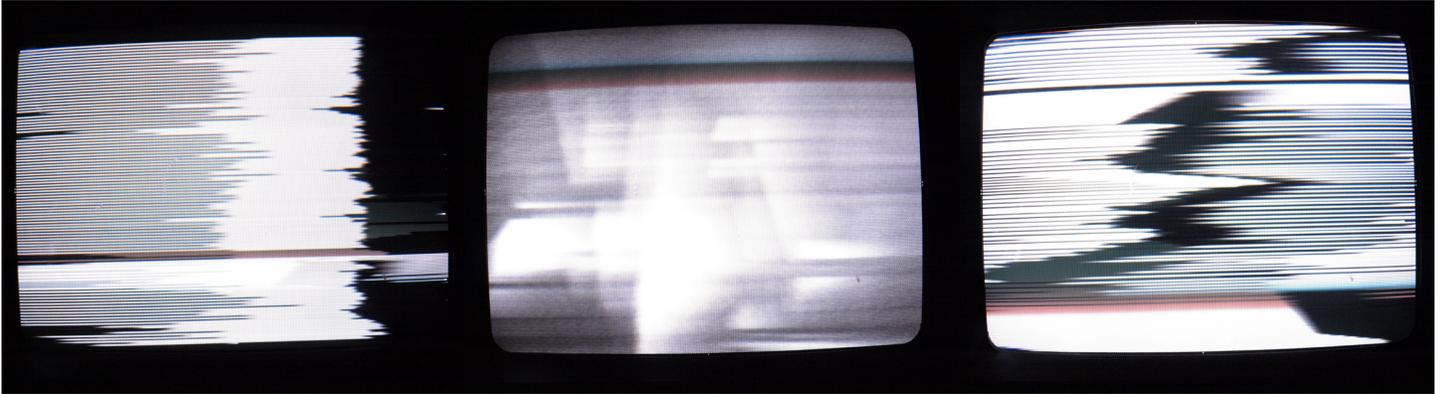
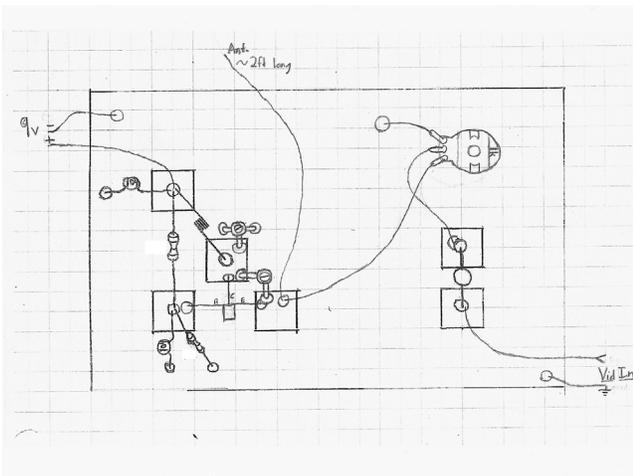


# BUILDING A DIY VIDEO TRANSMITTER



## WHAT YOU NEED

- Blank PCB Copper Plate (jameco.com part #169279)
- Capacitors: 2x 0.1uf  
1x 100u  
2x 6-70pf Variable Caps (jameco.com part #32855)
- Resistors: 27kOhm  
10kOh
- Transistor-MPSA18 (jameco.com part #210681)
- 1k potentiometer
- Small amount (~4") of magnet wire 24 AWG or close (jameco.com part #2098419)
- Sand paper
- Stranded hookup wire
- Hacksaw or dremel tool
- Headphones with 1/8" plug (from iPod or MP3 player)
- Hot glue or super glue
- Soldering Iron
- CRT "tube" TV with an antenna (the transmitter won't transmit to newer flat screen TV's)



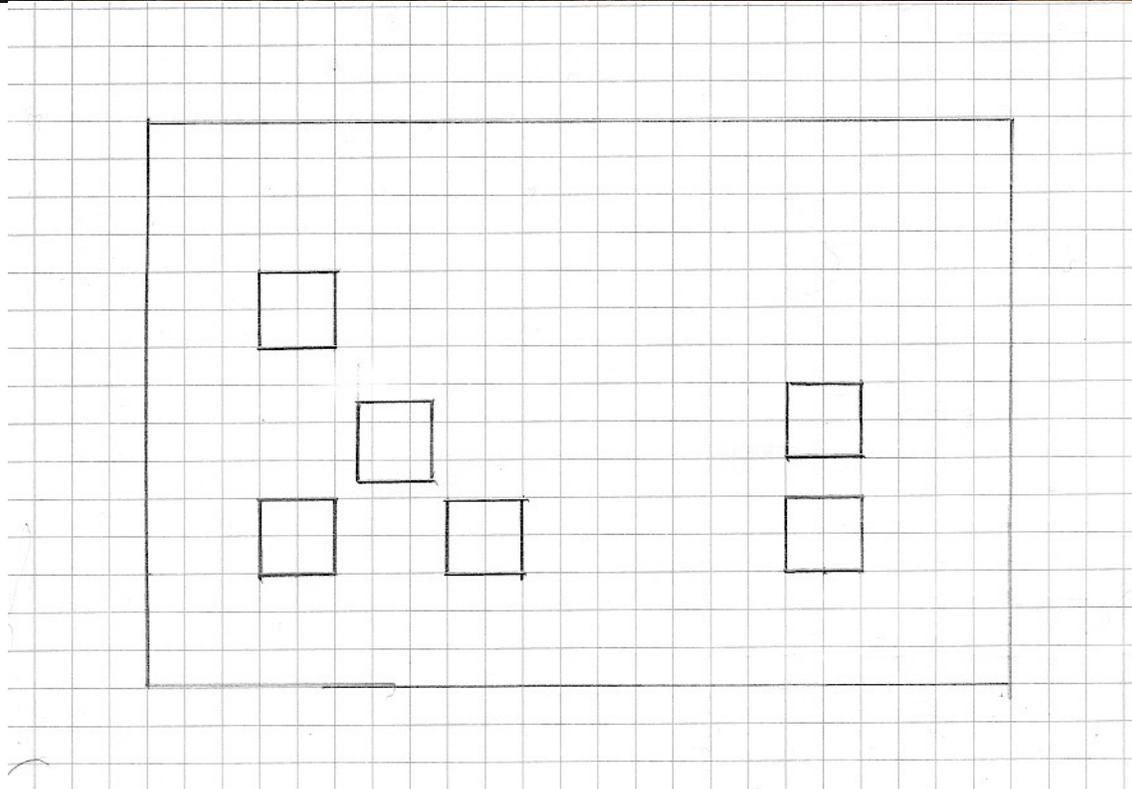
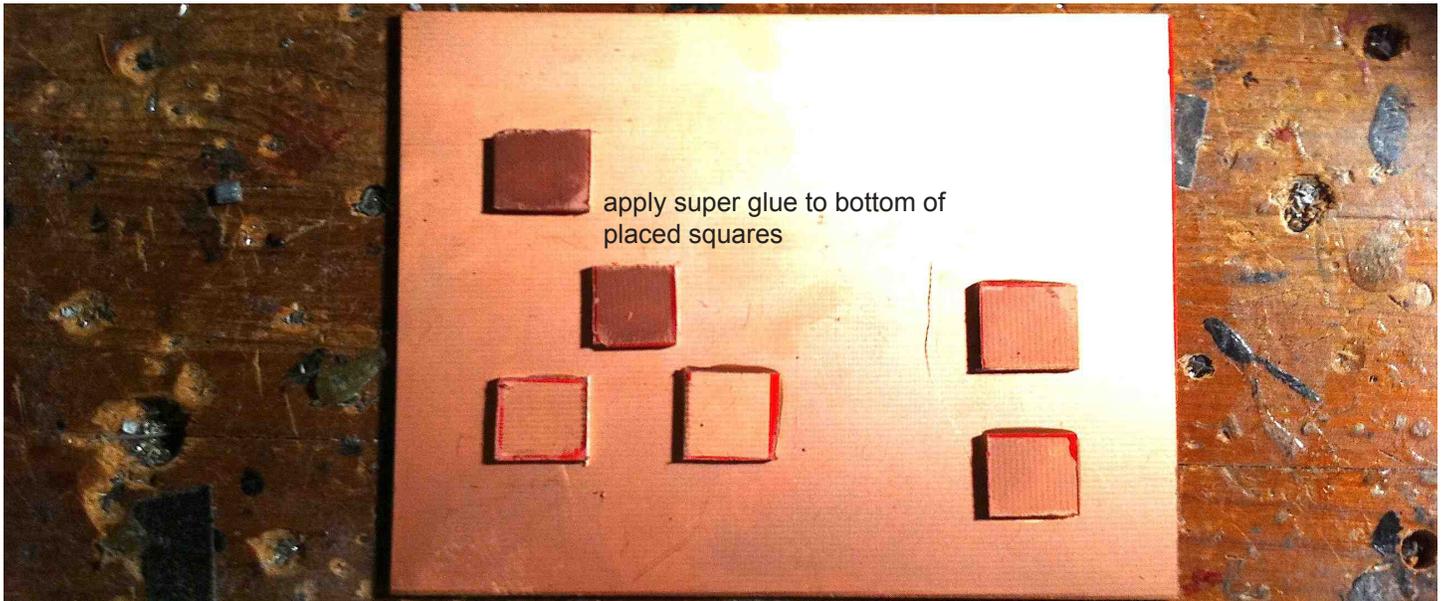
## INTRODUCTION

This micro video transmitter was designed by the DIY radio and micro TV artist Tetsuo Kogawa. His website (<http://anarchy.translocal.jp/>) is full of great info on DIY radio, and all credit for this circuit goes to him. The transmitter can be used to transmit a relatively clear video signal or abstract visualizations, depending on the desired output. It will usually function at a distance of about 20 feet. If you have any previous experience with electronics or circuit building, you will notice that this method of building is different. The circuit is constructed on top of a copper "ground plate" which is common in radio applications. This tutorial uses step-by-step sketches and photos created based on Tetsuo Kogawa's design.

## BUILDING THE TRANSMITTER

### 1. PREPARING THE COPPER PLATE

- Take the bare copper plate and cut off 1 inch of material using a dremel tool or hacksaw.
- Use this material to cut out 6 square  $\frac{1}{2}$  in. x  $\frac{1}{2}$  in. pieces.
- Arrange the 6 pieces on the larger copper plate as shown in the image below...

