Photo Lights

by webphotos

I thought of the idea for this Instructable when reading this article:

https://www.instructables.com/id/Cheap-Two-Channel...

This Instructable shows how you can make variable brightness LED lights with this power supply.

You can also try making this circuit:

https://www.instructables.com/id/Cheap-Colour-Ligh...

or

https://www.instructables.com/id/Cheap-Colour-Ligh...

However, my circuit can drive higher power loads.

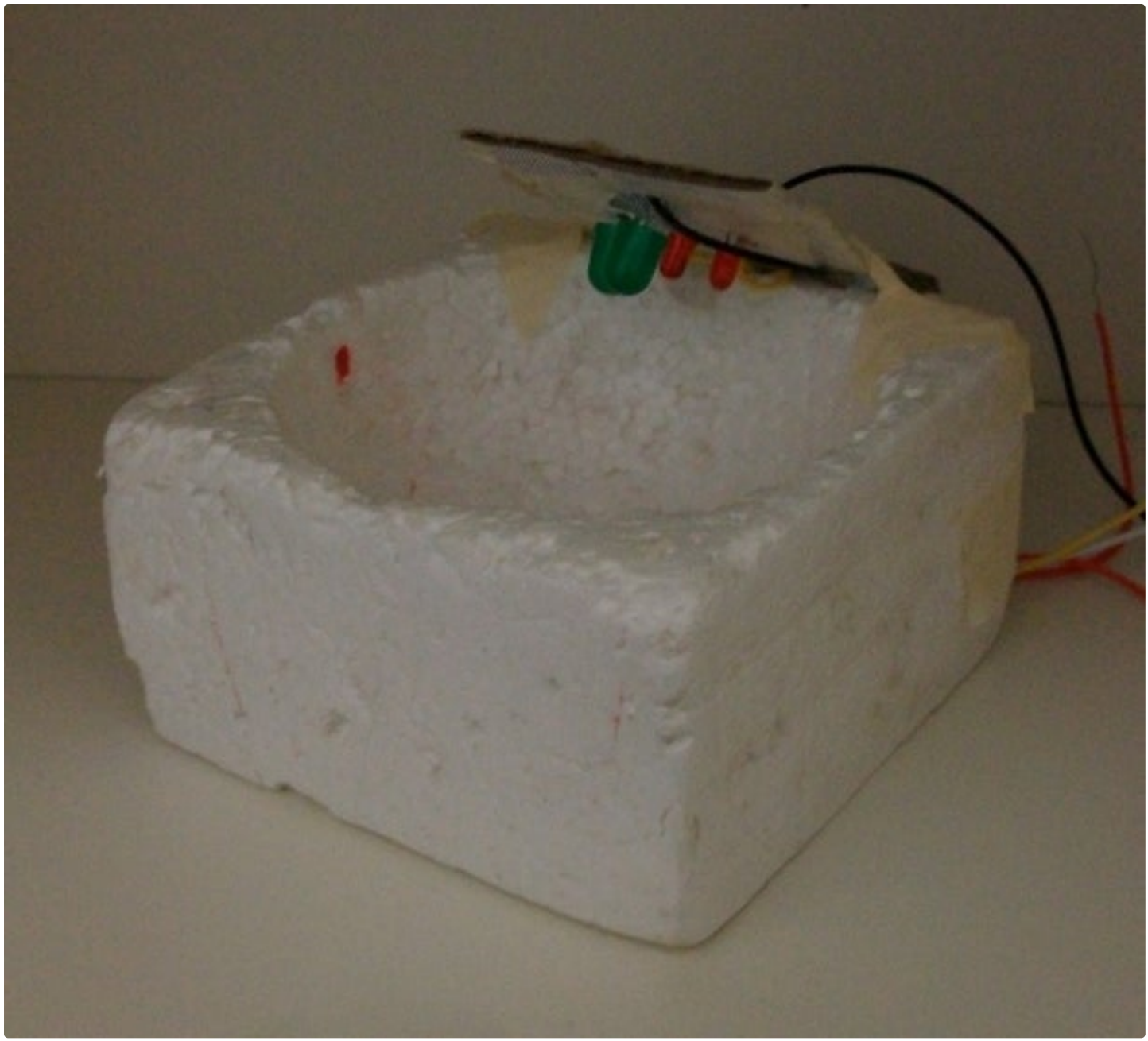
Supplies:

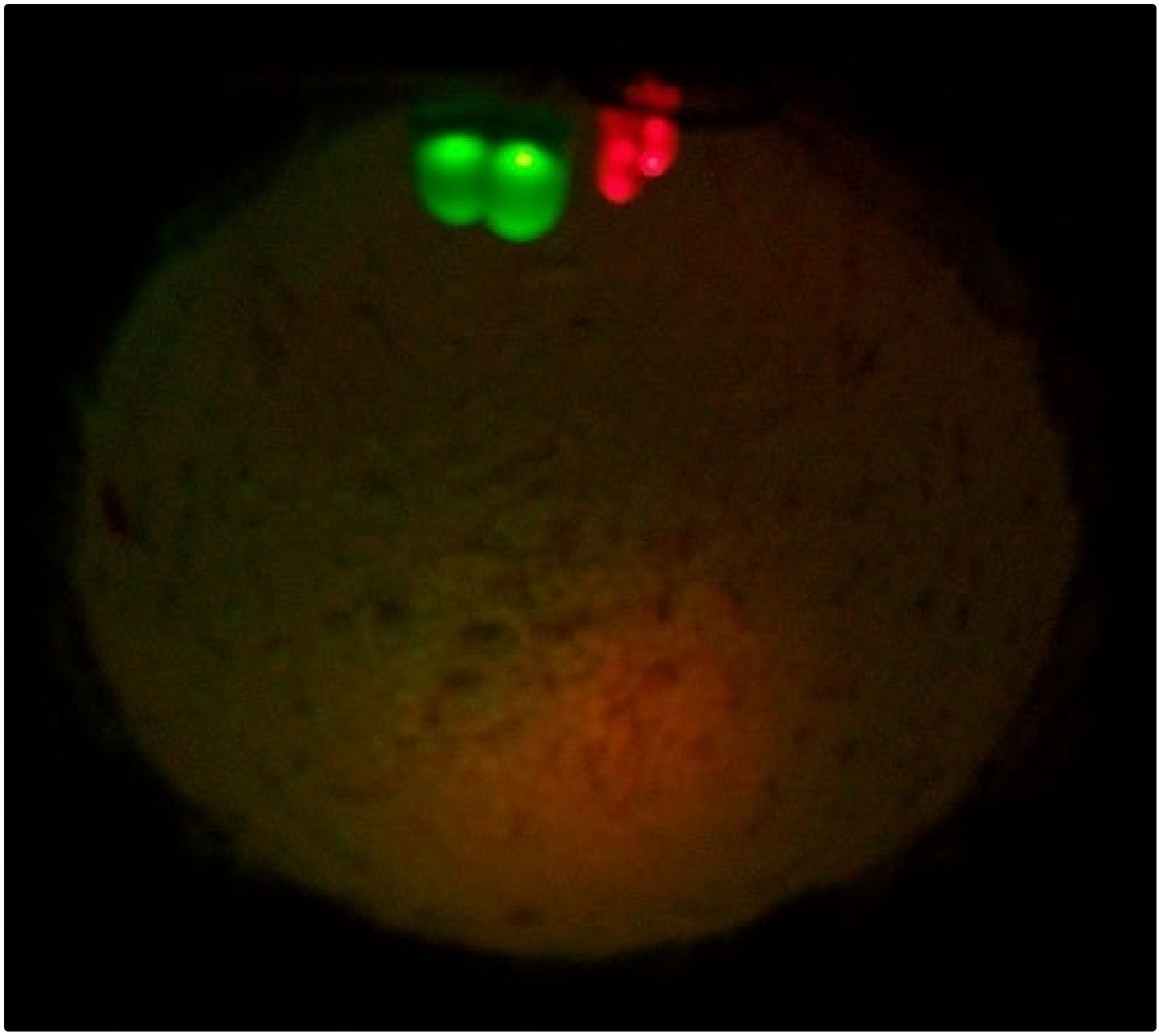
materials: general-purpose BJT NPN transistors - 3, bright LEDs/LEDs - 5, foam material, piece of cardboard, wires, metal wire 1 mm, masking tape, electrical tape, 9 V battery, 9 V battery harness.

