

# Does Fascinating Stunts

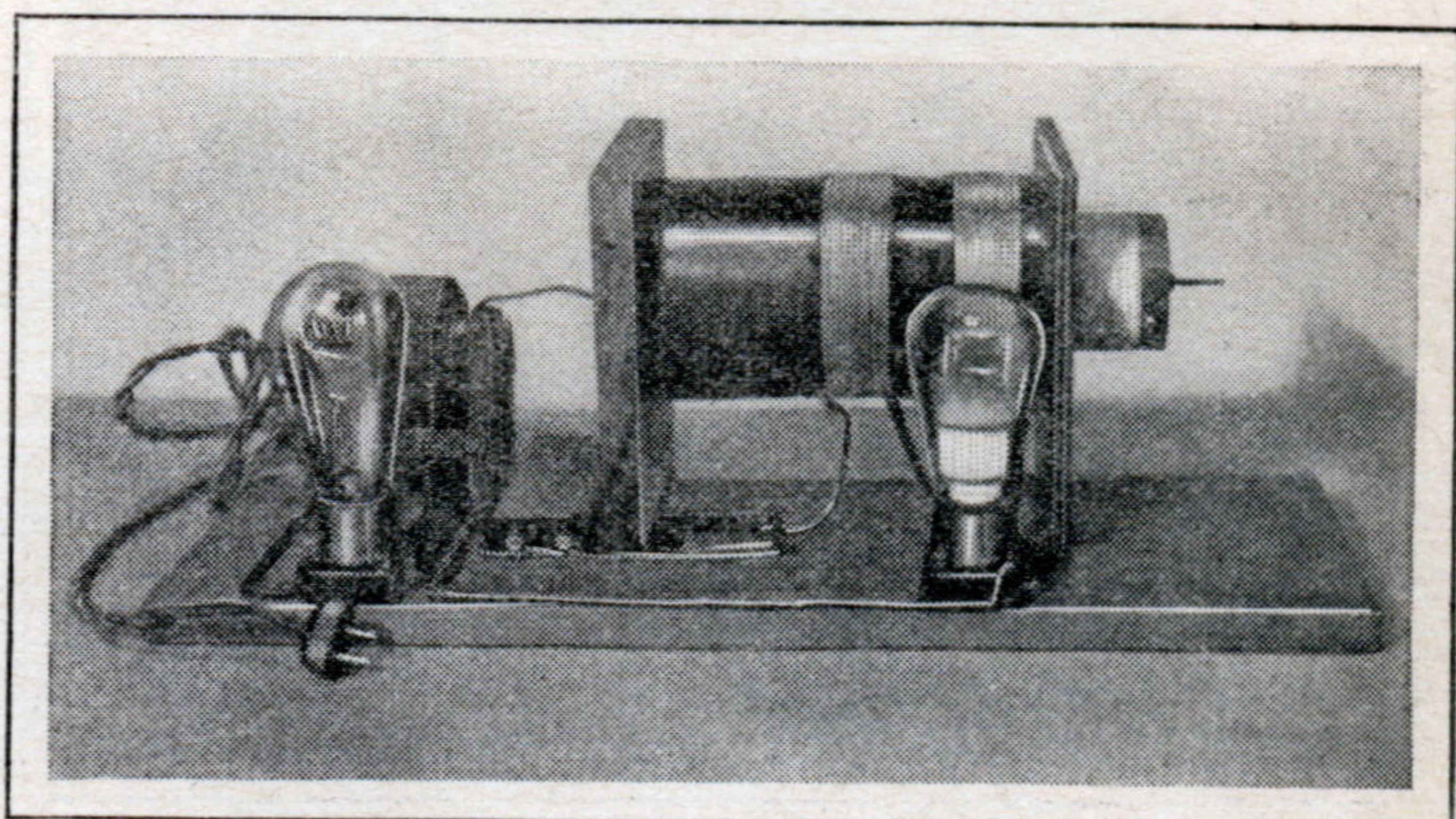