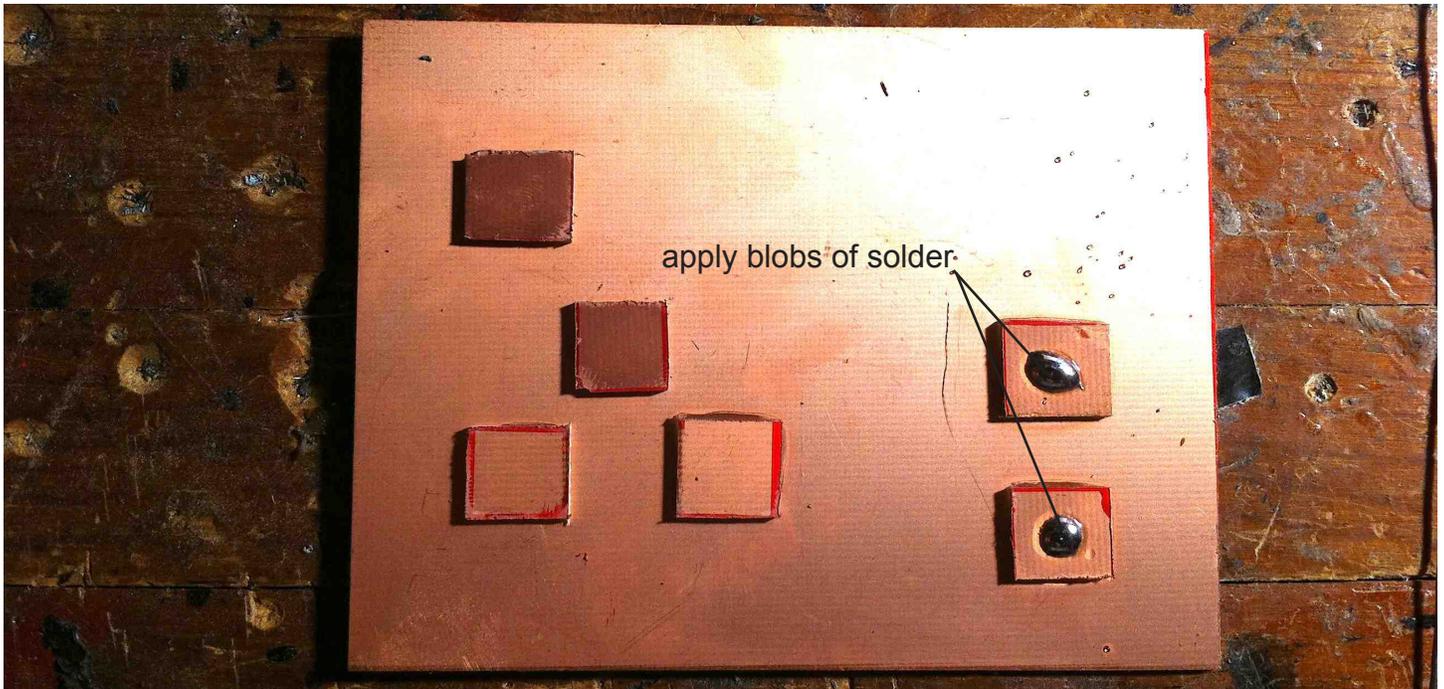


**\*\*NOTE\*\*** Be sure to arrange them so that all the component leads will be able to reach the squares. Look ahead to see what components will go where so you know exactly how to space them.

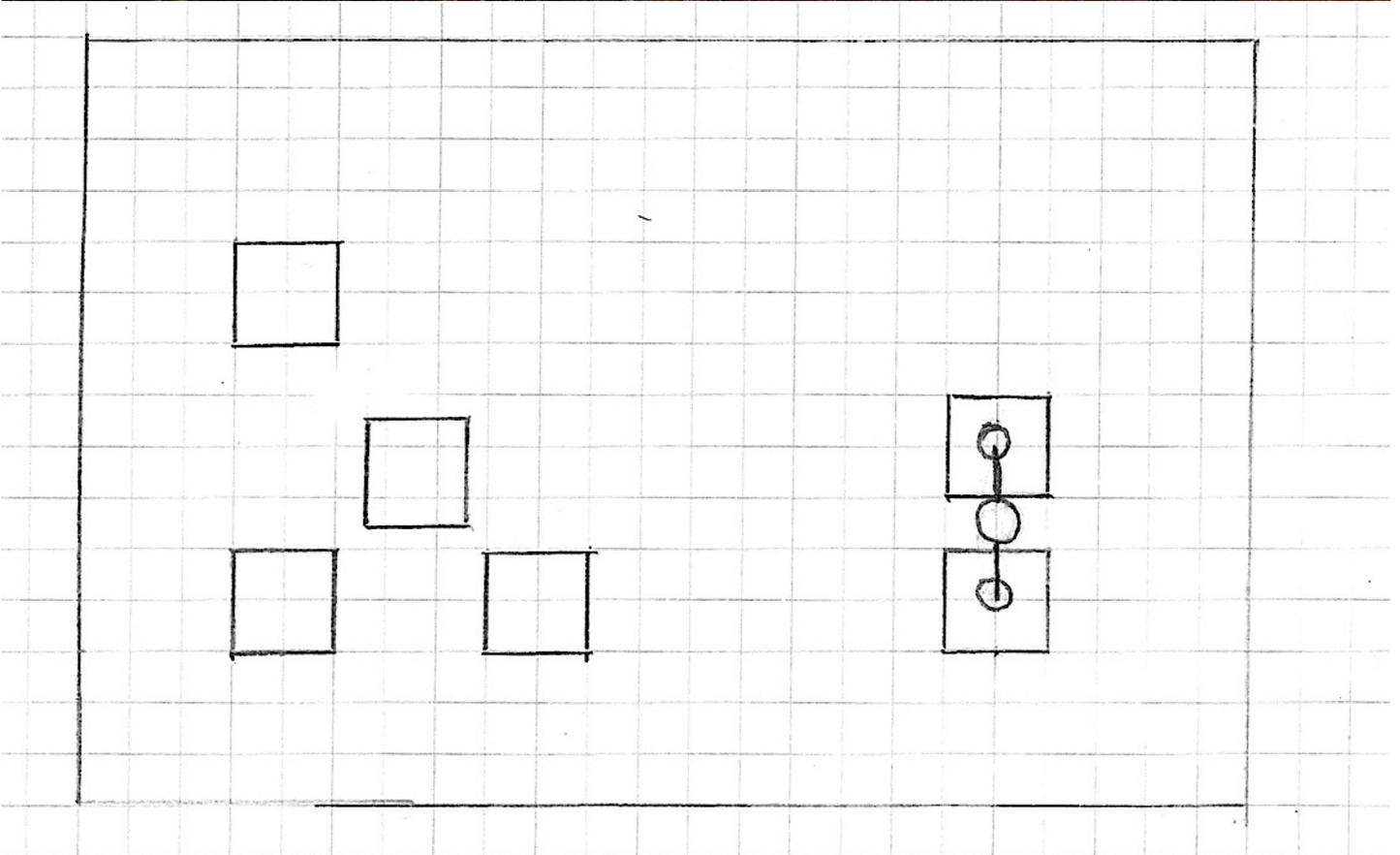
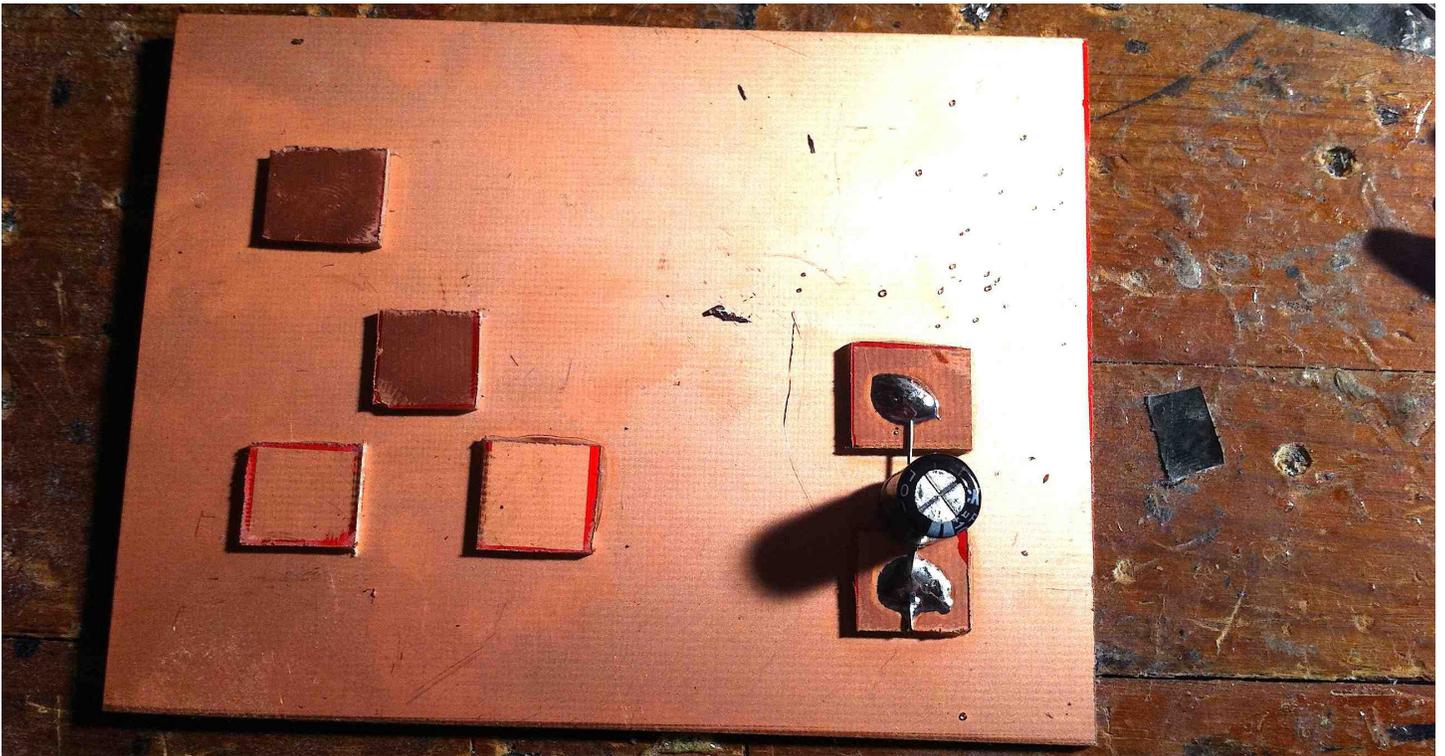
- Once you have them arranged, put a dab of hot or super glue on the bottom of each square and stick them in place on the copper plate.

