A text from the Electro Importing Company, (NY) 1908 Catalog, pages 44 & 45; (a book from the archives of the Society of Wireless Pioneers (CHRS), now held in the California State Library; transcribed by Bart Lee, K6VK, CHRS Archivist:

Experiments With Spark Coils.

Connect two short pieces of wire the two top binding posts.

Make a "spark gap" by leaving a small space between the wire points. If the coil is started with the battery, a steady stream of sparks will flow between the points. It can be intensified by tightening the thumb screw.

If the "spark gap" is about 1/8 inch, a "fire ball" will be observed between the points. If the experiment is continued the positive wire will get white hot and finally fuse at the end. If the wires were copper the fire ball will be green; if of iron, reddish yellow; if of zinc, blueish.

If a coil is listed as a 1-inch one, for instance, it gives a 1-inch spark, measured between two needle- or sharp points. Of course, the battery has to be strong enough or else the spark will not appear as guaranteed.

To lengthen the spark, attach a metal ball, or metal disc, to the negative pole. The positive pole should have a sharp point. The lengthened spark will not be single; it will tend to branch out.

Another method to greatly lengthen the spark is as follows: Moisten the cover of [the] coil box between the two wire points with your finger. The spark will at first be thin, but it will enlarge gradually as the moisture dries. This method lengthens a spark

three or four times. A 1-inch spark coil will very often give 3 or 4 inches. The experiment is very interesting.

If a thin glass plate is placed in the spark gap, the spark will not be straight, but it will hit around the plate's edge in zig-zag form.

A very striking experiment is done as follows: Bend two thin iron wires vertically in such a manner that they run parallel. With a little experimenting the right distance how to space the wires will be found. The spark will then start at the bottom and run up swiftly in ladder fashion. As soon as it reaches the top it stops, only to recommence at the bottom. It will work automatically for hours, and never fails to attract considerable attention. The sparks also emit a strange noise.

Lengthen the spark gap 4-5 times and strew carbon powder or metal filings between it. The spark will select a route of its own in a peculiar manner. The experiment is greatly beautified in the dark.

A small cup of benz[e]ne, gunpowder, etc., can be exploded if placed in a spark gap; but of course great precaution is necessary for such experiments.

If the flame of a candle is brought near the spark gap, the spark will be drawn into the flame (hot air being a better conductor for the current than cold air). If the candle is blown out and if the wick touched at once by the spark, it will light up again.

If a piece of cardboard is put between the spark gap it will be pierced. The bigger the coil the thicker the cardboard can be. Note the very peculiar hole the spark has made, and compare it with a hole the needle has made. Explanation: The current comes from both sides.

If your friend smokes cigarettes you can play an amusing trick on him. Offer some of your cigarette paper prepared as follows:

Place 10 or 15 leaves on a metal plate to which one wire of the coil leads. Take the other wire (which must be well insulated or you get a shock) and move it all over the surface of the cigarette paper; the more sparks you make in different places the better the trick will turn out.

The idea Is this: The paper will be pierced with numerous fine holes, — too fine to be observed, — and when your friend tries to light the cigarette after he carefully rolled it, he will waste a box of matches without being able to get as much as one puff, on account of the wrong draft. If he tries three or four of your leaves and if he is still unable to get as much as one whiff, you can hardly blame him if he commences to say a few things — or he may quit smoking cigarettes altogether.

If an old incandescent bulb is connected with one wire, and if the other is grounded, the ball will emit a greenish light in the dark, as soon as the coil starts working. If one wire has a very fine point and is not too far away from the other wire, a very peculiar and weird discharge will be observed in the dark.

If a drop of oil is placed in the spark gap it will be scattered around violently through the spark.

If your neighbor's dog has the habit of extracting things from your ash can, lead a well insulated wire to the can, which must stand on a piece of very dry wood. Ground the other wire. When you see the dog standing on his hind legs and leaning against the

can, bring your coil in operation. You will never see a see a more surprised dog in your life, and you can vouch that he will never come near that particular ash can again, even if it should be full of soup bones.