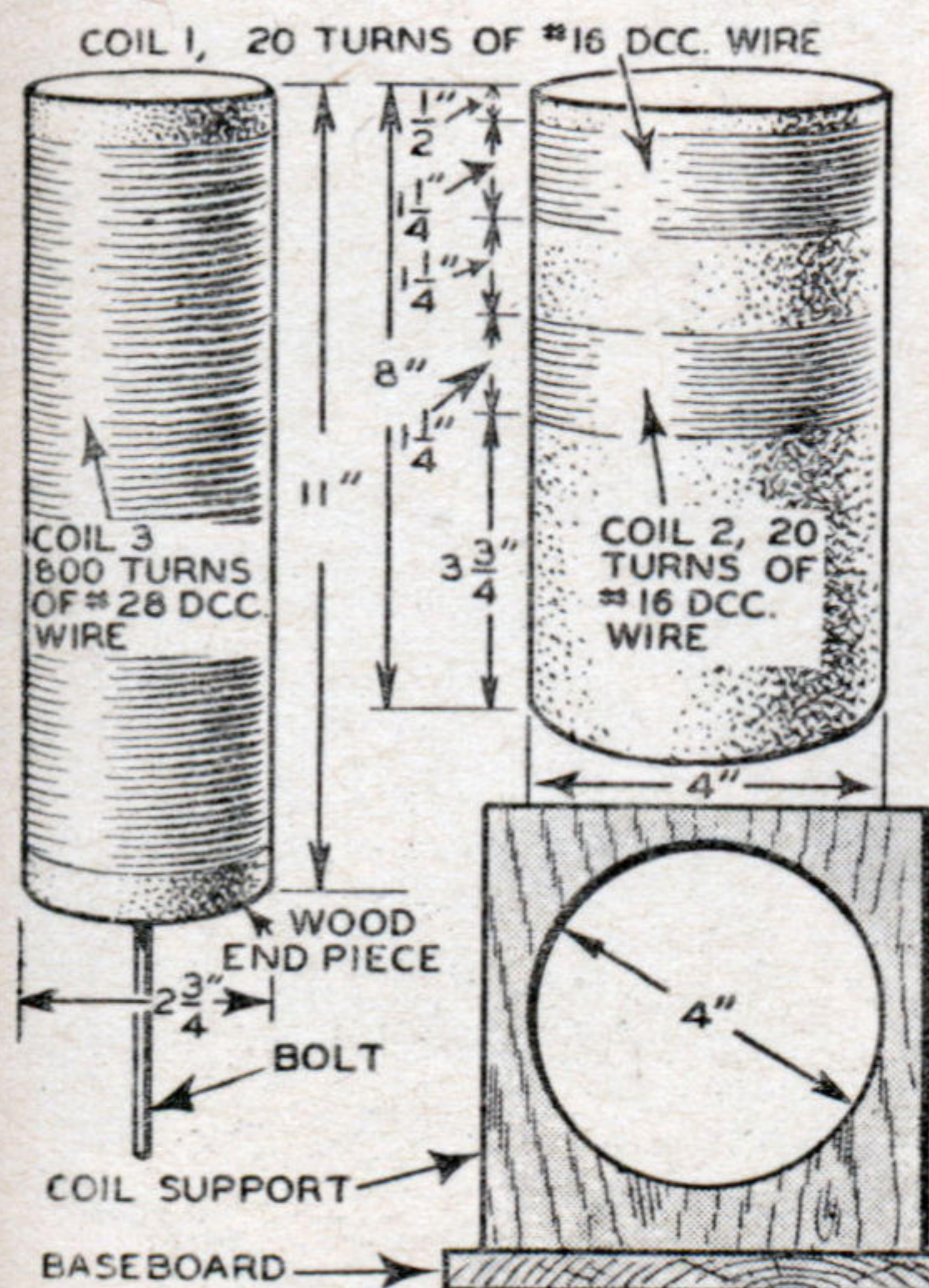


