

No. 676,311.

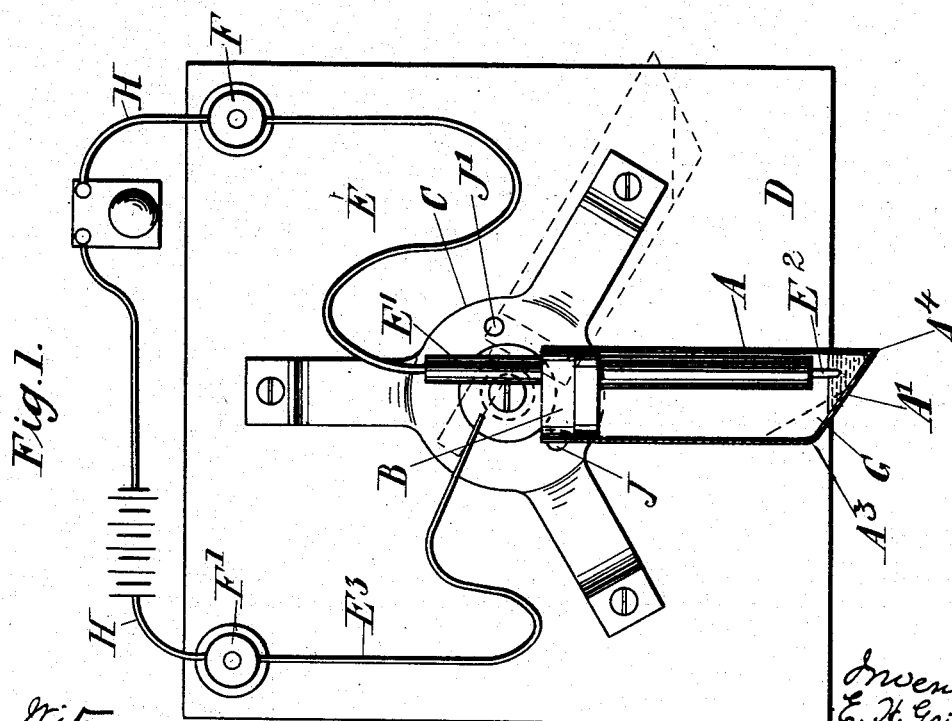
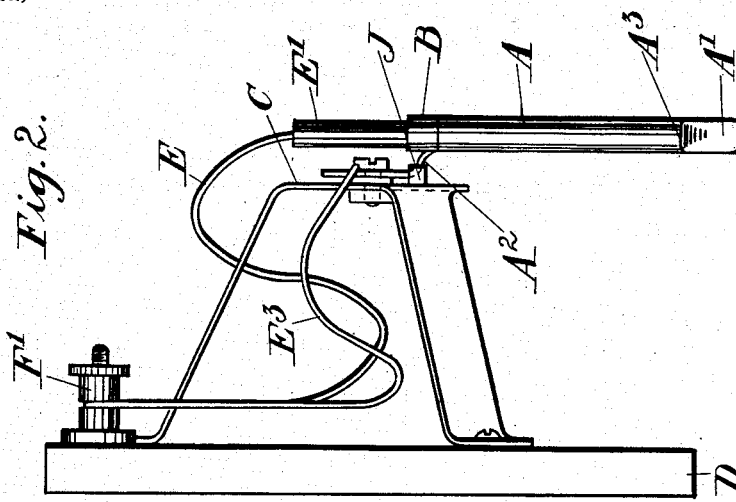
Patented June 11, 1901.

E. H. GRIFFITHS & W. C. D. WHETHAM.

MECHANISM FOR CONTROLLING AND INDICATING TEMPERATURE LIMITS.

(Application filed Dec. 19, 1900.)

(No Model.)



Witnesses  
H. E. Ogdun  
J. J. McCarthy.

Inventors  
E. H. Griffiths  
W. C. D. Whetham  
by J. J. McCarthy  
attorneys.

# UNITED STATES PATENT OFFICE.

ERNEST H. GRIFFITHS AND WILLIAM C. D. WHETHAM, OF CAMBRIDGE,  
ENGLAND.

MECHANISM FOR CONTROLLING AND INDICATING TEMPERATURE LIMITS.

SPECIFICATION forming part of Letters Patent No. 676,311, dated June 11, 1901.

Application filed December 19, 1900. Serial No. 40,438. (No model.)

*To all whom it may concern:*

Be it known that we, ERNEST HOWARD GRIFFITHS and WILLIAM CECIL DAMPIER WHETHAM, subjects of the Queen of England, residing at Cambridge, in the county of Cambridge, England, have invented a certain new and useful Mechanism for Controlling and Indicating Temperature Limits, (for which we have made application for Letters Patent in Great Britain, dated March 27, 1900, No. 5,743,) of which the following is a specification.

This invention relates to mechanism for controlling and indicating temperature limits, and has for its object to construct an apparatus which upon a temperature limit being reached will complete an electric circuit and cause an alarm to be sounded or some other function to be performed.