We leave it to the ingenuity of the experimenter to devise new experiments, tricks, etc., and shall be pleased to hear of such, for the benefit of other experimenters.

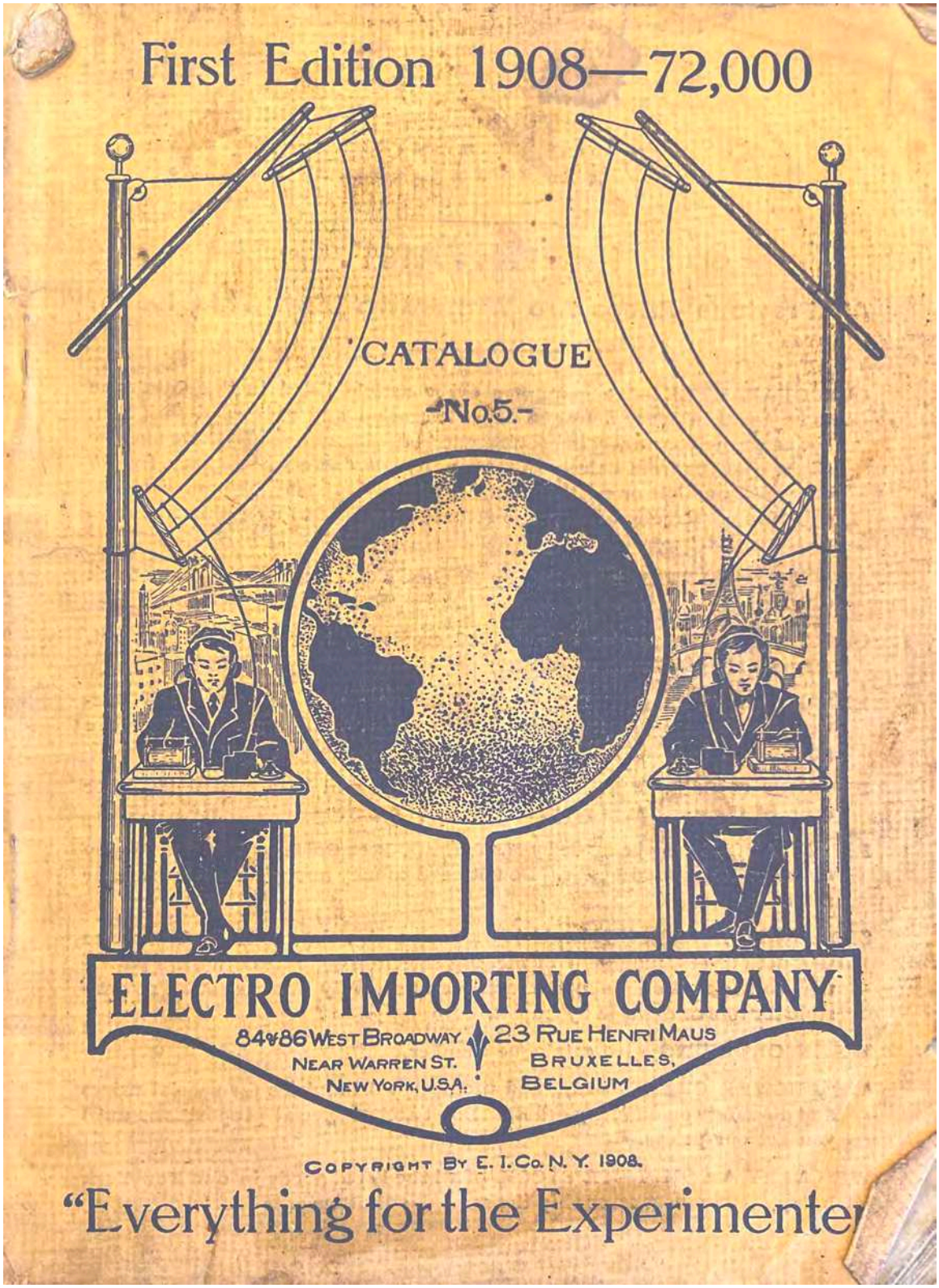
The most beautiful and startling effects, however, are created by lightening Geissler tubes, listed and explained on page 53. It is impossible to do the tubes justice on paper, — one must see them. We cannot recommend them too strongly, and a coil is never complete without at least one tube, which, by the way, never wears out. Our smallest coil will light our biggest tube for hours, and our 1-inch coil will light 8-10 medium tubes simultaneously if connected in series. As all tubes are different in color the most beautiful effects and designs can be created. In a store window they will stop every passer-by without fail. For parties a weird effect is obtained by suddenly turning out all the lights and operating a single large tube near the ceiling. It will startle the most phlegmatic man and the ladies will swear they saw a ghost.

