

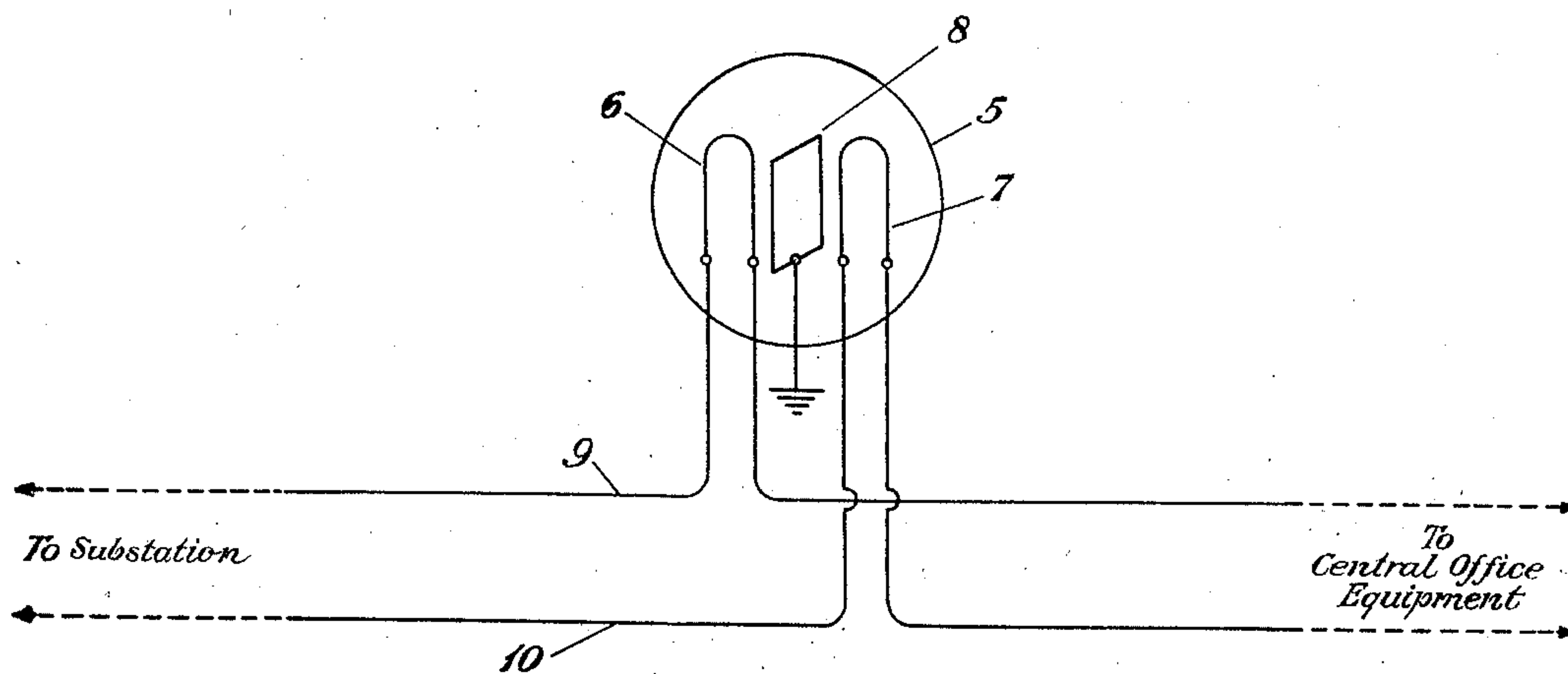
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PROTECTIVE DEVICE FOR ELECTRIC CIRCUITS

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PROTECTIVE DEVICE FOR ELECTRIC CIRCUITS

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This invention relates to protective devices for electric circuits, and, more particularly, telephone circuits.

A particular adaptation of the improved arrangement consists in its use as a protective device for telephone circuits in place of the heat coils and carbon block protectors ordinarily used for this purpose. The heat coils and protective block protectors require considerable time and effort in their replacement. The protective block protectors also require considerable maintenance effort to be expended in cleaning the dust and dirt which may accumulate thereon. Considerable maintenance effort is also expended in burnishing the contact surfaces between the heat coils and their mountings. It is an object of this invention to overcome these undesirable characteristics by providing a protective device which may be positioned and replaced with minimum effort, and which will remain free from dust and dirt and require little or no effort to maintain it in operative condition.

These and further objects of the invention will be more fully understood by reference to the accompanying drawing which illustrates a preferred embodiment thereof.

Referring to the drawing, 5 represents a tube which may be of a gas or vacuum type. The tube 5 encloses filaments 6 and 7, and an electrode or plate 8 thereby comprising an electric valve. The filaments are connected to a pair of conductors of the electric circuit to be protected, for instance, a telephone circuit, which extends from a subscriber's station to a central office. The conductors are designated by the numerals 9 and 10. The conductor 9, which may be the tip side of the line, extends from the substation to one terminal of the filament 6, and the other terminal of the filament is connected to the line which extends to the central office equipment. The conductor 10, which may form the ring side of the line, is connected to the filament 7 in a manner similar to that described in connection with the tip conductor 9.

The design of the filaments 6 and 7 is such that they will melt or rapidly deteriorate and thereby open the circuit when it carries a cur-

rent in excess of predetermined limits. The plate 8, which is connected to ground, is so positioned adjacent the filaments that a difference in potential between either filament and ground in excess of predetermined limits will establish an electron discharge or arc discharge between the filament and plate, thereby grounding the conductor.

The resistance of each filament may correspond to the resistance of the usual heat coil which is associated with a subscriber's line at a central office, and which will break down and open a circuit when subjected to abnormal voltages and currents which may be introduced in the subscriber's line external to the central office.

What is claimed is:

1. In a protector for electric circuits, the combination of a pair of line conductors, an electric valve associated therewith, said valve consisting of an evacuated vessel containing two independent filaments and a plate intermediate thereto, each filament being serially associated with one conductor of the pair, and said plate being connected to ground.

2. In a protector for electric circuits, the combination of a pair of line conductors, an electric valve associated therewith, said valve consisting of an evacuated vessel containing a pair of filaments and a plate intermediate thereto, each filament being serially associated with one conductor of the pair, and said plate being connected to ground, said filaments being so designed that they will break down and open the circuit of their respective conductors when subjected to current in excess of a predetermined value, and said plate being so related to the filaments and the vacuum being such that a discharge will take place and ground the line when a difference in potential occurs between either filament and plate in excess of predetermined limits.

In testimony whereof, I have signed my name to this specification this 23rd day of February, 1928.

HENRY M. BASCOM.