Fig. 3. Here is the completed vacuum tube Tesla coil, ready to produce fantastic light effects. Power of tube is decreased when experimenting by rheostat in primary of the transformer.

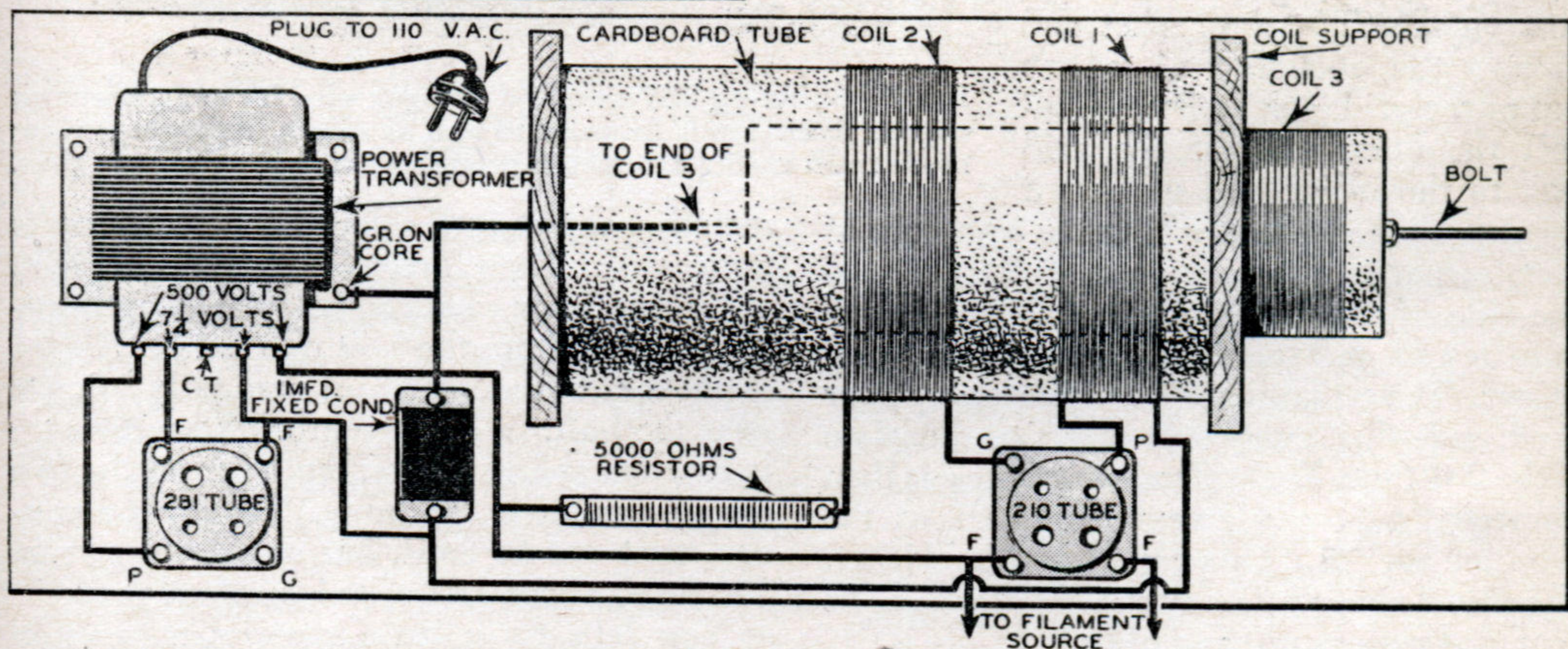


Fig. 2. Coils 1, 2 and 3 are wound on cardboard tubes to dimensions given in top drawings. Lower drawing gives layout of parts on baseboard and hook-up for tubes and coils. Coil 3 is inserted in coils 1 and 2 as shown. Filament leads of 210 tube are wired to 7½ volt terminals of transformer.

the remaining socket for the 210 oscillating tube.

Now comes the winding of the coils. First wind those called Coil 1 and Coil 2 on the 4-inch tube. These consist of 20 turns each of No. 16 DCC wire. Note the dimensions and spacings on the diagram (Fig. 2). Wind closely and tight and space them 11¼ inches apart. Wind in the same direction and secure the ends by any manner at hand. Wind in the same direction as the two former coils and secure each end to a bolt, the right hand one projecting out two or three inches from the end.