According to this invention a certain quantity of some fusible metal, alloy, or other conducting substance is so disposed within a suitable receptacle in relation to a contact-piece that upon the temperature limit being reached and the alloy fused the force of gravity or the action of a spring will cause contact to be made between the alloy and the contact-piece, thereby completing an electric circuit. In our construction the receptacle is made in the form of a metallic tube suspended in some suitable manner, with the lower end closed. The lower end of the tube is bent, inclined, or otherwise shaped so as to form at one side of the tube, near its end, a recess, pocket, or the like, within which the alloy will be retained when in its solid state and the apparatus is "set." Opposite the recess containing the alloy a contact-piece is so disposed that upon the temperature limit being reached, and the alloy consequently fused or melted, it will run down to the extreme end of the tube and make contact with this contact-piece, thereby completing the electric circuit. This device may conveniently be made by cutting the end of a piece of tube and closing it in such a way that the bottom of the tube forms some angle other than a right angle with the axis of the tube. The upper open end of the tube is closed by an insulating-plug, through which passes a con-

tact-wire of such length that the extreme end will lie in or adjacent to the extreme end of the tube, the alloy being retained in the obtuse angle of the end of the tube. The tube is suspended in such a manner that after the alloy has been fused and the contact made the device may be reset by raising the end of the tube while the alloy is in a fused or melted state, so that the contact will be broken, and retaining the tube in the raised position until the alloy has solidified. It is found advisable to provide the fusible metal or alloy with a coating of paraffin, wax, vaseline, oil, or the like, which by lying on the top of the alloy prevents oxidation of the latter.

In the accompanying drawings, Figure 1 is an elevation, partly in section, of a temperature-indicator in the form of a fire-alarm constructed according to this invention. Fig. 2 is an end elevation of Fig. 1.

Like letters indicate like parts throughout the drawings.

A metal tube A, conveniently somewhat flattened, is cut at one end at an angle and closed by a plate A', an insulating-plug B being inserted in the other end. The tube A is provided with a lug A<sup>2</sup>, by which it is pivotally attached to a bracket, shown in the drawings in the form of tripod. The tube A is thus free to depend vertically clear of any obstacle. The bracket is mounted conveniently on a base D.

Passing through the insulating-plug B and running almost to the bottom of the tube A is a wire E, which is covered by some insulating material E', but which has its point E<sup>2</sup> uncovered. The upper end of the wire E is attached to a terminal F, carried on the base D. To the metal tube A or the lug A<sup>2</sup> is attached a conducting-wire E<sup>3</sup>, whose other end is connected to a terminal F', also on the base D. Situated in the obtuse angle A<sup>3</sup> of the tube A is some alloy G which will fuse when the desired temperature limit is reached or exceeded and run down the inclined plate A' at the bottom of the tube into the acute angle A<sup>4</sup>. When in this position, the alloy G will surround the point of the wire E<sup>2</sup>, and thus close the gap between the tube A and the wire E. Wires H connect the terminals

to an electric-bell circuit or other form of alarm, which will be operated directly the gap is closed by the fusion of the alloy.

To reset the apparatus, the tube A is turned about its pivot and brought into the position shown in dotted lines in Fig. 1. Heat is applied so as to fuse the alloy G, which then runs back into its former position in the obtuse angle A<sup>3</sup>. When the alloy has solidified, the tube is turned or allowed to fall back into the vertical position, so as to be again ready for use. Stops J J' limit the movement of the tube A about its pivot and prevent it from being raised too far when resetting.

What we claim as our invention, and desire to secure by Letters Patent, is—

1. In an apparatus for controlling or indicating temperature limits, the combination of a receptacle hung for angular movement, an electrical circuit normally having in it a gap and a fusible conducting substance constituting a gravity-switch in the receptacle, substantially as set forth.

2. In an apparatus for controlling or indicating temperature limits the combination of a tubular receptacle with an inclined bottom, an electrical circuit including the receptacle and normally having in it a gap and a fusible conducting substance constituting a gravity-switch in the receptacle substantially as set forth.

3. In an apparatus for controlling or indicating temperature limits, the combination of a pivoted receptacle, stops to limit the movement of the receptacle about its pivot, an electrical circuit including the receptacle and normally having in it a gap and a fusible conducting substance constituting a gravity-switch in the receptacle substantially as set forth.

4. In an apparatus for controlling or indi-

cating temperature limits the combination of a pivoted tubular receptacle having an inclined bottom, an electrical circuit including the receptacle and normally having in it a gap and a fusible conducting substance constituting a gravity-switch in the receptacle substantially as set forth.

5. In an apparatus for controlling or indicating temperature limits, the combination of a pivoted tubular receptacle having an inclined bottom, stops for limiting the movement of the receptacle about its pivot, an electrical circuit including the receptacle and normally having in it a gap and a fusible conducting substance constituting a gravity-switch in the receptacle substantially as set forth.

6. In an apparatus for controlling or indicating temperature limits the combination of a pivoted receptacle with an inclined bottom, a wire passing through an insulating-plug carried in the open end of the tubular receptacle the end of the wire lying in the acute angle at the bottom of the receptacle, an electrical circuit including the receptacle and the wire and normally having in it a gap between the end of the wire and the bottom of the receptacle and a fusible conducting substance normally situated in the obtuse angle at the bottom of the receptacle and constituting a gravity-switch operating to close the gap in the electrical circuit substantially as set forth.

In testimony whereof we have signed our names to this specification in the presence of two subscribing witnesses.

E. H. GRIFFITHS.  
W. C. D. WHETHAM.

Witnesses:

PERCY M. MARSHALL,  
CHARLES E. LAWRENCE.