## 2. ADDING THE 100 $\mu$ F CAPACITOR (the cylinder with “100 $\mu$ F” written on the side)

- Melt a blob of solder onto the two squares furthest to the right. To do this, apply your iron to each square to transfer heat for an extended period of time until the solder flows onto the surface.



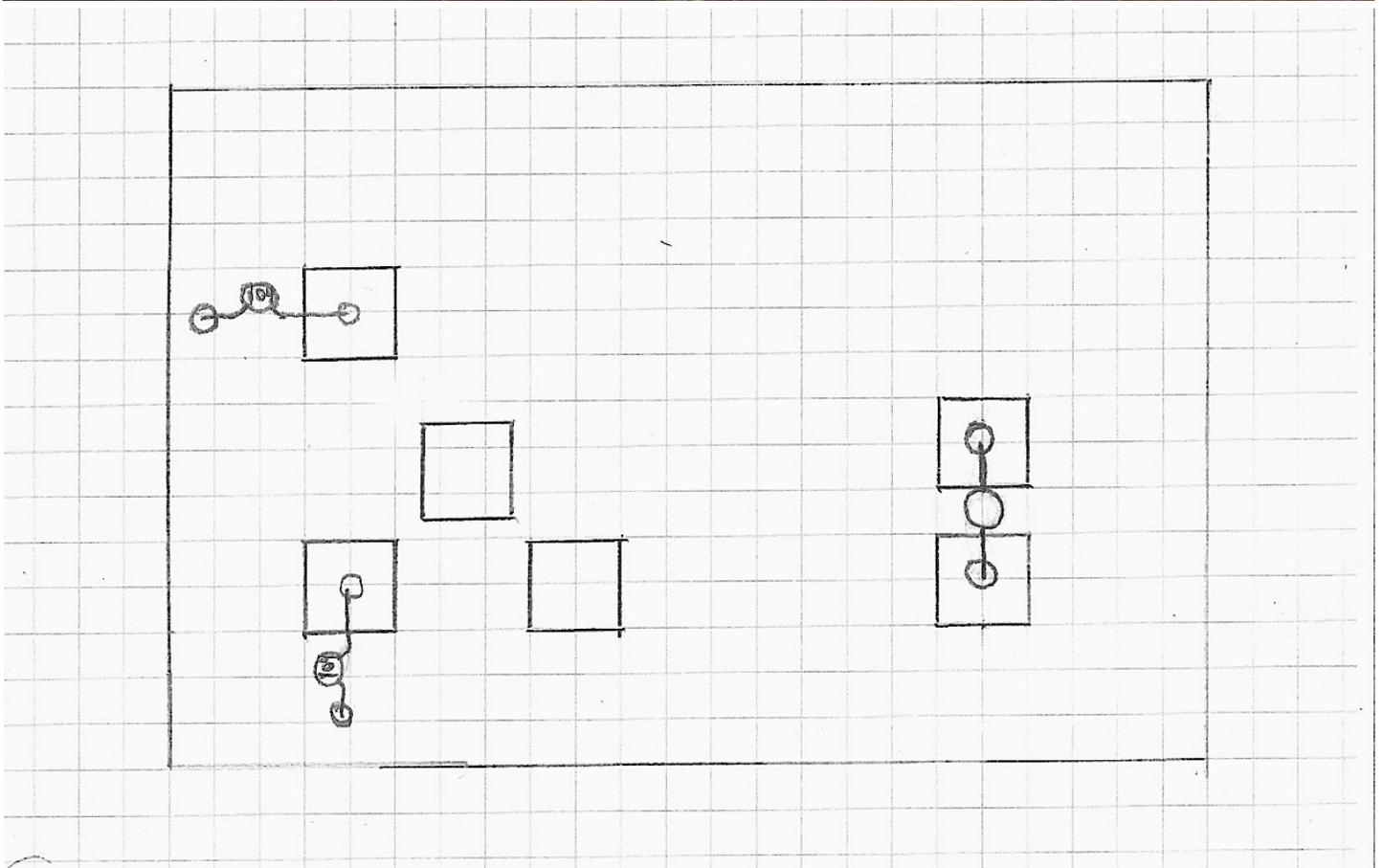
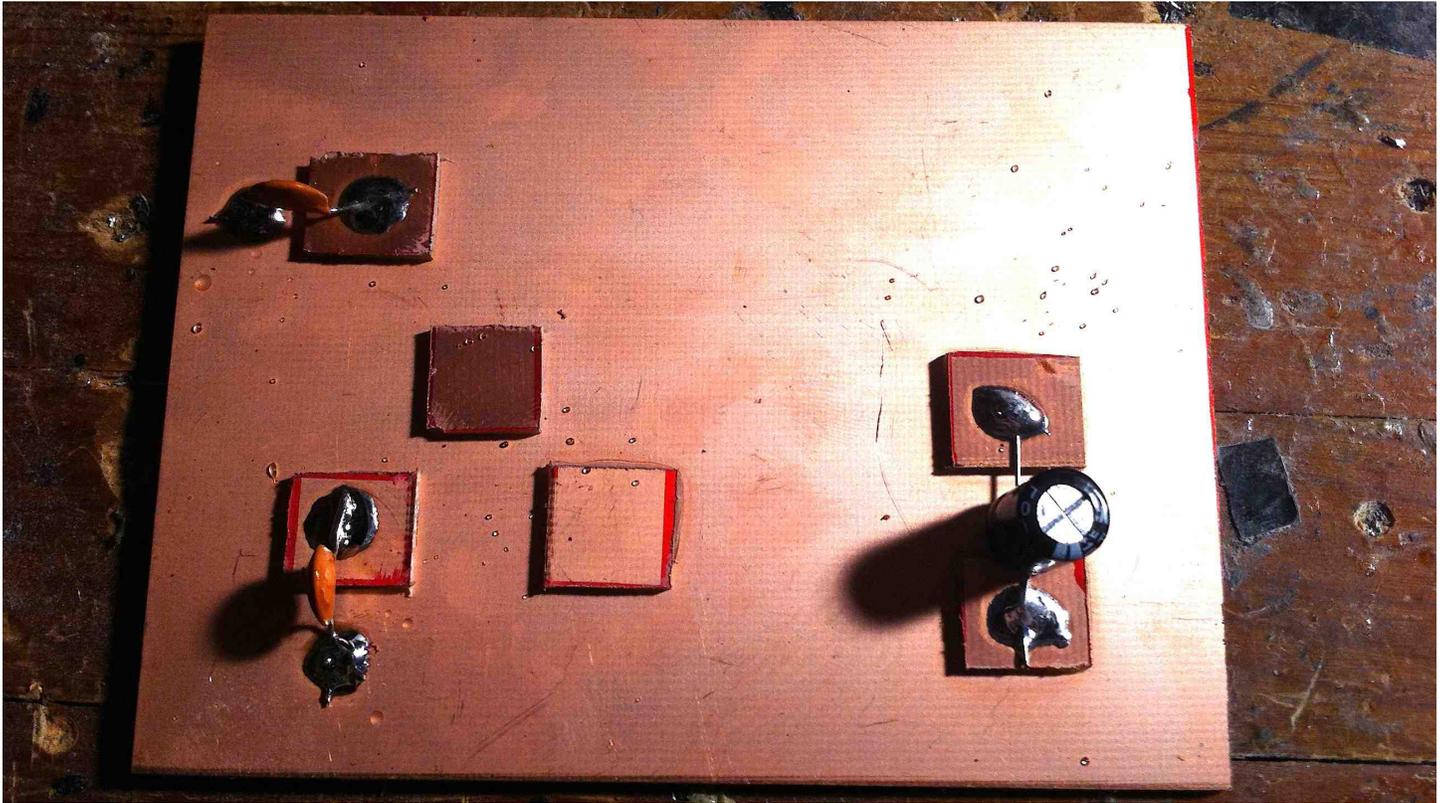
- Bend the legs out of the 100 $\mu$ f capacitor and straddle them between the two squares making sure that the leads are only touching the two small squares (not touching the ground plate).
- Cut the excess off of the leads.
- One at a time, re-heat the solder blobs and place the capacitor leads into them, allowing them to cool down until they stay in place.



\*\*\*NOTE\*\*\* - This capacitor is polarized meaning that it has to be facing in the appropriate direction. Make sure you solder the NEGATIVE lead to the LOWER of the two squares. The negative side has the shorter lead and a vertical stripe along the side of the capacitor.

