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THERMIC CIRCUIT CLOSER FOR ELECTROMAGNETIC APPARATUS.

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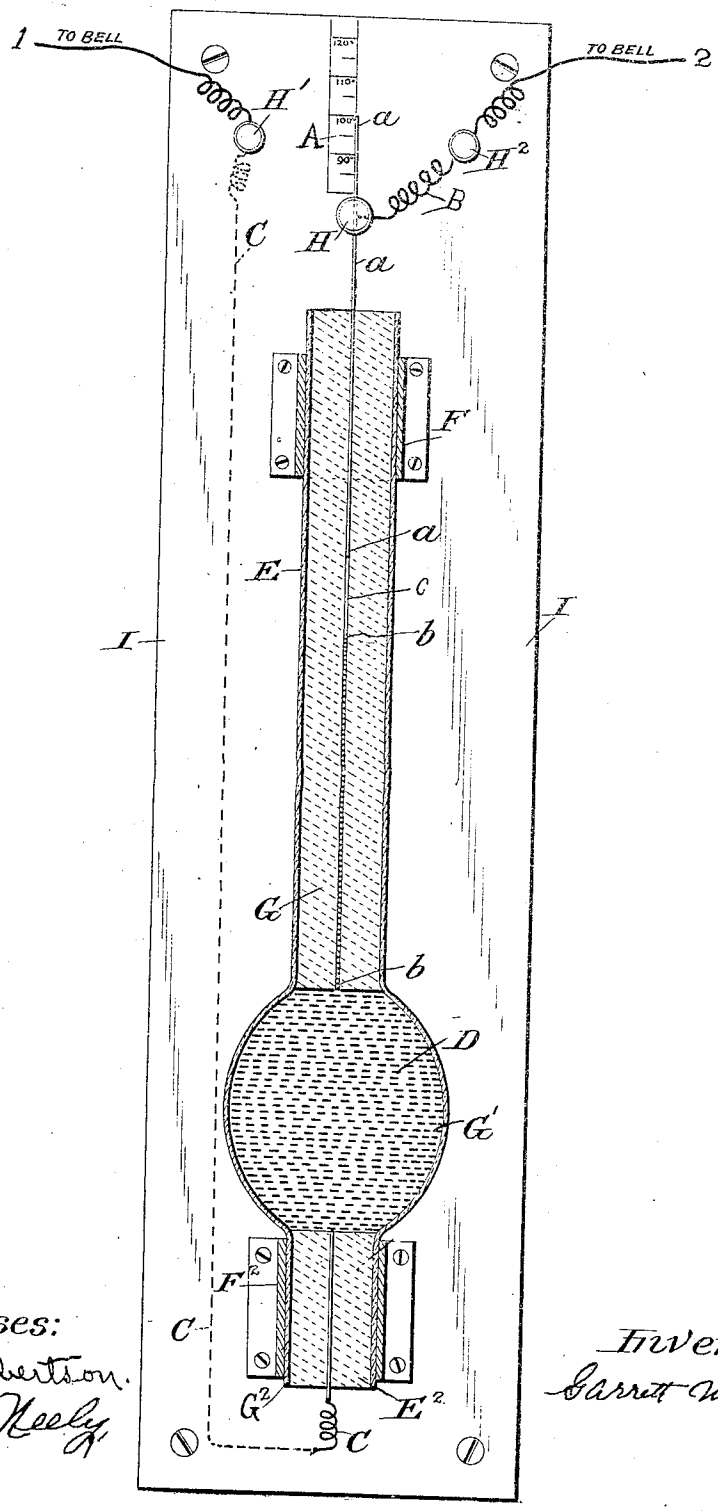

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THERMIC CIRCUIT-CLOSER FOR ELECTROMAGNETIC APPARATUS.

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To all whom it may concern:

Be it known that I, GARRETT WHITE, a citizen of the United States of America, and a resident of Chapel Hill, Marshall county, in the State of Tennessee, have invented a new and useful Improvement in Thermic Circuit-Closers for Electromagnetic Apparatus, of which the following is a specification.