IMPORTANT NOTE: If for some reason a coil does not give the right spark length, bend the vibrator spring a little back (towards the thumb screw). The stiffer the vibrator works the better will the spark be.

Never take off the cover of our coils, as the very thin wires which connect the binding posts will surely tear, for which, of course, we cannot be held responsible.

(Page two of two, transcribed; related graphics follow; Special Thanks to Scott Sibbett, CHRS, for the photographs to work from) >>>

The Source: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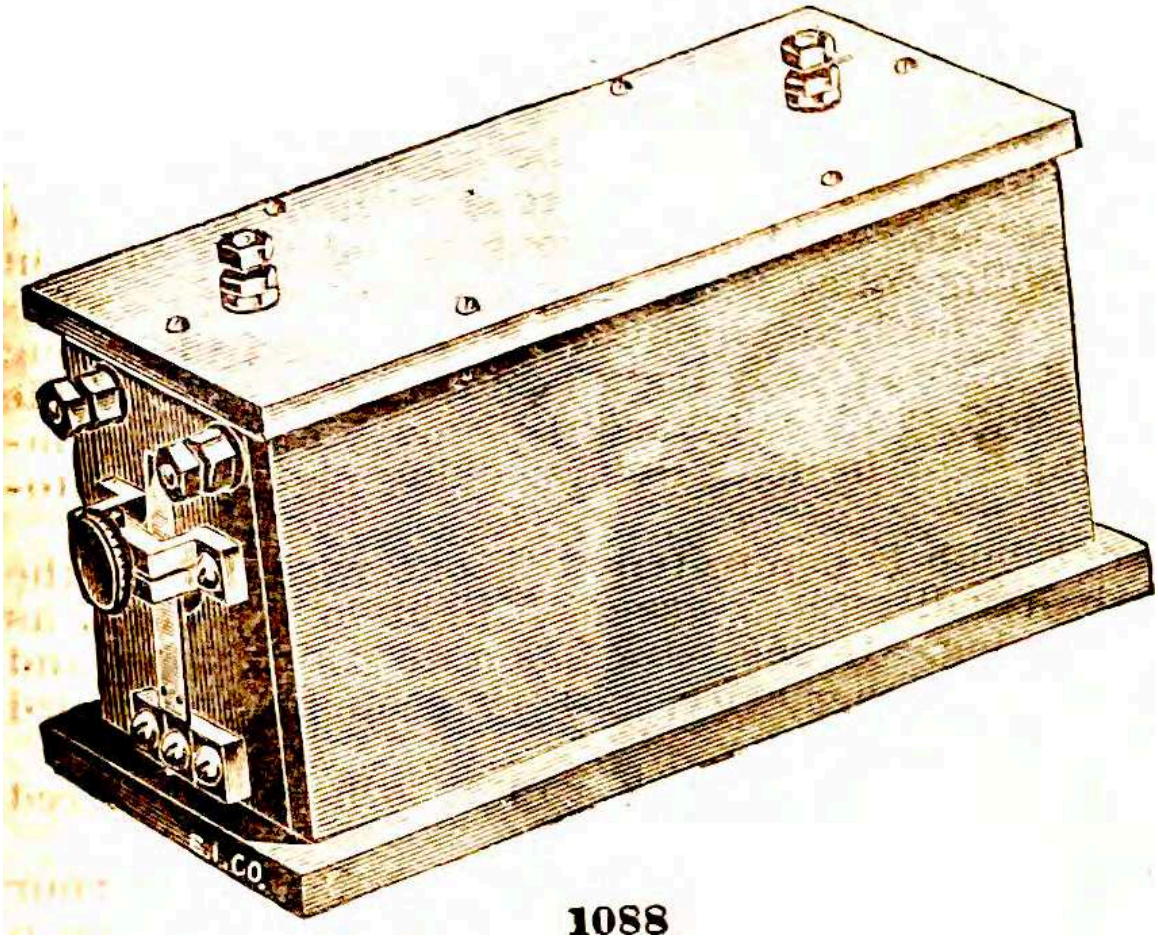
Spark Coils.