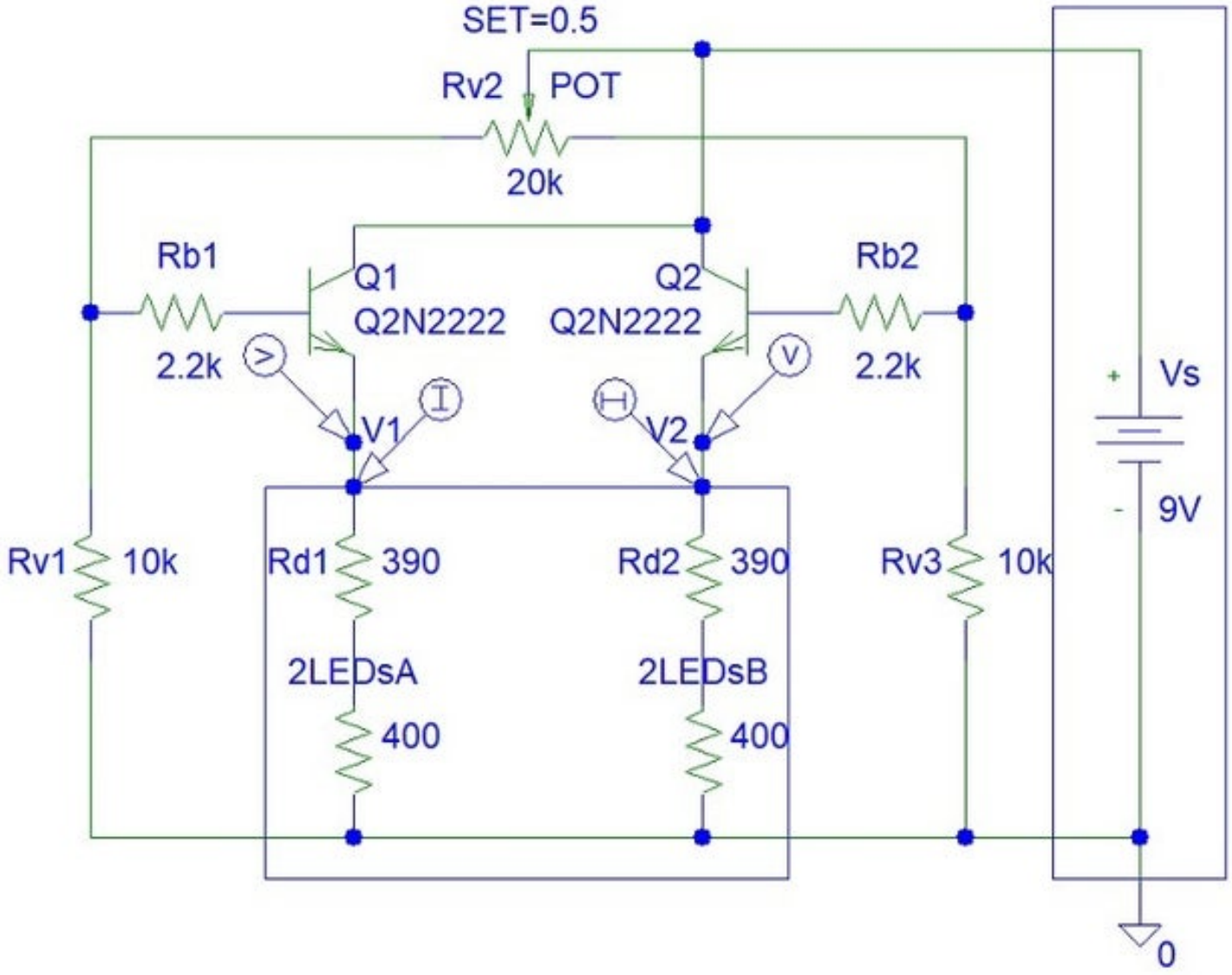
tools: scissors, wire stripper.

optional materials: solder, power transistors, heat sinks.

optional tools: soldering iron, multimeter, simulation software.