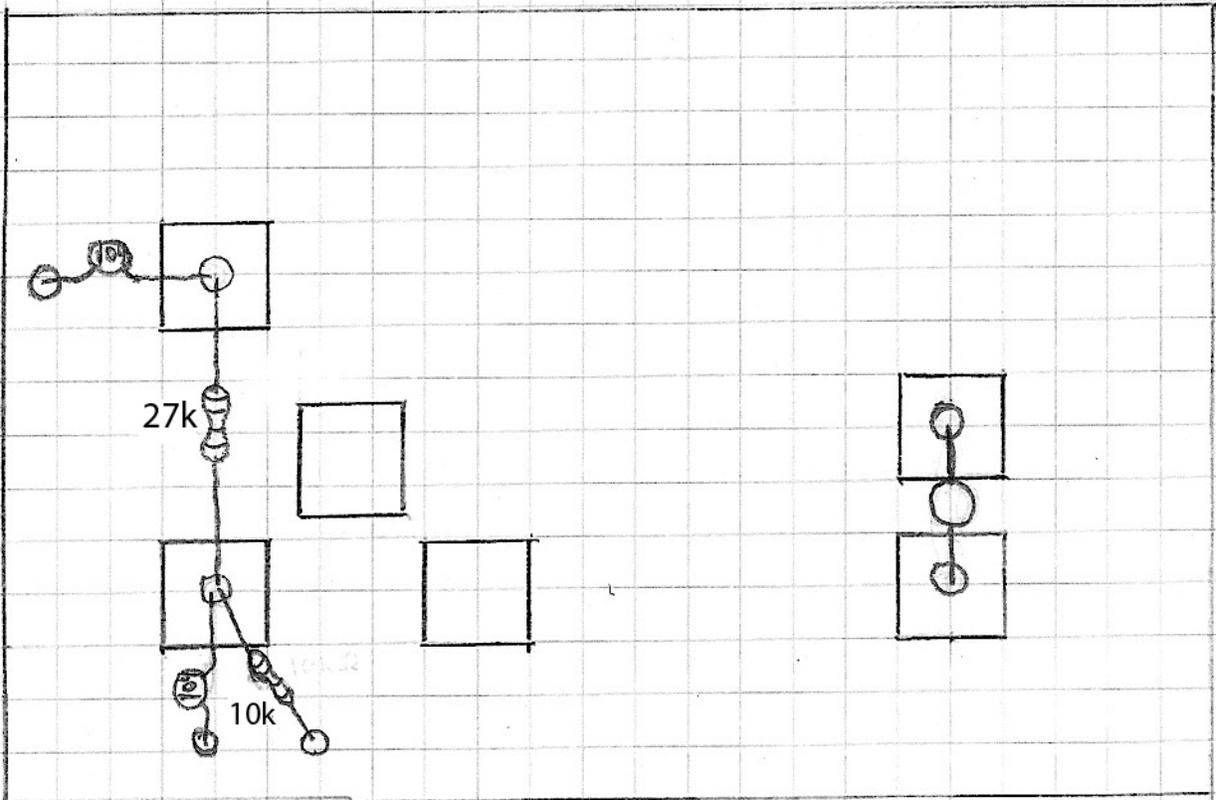
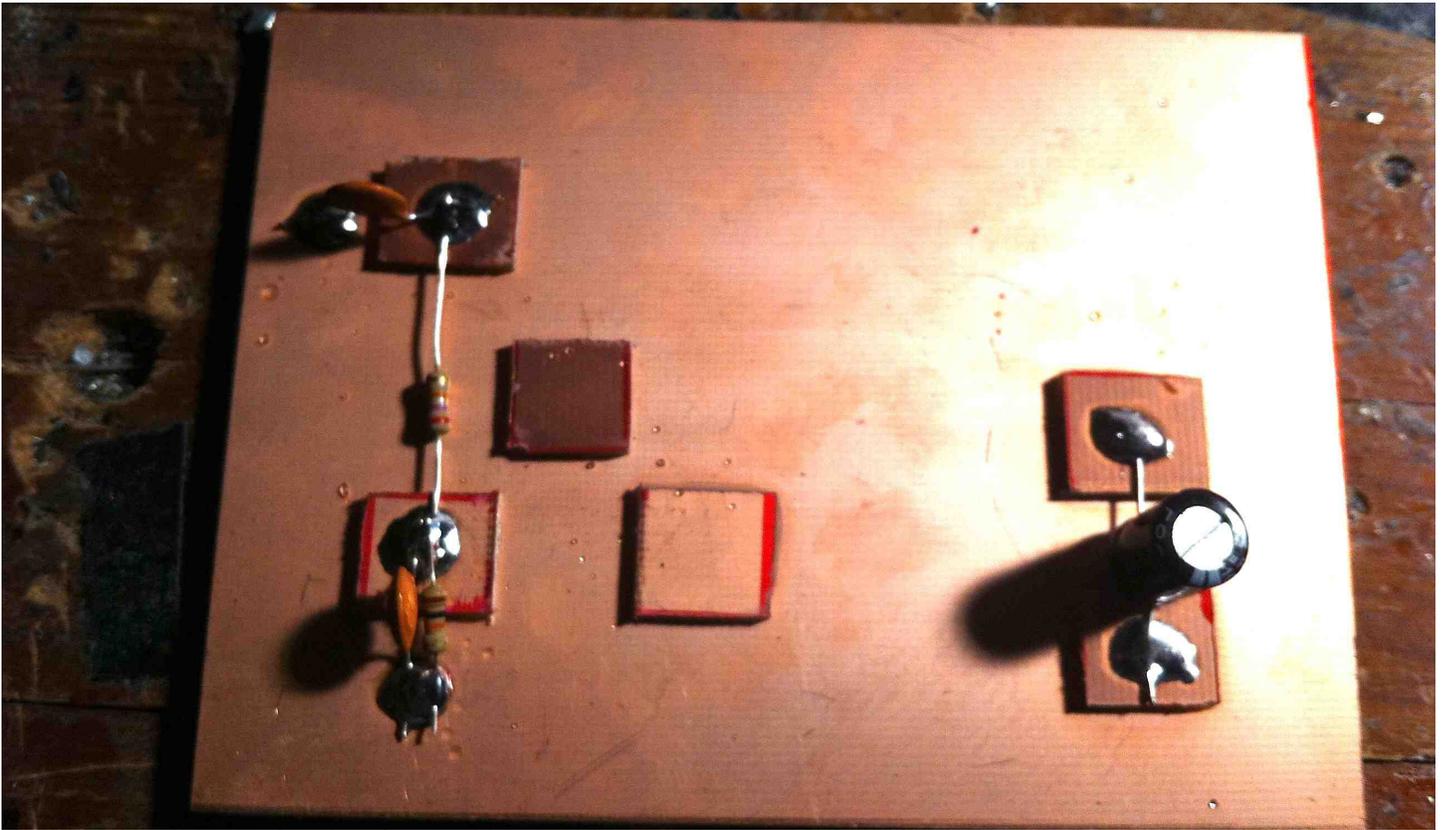
### 3. ADDING THE .1 $\mu$ F CAPACITORS (the two discs with "104" written on them)

- These capacitors will be positioned between the upper and lower left most squares and the ground plane. Melt a blob of solder on these two squares and two blobs on the ground plane beside each. (Reference the pictures for exact positioning).
- Re-heat the blobs and position the capacitors accordingly as in step 2.



#### 4. ADDING THE RESISTORS (10k and 27k)

- Solder the 10k resistor (brown, black and orange stripes) between the bottom left square and ground.
- Solder the 27k resistor (red, violate and orange stripes) between the two left squares.



## 5. ADDING THE COIL

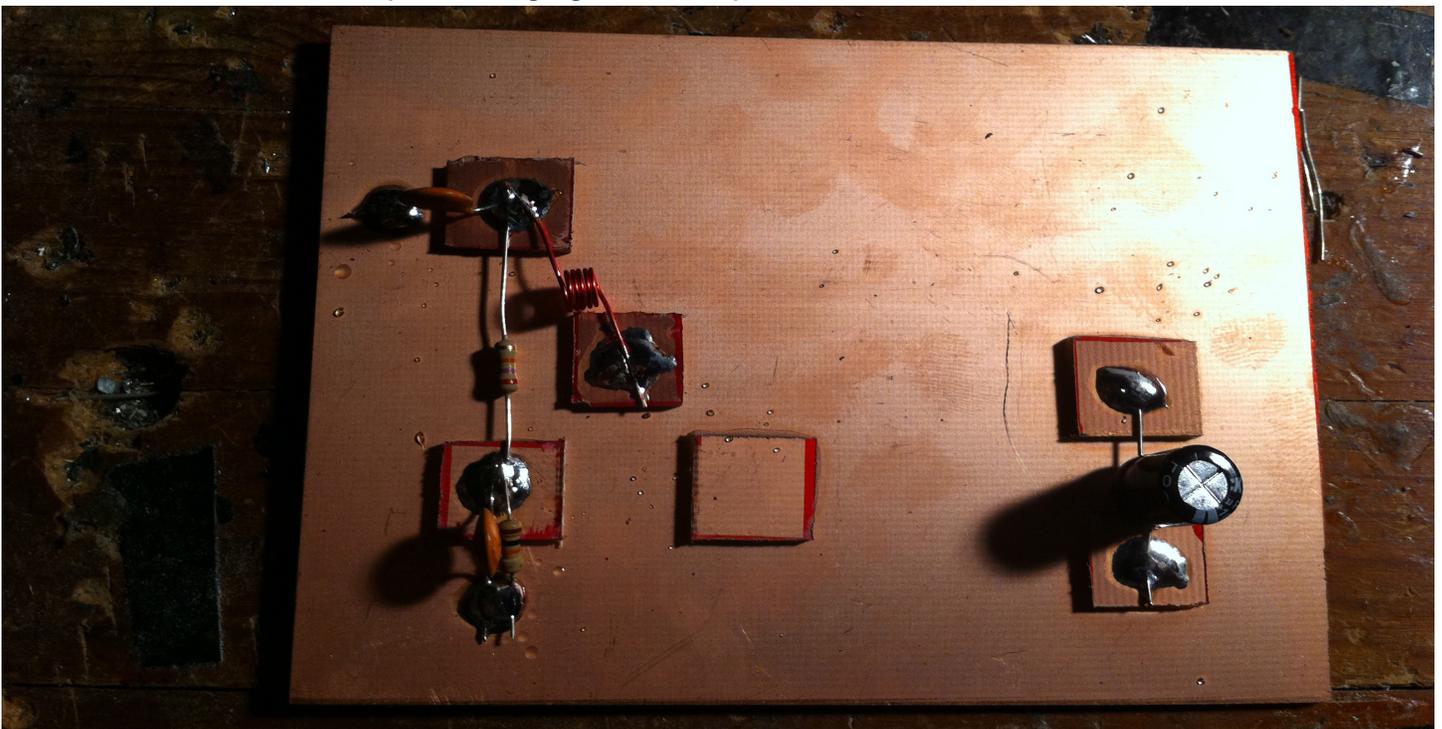
- Cut about 4" of the magnet wire (24 AWG or close)
- Use the plug from your headphones to wrap the wire around. Make 5 turns.

