

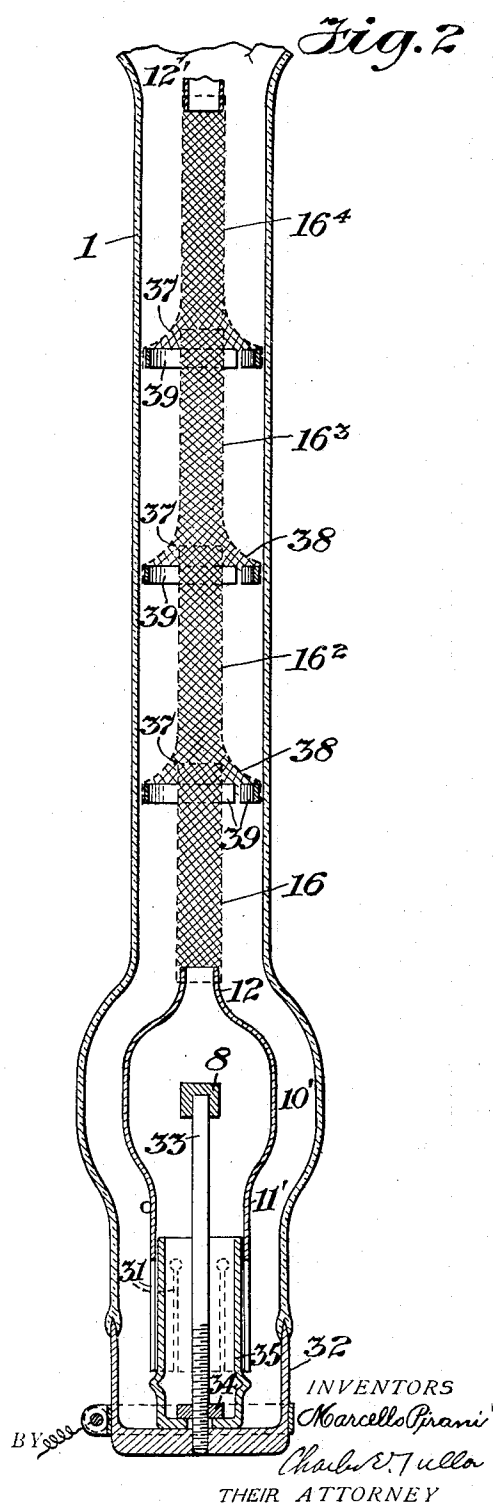
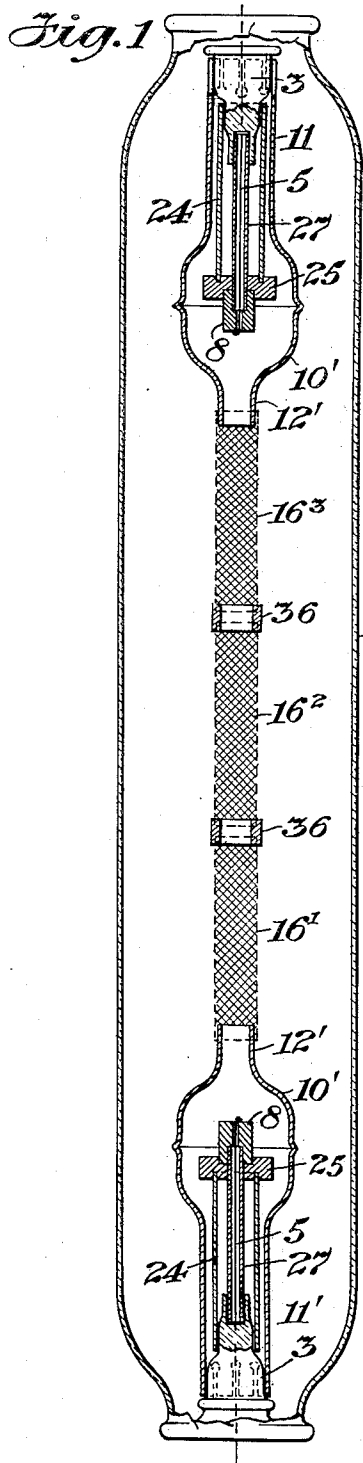
Oct. 10, 1933.

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1,930,147

GASEOUS ELECTRIC DISCHARGE DEVICE

Filed Nov. 15, 1929



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1,930,147

GASEOUS ELECTRIC DISCHARGE DEVICE

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Application November 15, 1929, Serial No. 407,525,
 and in Germany April 16, 1929

6 Claims. (Cl. 176—122)

The present invention relates to gaseous electric discharge devices generally and particularly the invention relates to such devices in which the discharge path is surrounded by a guide tube made of current conducting material.

