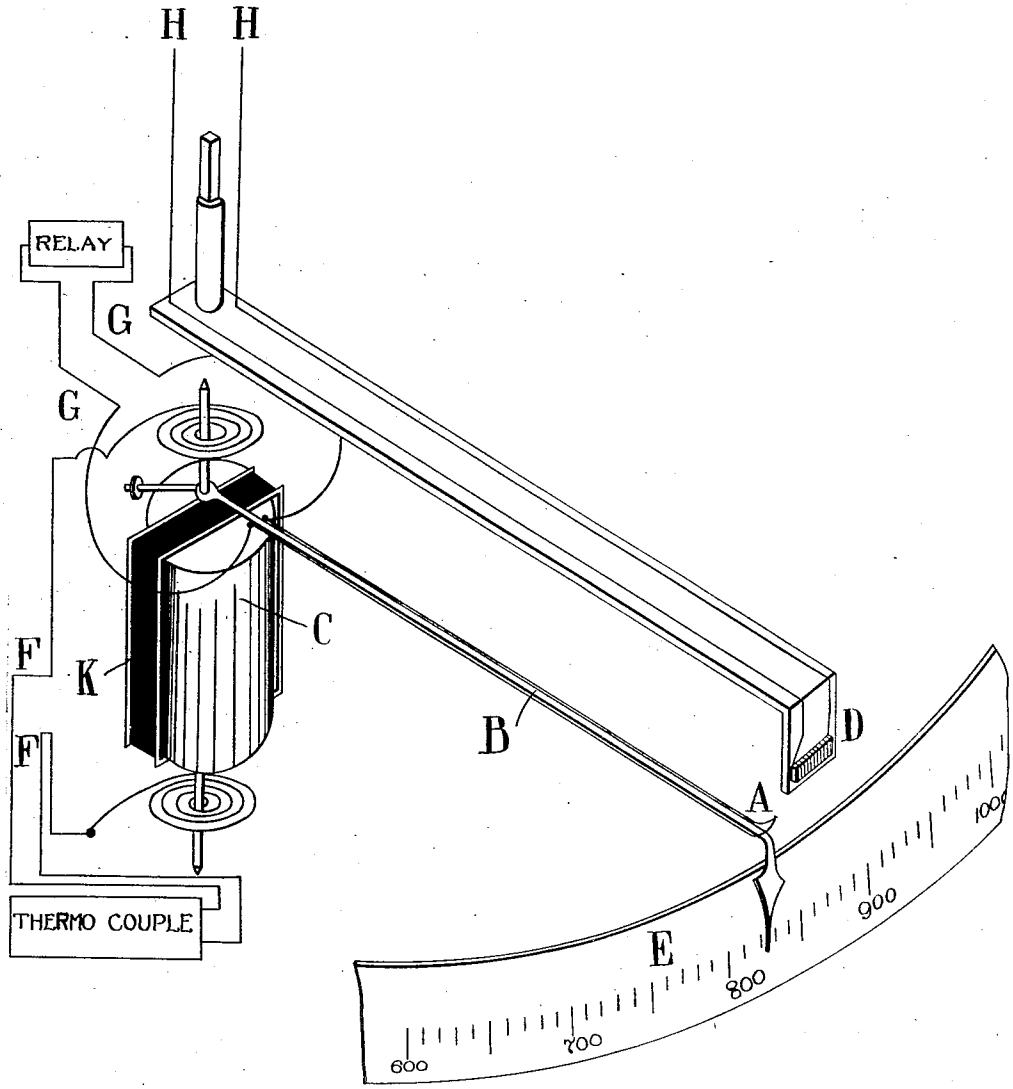
Feb. 2, 1926. 1,571,390

W. H. APTHORPE

ADJUSTABLE SENSITIVE ELECTRICAL REGULATING DEVICE

Filed May 12, 1923



Inventor
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UNITED STATES PATENT OFFICE.

WILLIAM HERBERT APTHORPE, OF LONDON, ENGLAND, ASSIGNOR TO CAMBRIDGE AND PAUL INSTRUMENT COMPANY LIMITED, OF CAMBRIDGE, ENGLAND.

ADJUSTABLE SENSITIVE ELECTRICAL REGULATING DEVICE.

Application filed May 12, 1923. Serial No. 638,546.

To all whom it may concern:

Be it known that I, WILLIAM HERBERT APTHORPE, a subject of the King of Great Britain and Ireland, and residing at Newton Avenue Works, New Southgate, London, N. 11, England, have invented a certain new and useful Adjustable Sensitive Electrical Regulating Device, of which the following is a specification.

This invention relates to adjustable sensitive electrical devices for regulating temperatures, and has for its object the provision of an improved form of such devices.

A great many classes of phenomena may be controlled with suitable well-known arrangements by the deflection of a galvanometer carrying a pointer. It is often desired that an electric contact be made for a given deflection of the pointer in order that some other apparatus may be brought into operation. In other words, it is often desired that the galvanometer should be used as a regulator operating at a certain given deflection. In a sensitive galvanometer there is great difficulty, owing to well-known mechanical reasons, in making this contact mechanically with the galvanometer boom.

It has been previously proposed in a telegraphic relay to insert in the relay circuit a thermo-electric couple controlled by the cable circuit for the purpose of magnifying impulses received from the cable.

The present invention consists in an adjustable sensitive electrical regulating device including a galvanometer having a boom which is deflected in accordance with the variations of the temperature, to be regulated, a thermo-couple and a source of heat so arranged that the thermo-couple is energized by the source of heat only when the galvanometer boom attains a predetermined deflection, and well-known means such as a relay for varying the aforesaid temperature, when the thermo-couple is energized.

The accompanying diagrammatic sketch illustrates one way, by way of example, of carrying the invention into effect as a temperature regulator for a furnace.

The leads FF convey current from a thermo-couple exposed to the temperature of the furnace. This current traverses the coil K of the galvanometer C and causes the end of the boom B to travel along the scale E.

When the thermo-couple A, which is attached to the galvanometer boom B, reaches the heating element D which is adjustable along the scale and is continuously heated by means of a source of current through the leads HH, an E. M. F. is set up which produces a current in the leads GG. This current is then utilized in a known manner, e. g., by means of a relay, to react in a suitable manner upon the heat regulating apparatus of the furnace.

Any source of heat, electrical or otherwise, may be used for heating the heating element which coacts with the thermo-couple A.

Having now described my invention, what I claim as new and desire to secure by Letters Patent is:—

In an adjustable sensitive electrical regulating device, a galvanometer having a needle and a scale, a heat emitting element arranged adjacent to a predetermined position on said galvanometer scale and a thermo-couple carried by the said galvanometer needle and capable of being energized when adjacent to said heating element.

In testimony whereof I have signed my name to this specification.

WILLIAM HERBERT APTHORPE.