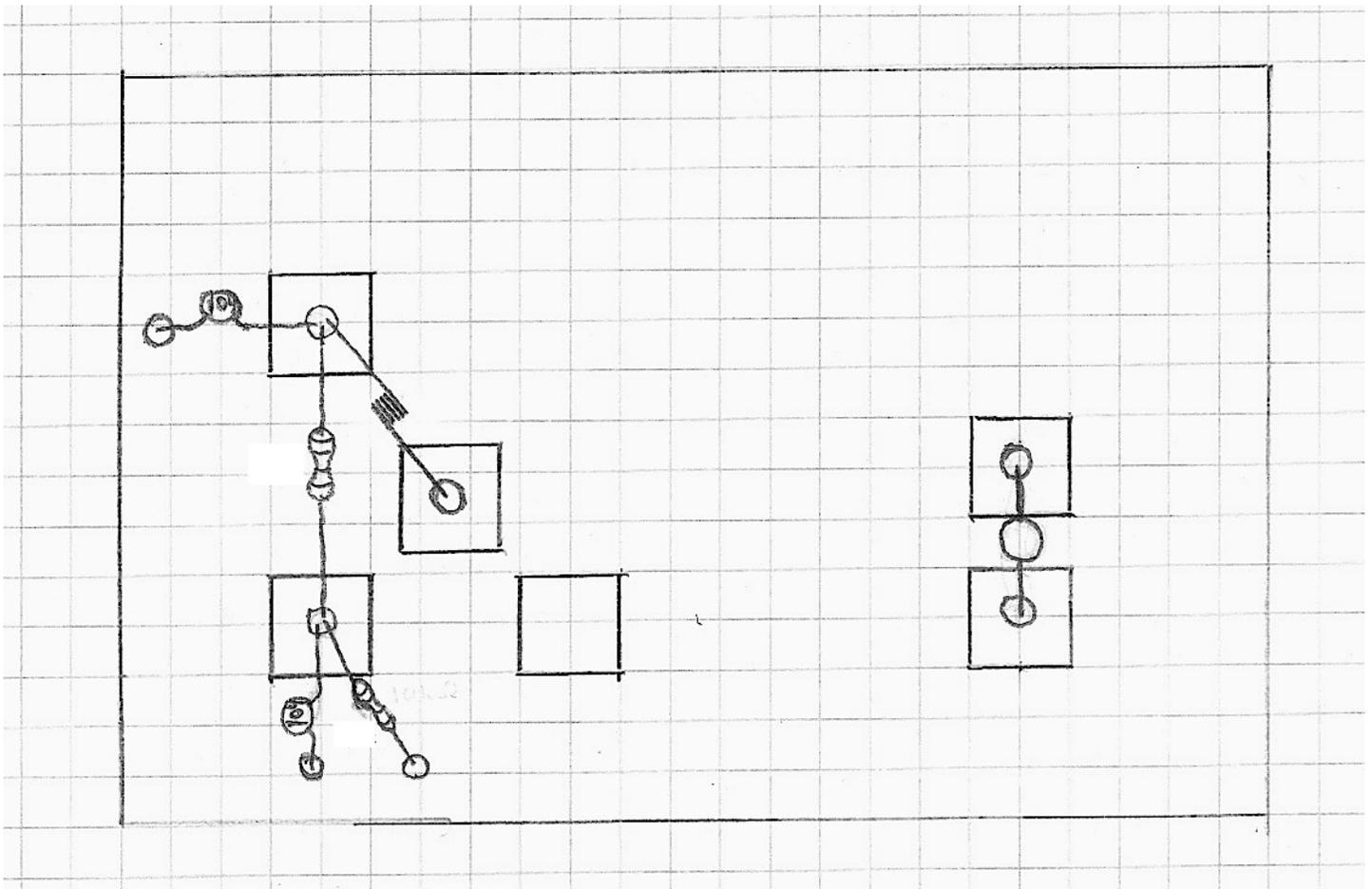


- With the wire still wrapped around the headphone plug, take a small piece of sand paper and rub off the colored insulation of each end until the bare copper is exposed (If the copper is not exposed, you won't be able to make a connection).



- Solder the coil into place bridging the two squares as seen below





## 6. ADDING THE VARIABLE CAPACITORS

**\*NOTE\*** Once the component leads start to pile up on each other on each square, it helps to add additional solder.

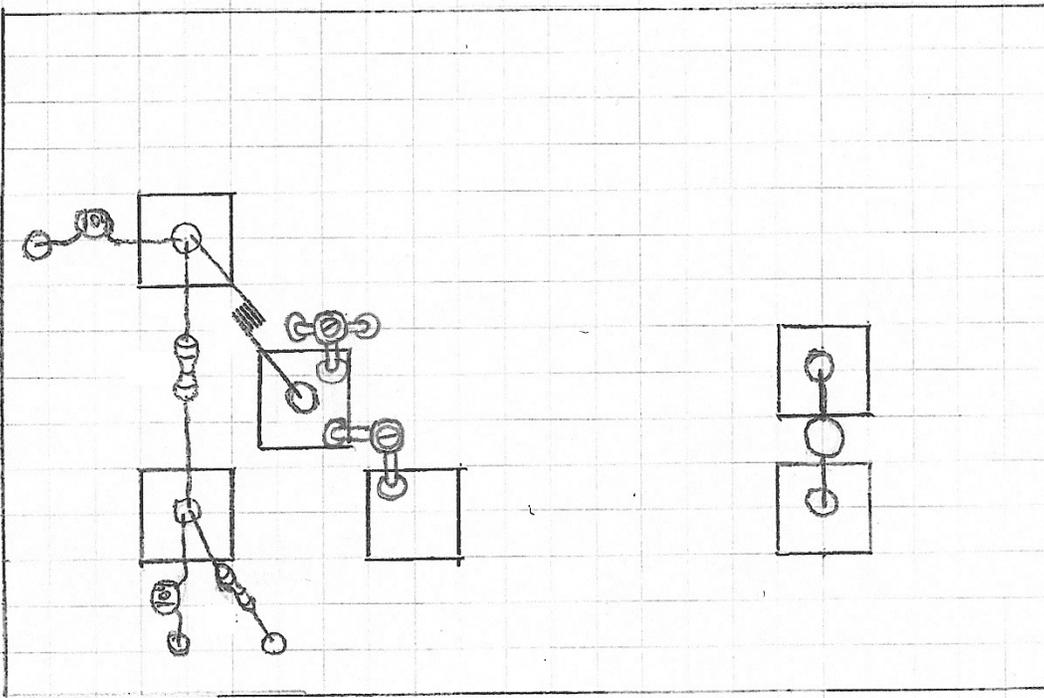
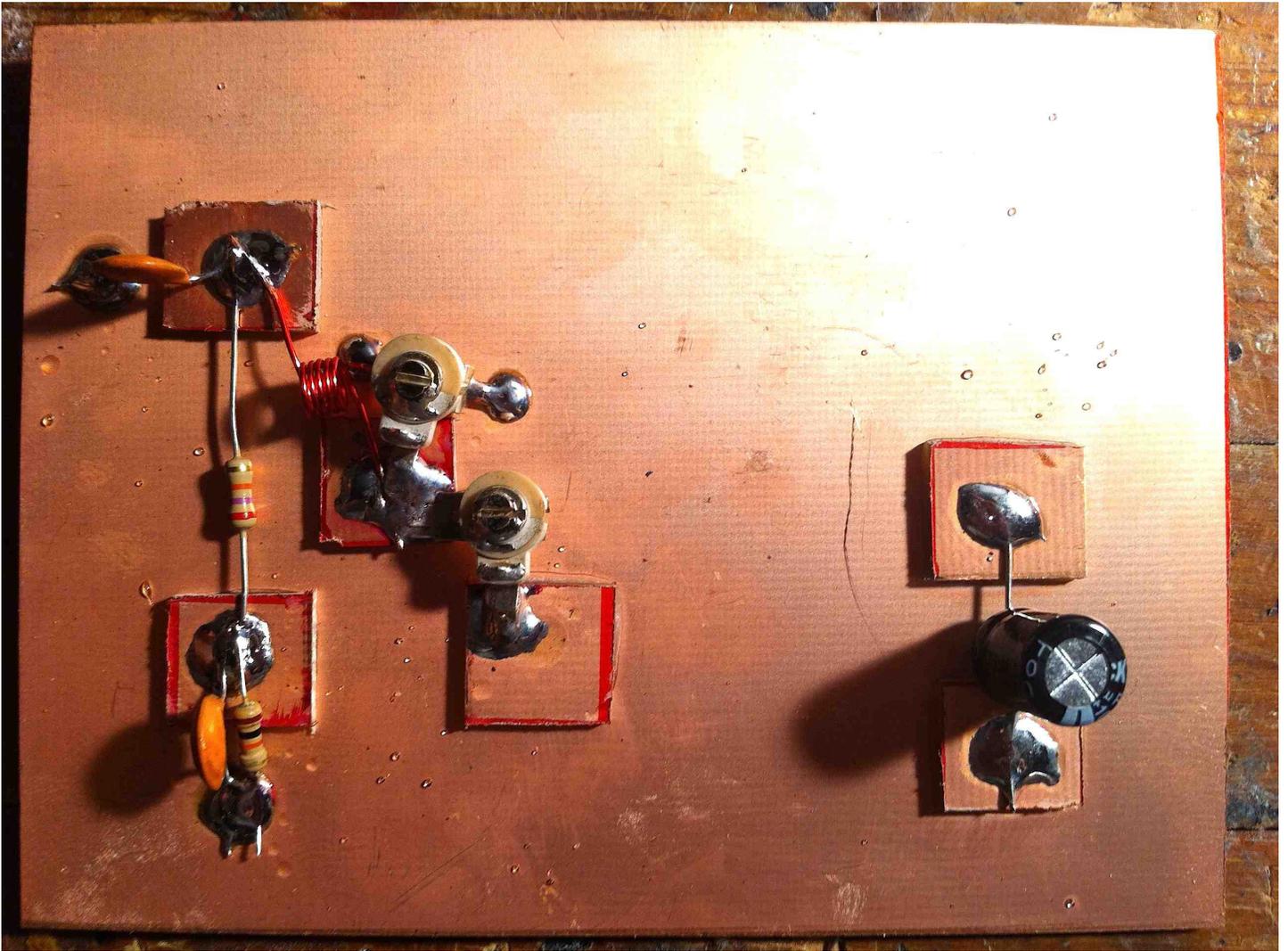
- The first variable capacitor will be soldered between the top square of the three that make up the bottom triangle and the ground plate.
- Solder the “nose” of the capacitor (the lead that is different from the other two) to the square, and the other two side leads to the ground plate.

**\*NOTE\*** You will have to bend the leads in a certain way in order to get everything positioned properly. Just play around with it till you get it.

- The second variable capacitor will bridge between top and right squares of the triangle. Only two leads are needed here so use your clippers to remove one of the side leads, leaving the nose and only one side. (See the pic below)



The variable capacitors soldered into place...

