R. D. TIFFANY.

CIRCUIT CLOSER FOR FIRE ALARM CIRCUITS.

APPLICATION FILED MAY 29, 1908.

911,921.

Patented Feb. 9, 1909.

2 SHEETS—SHEET 1.

FIG. 1

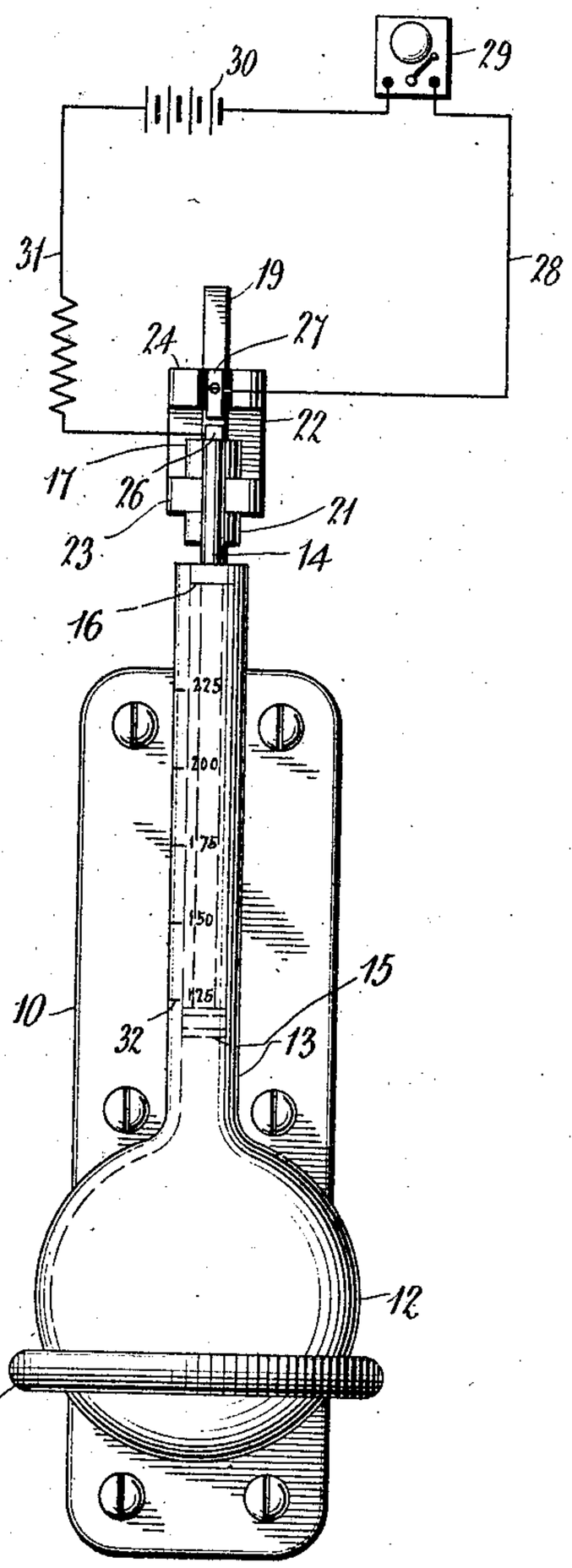
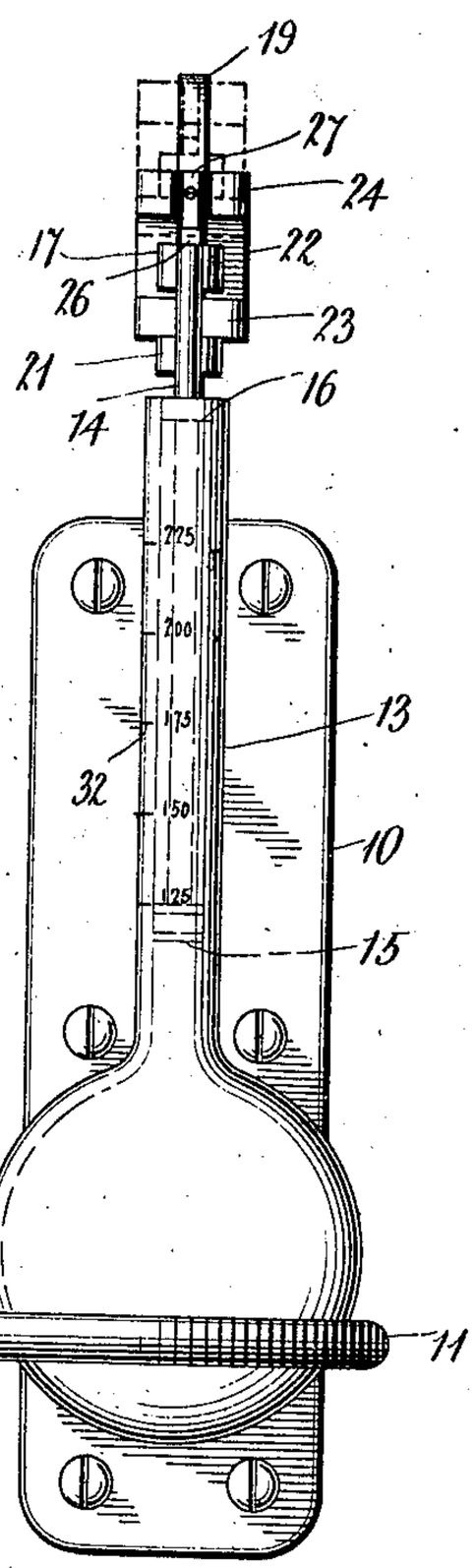


