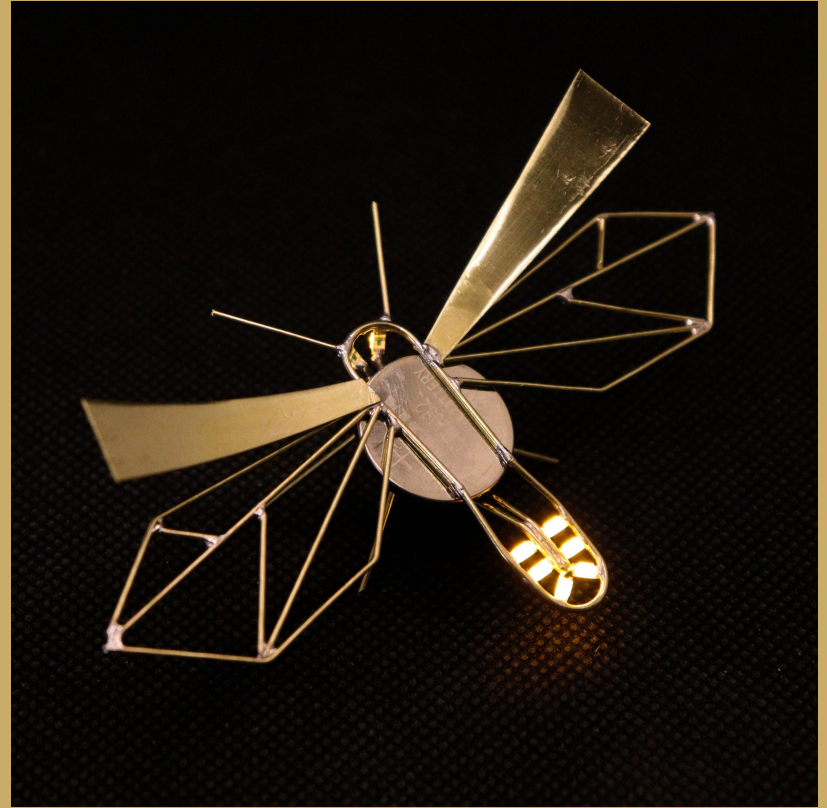
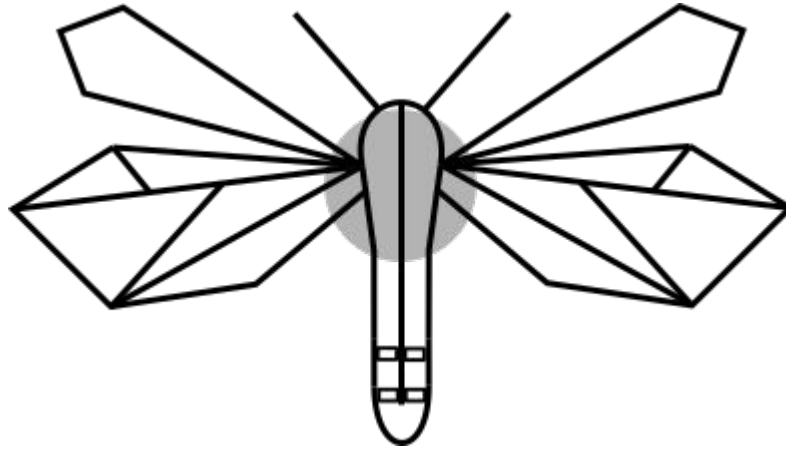


# Firefly

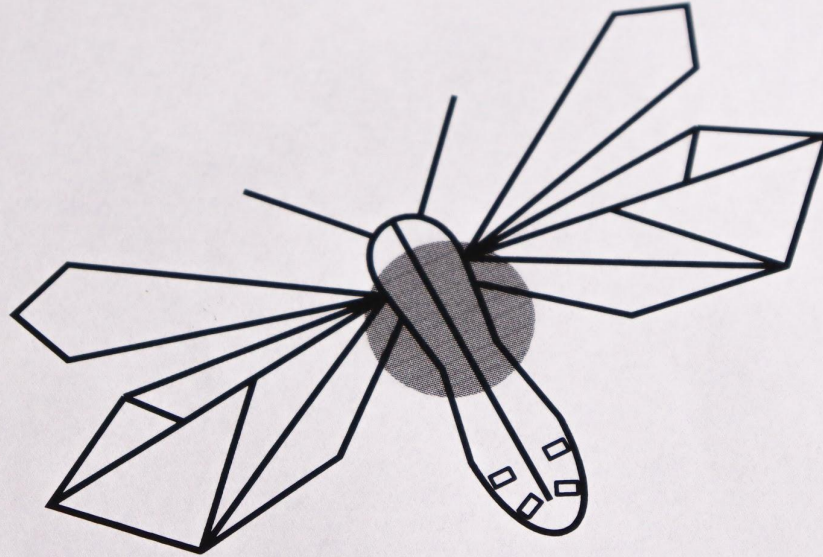
Engineer's approach to creating a dead-simple freeform circuit.





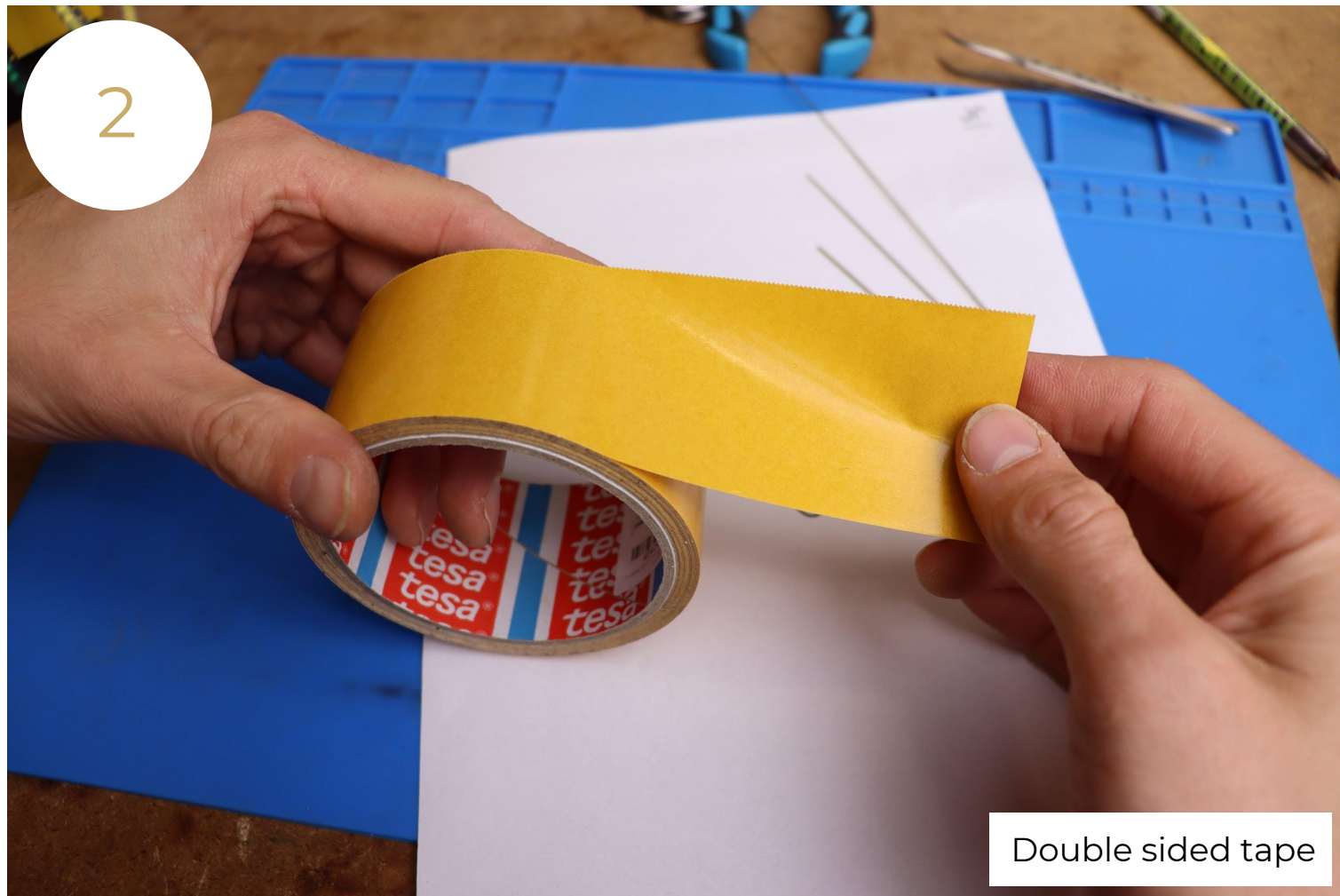
Vector template available on Hackaday workshop site for download