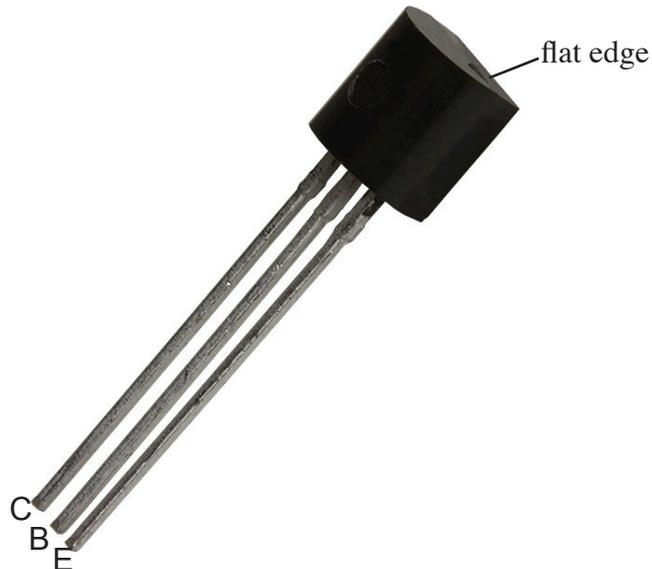


## 7. ADDING THE TRANSISTOR (MPSA18)

**\*NOTE\*** This transistor is sensitive to heat and can be destroyed by the heat from your iron. Be sure to follow the necessary precautions below. But don't worry if you do kill one, they are only ~\$.10 a piece.

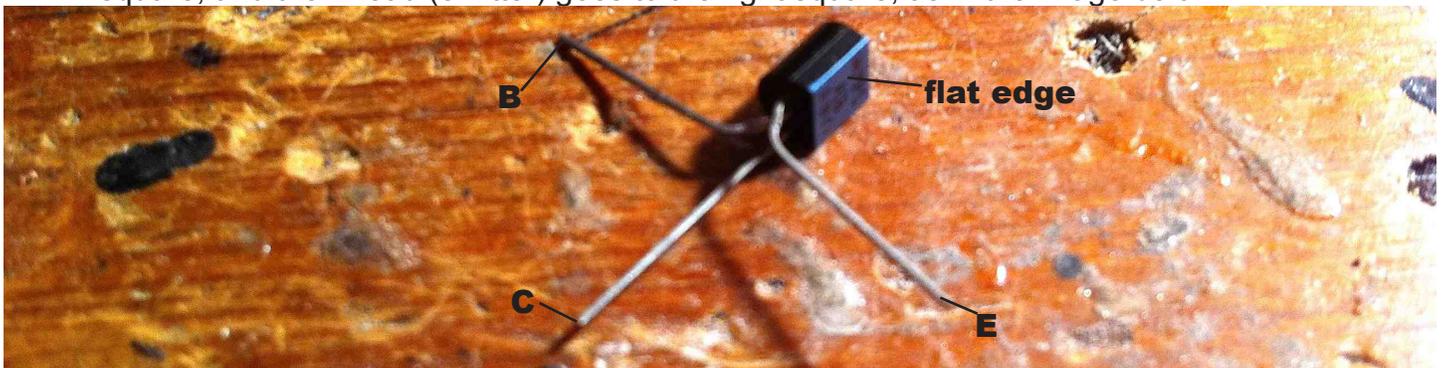
- The three leads of the transistor all do specific things and must go to the appropriate places. Here is a pic of the orientation of this transistor...

**C=Collector B=Base E=Emitter**



- Each lead from the transistor will be soldered to the three different squares that make up the triangle, so you will have to bend the leads accordingly.

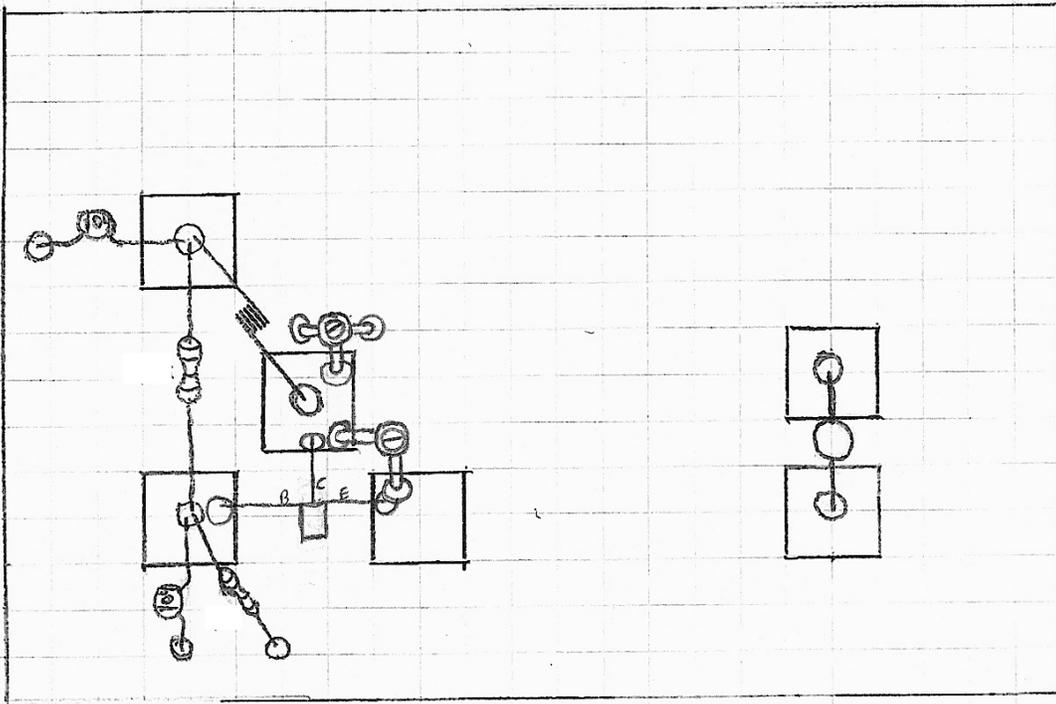
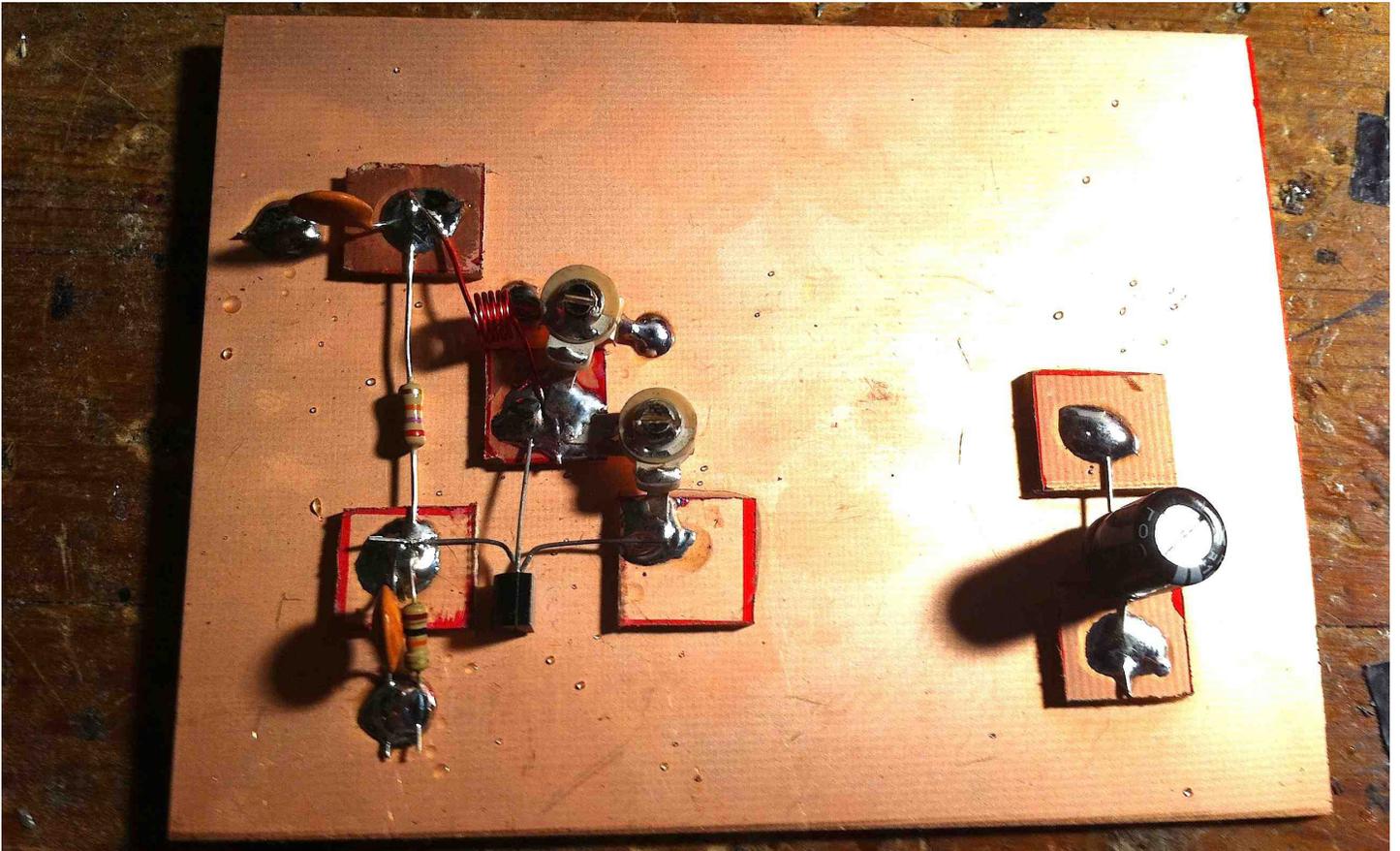
- The B lead (base) goes to the left square of the triangle, the C lead (collector) goes to the top square, and the E lead (emitter) goes to the right square, as in the image below.



- Before you solder the transistor in place, you need to have a "heat sink" attached to protect it. This will draw some of the heat from the transistor to something else. To do this, simply take an alligator clip and attach it to the lead you are soldering...