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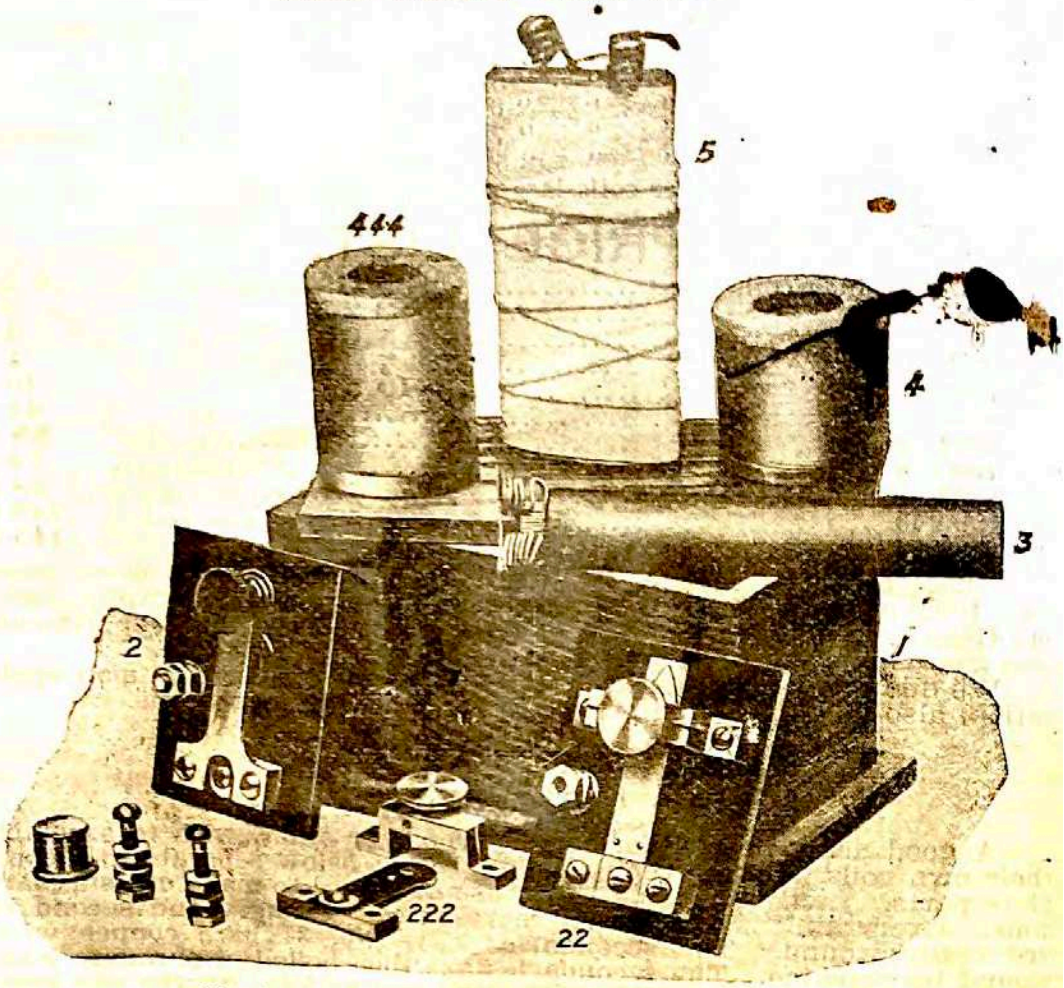
COIL PARTS—Continued.



Parts for One and One-half Inch Coil.