FIG. 2



Witnesses

H. Barbour

L. G. Smith

Inventor

Ross D. Tiffany

By Chandlee & Chandlee

Attorneys

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FIG. 3

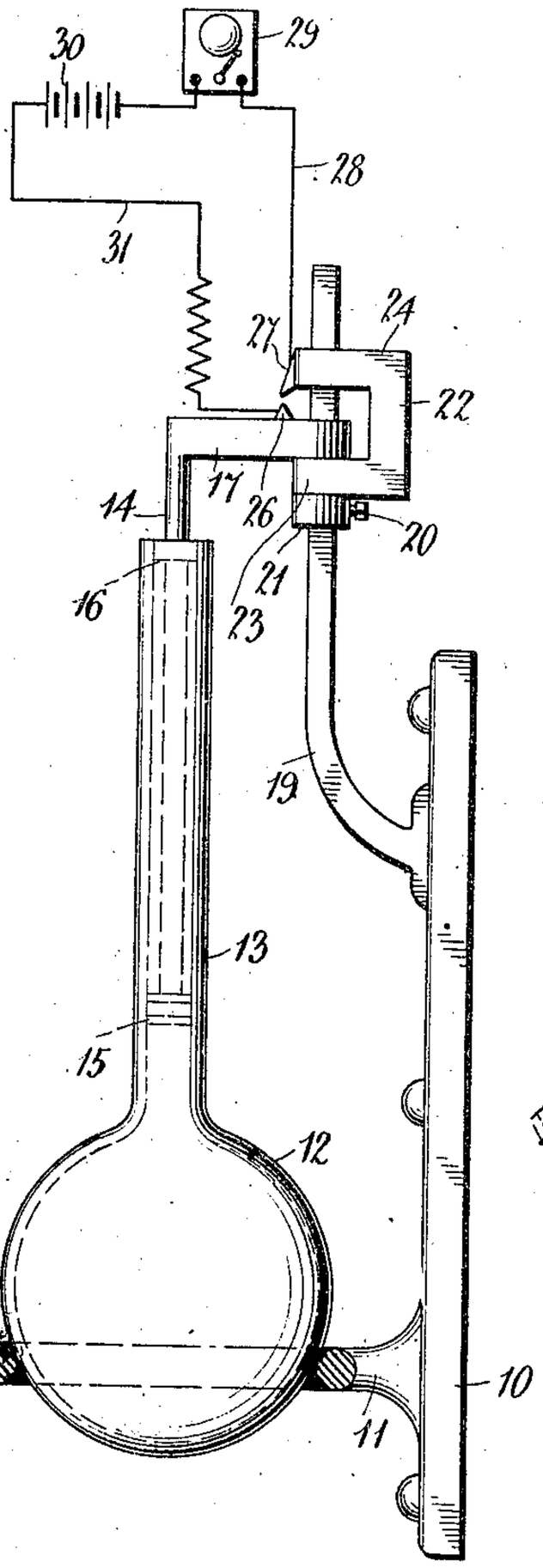


FIG. 4

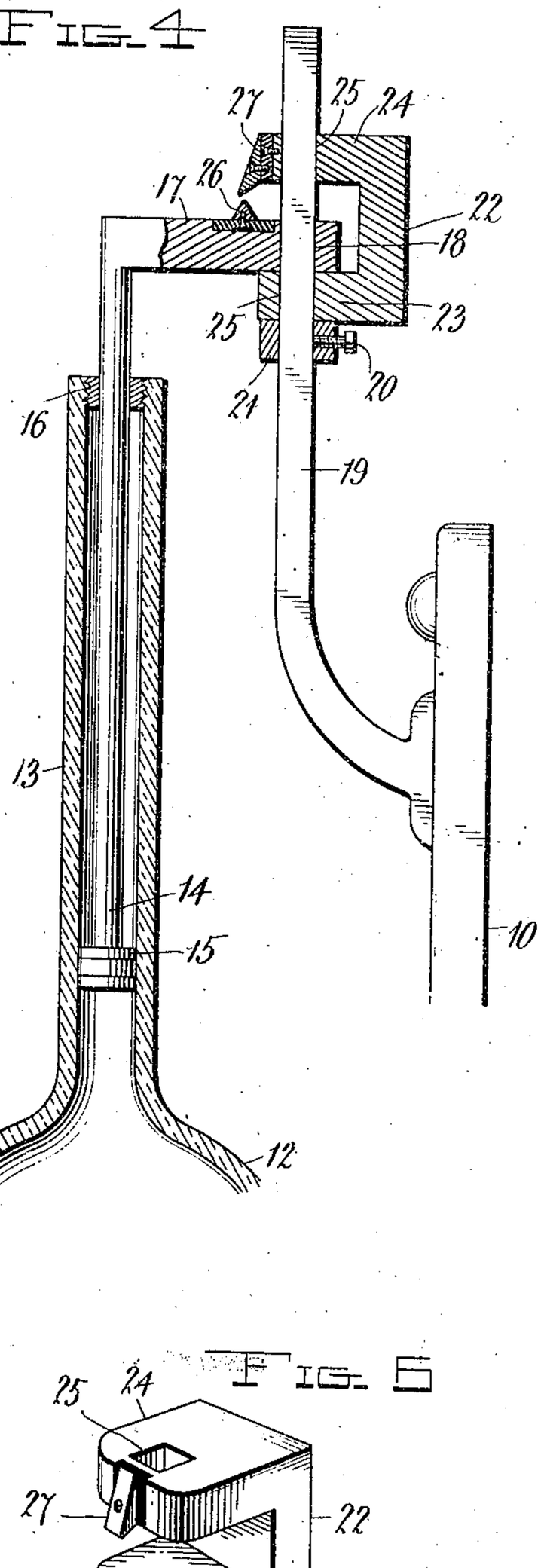
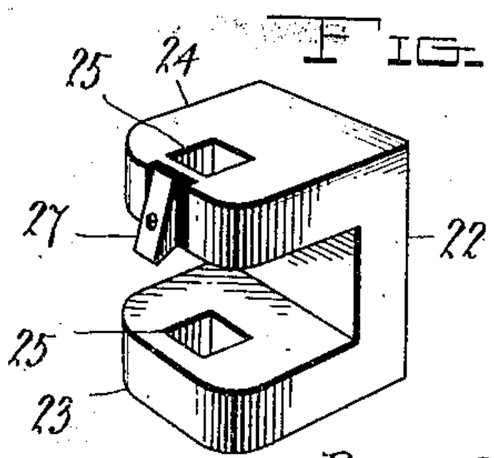