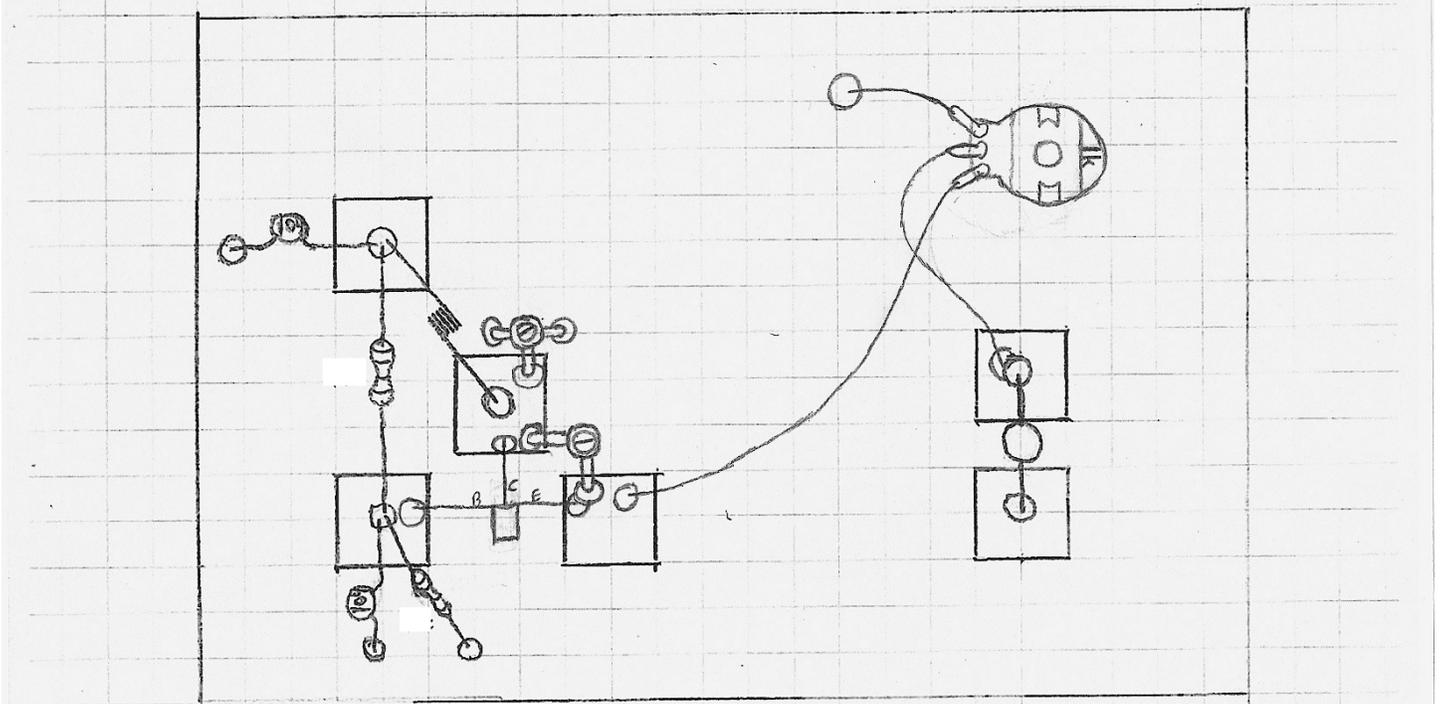
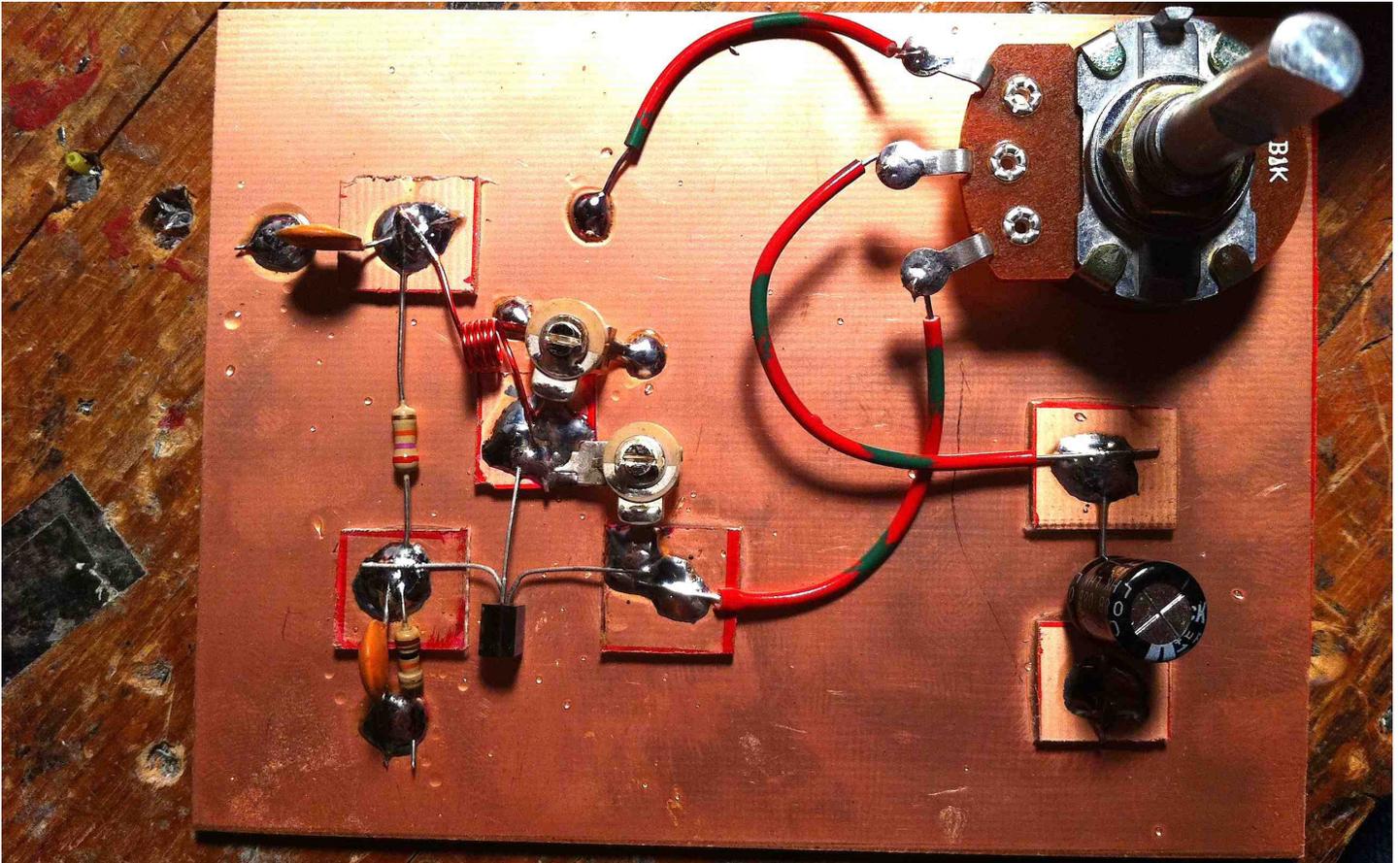


- Solder each lead in place attaching the clip lead to each one before doing so.



## 8. ADDING THE 1k POTENTIOMETER

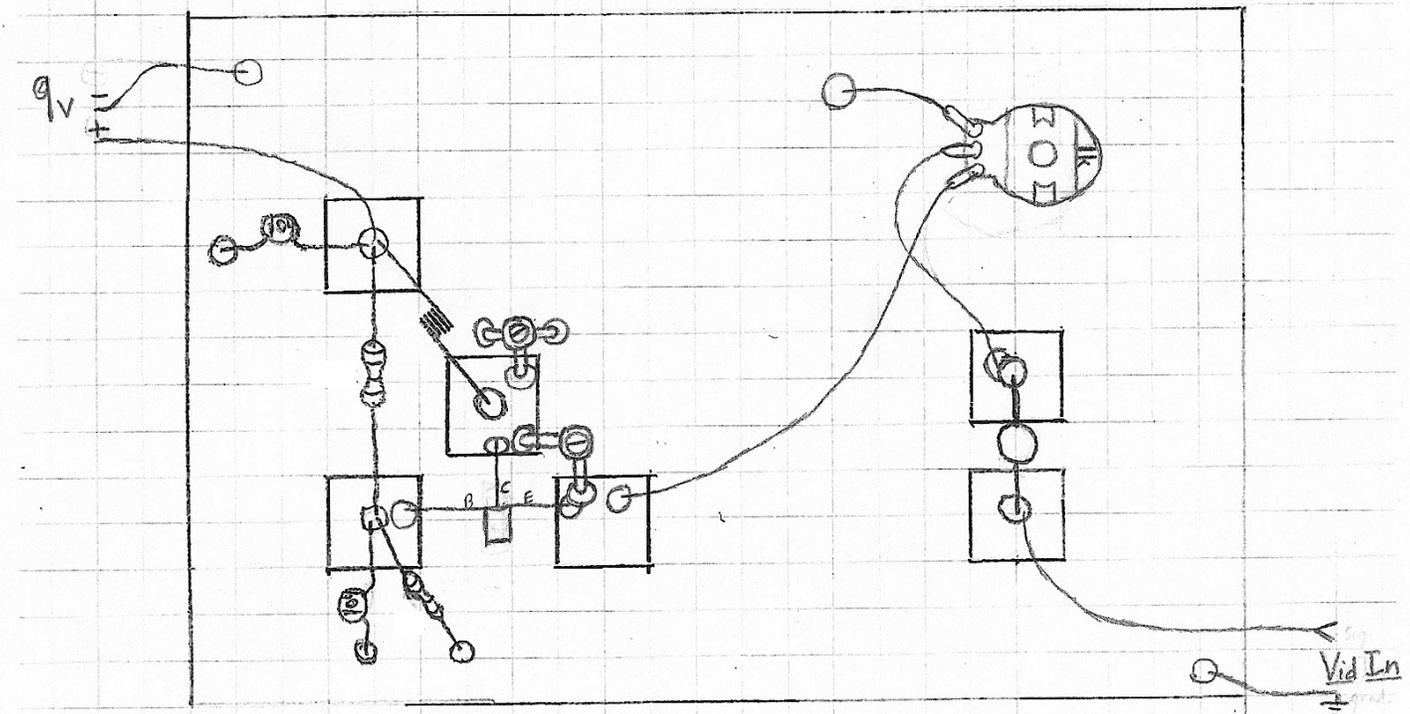
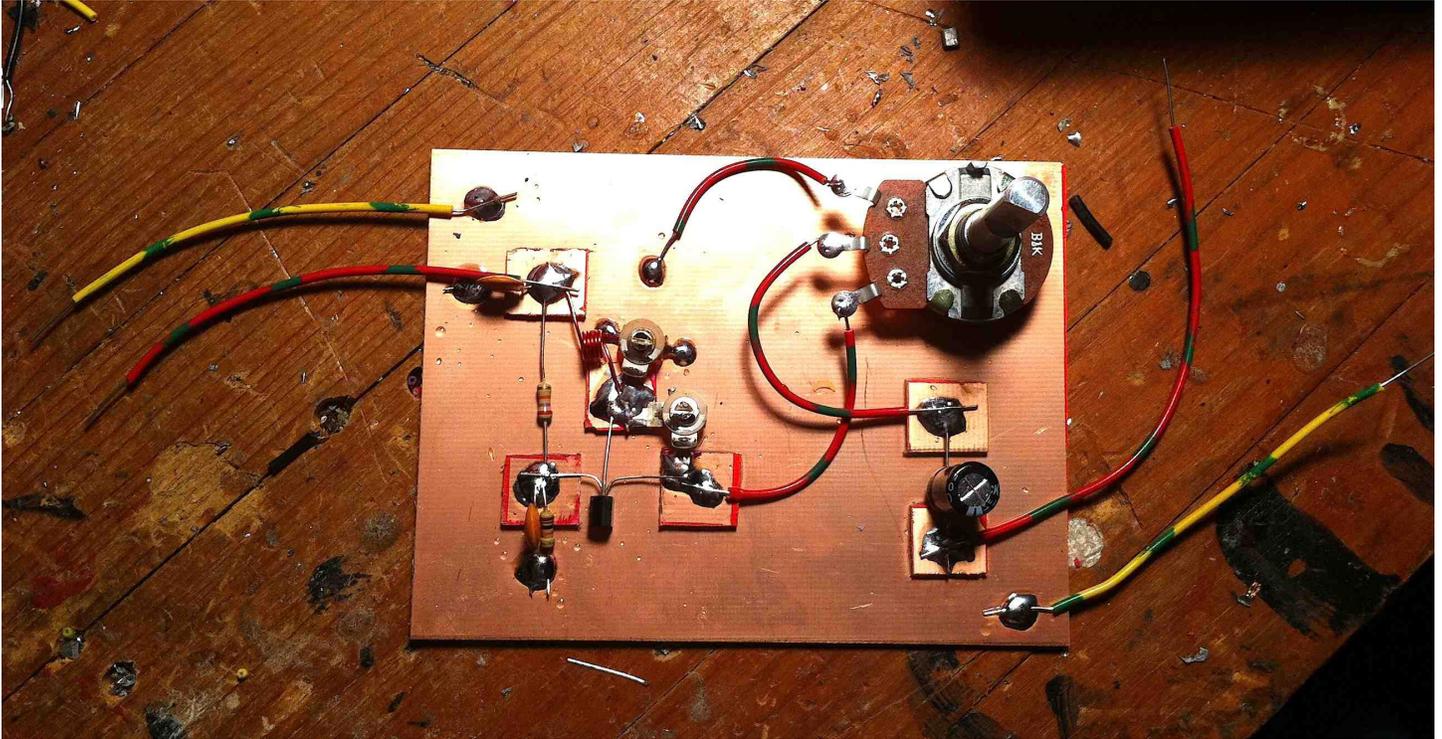
- Put a bit of super glue or hot glue on the bottom of the potentiometer and stick it to the upper right corner with the leads facing towards the left of the plate.
- Take a small amount of stranded hookup wire and strip both ends. Solder one side to the upper most lead and the other side to the ground plate.
- Repeat the process by connecting the middle lead of the potentiometer to the upper most of the two right squares. Then connect the lower lead of the potentiometer to the right most square of the triangle.