1



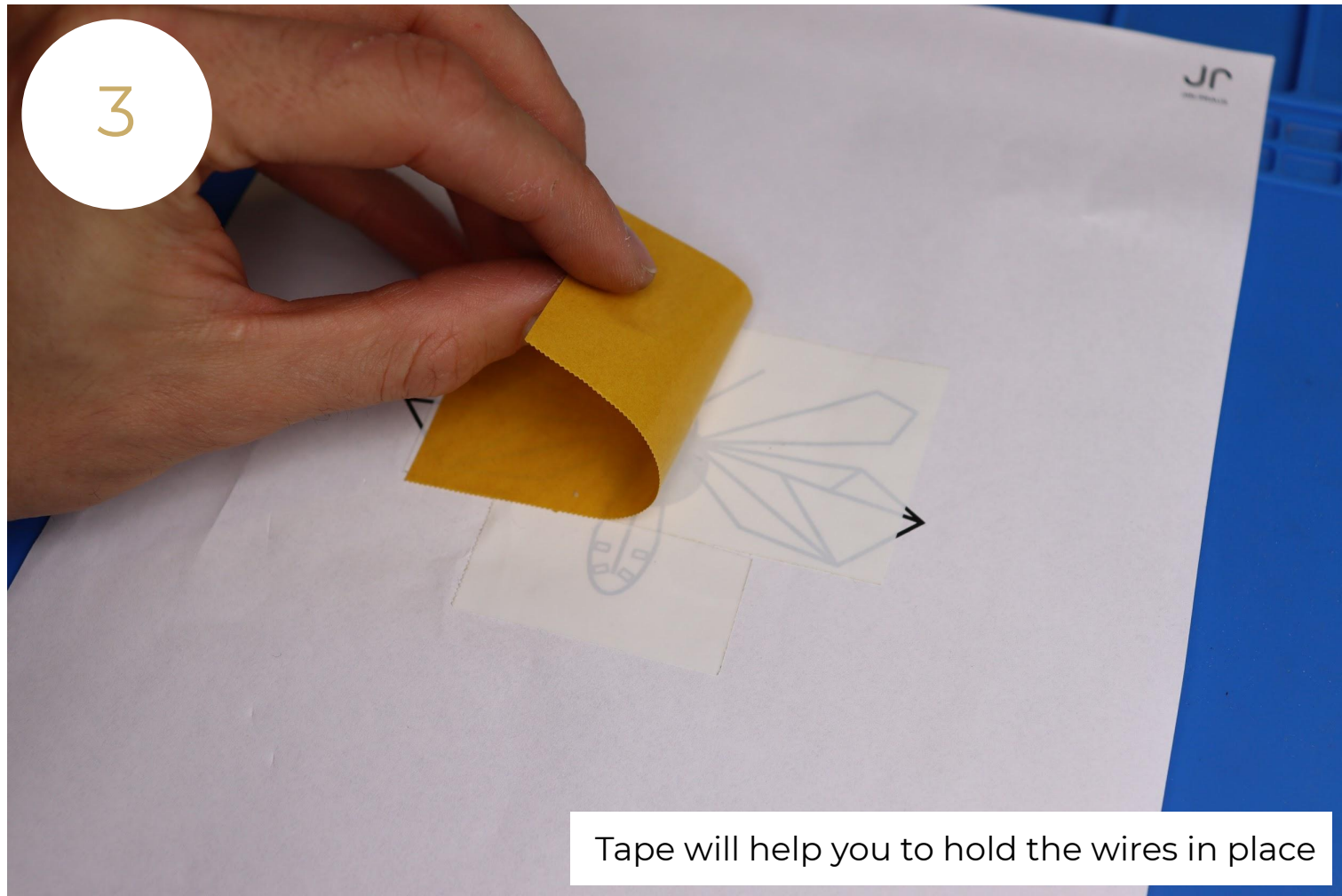
Print the template on a sheet of paper

2



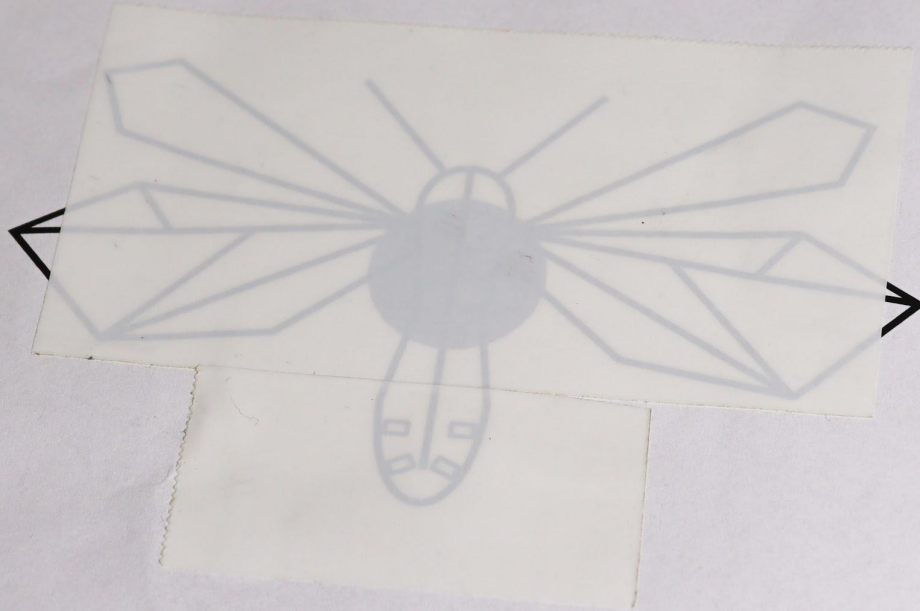
Double sided tape

3



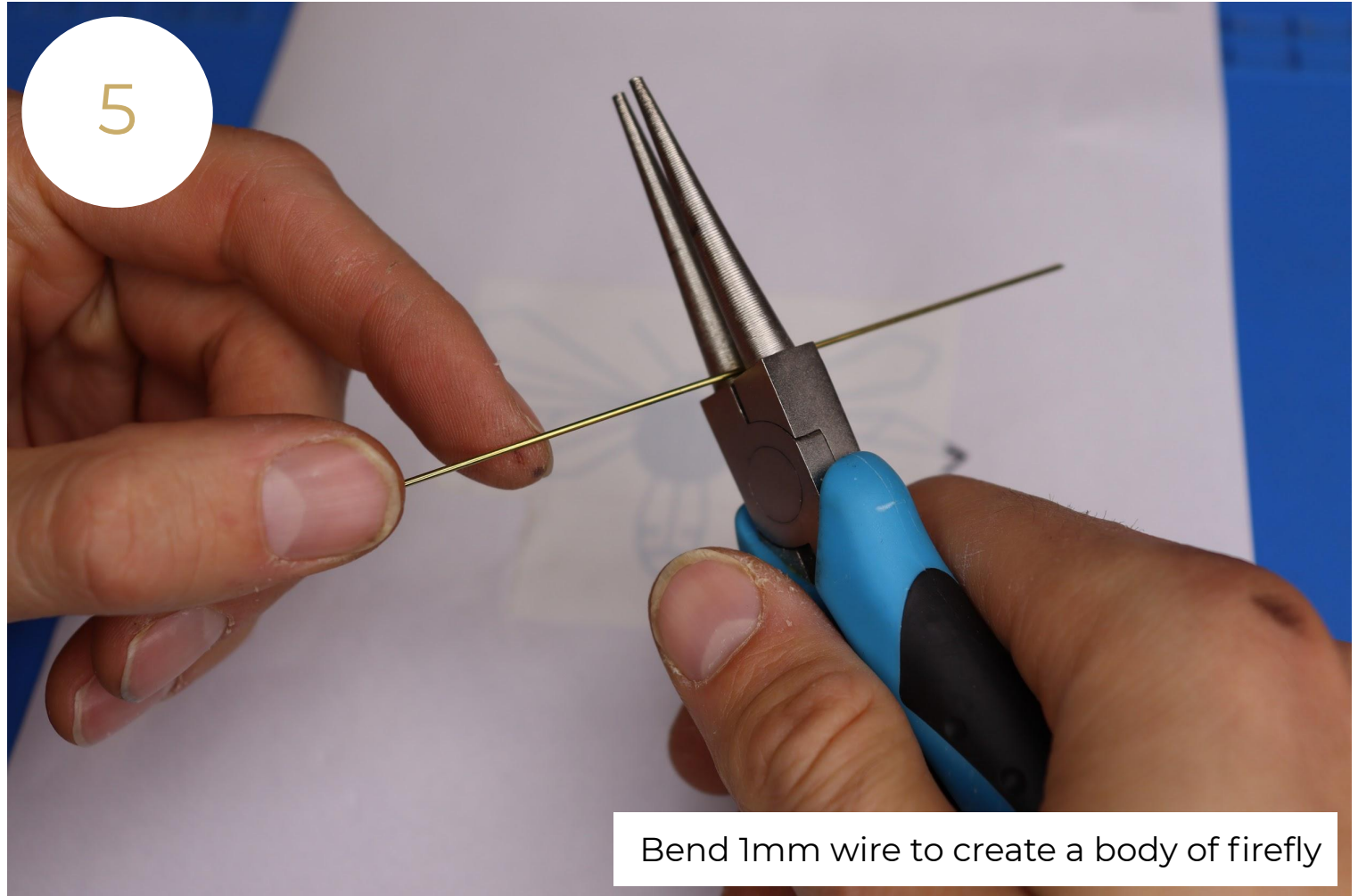
Tape will help you to hold the wires in place

4



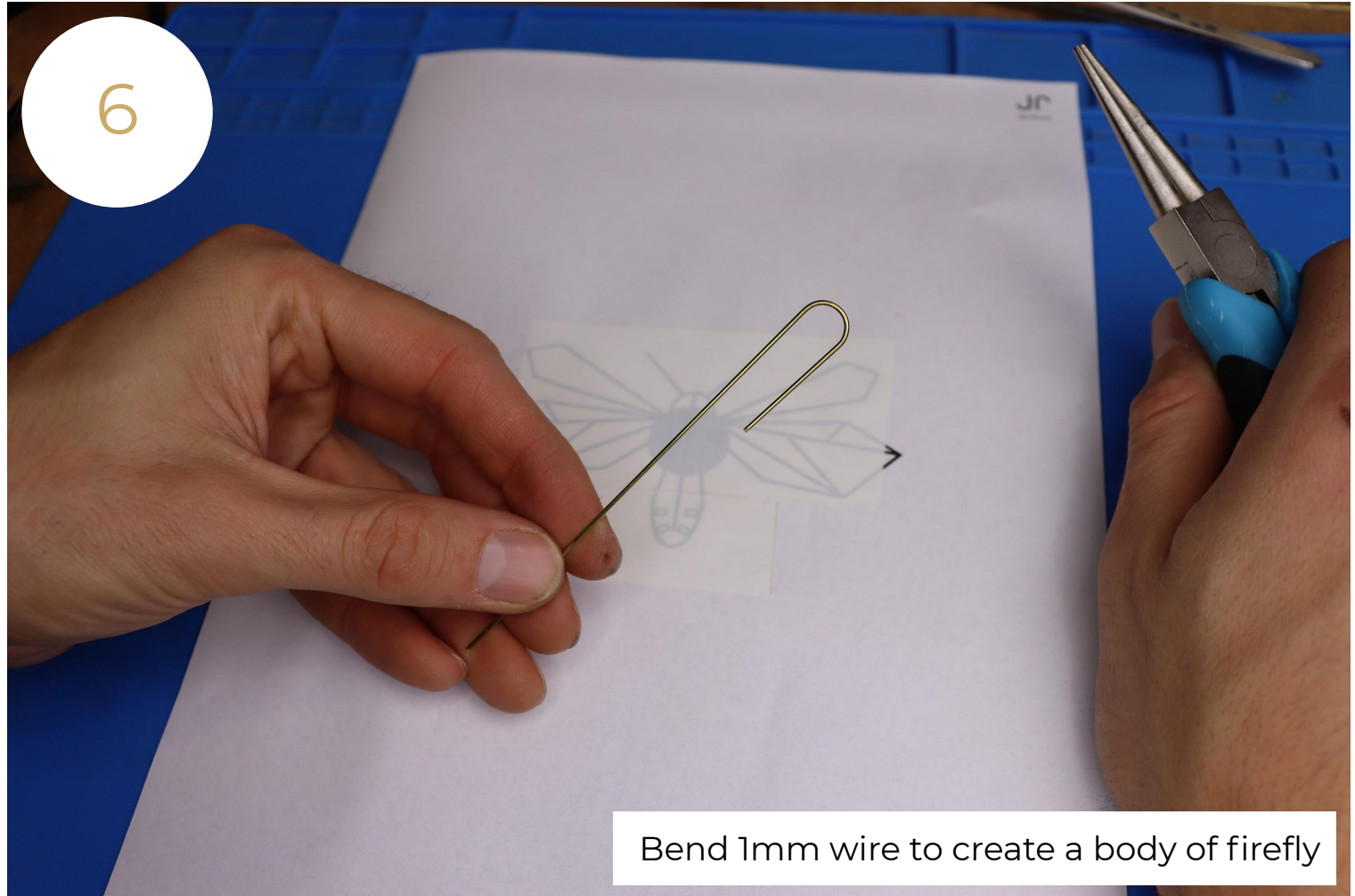
Apply double sided tape over the firefly shape