FIG. 5



Witnesses

H. B. Barbour

H. G. Smith.

Inventor

Ross D. Tiffany

By Church & Church

Attorneys

UNITED STATES PATENT OFFICE.

ROSS D. TIFFANY, OF BELLINGHAM, WASHINGTON.

CIRCUIT-CLOSER FOR FIRE-ALARM CIRCUITS.

No. 911,921. Specification of Letters Patent. Patented Feb. 9, 1909.

Application filed May 29, 1908. Serial No. 435,781.

To all whom it may concern:

Be it known that I, Ross D. TIFFANY, a citizen of the United States, residing at Bellingham, in the county of Whatcom, State of Washington, have invented certain new and useful Improvements in Circuit-Closers for Fire-Alarm Circuits; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

This invention relates to circuit closers and more particularly to that class which are designed for use in connection with a fire alarm circuit, the object of the invention being to provide a circuit closer of the type which are designed to automatically close the fire alarm circuit upon rise of the temperature of a room above a predetermined degree.

One of the primary objects of the invention is to provide a device of this type which may be adjusted or regulated so as to close the fire alarm circuit at any desired temperature and in carrying out my invention I provide a container for an expansible fluid such as alcohol or mercury, a plunger working in said container or rather in a barrel extension formed integral therewith, a support, a frame slidable upon the support means for limiting the downward movement of the frame, the frame being formed with a portion for limiting the downward movement of the plunger, and the frame being adjustable upon the support to adjust the plunger within the container and in this manner predetermine the temperature at which the device will operate to close the circuit.

In the accompanying drawings, Figure 1 is a view in elevation of the circuit closer embodying my invention, the plunger of the said circuit closer being shown in normal position. Fig. 2 is a similar view but showing the plunger raised to position to close the circuit, in full line and raised beyond this point in dotted line, Fig. 3 is a side elevation of the device the plunger being in normal position, Fig. 4 is a vertical sectional view in detail through the device, and, Fig. 5 is a detail perspective view of the frame which is slidable upon the support of the device.

As shown in the drawings, the circuit closer embodying my invention comprises an attaching plate or base which is indicated by the numeral 10 and formed integral with which is an annular bracket 11 upon which is seated the spherical body 12 of an expansible fluid container the said body being formed with a barrel extension 13 the bore of which is cylindrical to receive a plunger as will now be described.

The plunger mentioned above is indicated by the numeral 14 and is provided at its lower end with suitable packing rings 15, the plunger being received in the barrel as above mentioned and being passed through a packing ring 16 at the upper end of the said barrel. The upper end of the plunger is turned at right-angles as indicated by the numeral 17 and is formed at its extremity with a bearing 18 passing upwardly through which is a rod support 19 which is preferably formed integral with the attaching plate or base 10 of the circuit closer and projects forwardly and thence vertically therefrom. Adjustably secured by means of a set screw 20 upon the said rod support 19 is a collar 21 and resting upon this collar and loose upon the said support is a frame which is comprised of a connecting portion 22 and spaced portions 23 and 24, the said spaced portions projecting forwardly from the connecting portion 22 and the portion 24 being located above the portion 23, both of said portions formed at their extremities with bearings 25 through which the rod support 19 passes.