Mount the 4-inch coil in the supports as shown. Now slip the 800-turn coil (Coil 3)

inside the larger tube and by means of blocking or little angle pieces, support it in the center of the large tube equidistant from all sides as illustrated in Fig 4. Solder all connections not secured by connectors or binding posts and make all leads as short as possible. Hookup wire can be either bare copper wire covered with spaghetti, or any type so long as it is well insulated and about No. 18 gauge.

Start with Coil 1. Connect the outside lead to one side of the fixed condenser and to one side of the filament winding used to light the rectifying (281) tube. The inside lead of Coil 1 then connects directly to the plate terminal on the 210 tube socket. Now connect the inside lead of Coil 2 to the grid binding



# Spinning Rotor Emits Changing Corona Discharge in Fascinating Stunt

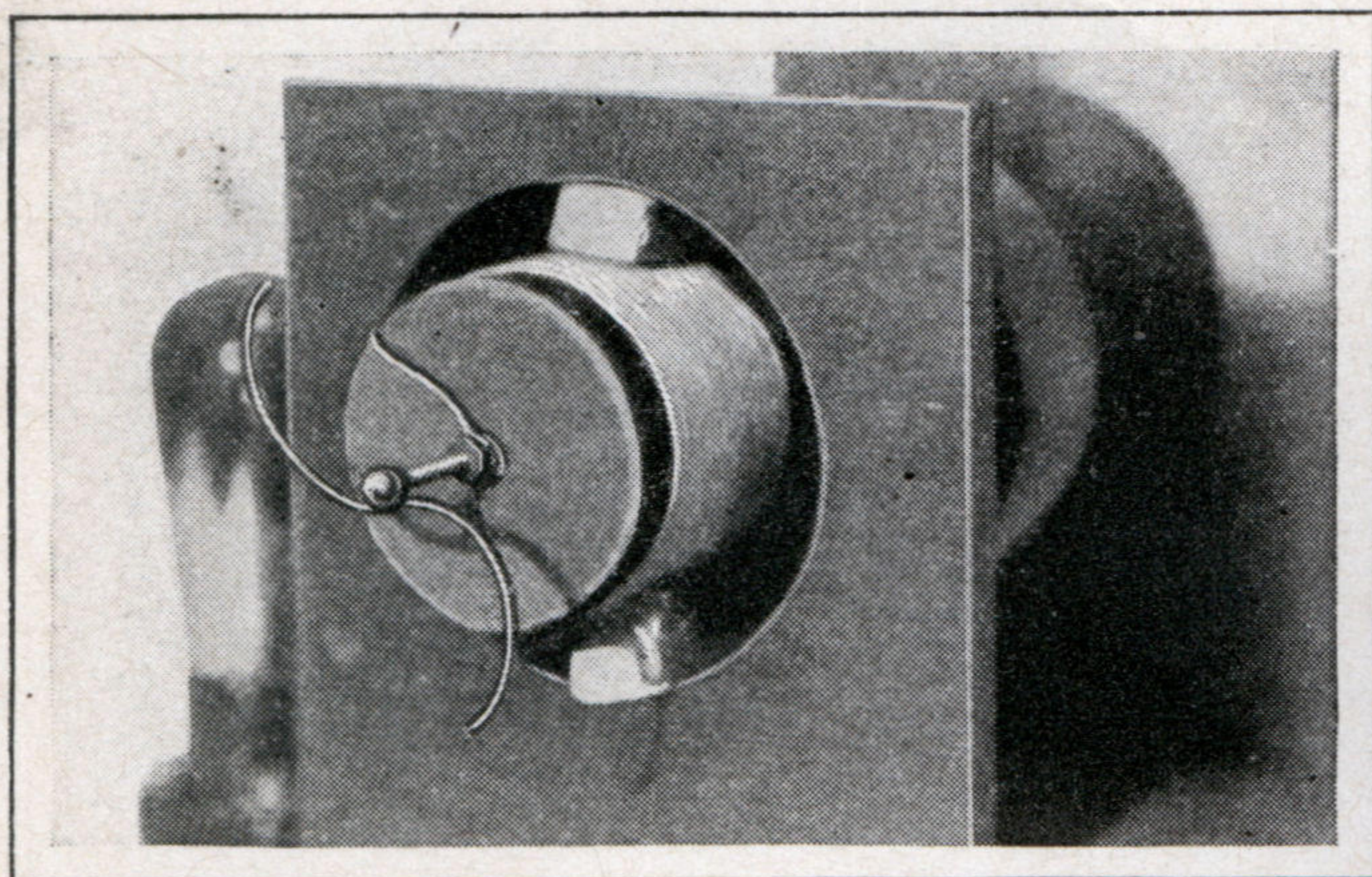


Fig. 4. Cardboard form for coil 3 is held firmly in place by means of blocks as shown here. Photo also shows spinning "S" wire.

post on the 210 tube socket and connect the outside lead to one end of the grid leak resistor. Connect the other side of the grid leak to the inside end of Coil 3 (next to the transformer), to the iron core of transformer to filament post of 210 tube, to one side of the high voltage winding on the transformer and remaining side of fixed condenser. The remaining side of the high power winding is then connected direct to the plate of the 281 tube. Each filament winding is then connected to the filament terminals of the two tube sockets. This completes the wiring. The transformer primary should of course be provided with a cord and plug.

To test first plug in the transformer. This will light the tube filaments. Then, to see if the high voltage is energizing the Tesla coil, run a screwdriver or other metal tool up and along the bolt at the protruding end of Coil 3, as demonstrated in the photo on page 92. It should draw sparks as it passes over the threads and will prove it is working. If no show of energy occurs go over the wiring thoroughly (first pulling the plug) and look for disconnected wires or poorly soldered joints. When properly hooked up it will surely work and you are then ready for a number of highly fascinating experiments.

With your Tesla coil operating properly you are ready for some of the most weird and interesting experiments imaginable. First, do not fear a shock. Slight burns may result if taken on the bare flesh but if one holds a