5



Bend 1mm wire to create a body of firefly

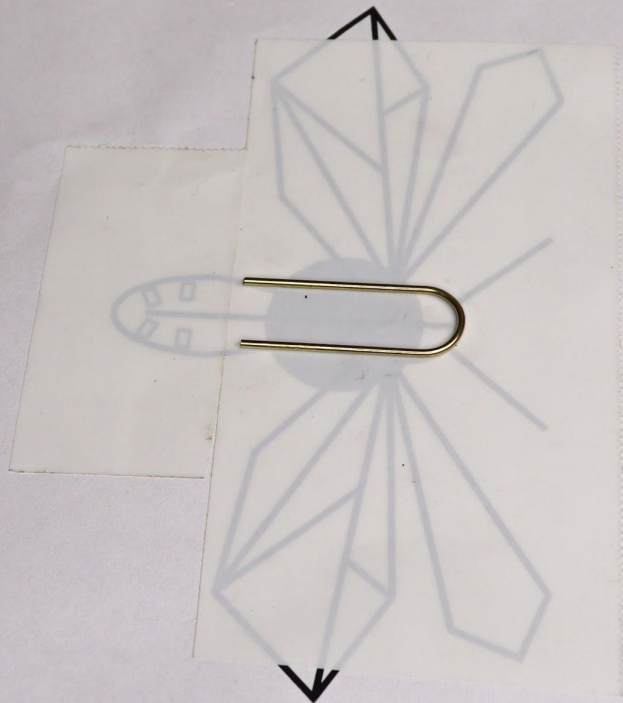
6



Bend 1mm wire to create a body of firefly

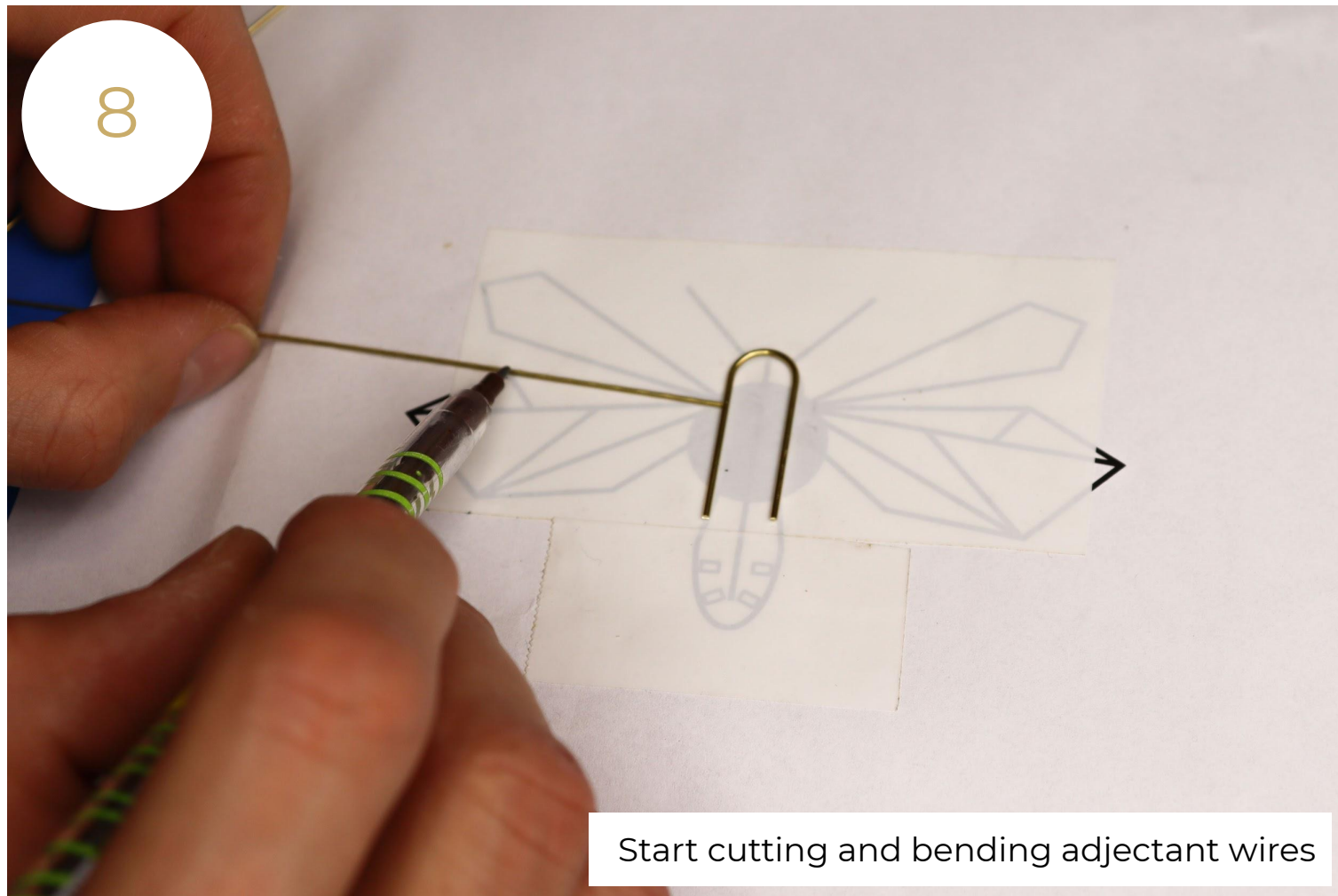


7



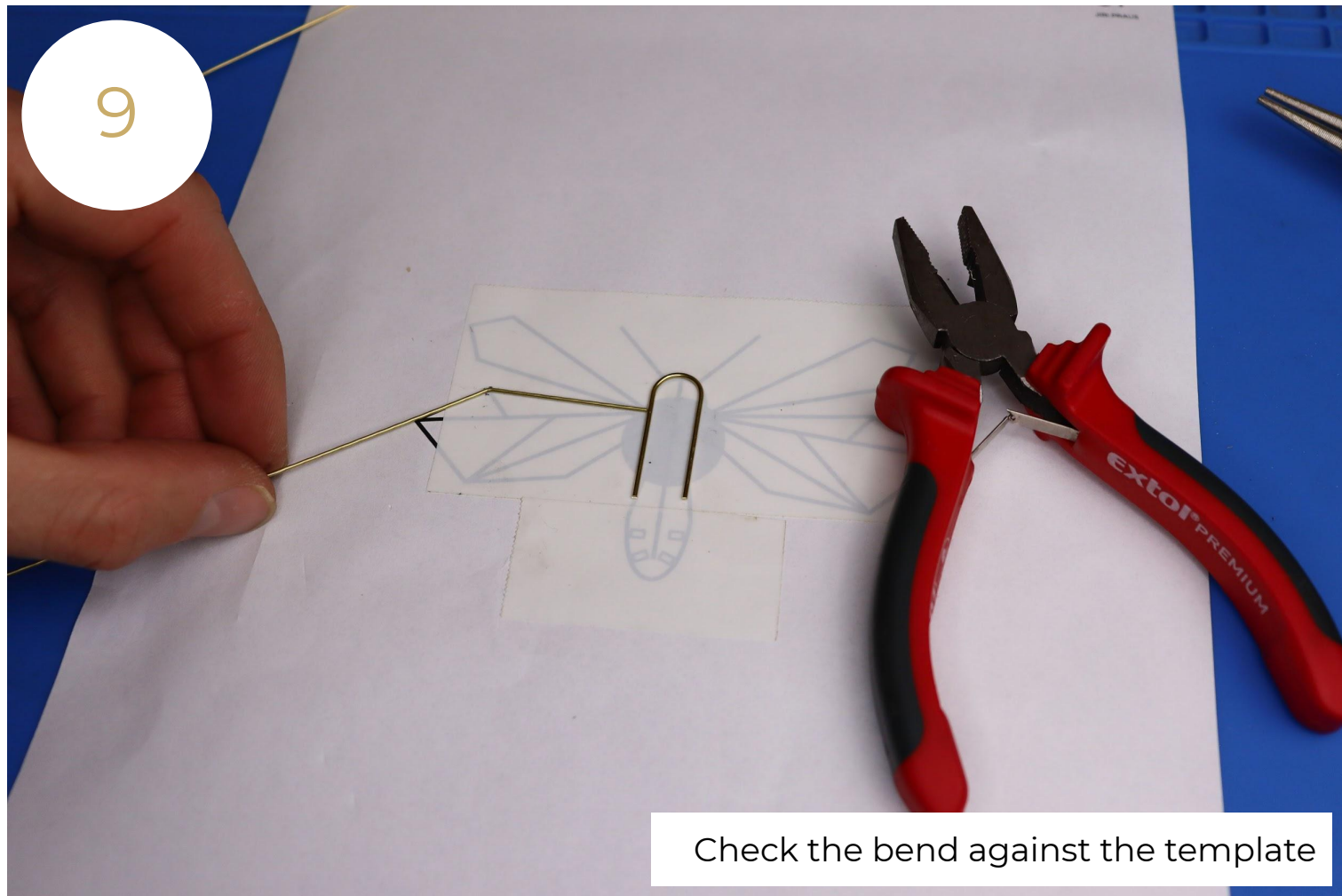
Place the shape onto the template

8



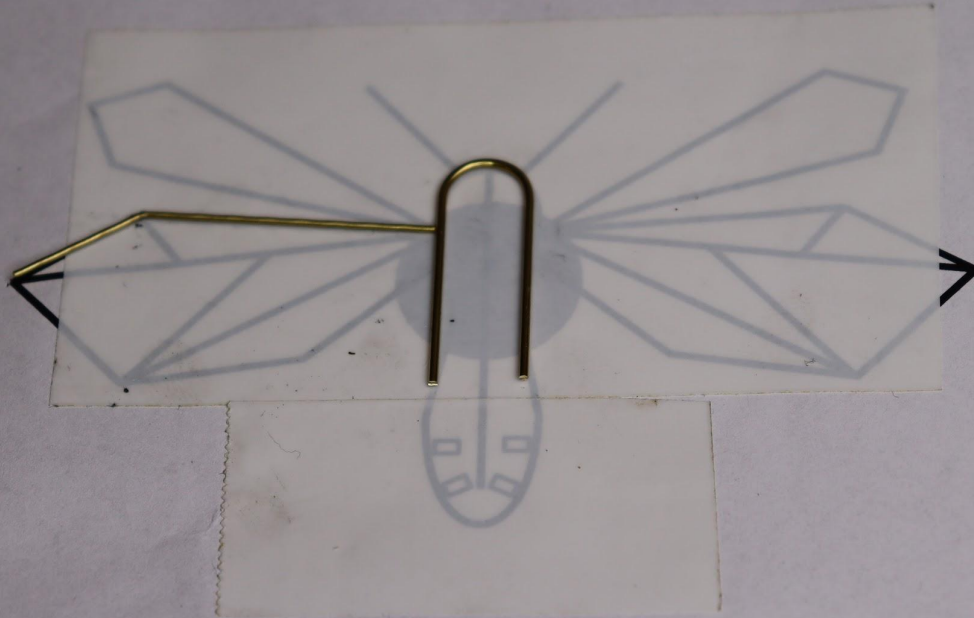
Start cutting and bending adjacent wires

9



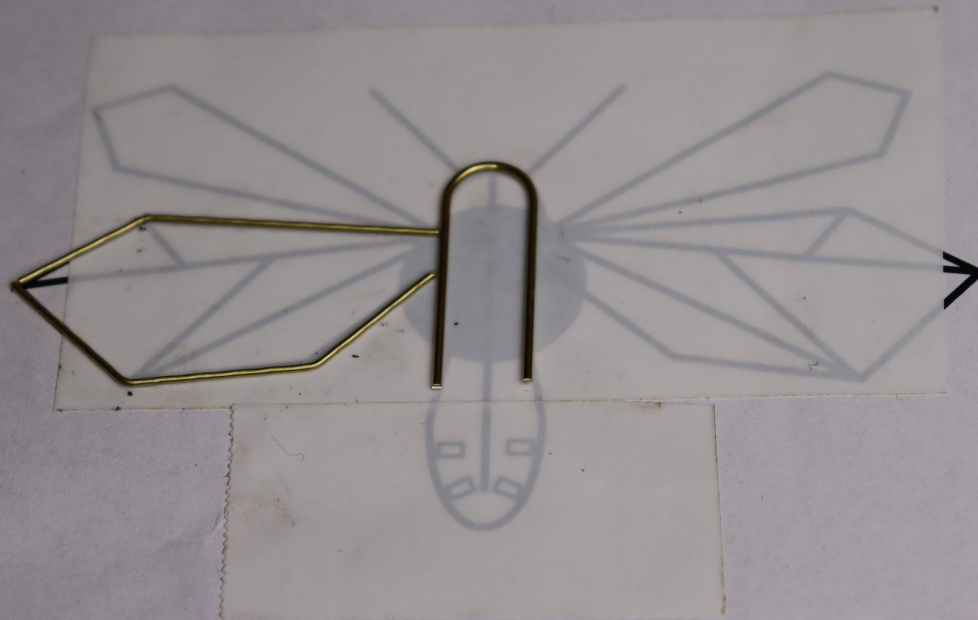
Check the bend against the template

10

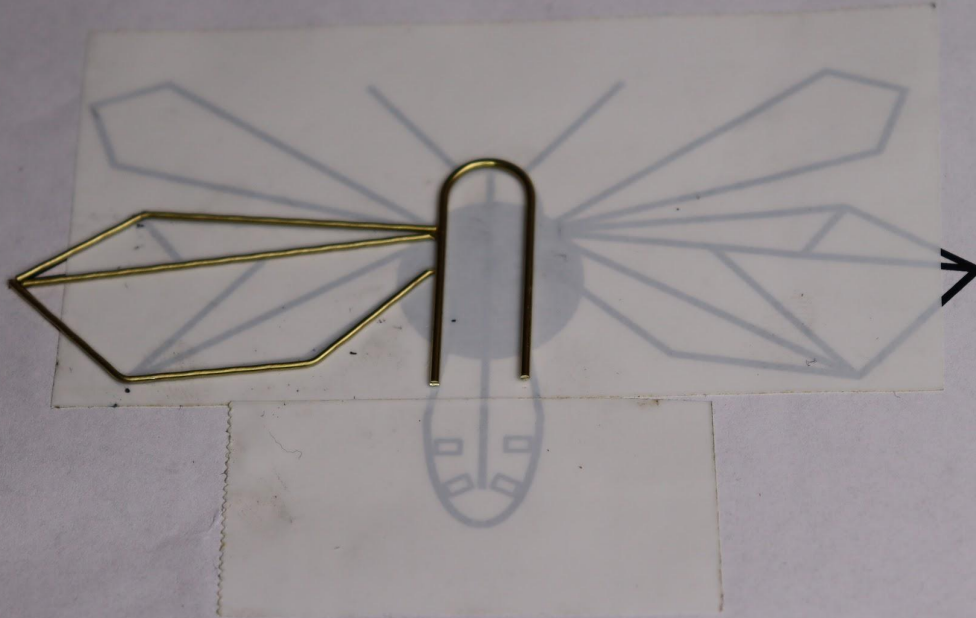


Bends over  $90^\circ$  are hard to make to look nice.  
So I will cut the wire in joint and continue with new piece.