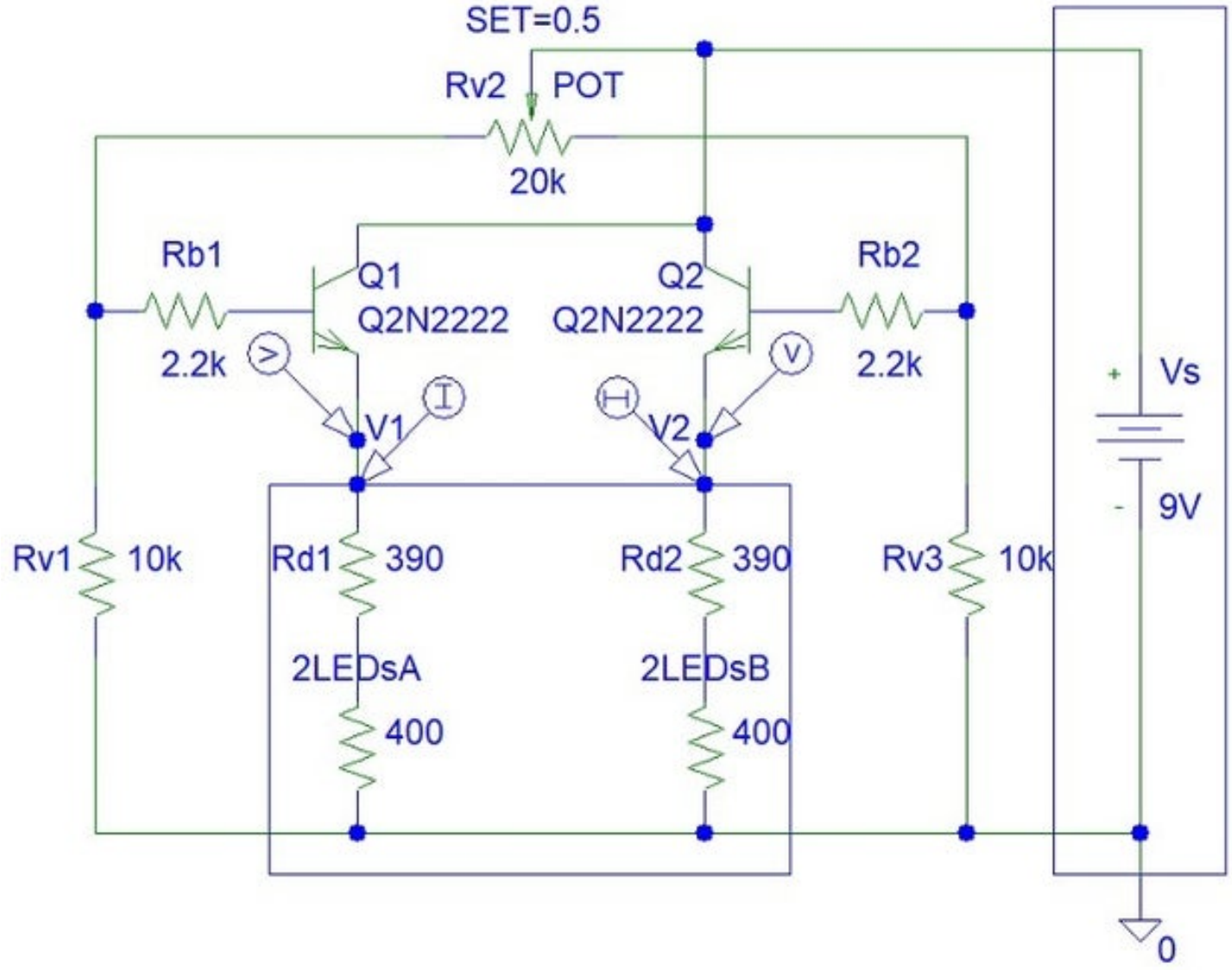




Step 1: Design the Circuit

The maximum LED current will equal to:

ImaxLed = (Vs - Vbe) / (Rd + 2*Rled) = (9 V - 0.7 V) / 790 ohms = 10.51 mA

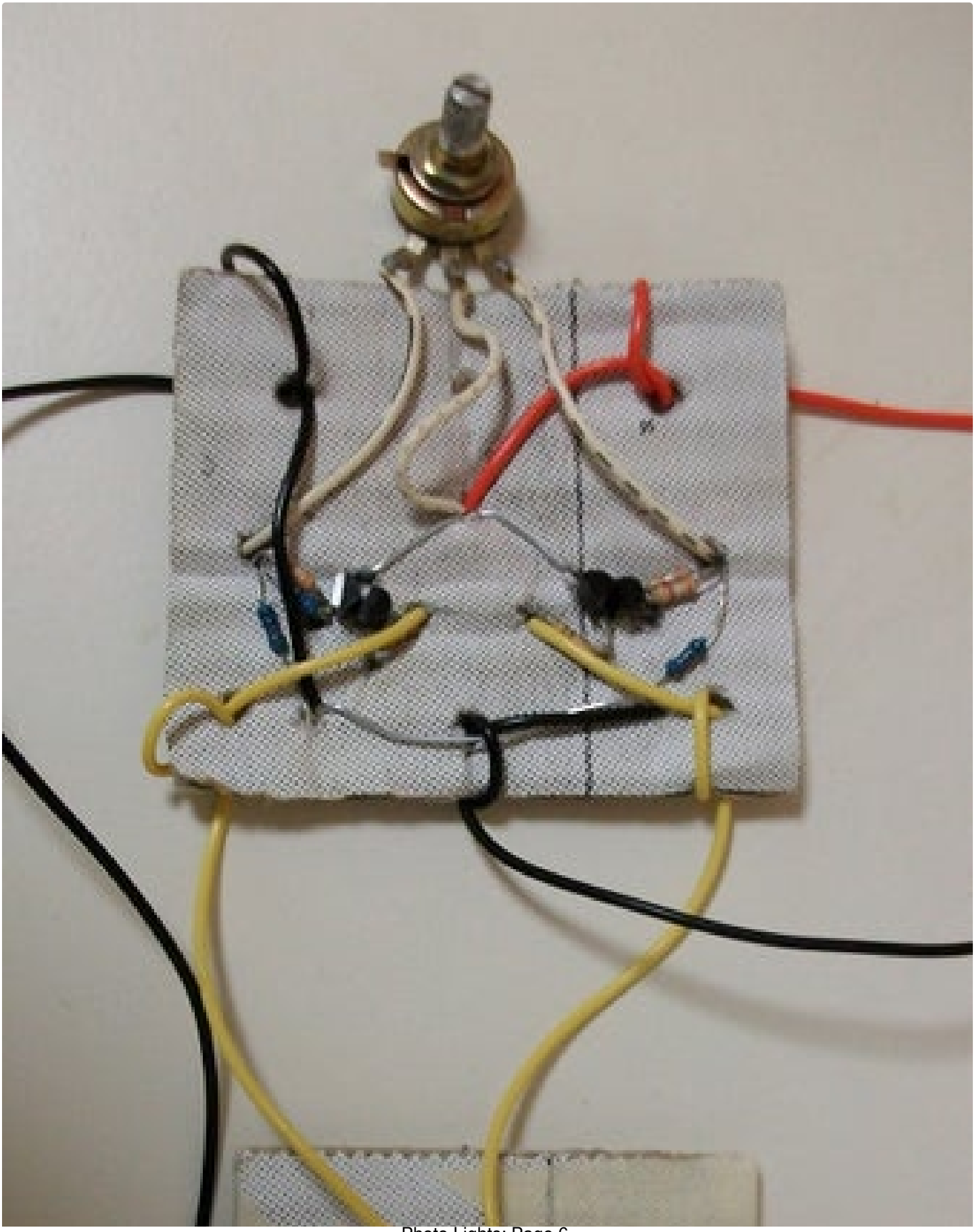


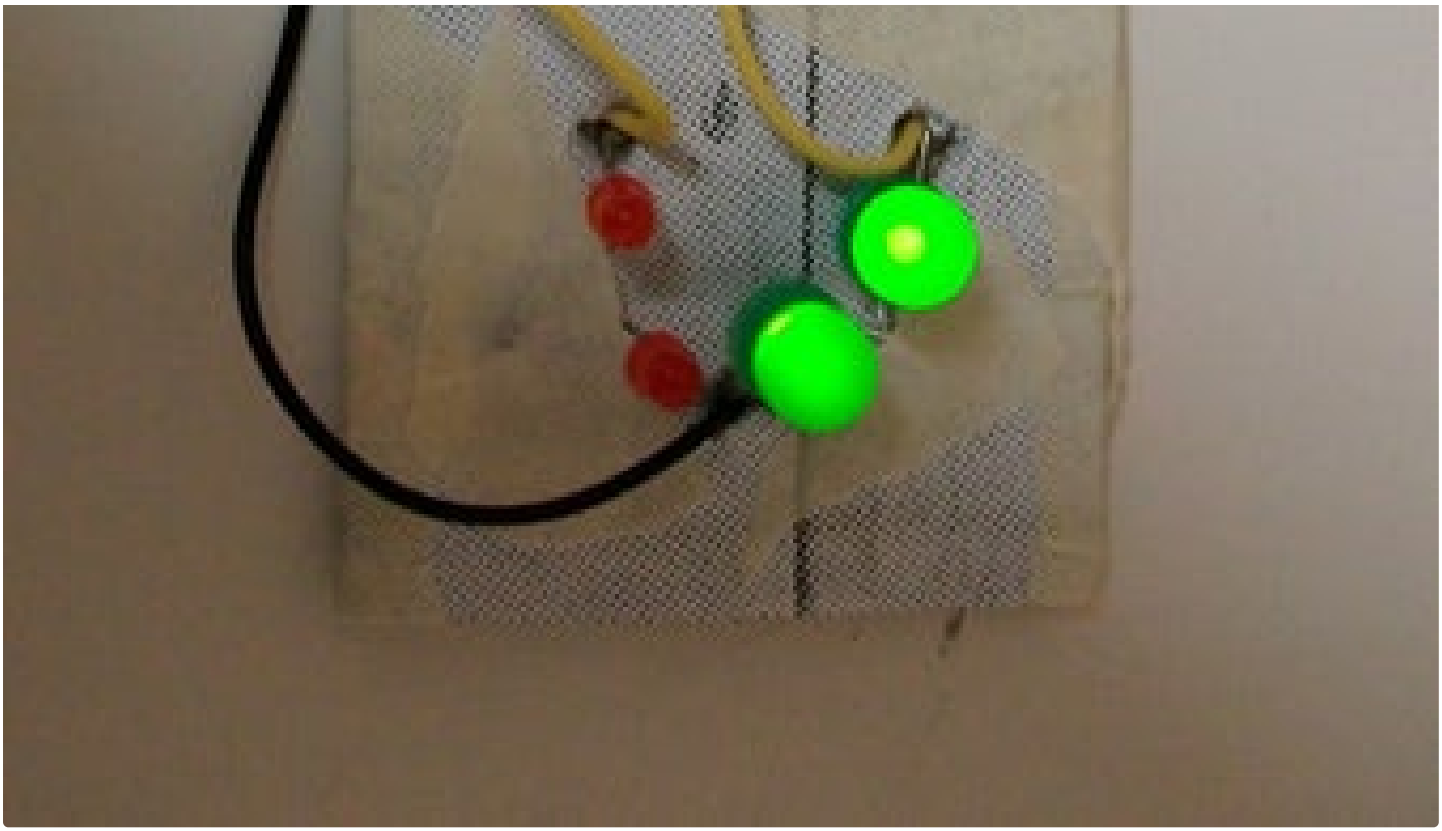
Step 2: Make the Circuit

I used two pieces of the cupboard.

You cannot see the Rd1 and Rd2 resistors in the photo. However, I did attach them. they are covered by yellow wire.

I used a few resistors in parallel because I did not have what I needed.