The spaced portion 23 of the frame just mentioned rests directly upon the collar 21 and it will be understood that the downward sliding movement of the frame upon the rod support 19 is limited by this collar, it being also understood that the collar may be adjusted vertically upon the said rod support to adjust or regulate the downward movement of the frame. The bearing end of the laterally termed portion 17 of the plunger 14 is, as stated above, slidably engaged with the rod support 19 and it moves between the spaced portions 23 and 24 of the frame 22, there being a contact 26 fixed upon the said laterally termed end 17 of the plunger and another contact 27 fixed upon the spaced portion 24 of the said frame 22. A wire 28 is electrically connected with the contact 27 and to one terminal of an electric bell or other signal device 29, the other terminal of this signal device being connected to one terminal of a battery 30 and the other ter-

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minal of the battery being connected electrically with the contact 26 by means of a wire 31.

From the foregoing description of my invention it will be understood that the operation is as follows: The device is placed in the room to be protected and suitably wired with the fire alarm circuit and the collar 21 is then adjusted upon the rod support 19 so as to bring the packing rings 15 of the plunger 14 into registration with one of the degree or temperature marks 32 upon the barrel of the container, this mark being the one at which the device is to operate to close the alarm circuit. The container is previously filled with mercury, alcohol, ether or some other expansible fluid and when the temperature of the room in which the circuit closer is located reaches a predetermined degree, indicated by the plunger 15 with respect to the scale 32, the plunger will be forced vertically by the expansion of the fluid within the container and the contact 26 will be brought into contact with the one 27 thereby closing the circuit.

As clearly shown in the drawings, the plunger is not limited in its vertical movement and consequently bursting of the container is obviated, the frame 22 carrying the contact 27 being freely slidable in an upward direction upon the rod support 19.

What is claimed is:

1. A circuit closer of the class described, comprising a container for an expansible fluid, a plunger working in said container, a support, the upper end of the plunger being connected with the support for sliding movement thereon, a contact carried by the plunger at its said end, an element upon the support for limiting the downward movement of said plunger, and a contact carried by the said element.

2. A circuit closer of the class described, comprising a container for an expansible fluid, a plunger working in said container, a support, the upper end of the plunger being connected with the support for sliding movement thereon, a contact carried by the plunger at its said end, an element adjustably mounted upon the said support for limiting the downward movement of said plunger, and a contact carried by the said element.

3. A circuit closer of the class described, comprising a container for an expansible fluid, a plunger working in said container, a support, the upper end of the plunger being connected with the support for sliding movement thereon, a contact carried by the plunger at its said end, a frame upon the support for limiting the downward movement of said plunger, and a contact carried by a portion of the said frame.

4. A circuit closer of the class described, comprising a container for an expansible fluid, a plunger working in said container, a support, the upper end of the plunger being connected with the support for sliding movement thereon, a contact carried by the plunger at its said end, a frame fixed upon the support and provided with a contact portion and beneath the said portion with a portion for limiting the downward movement of the said plunger.

5. A circuit closer of the class described comprising a container for an expansible fluid, a plunger working in said container, a support, the upper end of the plunger being connected with the support for sliding movement thereon, a contact carried by the plunger at its said end, and a frame adjustably fixed upon the support and including a portion for limiting the downward movement of said plunger and a contact portion.

6. A circuit closer of the class described comprising a container for an expansible fluid, a plunger working in said container, a support, the upper end of the plunger being connected with the support for sliding movement thereon, a contact carried by the plunger at its said end, a frame slidable upon the support, means for limiting the downward movement of the frame, the frame being formed with a portion for limiting the downward movement of the plunger and a contact carried by another portion of the frame.

7. A circuit closer of the class described comprising a container for an expansible fluid, a plunger working in said container, said container being graduated, a support, the upper end of the plunger being connected with the support for sliding movement thereon, a contact carried by the plunger at its said end, an element upon the support for limiting the downward movement of the said plunger, said element being adjustable upon the support, and a contact carried by the said element.

In testimony whereof, I affix my signature, in presence of two witnesses.

ROSS D. TIFFANY.

Witnesses:
J. E. HICKMAN,
SENA A. PARKER.