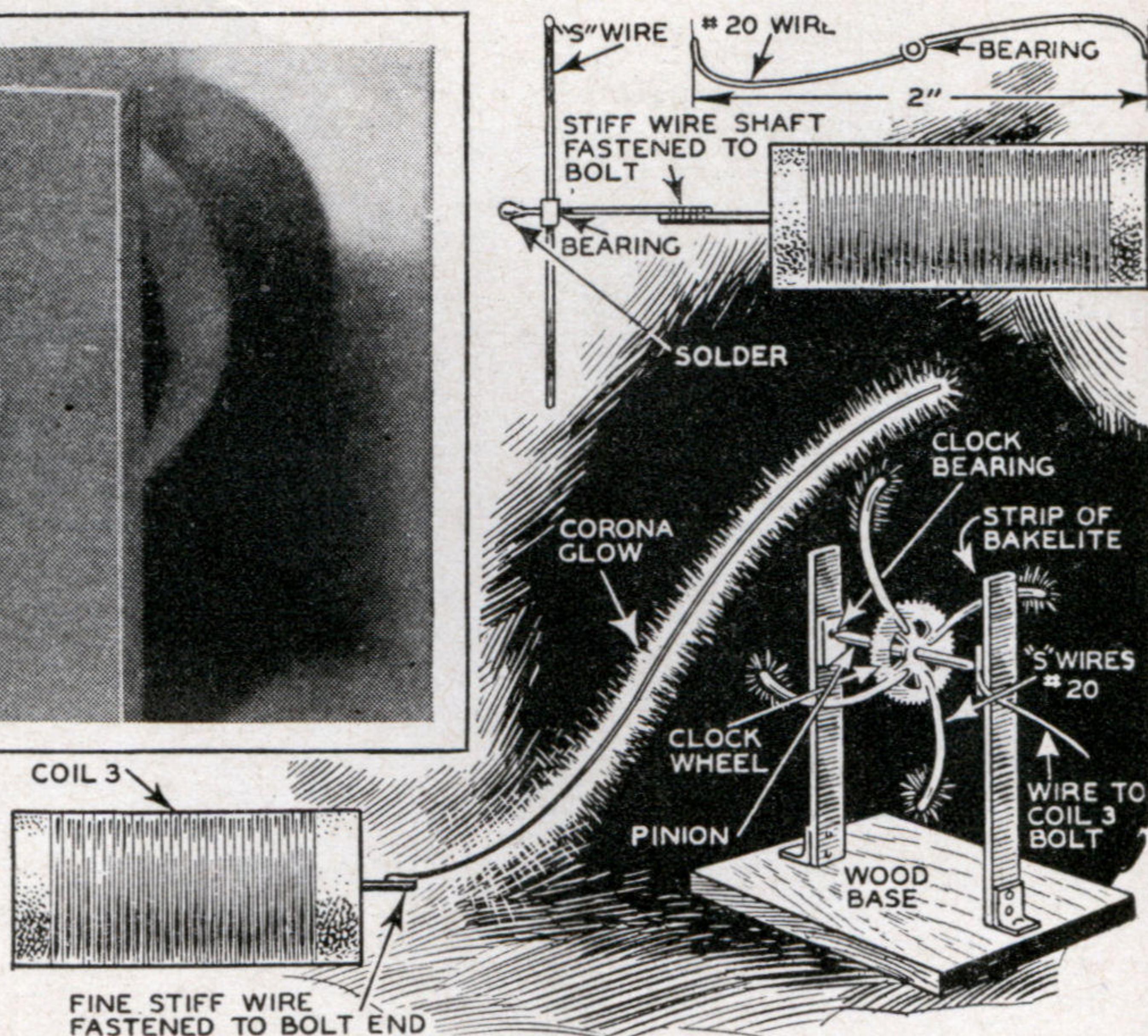


Fig. 5. Spinning "S" wire and straight wire for experiment on corona discharge is fastened to bolt as shown. At right is rotor made from clock parts which produces fascinating corona glow.

metallic object in the hands no sensation is noticeable. Therefore, there is no danger.

First let's see what can be done about drawing a spark from the bolt on Coil 3. Hold a metal tool in the hand and gradually bring it near the bolt. When the breakdown distance is reached sparks will jump between the two metals similar to lightning. Too great a voltage must not be used, but any voltage from 350 up to about 750 volts is perfectly safe.

Now let's try a little experiment with an electric light bulb. If you can get hold of a bum one so much the better. First fasten a small metal ball to the end of the bolt. Then, holding a 15 or 20-watt bulb by the glass, bring the metal ferrule near the bolt. As it approaches it will commence to glow and change colors according to the gas in the bulb and the power of the coil. Get a bulb in the "Five and Ten" marked "made in Japan" if you want to see some fascinating effects.

Here is another fascinating demonstration. Fasten a very fine, stiff wire to the bolt and bend it up and outward in a wide curve as illustrated in Fig. 5. Plug in the coil and watch the result in a darkened room. Varying the output voltage will change the glow around the wire and at the very end will be seen a very concentrated discharge of fire.

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# Tesla Coil Does Fascinating Stunts

*(Continued from page 94)*