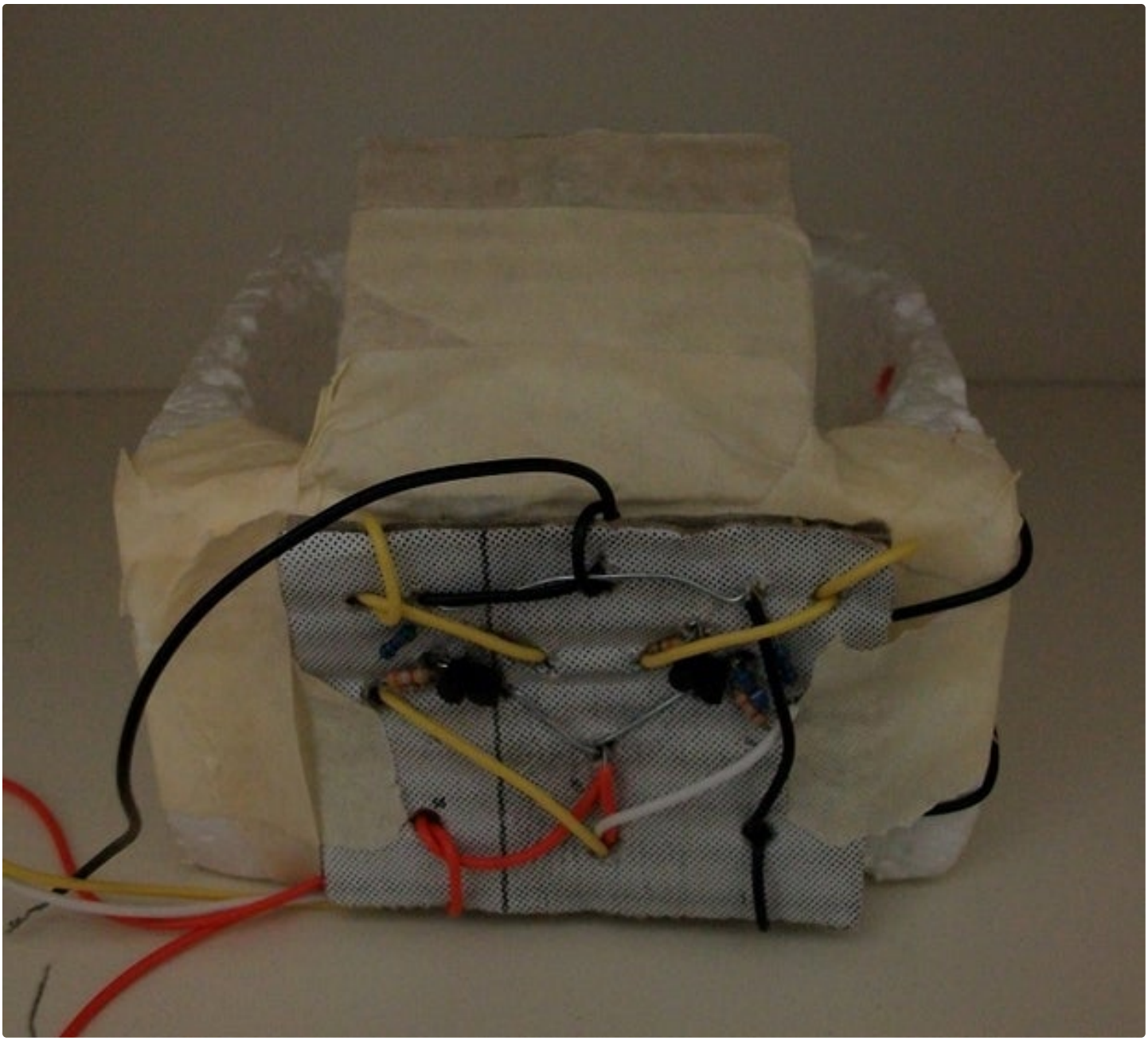


Step 3: Attach to Foam Sink

Use masking tape to attach to the foam sink.

You can use bright LEDs. However, they cost more money.

I had this packaging material for many years. It is from an old plasma ball that someone else in my household purchased many years ago.



Step 4: Test the Circuit

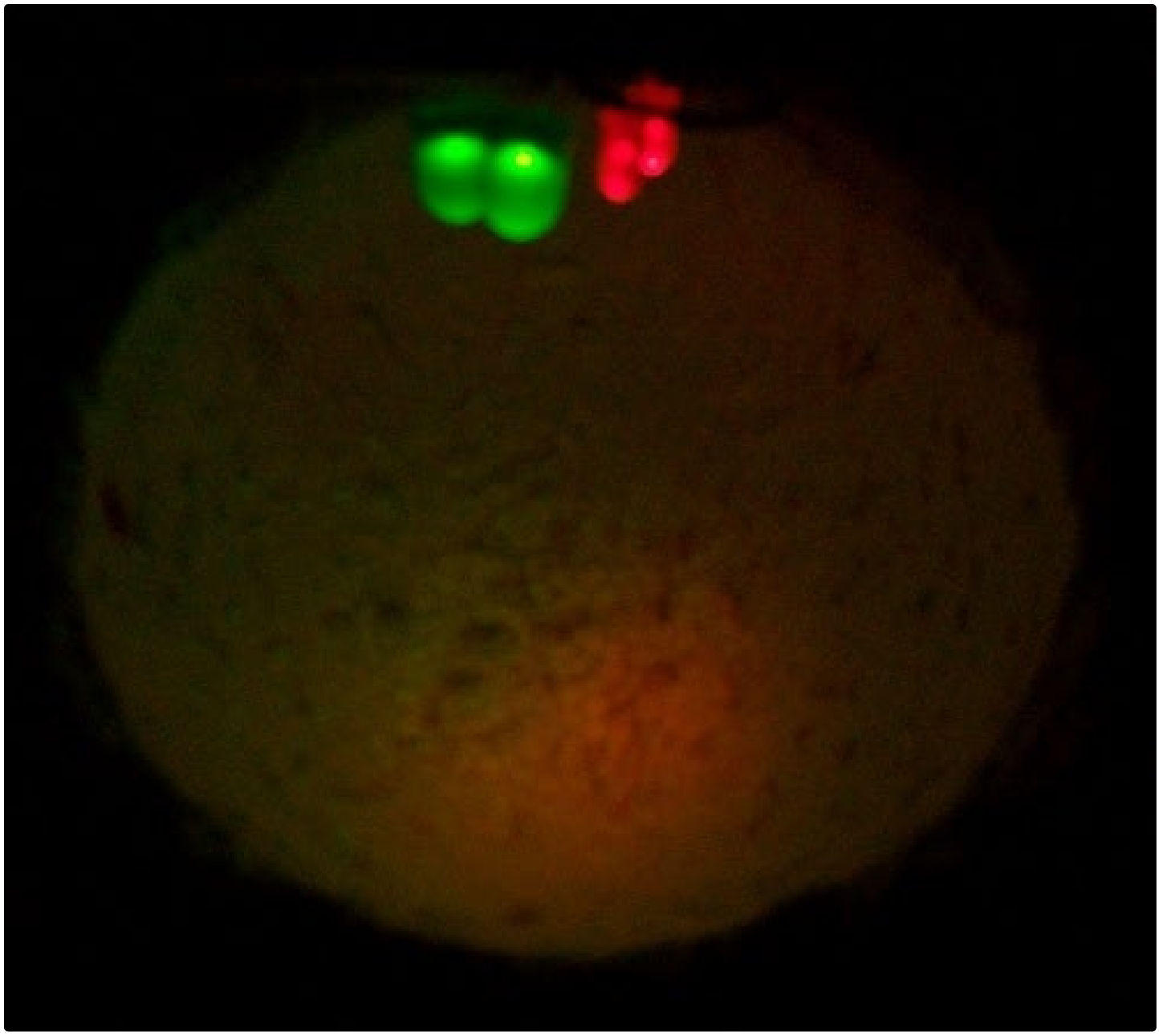
I shorted all three potentiometer terminals to get the photo you see above because otherwise, the LEDs would not turn on at the same time when I rotate the potentiometer. The method would not damage the transistors or potentiometer.