This invention relates to those circuit closers of electromagnetic temperature alarms and other electromagnetic apparatus in which a bell circuit for example is automatically closed by a column of mercury when the heat rises to a predetermined degree.

The leading objects of the present invention are to prevent humidity or dampness within the bore of an open-topped glass tube for the mercury, in such a circuit closer; and, at the same time, to simplify the construction of the device and reduce the cost of manufacture. The first of these objects is accomplished by providing an open-topped glass tube of sufficient diameter with a lining, molded *in situ*, of a material non-absorbent to mercury but absorbent of dampness.

Other objects will be set forth in the general description which follows.

The accompanying drawing is a sectional face view of the improved circuit closer.

A suitable upright support, I, which is preferably the customary wooden backboard is provided with three binding posts, H, H′, H^2; and beneath the central binding post H, an open-ended glass tube, G, G′, G^2, is attached by metallic bridge pieces or staples, F, F^2. The glass tube G G′ G^2 is made of large tubing, as compared with those heretofore in use; its main body portion (G) including its upper end, and its lower end portion (G^2) are or may be of one and the same diameter and in line with each other, and between them there is a single expansion (G′) to form the mercury chamber. Within said body portion G of the glass tube, a lining, E, of plaster of paris is molded *in situ* around a central wire of suitable gage which is withdrawn when the plaster is nearly hardened. Provision is thus made for inclosing the movable wire or needle; *a*, and the mercury column, *b*, within a bore, *c*, the walls of which are wholly of material which tends to prevent humidity within the bore, by absorbing dampness, said material being absorbent of dampness and non-absorbent to mercury, and at the same time a bore that is readily fitted with accuracy to the needle *a*.

The expansion G′ is supplied in customary manner with sufficient mercury, D.

The lower end G^2 of the glass tube is provided with a filling E^2 of plaster of paris by which one end of the lower contact wire C is permanently sealed within said lower end, with its extremity within the mercury chamber G′. The customary fusing of a platinum wire through the glass to form the lower contact is thus obviated. The other extremity of the wire C is electrically connected to the binding post H′.

The needle *a*, inserted into the upper end of the glass tube, is fastened at any desired depth by the binding post H, which is connected by a wire B to the binding post H^2.

A scale, A, on the upper portion of the backboard I, in juxtaposition to the extremity *a′* of the needle *a*, may conveniently indicate the degree of heat for which the circuit closer is set.

To set the device for operation at a given temperature, the needle *a* is loosened in the binding post H, and is then set at any desired degree in warm air or water with the aid of an accurate thermometer, after which the needle is fastened in the binding post. After hanging the backboard I in a suitable position, the terminal wires 1 and 2 of a bell circuit or other electric circuit are fastened in the binding posts H′ and H^2 respectively.

Having thus described said improvement, I claim as my invention and desire to patent under this specification:

1. A thermic circuit closer for an electric circuit having, in combination, an open-topped glass tube constructed with a mercury-chamber expansion near its lower end, a lining of a material absorbent of dampness and non-absorbent to mercury within the main body of said tube including its upper end, a lower contact wire sealed within the lower end of the tube, and an endwise movable needle extending into the upper end of said lined tube; said expansion and the lower end of the lined portion of the tube being occupied by mercury.

2. A thermic circuit closer for an electric circuit, having, an open-topped glass tube

supported in upright position and constructed with a cylindrical main portion including its upper end, a relatively short subjacent cylindrical portion including its lower end and a mercury chamber expansion connecting said cylindrical portions and supplied with mercury, a lining of plaster of paris within said main portion, a filling of plaster of paris within said subjacent portion, a movable needle extending downward a variable distance within the upper end of said lined tube to contact with the mercury column, and a lower contact wire sealed within the lower end of the tube by said filling, said lining being adapted to prevent humidity within the tube by absorbing dampness, substantially as hereinbefore specified.

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