Avramenko's Plug

Avramenko is a Russian scientist and invented the plug shown in Fig. 1 to transmit electrical energy over a single wire. It's a simple circuit consisting of two diodes, one capacitor, and a flash tube. The high-voltage (HV) terminal is connected to the HV output of an auto ignition coil. The + HV pulse charges C1 through D1. D2 is OFF during this operation. When the pulse is OFF, D1 will be OFF, and the charged capacitor will be discharged through the flash tube. When there is no trigger wire, the flash tube won't fire! When I wrap a wire around the flash tube and extend it into the air by about 15 cm, the tube will fire nicely.

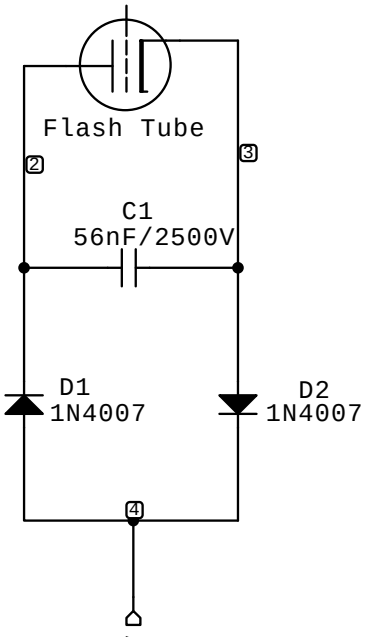

Fig. 1. Avramenko's plug.

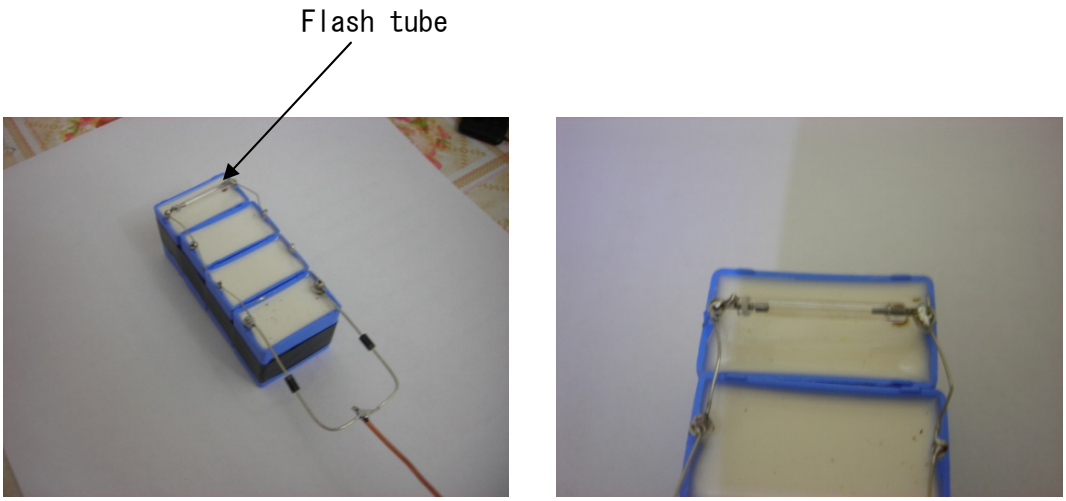

Fig. 2. Avramenko's plug. Four capacitors, each 56nF/2500V are connected in parallel to form a 224nF/2500V cap. Single capacitor works too, but the flash intensity is lower.

Fig. 3. a) No wire, no flash. b) With the wire, the flash tube fires! Firing mechanism can be explained by collecting free electrons from the wire and the air.

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