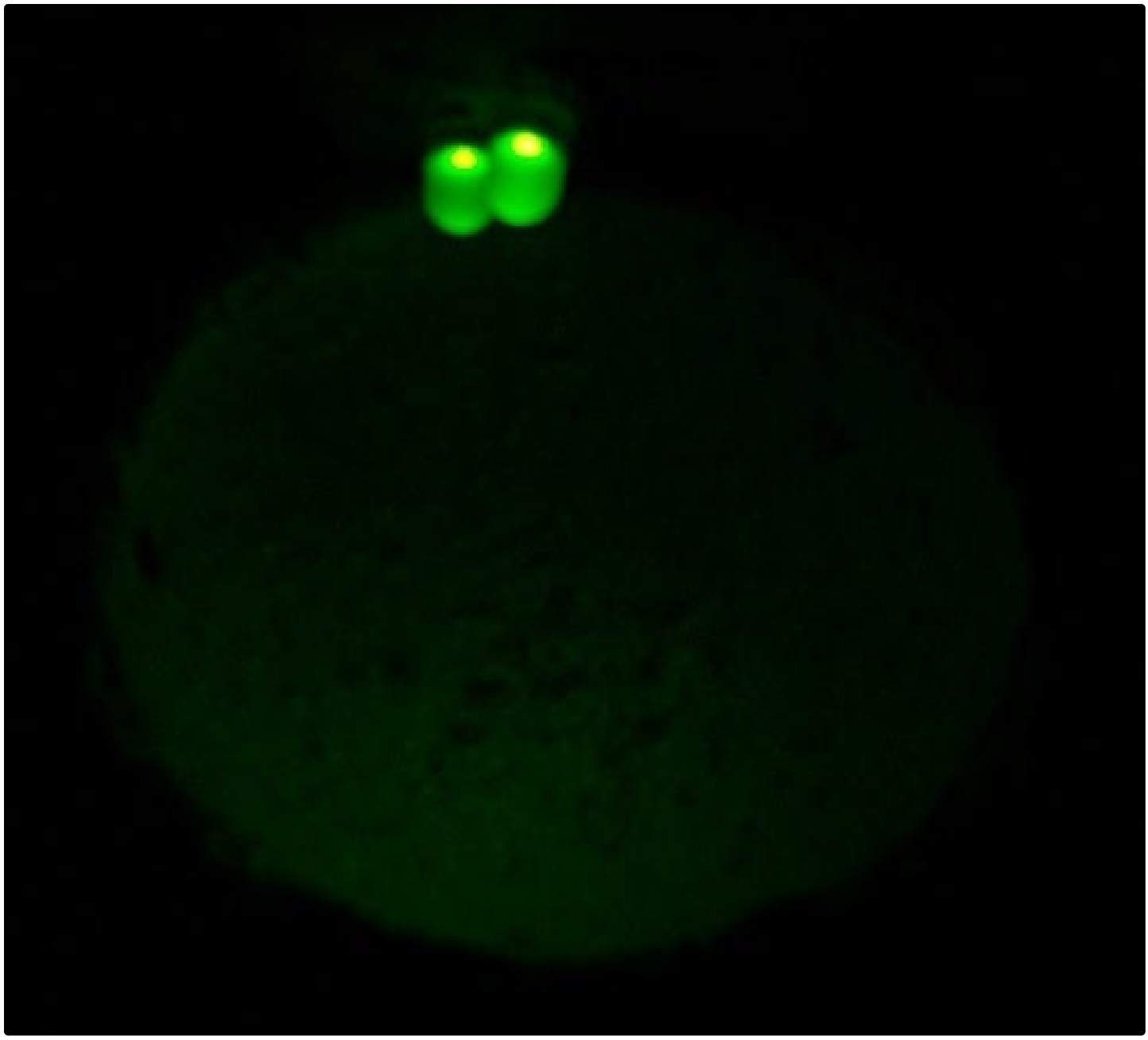
You can see the circuit working in the video.