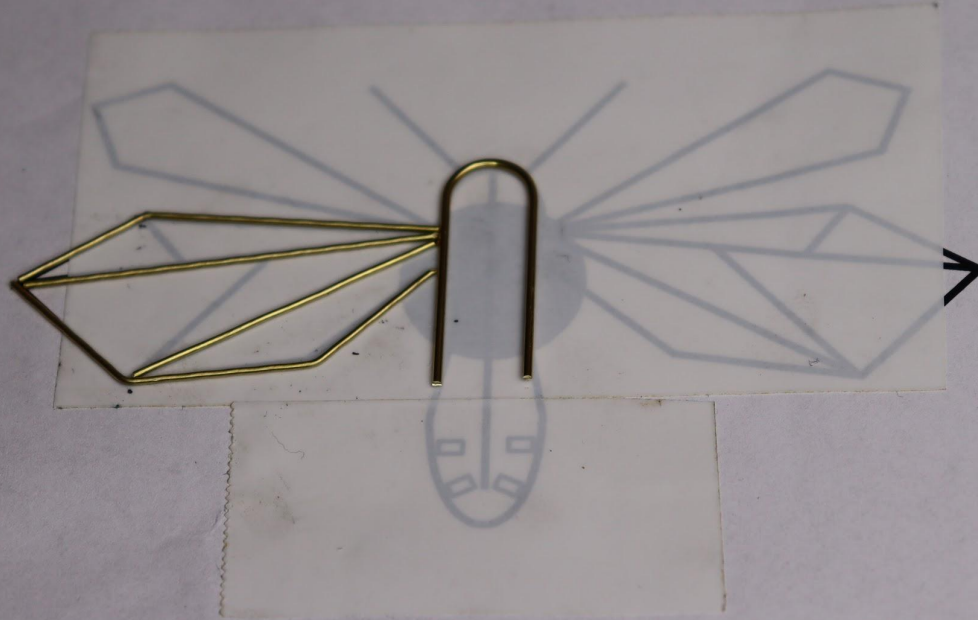
11



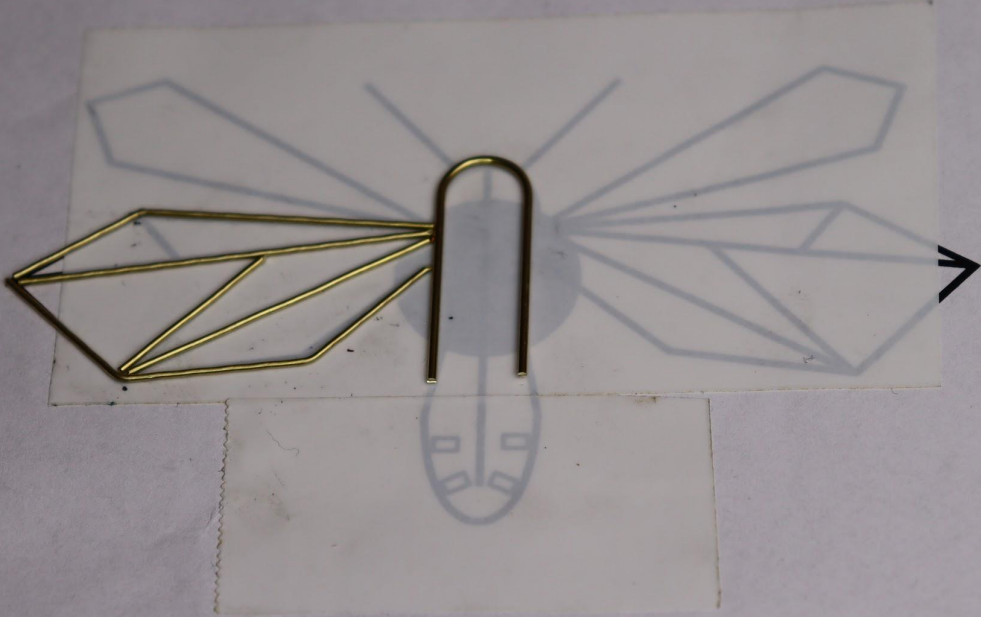
12



13

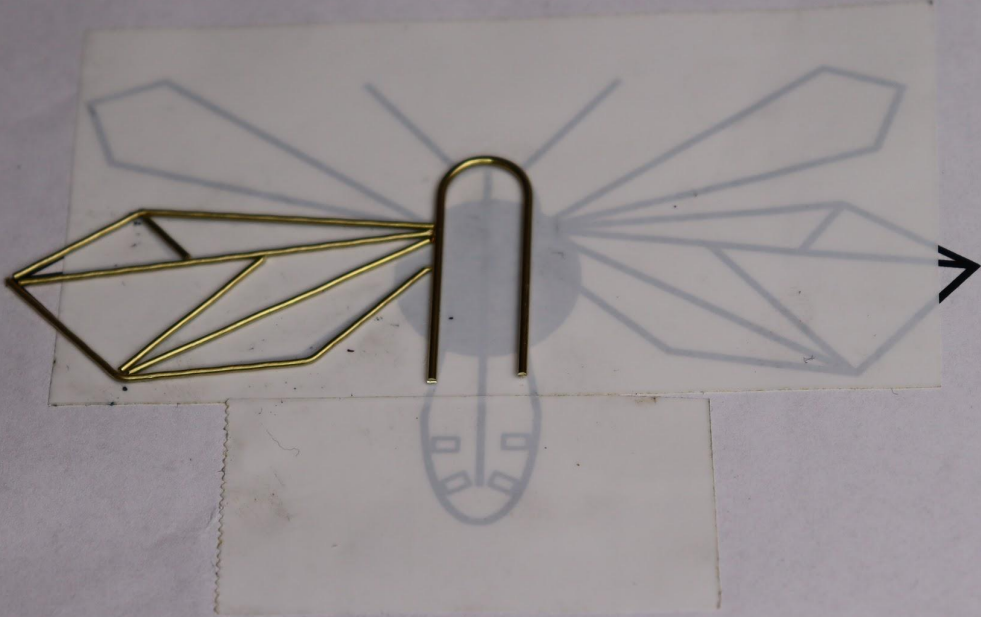


14

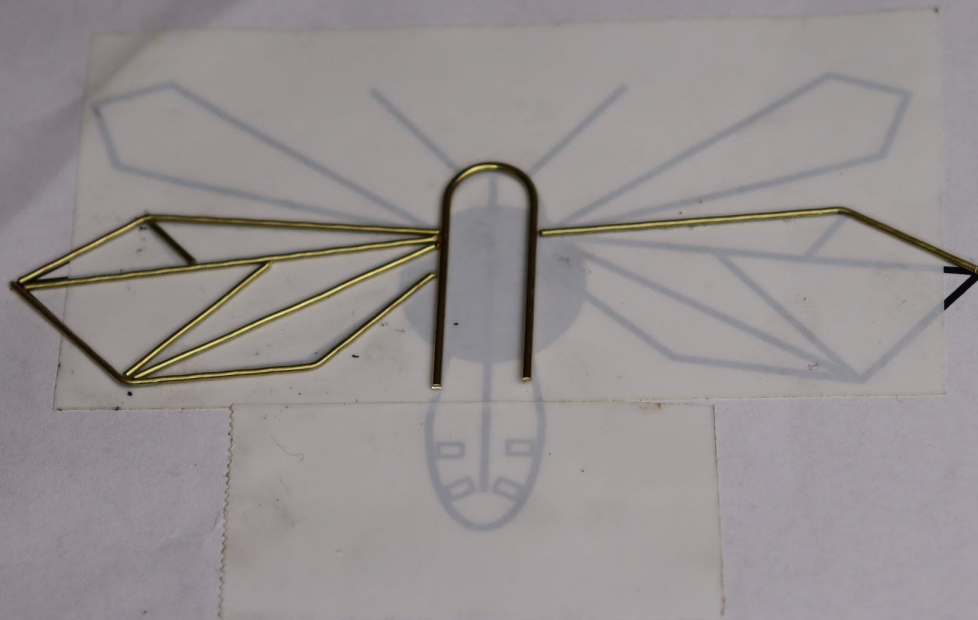




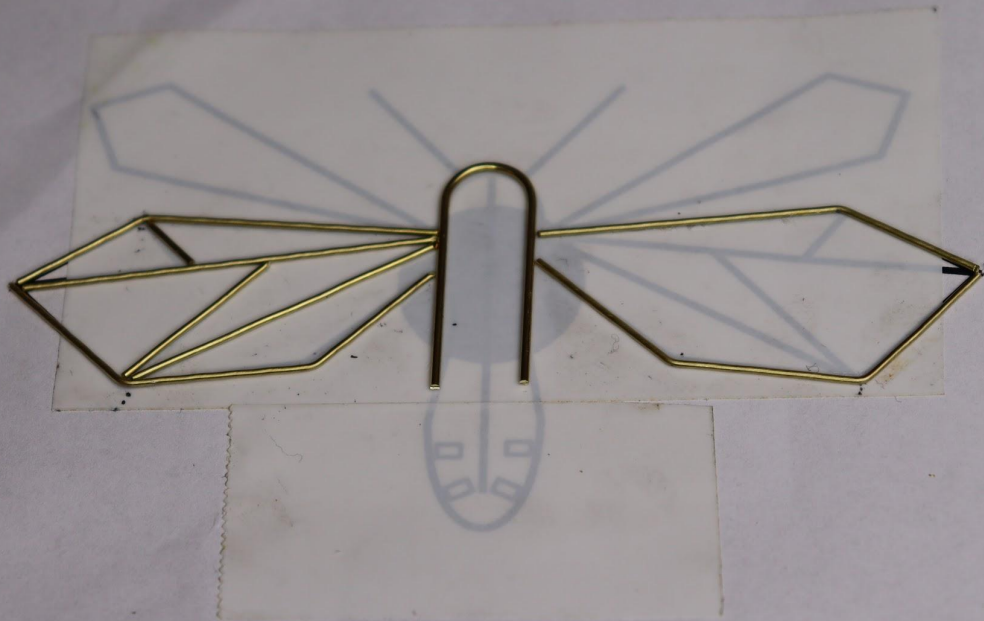
15



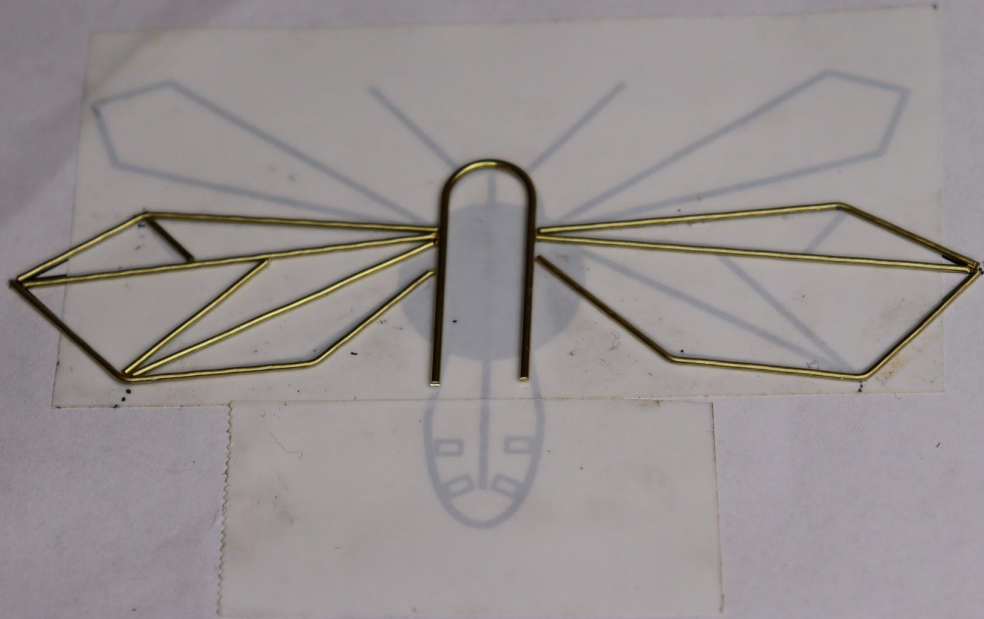
16



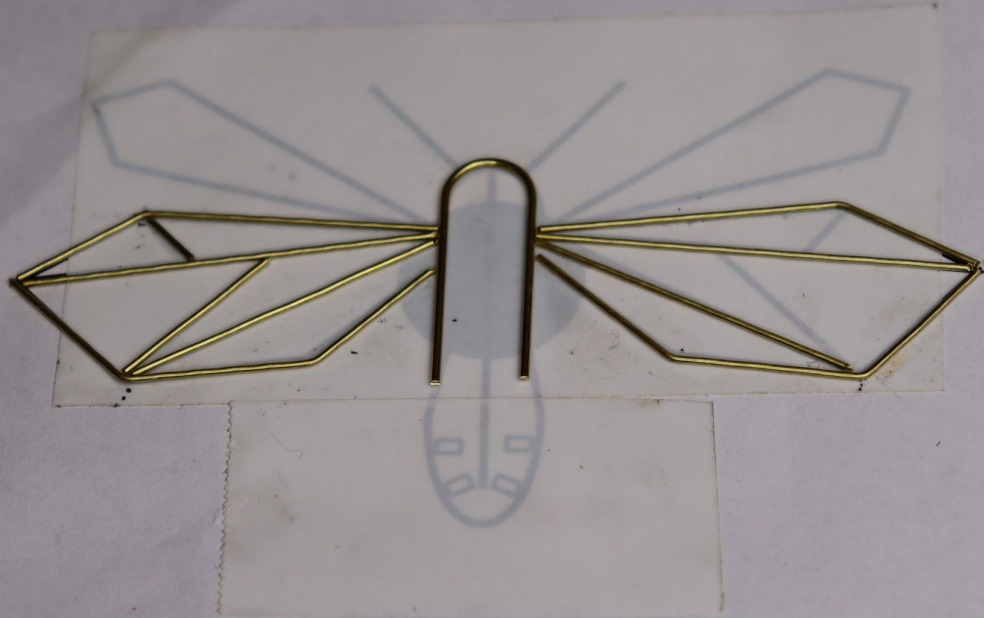
17



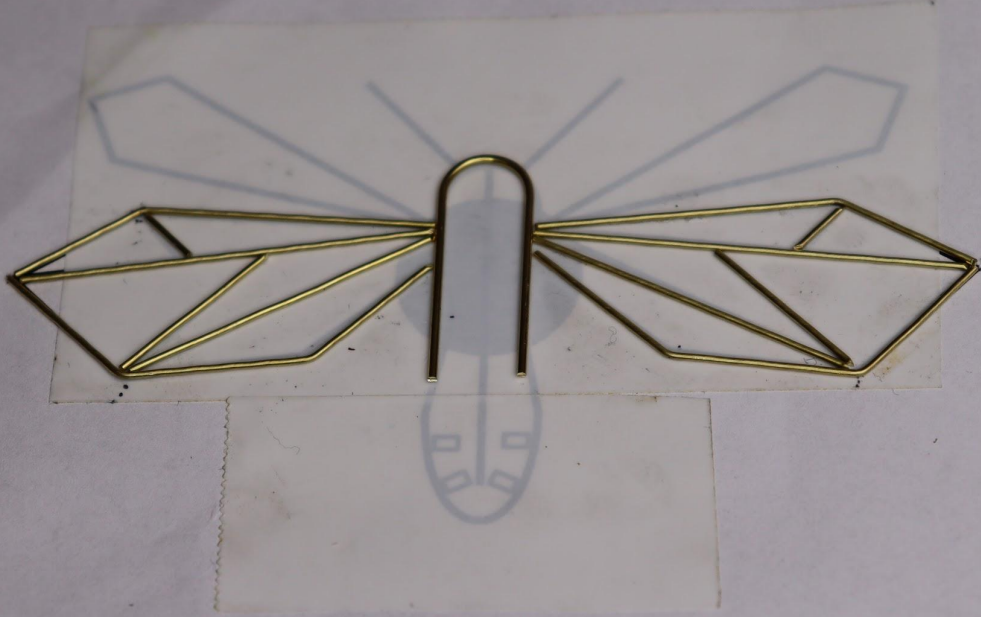
18



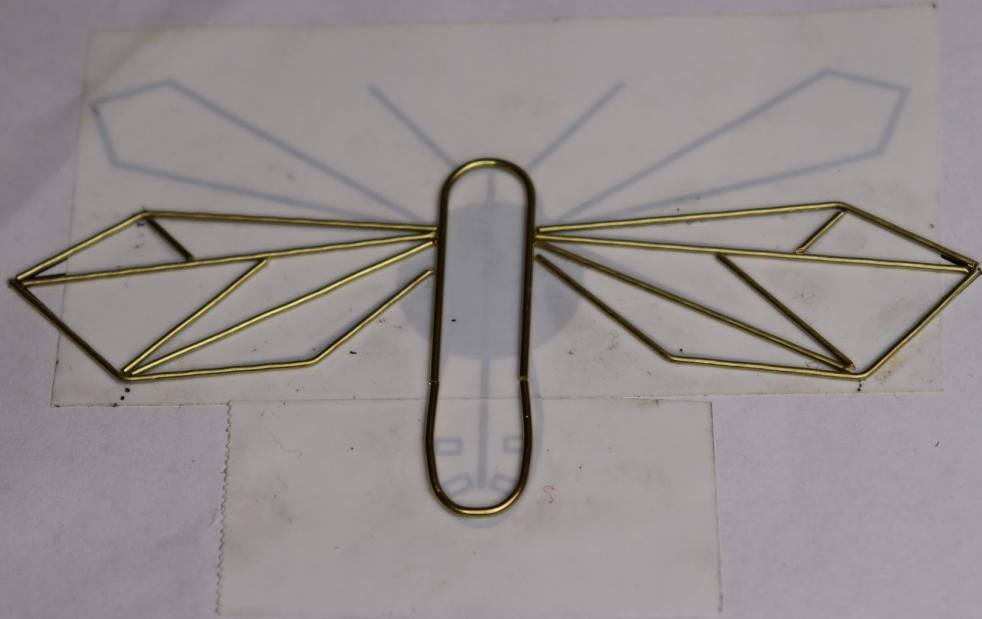
19



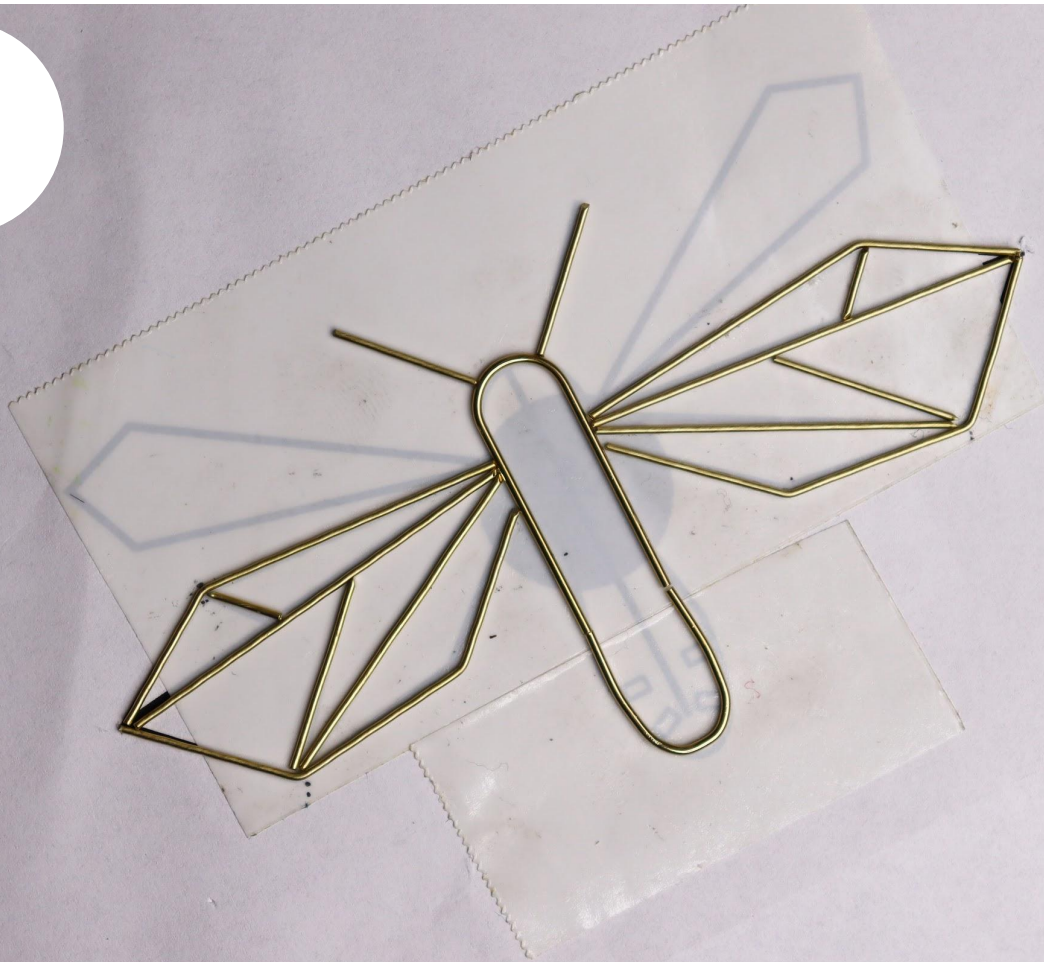
20



21