No. 111	Polished Hardwood Coil Case 9x4½x4½	$1 00	Postage extra		$0 40
" 222	Extra Strong Spring Vibrator, extra heavy platinum points, including binding posts, screws, etc.	1 50	"	"	8
" 333	Primary Coil complete heavy insulation	90	"	"	.13
" 444	Three Secondary Coils, extra large size, special high insulation	3 75	"	"	40
" 555	Big Capacity Condenser with glass plates	1 20	"	"	22
	Complete parts for 1½ inch coil	8 20	In 6 lots	....	7 85
Parafine Wax, extra fine quality		14	per lb.		
Top Binding Posts, laquered brass, per pair		10	In 6 lots		7
"How to make and use Induction Coils" by Trevert, postpaid					55

NOTICE: The above parts, if put together correctly and intelligently, will produce the spark as stated, which we absolutely guarantee. The parts are used by ourselves in our ½ inch, 1 inch and 1½ inch spark coils, with the above material. Of course it is understood that, for instance, vibrator No. 2 cannot be used with 1 inch or 1½ inch coil. All the above parts are selected and scientifically "balanced" out to procure the required spark. If parts are interchanged we do not guarantee the spark length.

How to Photograph Electrical Discharges

By H. GERNSBACK

President Electro Importing Company, General Manager and Secretary Royal Battery Company.

The following most extraordinary experiments, which, of course, can be varied hundredfold, can be performed with any of our coils, the ¼ inch one included. The ordinary photographic plate is used for all the experiments, its size depending on the objects.