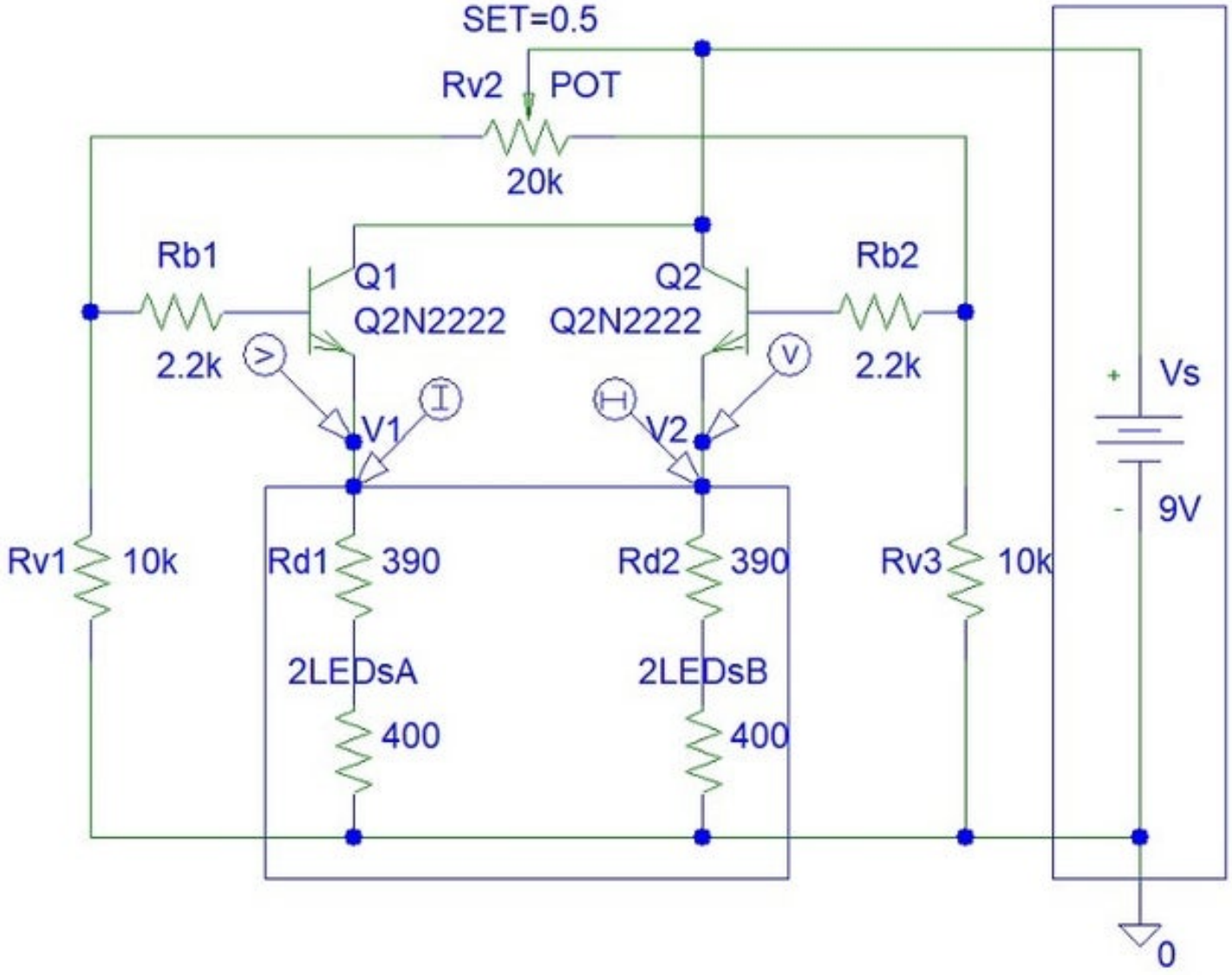
Both LEDs are not ON at the same time for the following reason. The mid supply voltage is 4.5 V. 4.5 V - Vbe (transistor voltage potential) = 4.5 V - 0.7 V = 3.8 V. The two LEDs need at least 4 V to turn and can still provide dim light even at current as small as 1 mA. Thus you can try replacing two LEDs per channel with just one LED per channel.

Then the maximum LED current will then equal to: (9 V - 0.7 V) / 590 ohms = 14.07 mA.

This current is still not too high for each LED and there is no need to increase the Rd resistor values.







https://www.youtube.com/watch?v=rfupVvqvbwg