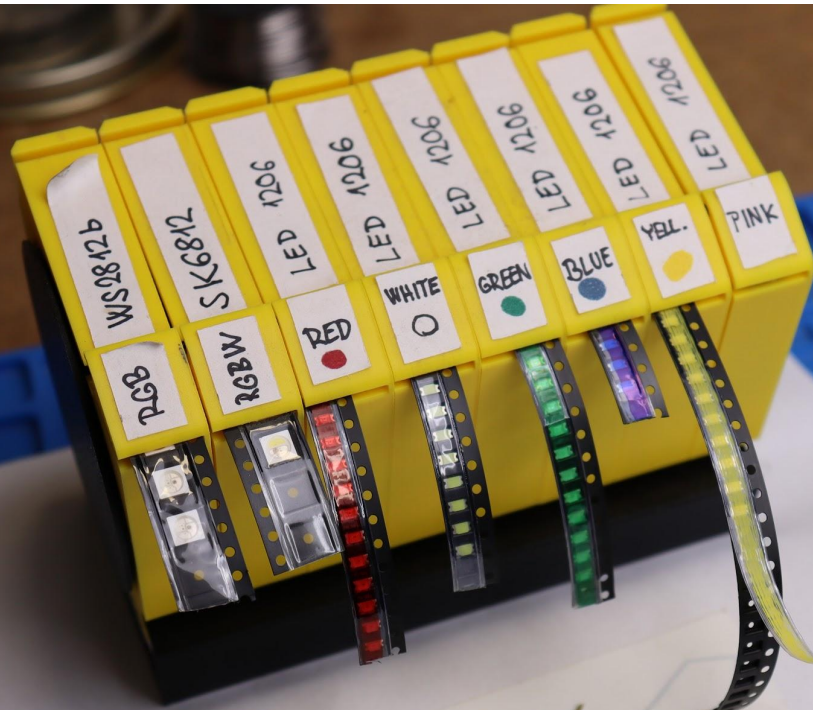


22



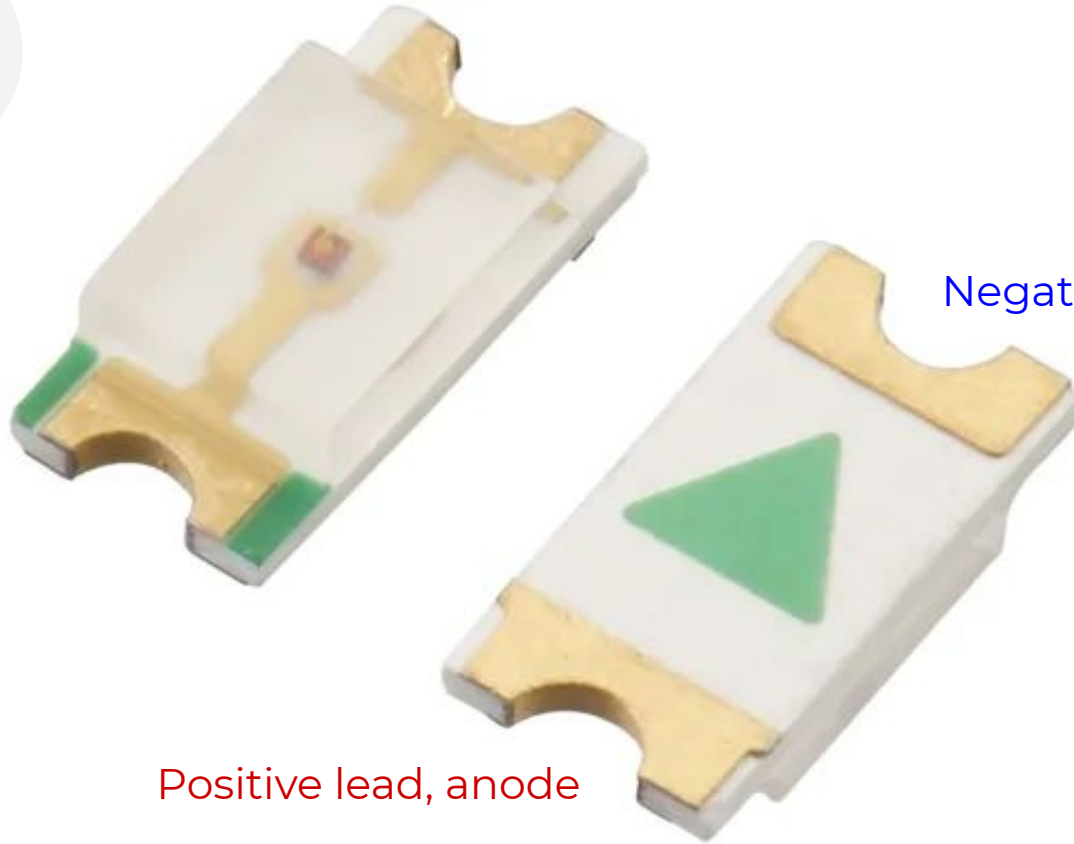


23



I most fancy 1206 SMD LEDs.

24

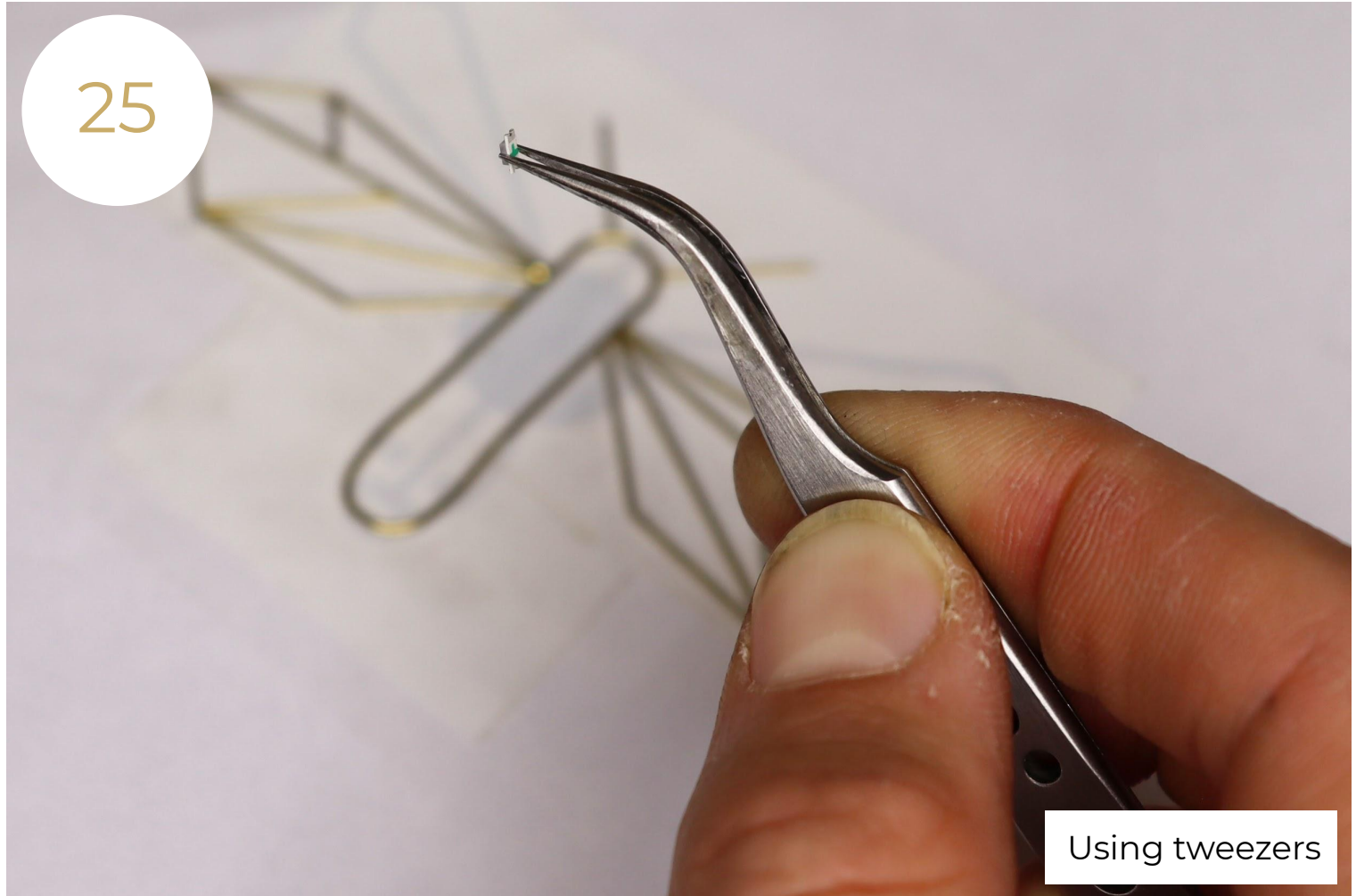


Positive lead, anode

Negative lead, kathode

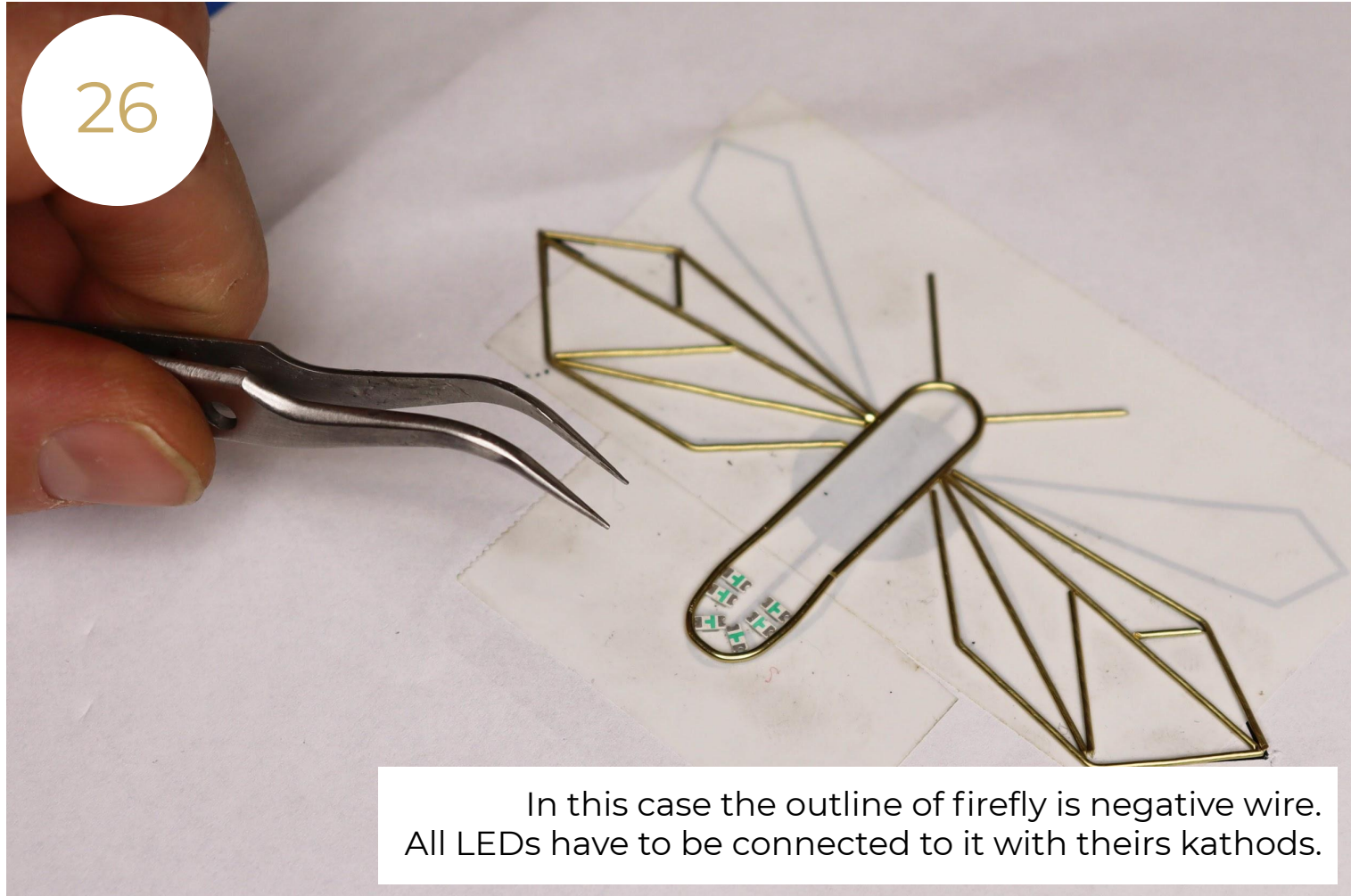
SMD LEDs. They have two leads. Arrows indicates the current flow.

25



Using tweezers

26



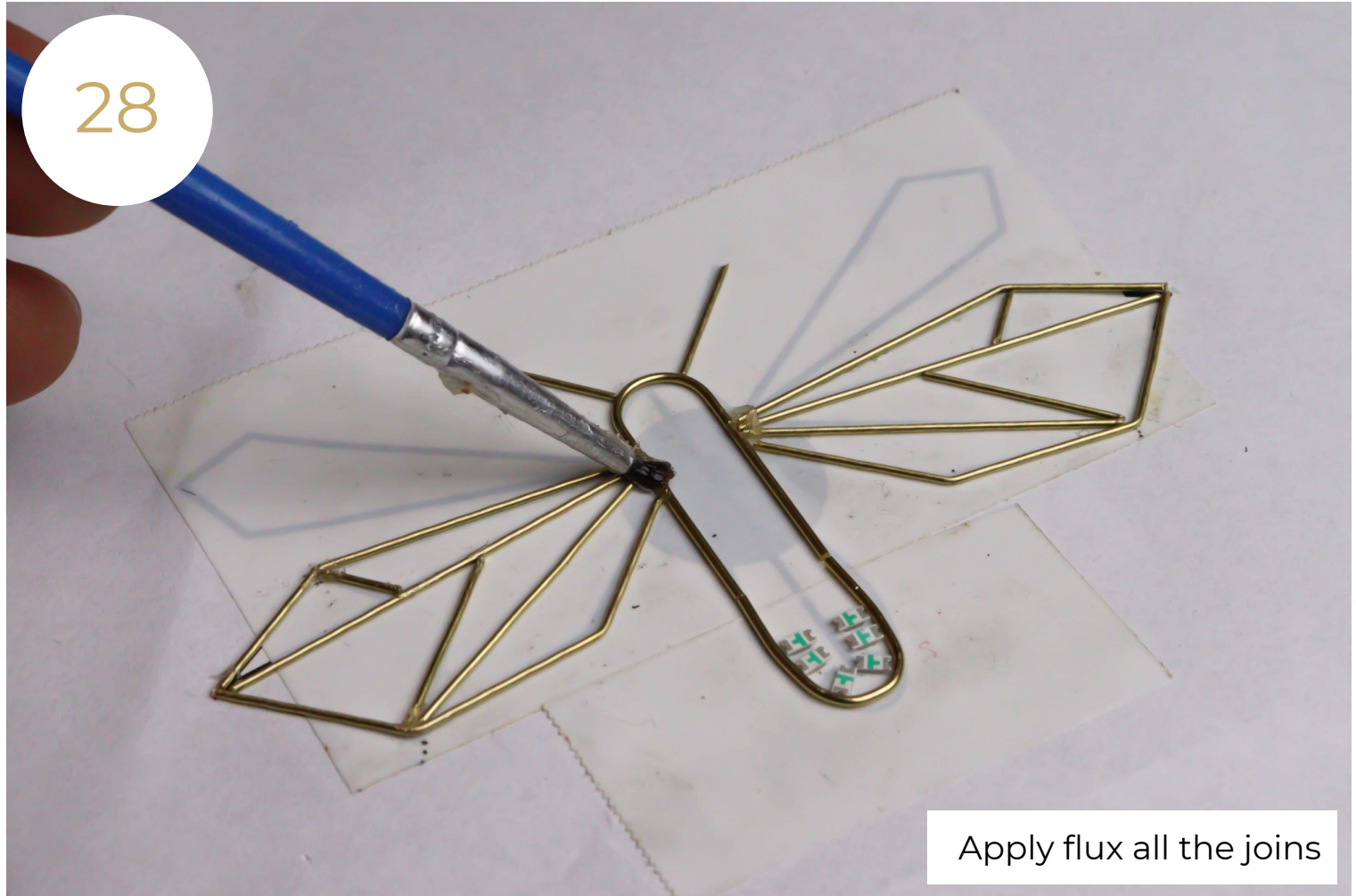
In this case the outline of firefly is negative wire. All LEDs have to be connected to it with their cathodes.