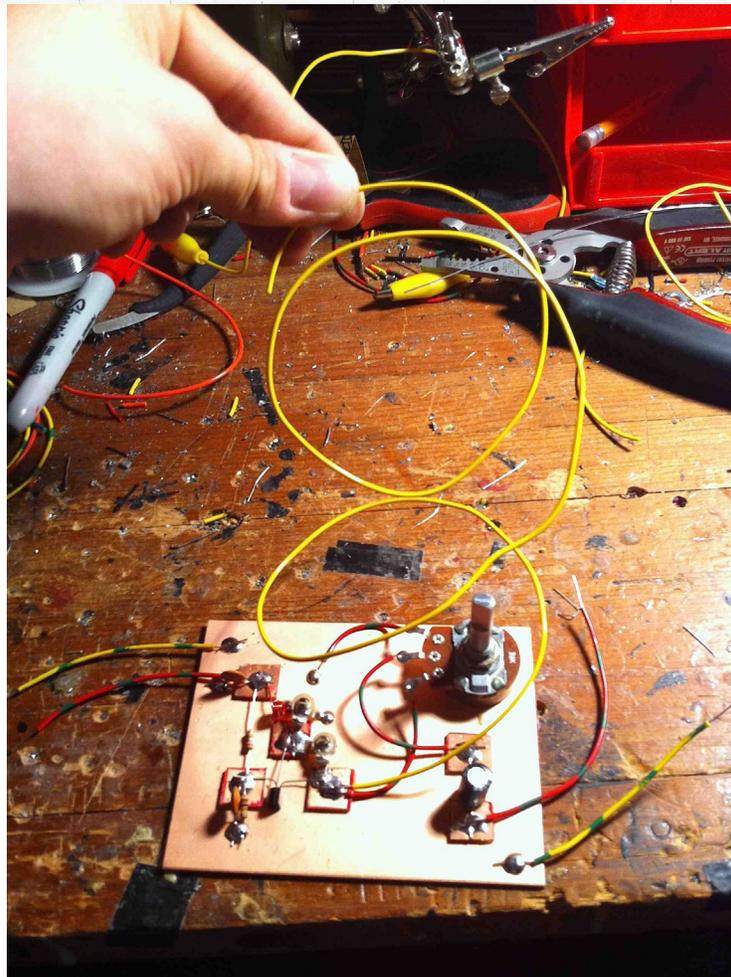
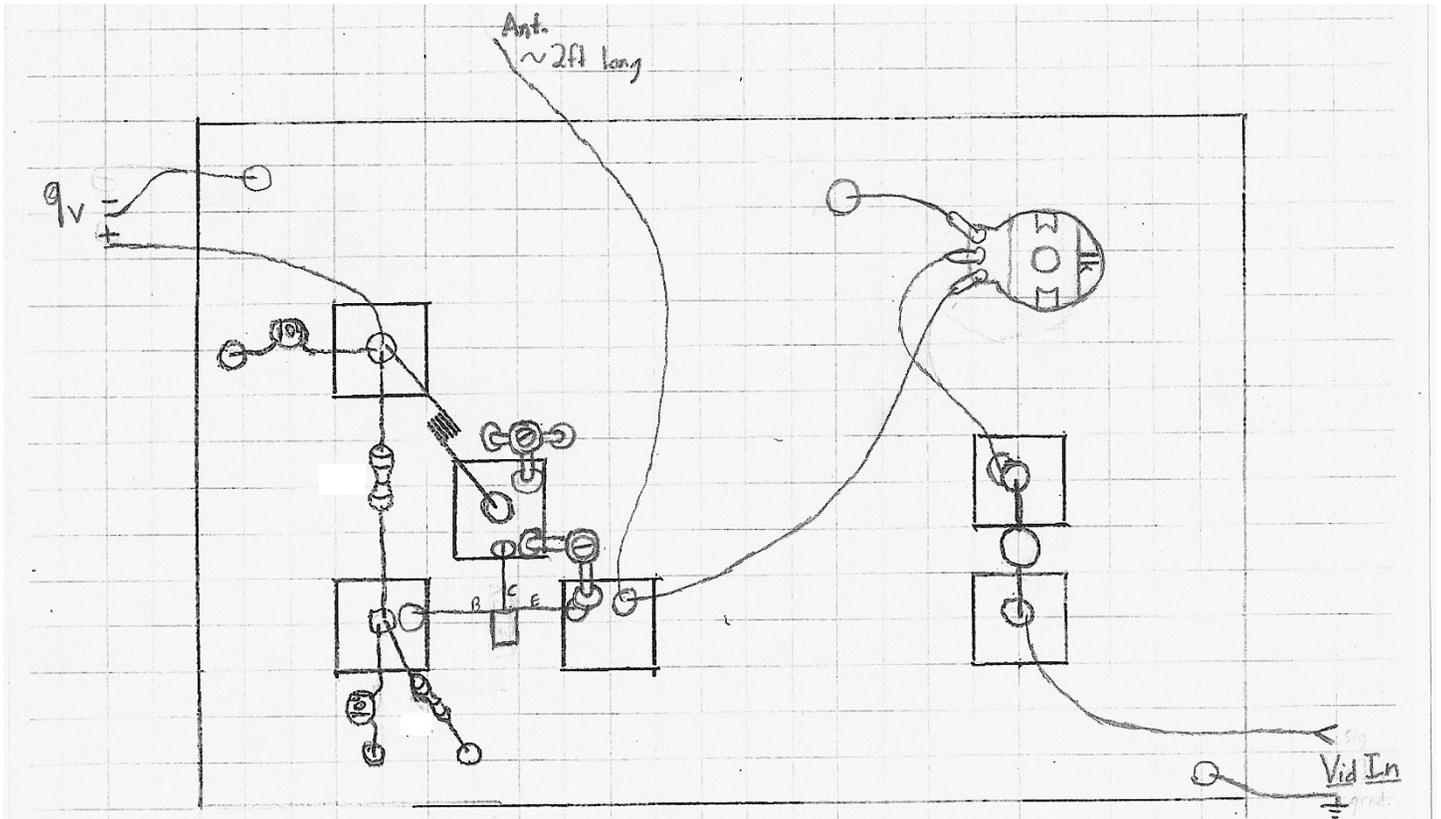
## 10. ADDING THE BATTERY INPUT WIRES

- Just like the last step, cut two short pieces of wire and strip both ends.
- Solder one of the wires to the ground plate (this will be the negative input from your 9volt battery).
- Solder the other wire to the upper left square (this will be the positive input from your 9volt battery).



## 11. ADDING THE ANTENNA

- Cut about 2 feet of wire and strip one end.
- Solder the wire to the right most square of the triangle.



## OPERATING

- Find a video source (DVD player, VHS player, iPod etc.) that has a composite video output.
- Use an alligator clip lead to connect the ground from your video source to the ground input of the transmitter. Using another alligator clip lead, attach the signal output from your source to the signal input of the transmitter.
- Use two more alligator clips to connect the positive and negative of a 9v battery to the positive and negative battery inputs of the transmitter.
- Turn on a CRT "tube style" TV and tune it to channel 2 or 3.
- Turn your potentiometer to somewhere around 50%
- Using a small screwdriver, tune the upper most variable cap slowly until you see the TV make a flicker or change.
- Tune the second variable capacitor until you start to see some strong signal coming through
- Tune the potentiometer and the two variable capacitors until you get the imagery you wan

Send any comments, questions or suggestions to [yaktronix.online@gmail.com](mailto:yaktronix.online@gmail.com)

