B. DONATH.

ELECTRIC DISCHARGING TUBE.

APPLICATION FILED OCT. 1, 1914.

1,416,623. Patented May 16, 1922.

Fig. 3.

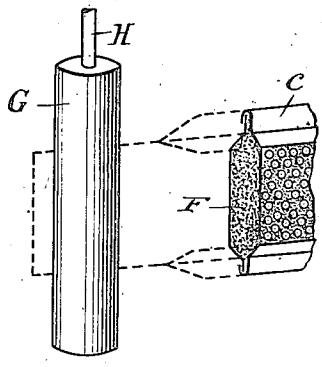


Fig. 2.

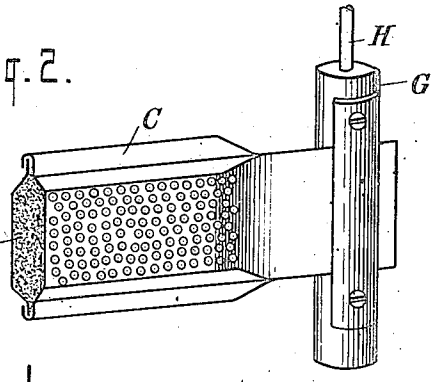


Fig. 1.

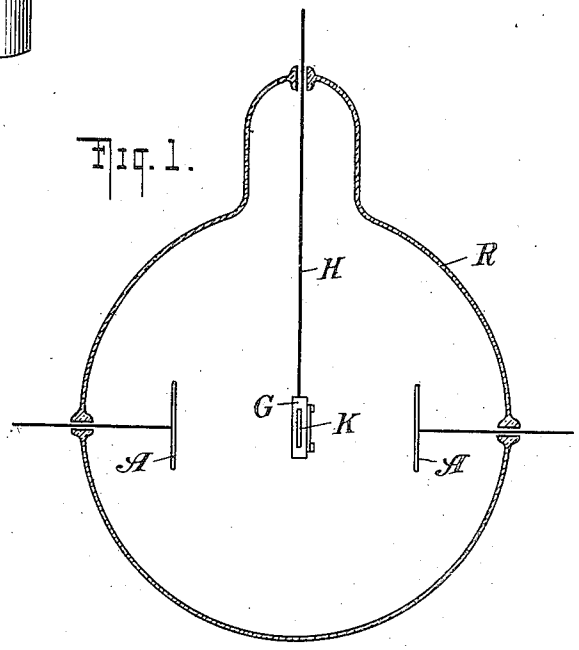
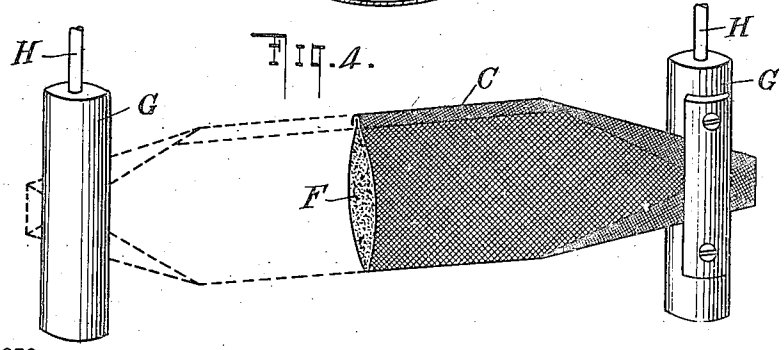


Fig. 4.



WITNESSES

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ELECTRIC DISCHARGING TUBE.

1,416,623. Specification of Letters Patent. Patented May 16, 1922.

Application filed October 1, 1914. Serial No. 864,536.

(GRANTED UNDER THE PROVISIONS OF THE ACT OF MARCH 3, 1921, 41 STAT. L., 1313.)

To all whom it may concern:

Be it known that I, BRUNO DONATH, a subject of the Emperor of Germany, residing at Friedenau, near Berlin, Germany, have invented new and useful Improvements in Electric Discharging Tubes, of which the following is a full, clear, and exact description.

This invention relates to electric discharging tubes with incandescent cathode, the latter being covered with any desired metallic combinations according to Prof. Wehnelt's process (described in the German Patent No. 157,845). The object of the improvement is to increase the durability of the said cathodes.

The smooth or rough cathode of the known discharging tubes have hitherto been provided with a thin covering of any desired metallic combination, preferably calcium oxide. They were not very durable as a constant, although small, consumption of the oxide takes place in the working cathodes. A thick layer of oxide would be liable to scale off, to heat irregularly and to produce a high ohmic resistance in the discharging circuit.

According to the invention the discharging tubes are provided with a cathode consisting of a perforated container of a refractory material of good electrical conductivity, for instance platinum, said container being filled with the metallic combinations, preferably calcium oxide. The container is preferably given the form of a flat pocket the walls of which are made of thin perforated sheet metal, woven wire or the like. The outer sides of the container can of course also be covered with the metallic combinations.

My invention will be better understood by referring to the accompanying drawing in which Fig. 1 represents a central diagrammatic section, taken transversely to the cathode, through a discharge tube having a cathode according to my invention; Fig. 2 is a perspective view, partly in section, on an enlarged scale, showing one end of the cathode of Fig. 1 when the container is made of sheet metal; Fig. 3 is a view showing one end of a modified cathode as in Fig. 1; and Fig. 4 is a view, similar to Fig. 2, showing the cathode when the container is made of woven wire.

In the drawings the bulb R is provided with anodes A and a cathode K; the latter is, in the examples shown, held in clamps G which are themselves supported on conductors H.

In Fig. 2 the cathode container C consists of two strips of sheet metal which have been suitably shaped and united so as to provide an elongated receptacle the sides of which are perforated. The two strips are united at their ends so as to fit into the clamps G. (Only one end of the cathode and one clamp are shown). The receptacle is filled with the desired metallic combination, preferably calcium oxide.

In Fig. 4 the cathode container consists of a strip of woven wire bent or rolled so as to constitute a receptacle of flattened cross section which is filled, as before, with the metallic combination F. The ends are folded and pressed flat so as to close the receptacle and to fit the clamps G.

In Fig. 3 is shown one end of a short section of the container as it appears when the metallic combination is placed upon its outside as well as contained within it.

The conductors H serve to conduct both heat and electrical current.

Having described my invention, I claim:—

1. An electric discharge tube having a cathode adapted to become incandescent, comprising a container of refractory material and good electrical conductivity, said container having thin metallic perforated walls and a metallic combination therein there being also a coating of metallic combination on the outside of said container.

2. An electric discharge tube having a cathode adapted to become incandescent, comprising a container of refractory material and good electrical conductivity, said container having thin metallic perforated walls, and enclosing calcium oxide, there being also a coating of metallic combination on the outside of said container.

In testimony whereof I have hereunto set my hand in the presence of two subscribing witnesses.

BRUNO DONATH.

Witnesses:
WOLDEMAR HAUPT,
HENRY HASPER.