27



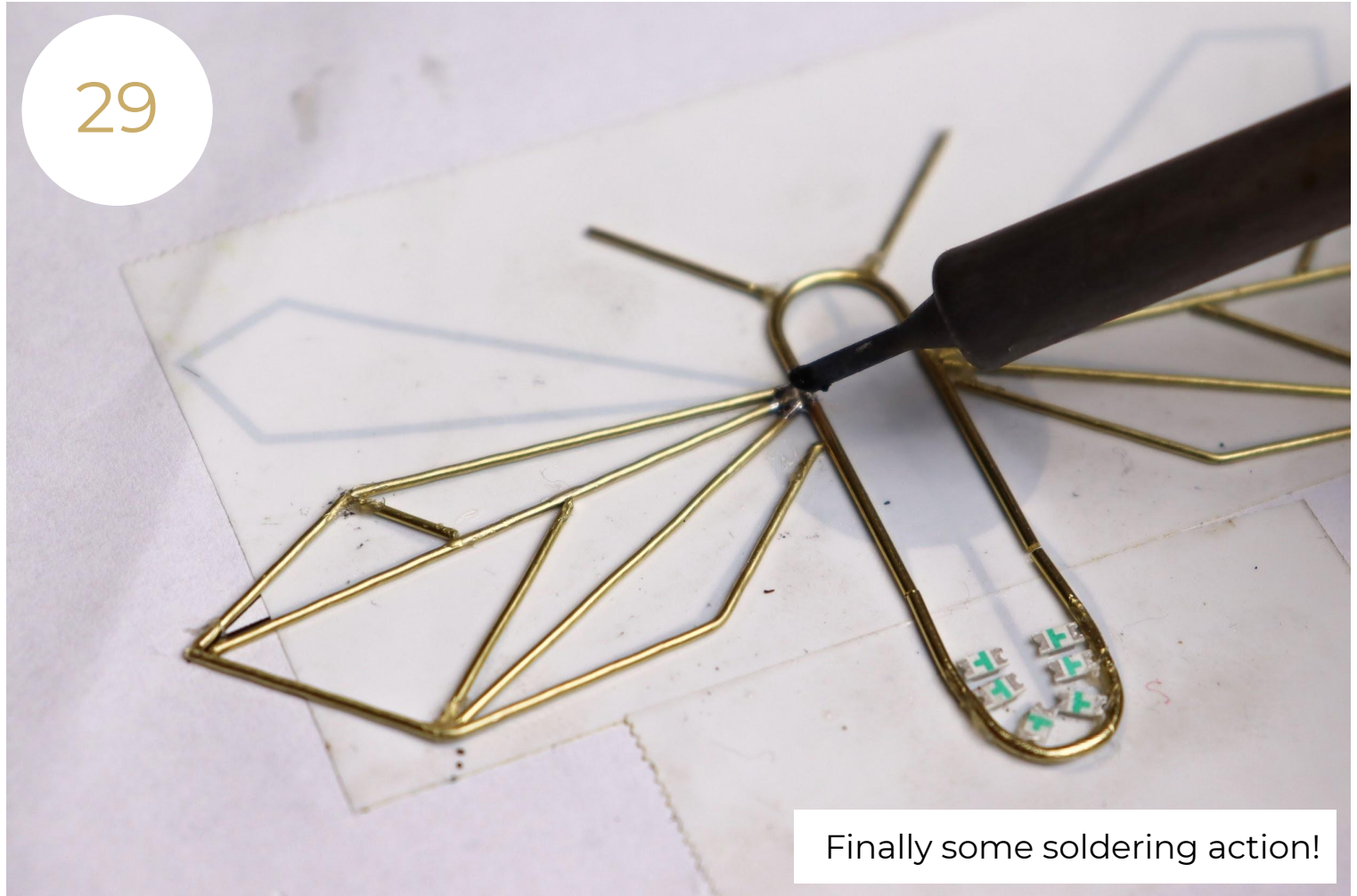
Place LEDs upside down to make the pads accessible

28



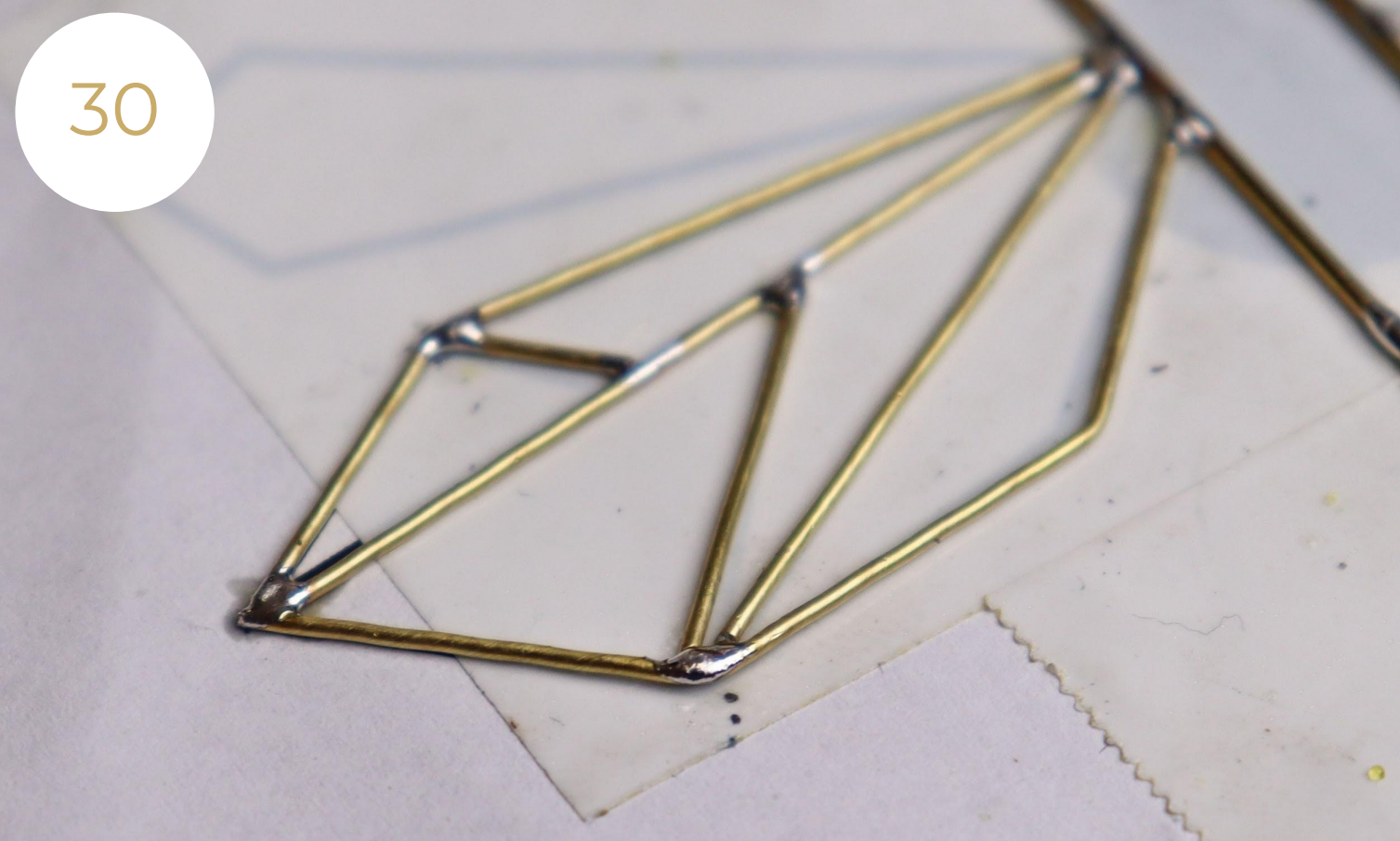
Apply flux all the joins

29



Finally some soldering action!

