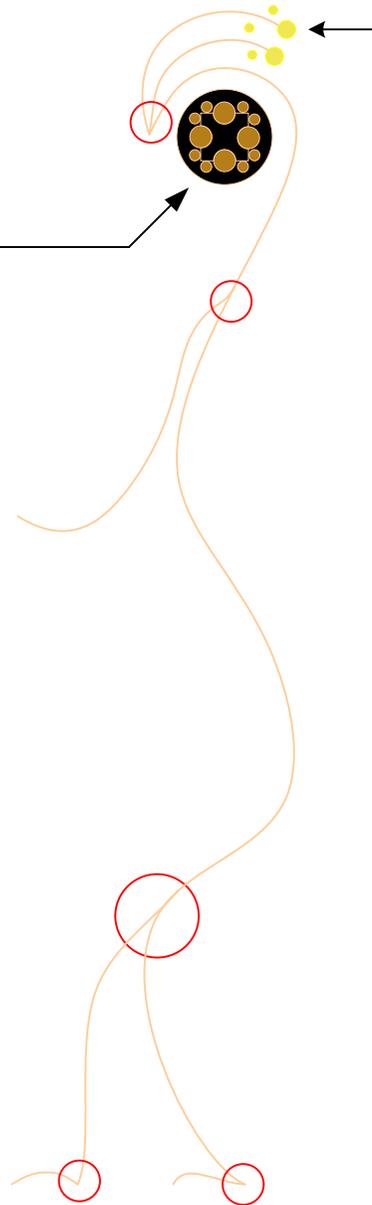


Important Detail

After cutting each kerf, inlay the wire before cutting the adjoining kerf. The inlaid wire will support the wood and prevent tear out here.



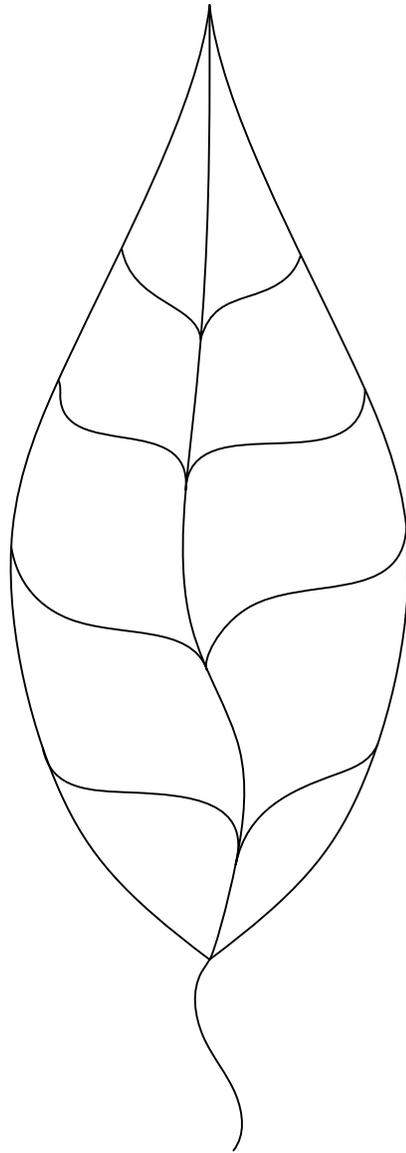
Inlay tokens which can be made by placing wood and other material in a piece of vinyl tubing with dyed epoxy. Once set, remove the vinyl tubing and cut into slices for inlay. They can be seen on the cover page of this guide.



Brass rod can be used to add a little embellishment to the inlay design.

Red circles indicate where two or more pieces of copper wire come together and should be tapered.

Try Inlaying a leaf motif.



An easy way of transferring your design from paper to the wood, is to trace the design onto tracing paper. Then position the design on the wood and tape one side down, Place a piece of graphite paper between the design and the wood and transfer it by tracing over the design.

Examples of inlay projects.