Here is one of the most spectacular stunts of all. It is a rotor spinning from the high frequency oscillations and emitting a changing corona discharge ever fascinating and beautiful. Bend a piece of fine wire such as No. 22 or 24 into a wide S as shown in Fig. 5. Slip this over a piece of stiff wire fastened to the end of the bolt horizontally. The wire must rotate freely and be free from kinks or corners. Start the coil and watch the S wire spin. It will rotate at terrific speed well up into several thousands of R.P.M.s. All around the circle will be seen an even number of brush discharges and the peculiar thing is that they will always be an even number.

Here is a way to mystify the crowd. Hold a match head near the bolt. No effect is no-

ticed. Then wet the head so it is soaking. Hold it near the bolt again and it lights! The dry head was non-conductive but the wet head acted as a metallic conductor and soon ignited from the spark produced. Done with the bolt and coil hid behind a thin partition makes the trick doubly mysterious.

As the user becomes accustomed to the action of his Tesla coil he will discover many more interesting and instructive uses for it. Common things can be utilized to produce many weird results and spectators will never tire of watching the effects of its action. As before stated, there is not the least danger in its effects. But, don't get careless with the direct output of the transformer itself. The current produced is at a much lower frequency (6 cycle) and 500 volts or more at this frequency will give quite a kick if taken through the body.