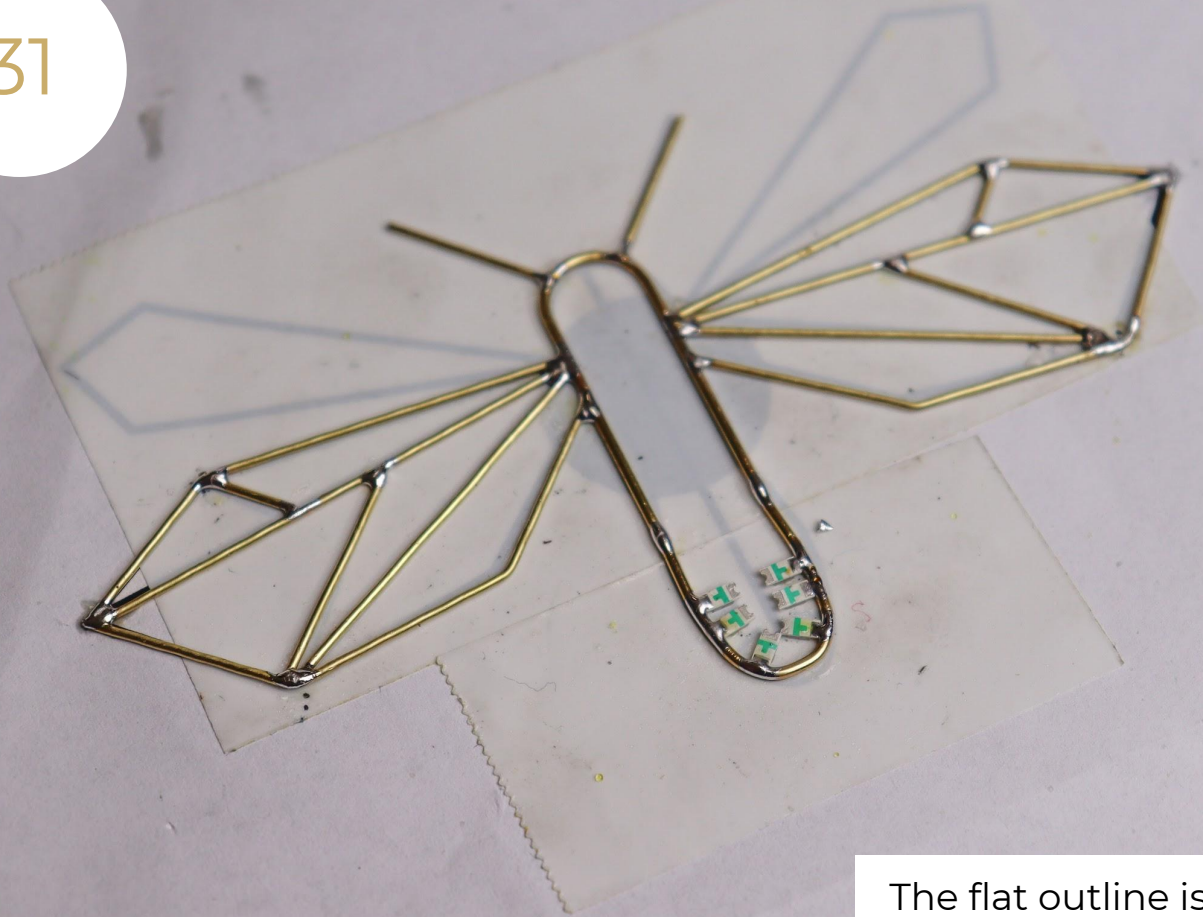
30



Applying enough flux will make the solder to nicely flood the joint



31



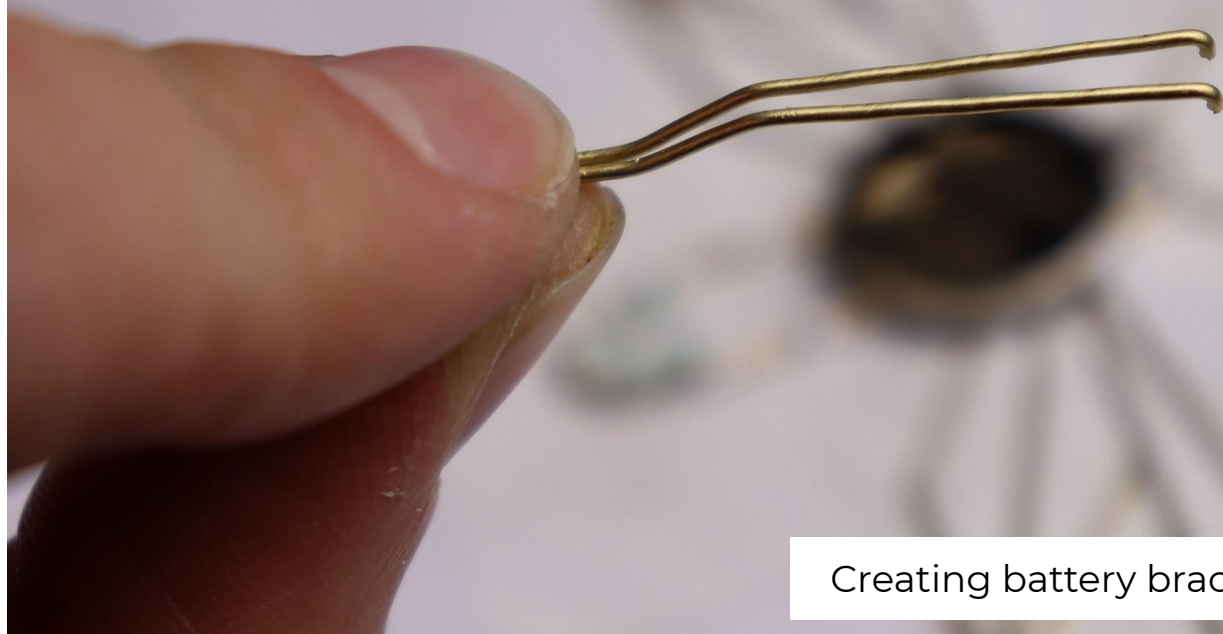
The flat outline is finished

32



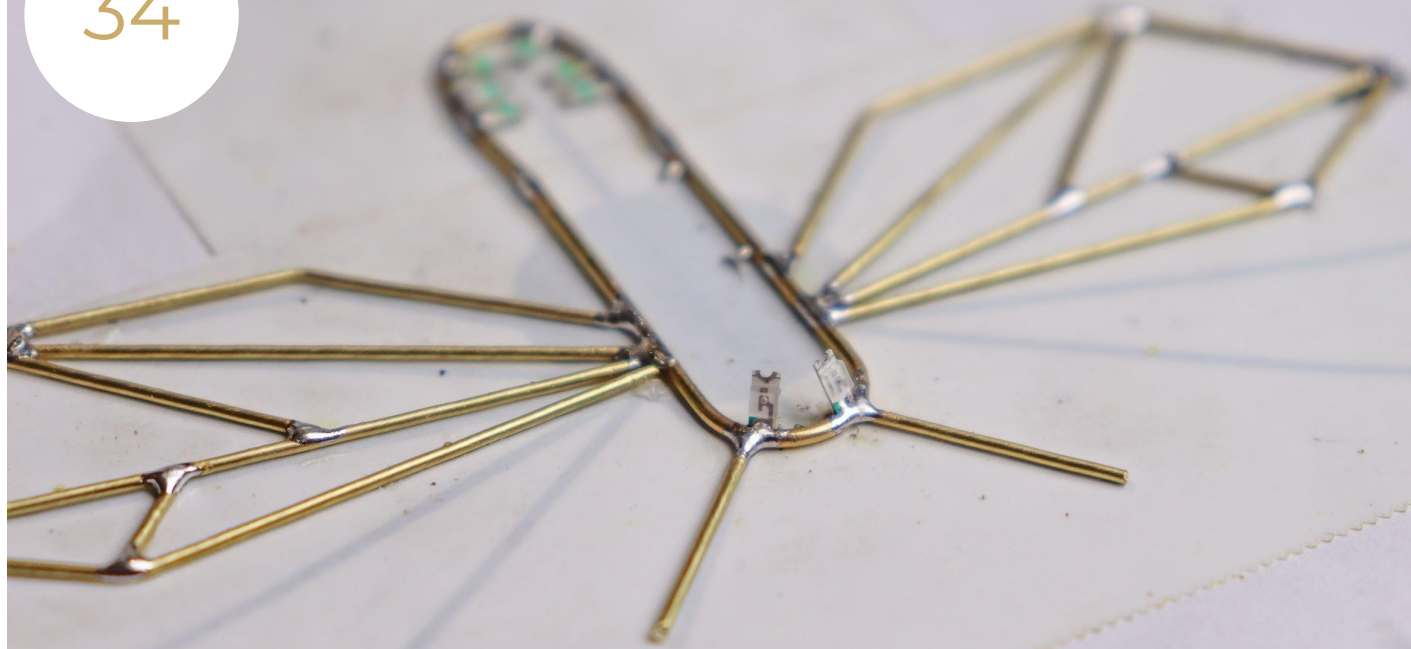
The last piece is adding battery to close the circuit

33



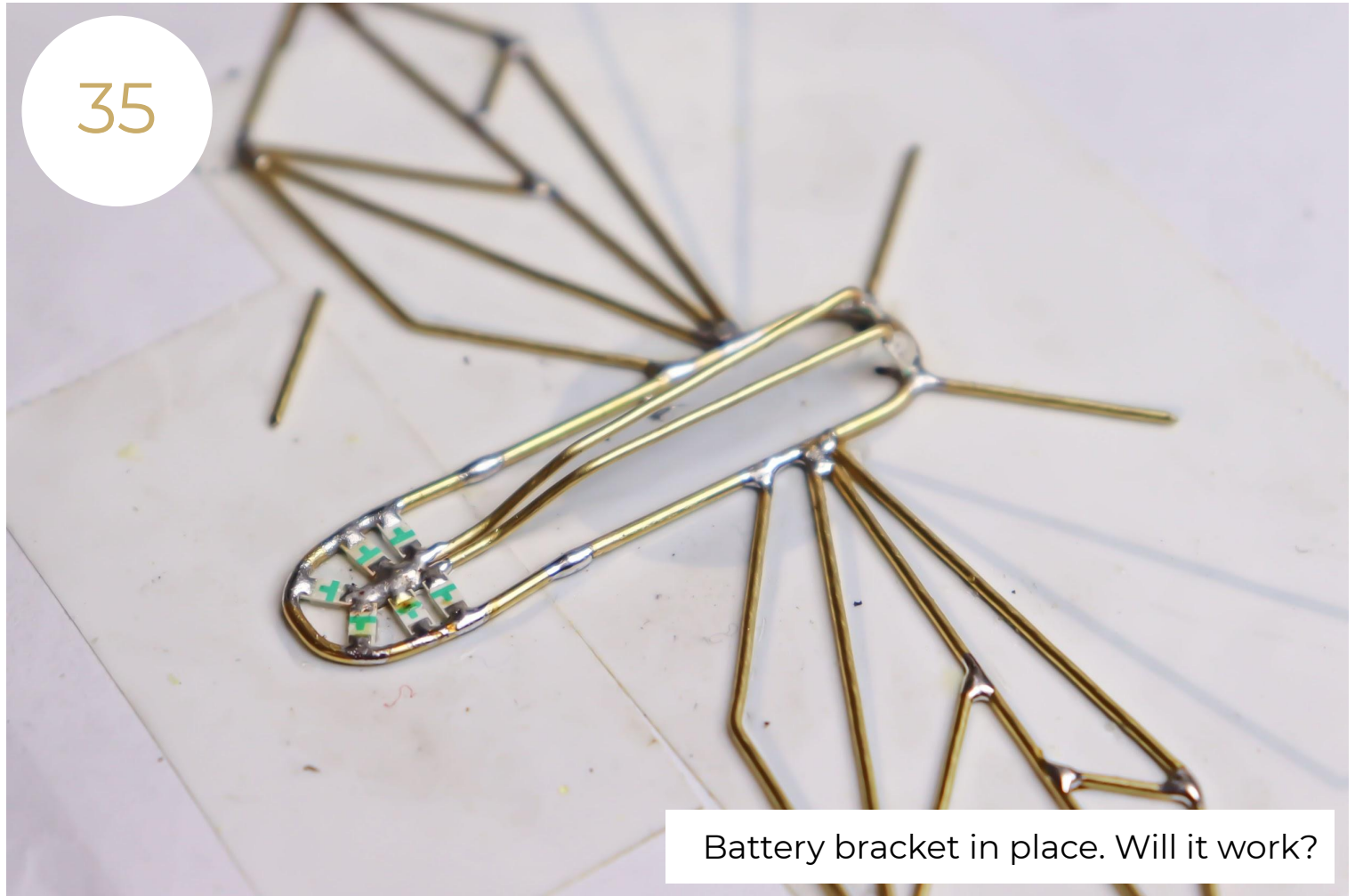
Creating battery bracket - 3D bend

34



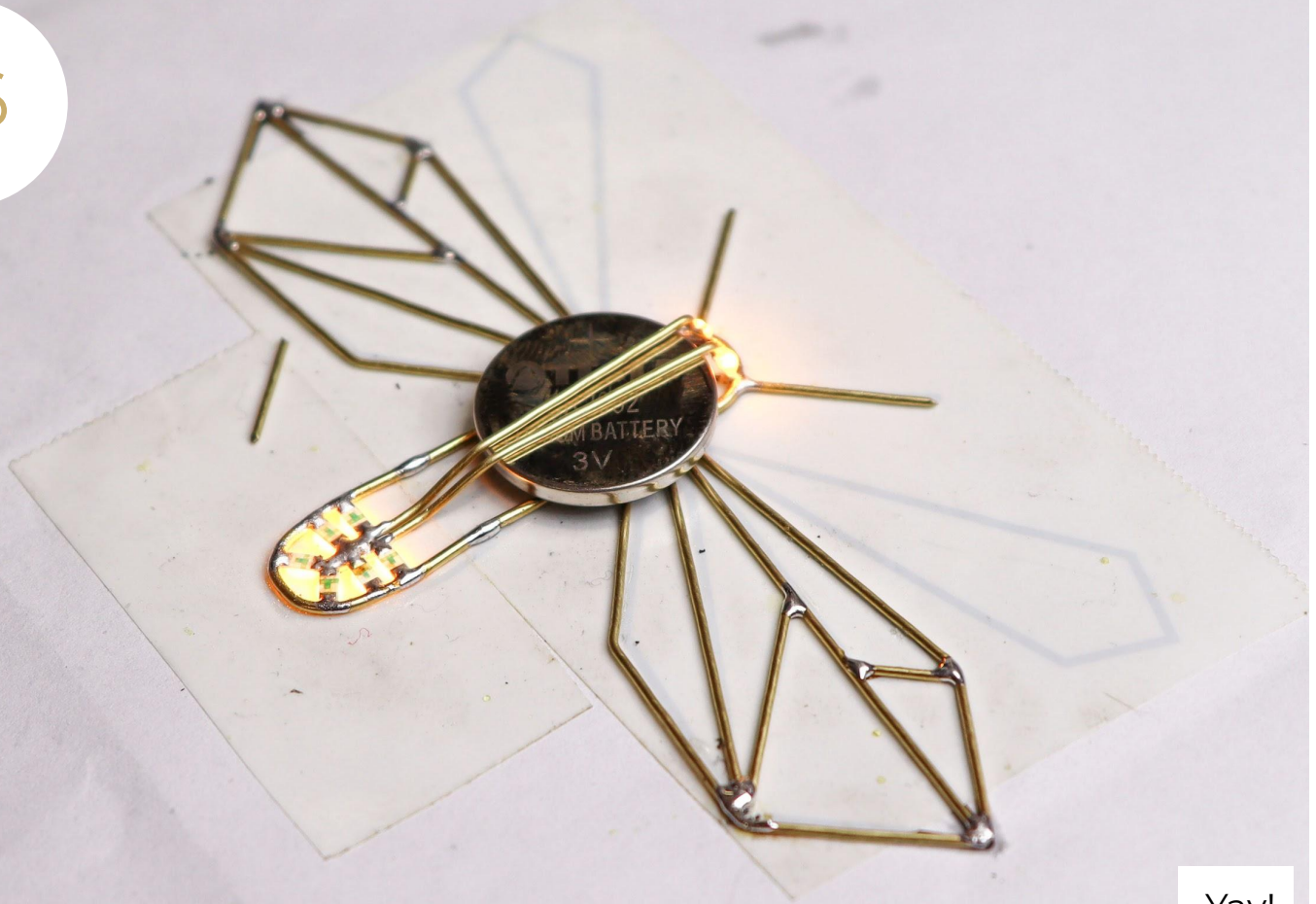
Adding two more LEDs to be able to connect the battery bracket at the front of firefly

35



Battery bracket in place. Will it work?

36



Yay!