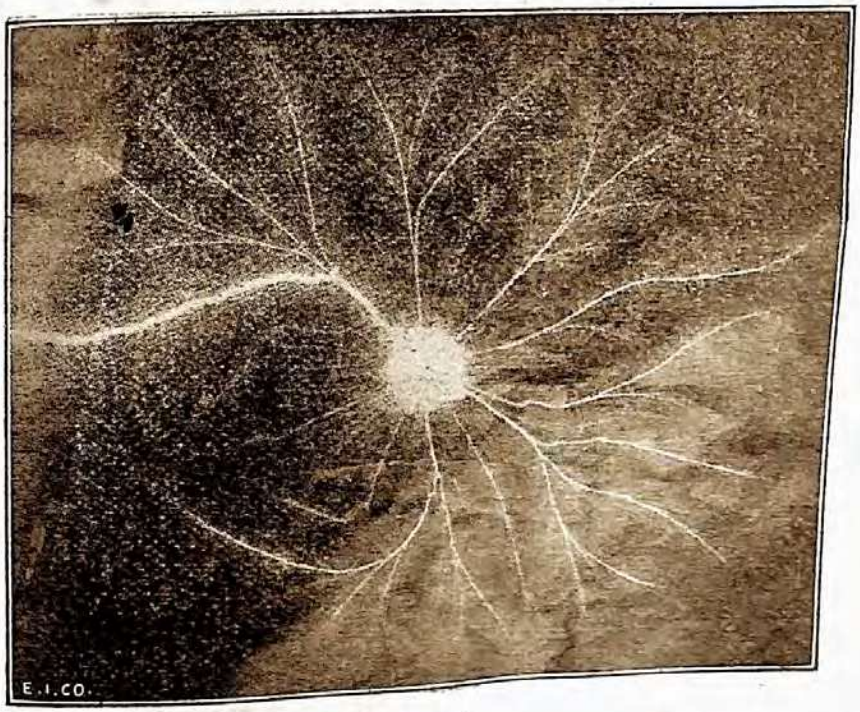


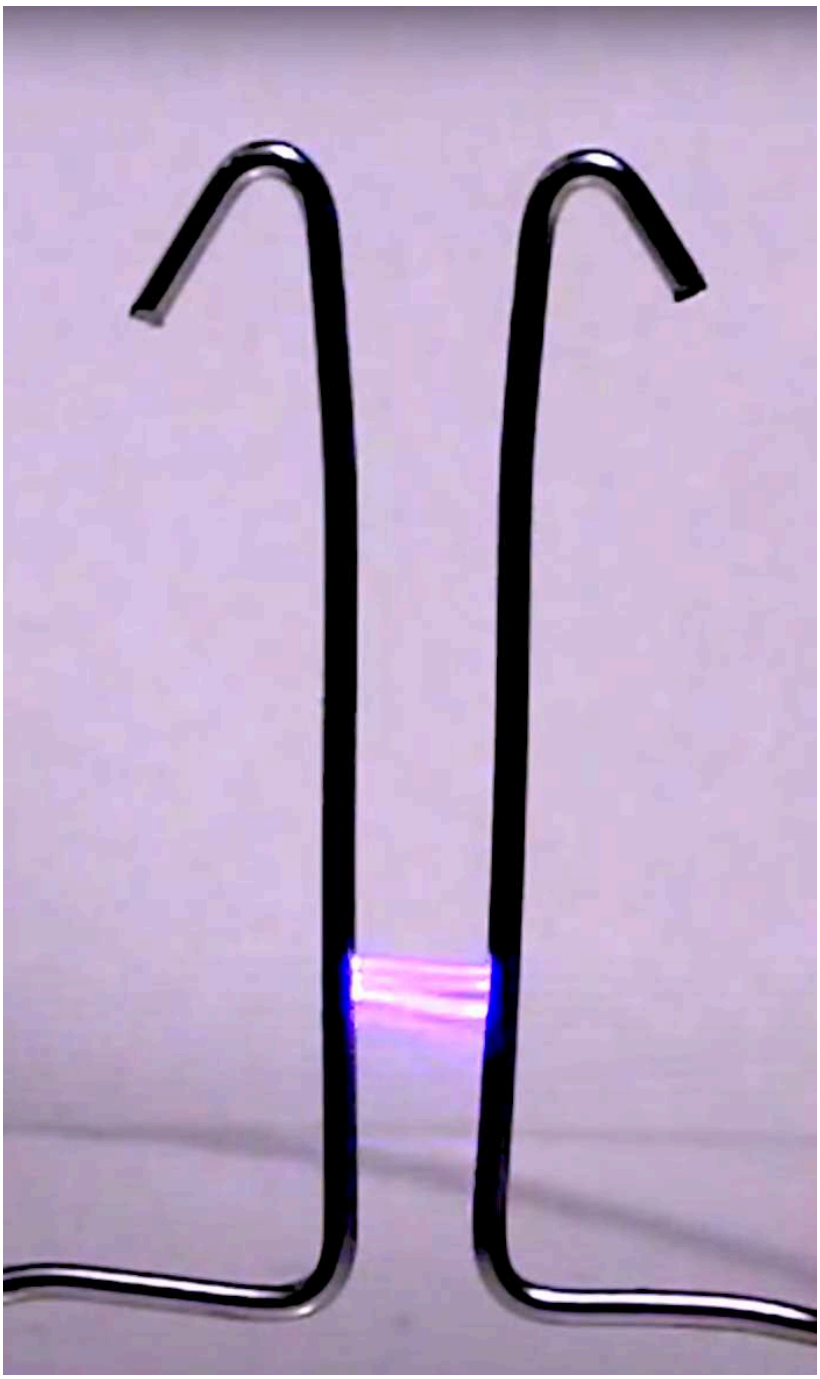
FIGURE 1

It is self evident that such experiments must be conducted in a dark room or in a room lighted only with a ruby (red) photographic lamp. Any white light will spoil the plates instantly. After exposing, the plate must of course be developed, which you can easily do yourself, or else re-wrap it in its black paper and have a photographer develop and print the negative.

Take a small bottle with wide mouth and fill it half full with **very** dry and pure starch powder, sulphur flour, or with talcum powder. Over the mouth place a thin piece of gauze to act as a fine sieve. Tie the gauze around the neck of the bottle with a string.

Take the photographic plate and place it (with the coated side upwards) on a metal plate, or a piece of stiff sheet iron, tin, etc. Connect the metal plate with one of the secondary posts of your coil.

A “Jacob’s Ladder” as described in the
Experiments with Spark Coils
in the E.I. Co. Catalog, No. 5, 1908:



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