In devices of this character the guide tube has been restricted in length as the potential drop through the guide tube arising from the passage of current from one electrode to the other electrode became so great if the guide tube exceeded a certain length that the discharge, instead of passing through the guide tube, would arc to it with disastrous results. It is the object of this invention to provide a guide tube for surrounding the discharge path of gaseous electric discharge devices which may be of any practical length desired.

The invention attains its object by employing a guide tube consisting of several sections insulated from each other. As the resistance of the discharge path is then less than the resistance of the guide tube surrounding said path the discharge is confined to the discharge path when even greater distances between electrodes are used than were hitherto found practical.

In the drawing accompanying and forming part of this specification, two practical commercial embodiments of the invention are disclosed, but as such illustration is primarily for the purposes of disclosure, it will be understood that the structure may be modified in various respects without departure from the broad spirit and scope of the invention.

Fig. 1 is an elevational view of one embodiment of the invention partly in section,

Fig. 2 is a sectional elevation view of an alternative embodiment of the invention.

Referring to Fig. 1 the gaseous electric discharge device consists of a glass chamber 1, containing gas or vapor, or a mixture of gas and vapor, two insulating tubes 27, 27 surrounding current leads 5, 5, two insulating tubes 24, 24 supporting insulating plates 25, 25 which carry solid electrodes 8, 8 and two metal chambers 10', 10' surrounding said electrodes 8 and attached to base tubes 3, 3, by their snug fitting neck parts 11, 11. The two supporting parts 12 of the surrounding chambers 10' are overlapped by the ends of the guide tube made up of tubular sections 16¹, 16², 16³, in this case, made of tungsten wire net. Said sections 16¹, 16², 16³ are axially mounted in the discharge chamber 1 and are connected to, and insulated from each other by a ring or rings 36.

The embodiment of the invention shown in Fig. 2 is intended for use in connection with a higher

current density than that to be used with the embodiment shown in Fig. 1. In this case the neck part 11' of metal chamber 10' is provided with slits 31 which enable said part 11' to fit snugly around shell 35, said shell 35 being of quartz or other insulating material. Rod 33 carries electrode 8 and at its opposite end screws through nut 34 into current conducting cap 32. Here the guide tube consists of four axially mounted sections 16¹, 16², 16³, 16⁴, separated from each other by spaces 37. Sections 16², 16³, 16⁴ are supported and kept in place by their funnel shaped enlargements 38 which are provided with outwardly pressing spring rings 39 fitted against the walls of chamber 1. Spaces 37 prevent the discharge from passing from one section to another. By thus attaching the funnel shaped enlargements 38 to the inner walls of chamber 1 the discharge is prevented from developing outside of the hollow body sections 16 of the guide tube.

While I have shown and described and have pointed out in the annexed claims certain novel features of the invention, it will be understood that various omissions, substitutions and changes in the forms and details of the devices illustrated and in its use and operation may be made by those skilled in the art without departing from the spirit of the invention.

What I claim as new and desire to secure by Letters Patent of the United States, is:

1. In an electric discharge device, a container, electrodes sealed therein, a gaseous filling therein, a tubular body surrounding the gaseous discharge path between the electrodes consisting of at least two sections of conducting material insulated from each other said tubular body being co-extensive with said discharge path.

2. In an electric discharge device, a container, electrodes sealed therein, a gaseous filling therein and a tubular body surrounding the gaseous discharge path between the electrodes consisting of at least two sections of conducting material insulated from each other by a non-conducting tubular body.

3. In an electric discharge device, a container, electrodes sealed therein, a gaseous filling therein and a tubular body surrounding the gaseous discharge path between the electrodes consisting of at least two sections of conducting material insulated from each other by a gap said tubular body being co-extensive with said discharge path.

4. In an electric discharge device, a container, electrodes sealed therein, a gaseous filling therein, and a tubular body surrounding the discharge path between the electrodes consisting of at least

two over-lapping sections of conducting material insulated from each other by a gap.

5 5. In an electric discharge device, a container, electrodes sealed therein, a gaseous filling therein, and a tubular body surrounding the discharge path between the electrodes consisting of at least two over-lapping sections of conducting material insulated from each other by a gap and said sections being supported by funnel shaped enlargements at their over-lapping parts provided with
10 spring rings to press against the walls of the container.

6. In an electric discharge device, a container, electrodes sealed therein, a gaseous filling therein, a tubular body surrounding the gaseous discharge path between the electrodes consisting of at least two sections of conducting material insulated from each other, the walls of said tubular body being out of contact with the walls of said container. 80

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