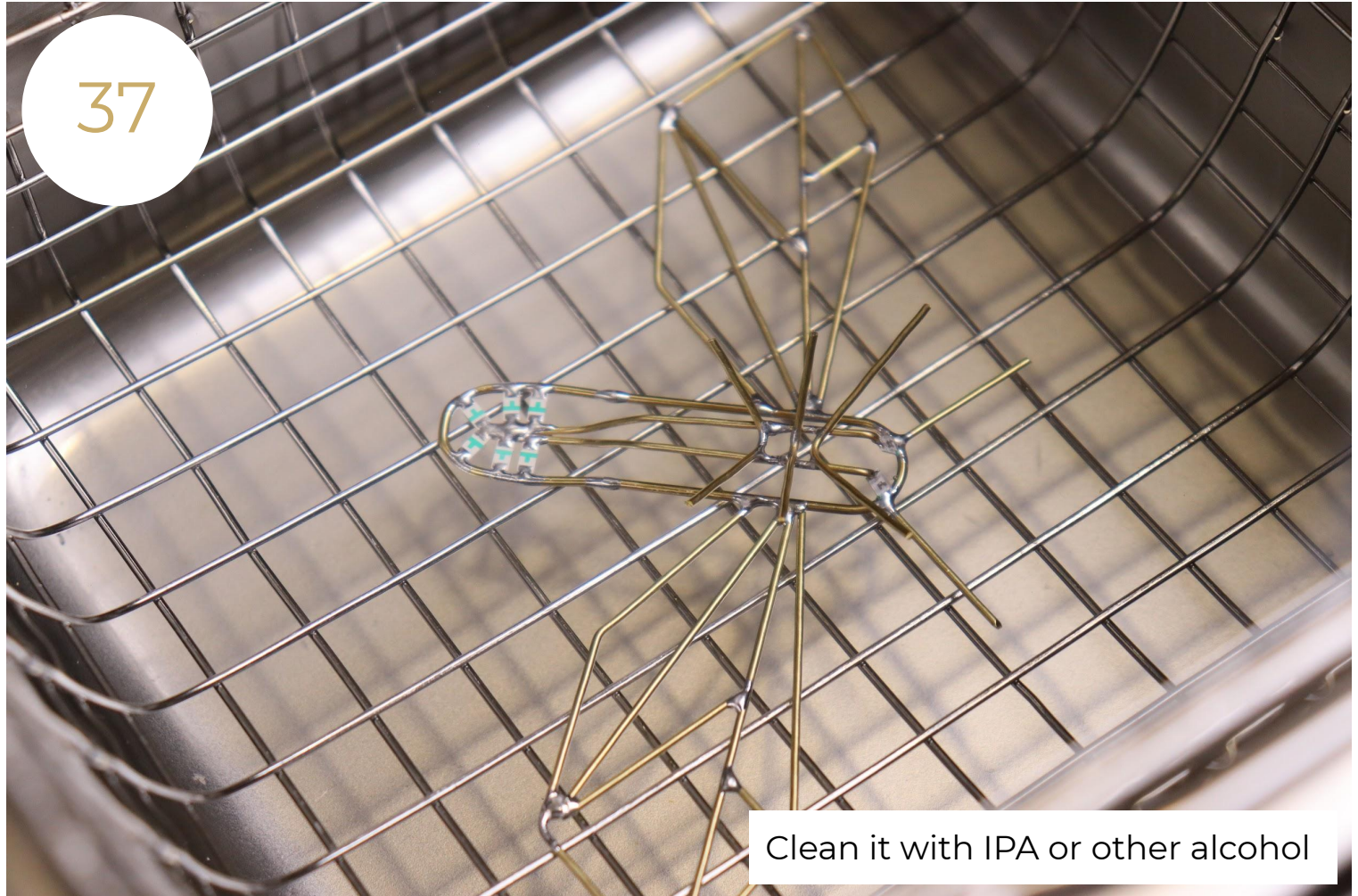
37



**BE CREATIVE!** Don't follow the template. Create outside of it. You have 3 dimensions. Add legs, bend wings...

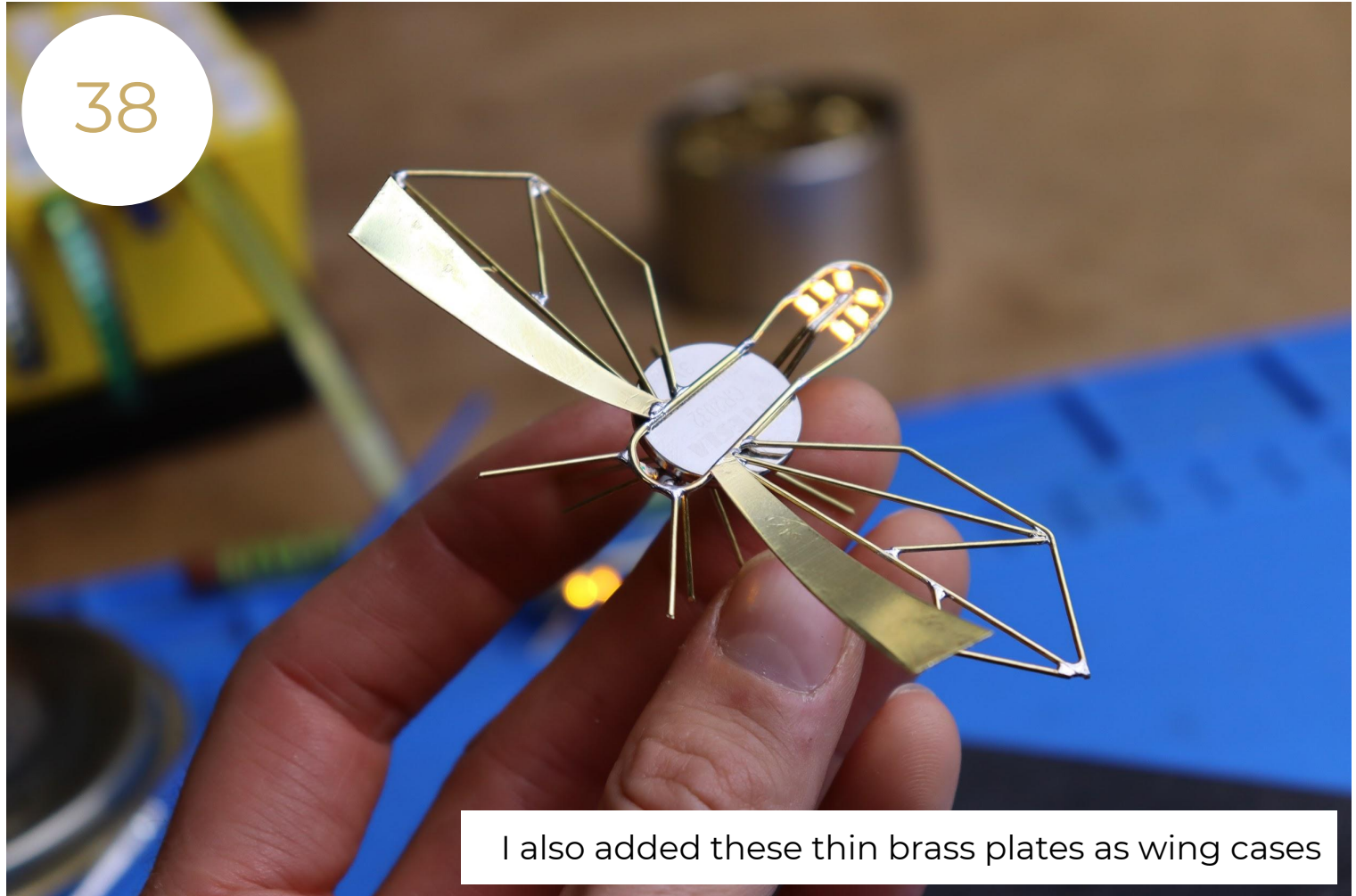
37

Clean it with IPA or other alcohol

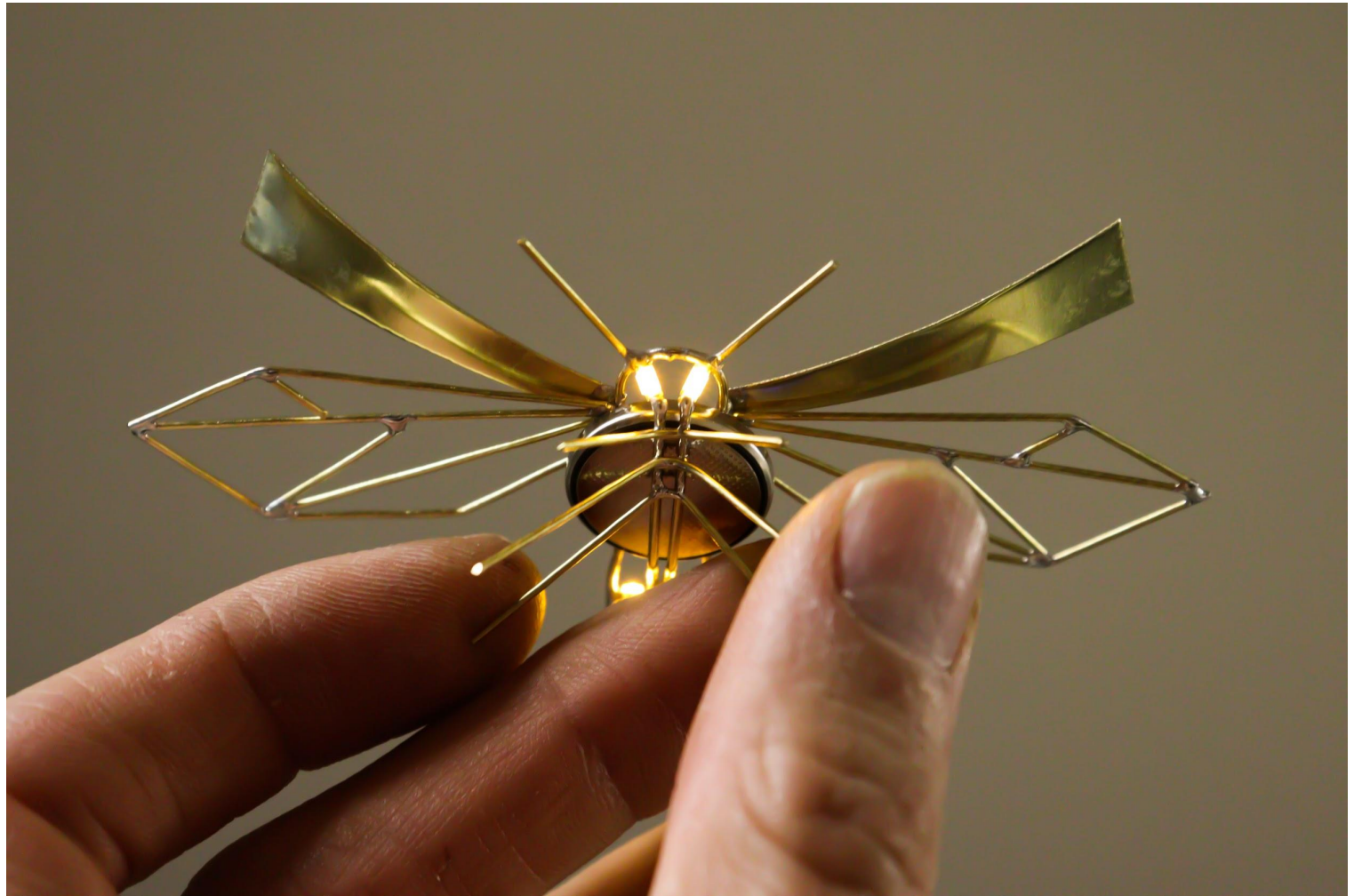


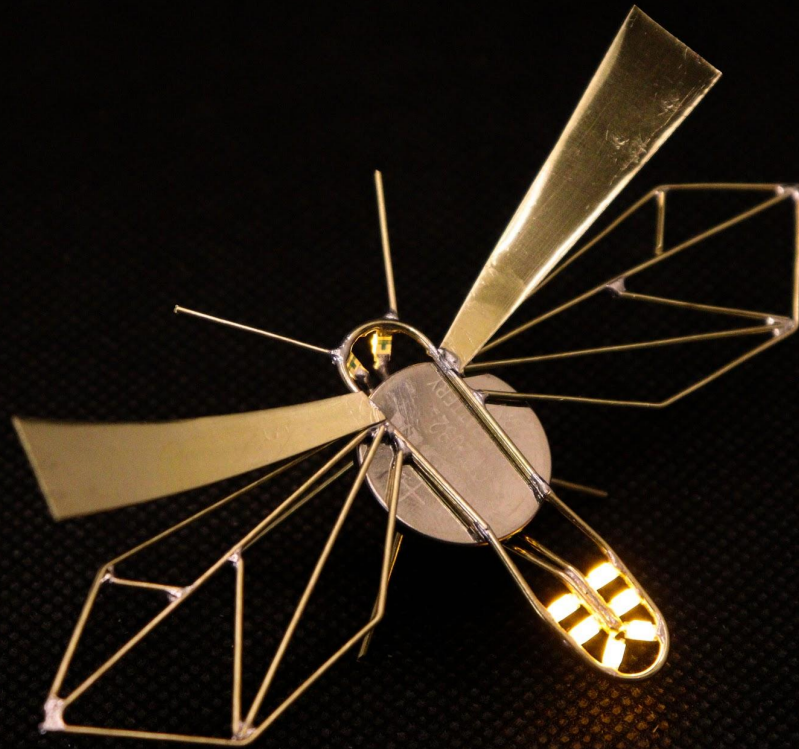


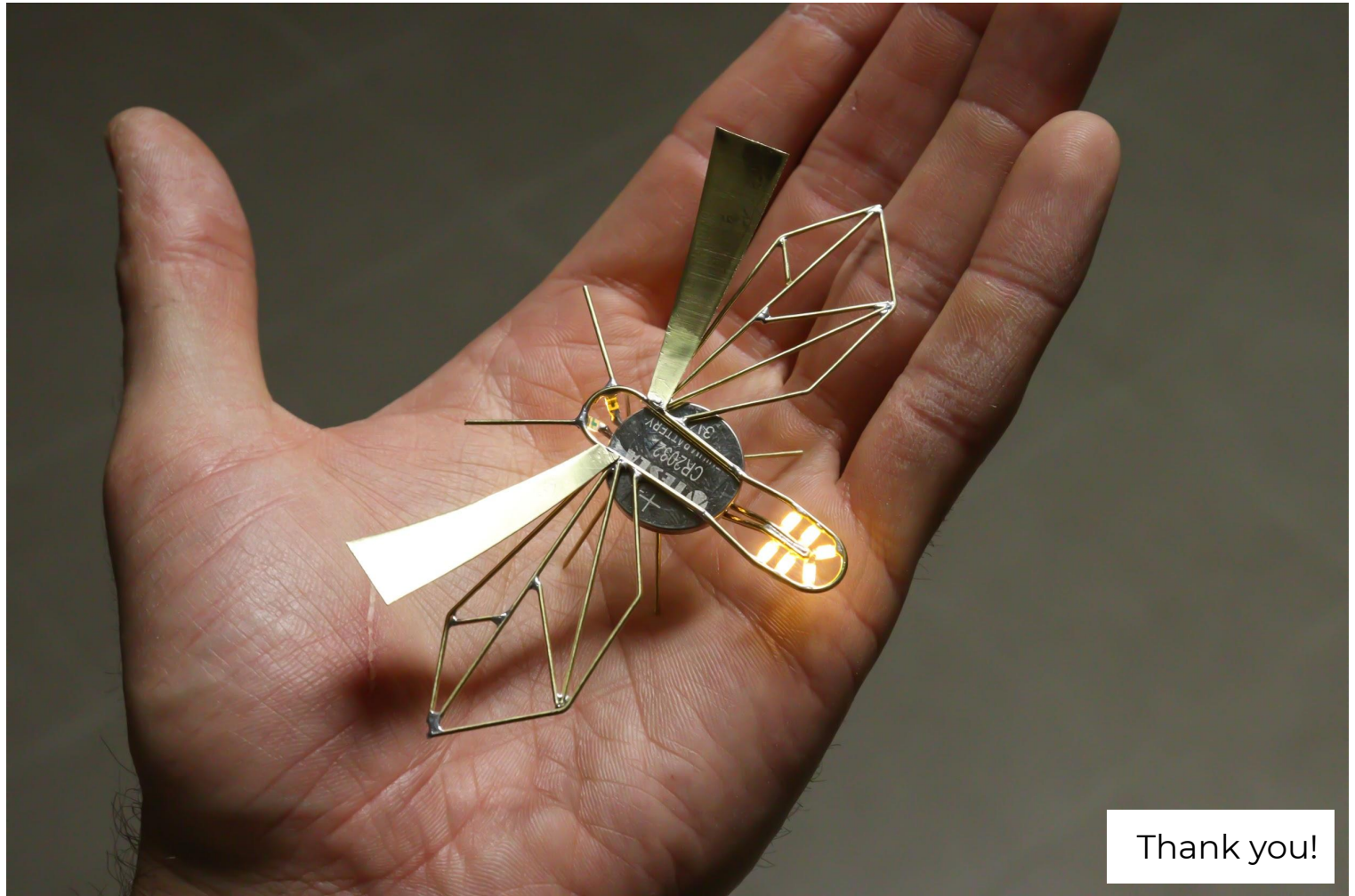
38



I also added these thin brass plates as wing cases







Thank you!