

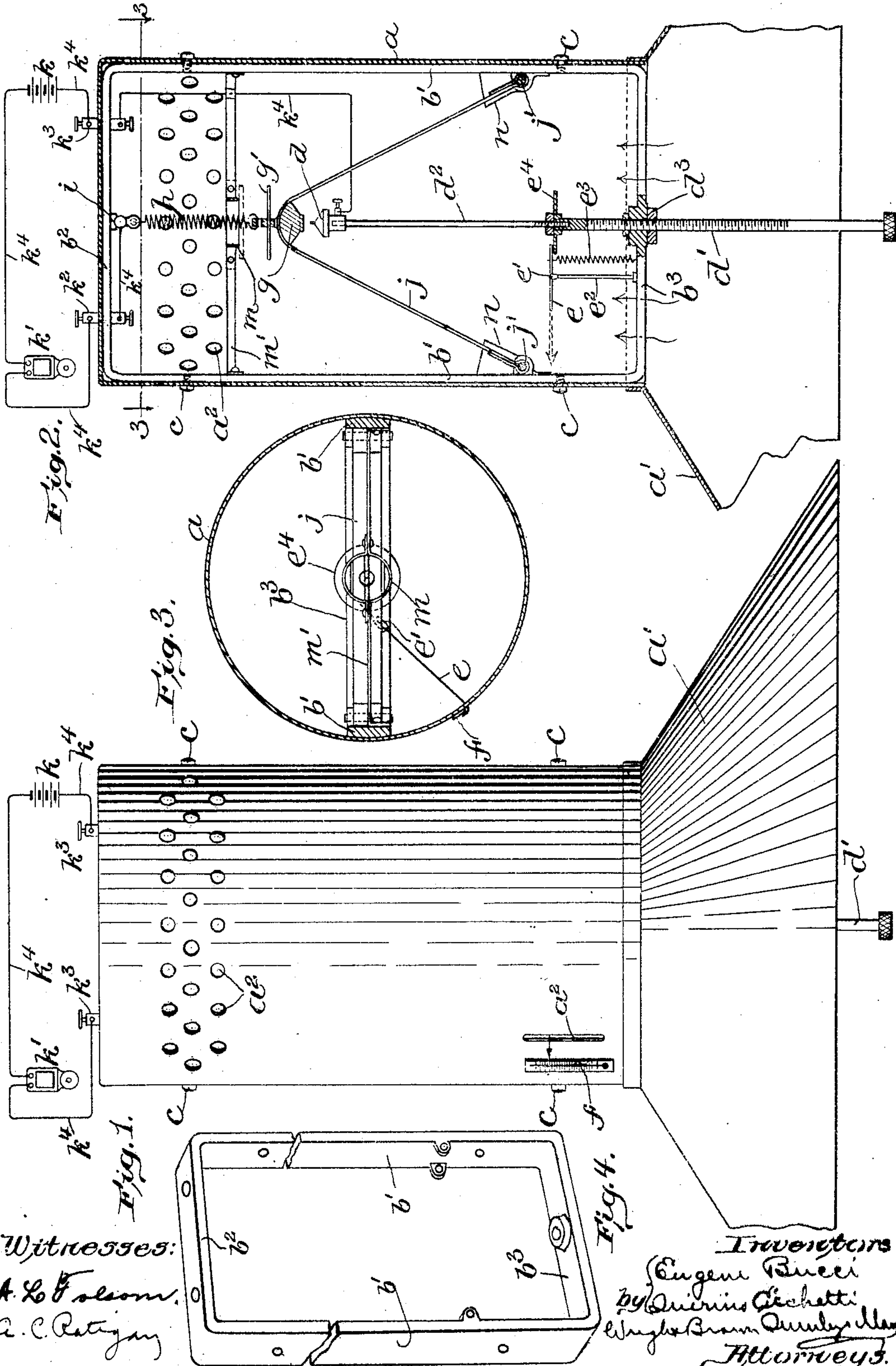
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PATENTED JULY 16, 1907.

E. BUCCI & Q. CICHETTI.

FIRE ALARM.

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UNITED STATES PATENT OFFICE.

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FIRE-ALARM.

No. 860,442.

Specification of Letters Patent.

Patented July 16, 1907.

Application filed December 3, 1906. Serial No. 346,040.

To all whom it may concern:

Be it known that we, EUGENE BUCCI and QUIRINO CICCHETTI, of Boston, in the county of Suffolk and State of Massachusetts, have invented certain new and useful Improvements in Fire-Alarms, of which the following is a specification.

This invention has relation to fire alarms, or appliances for indicating a sudden rise in temperature, such as occurs during conflagration.

The invention consists in certain improvements which are illustrated upon the accompanying drawings, described in the following specification and pointed out in the appended claims.

Referring to said drawings, Figure 1 represents in side elevation an appliance embodying our invention, the electric circuit and the alarm signal being illustrated diagrammatically. Fig. 2 represents a vertical section through the same. Fig. 3 represents a section on the line 3—3 of Fig. 2. Fig. 4 represents in perspective view the frame detached from the casing.

The invention is embodied in a movable contact which is adapted to be drawn by a thermostatic controlling member in the form of a flexible band, which contracts under the influence of heat, into electrical contact with a stationary contact which may be adjusted to any desired point so that the electric contact may be made at a predetermined temperature. In conjunction therewith, we employ a second stationary contact so that, in the event that the flexible contracting band is destroyed, the movable contact will engage the second stationary contact. Each of the stationary contacts is connected in an electric circuit which may comprise a signaling device, such as an electric bell.

The thermostatic controlling member extends in a direction approximately parallel with the path of movement of the movable contact, so that the contraction of the said thermostatic member by heat, acts to give a rapid circuit-closing movement of maximum amplitude to the movable contact, the device being, therefore, extremely sensitive, and adapted to be acted on by relatively slight variations of heat, the sensitivity of the apparatus being governed by the adjustability of the stationary contact.

Referring to the drawings, which illustrate one embodiment of our invention, a indicates a casing which, as illustrated, is cylindrical in form with a closed upper end, the lower end being open. It is quite apparent that the particular shape of this casing is of no moment provided it be adequate to contain the operative parts of the device. To the lower end of the casing is attached a flaring mouth a' so that heated air in rising will be guided and deflected into the casing. The casing itself is adapted to be attached to the ceiling or to a suitable support near the ceiling of a room.

The sides of the casing near the top are provided with apertures a^2 for the egress of the heated air. Within the casing is a rectangular frame b having side bars b' b' , a top cross-bar b^2 and a bottom cross-bar b^3 . This frame serves to support the operative parts of the device and is secured within the casing by screws c or other fastenings.

As previously indicated, the device includes a stationary adjustable contact which is indicated at d . This contact is supported upon a spindle which consists of a lower threaded section d' and an upper section d^2 , these two sections having a threaded connection. The section d' of the spindle is passed through a threaded aperture in the cross-bar b^3 , and may be adjusted up and down as occasion requires, being secured after adjustment by a lock-nut d^3 . An index e is pivoted at e' on a standard e^2 rising from the cross-bar b^3 . Its inner end is held yieldingly by a spring e^3 upon a flanged collar e^4 on the spindle and its outer end projects through a slot a^2 in the side of the casing, terminating in proximity to a graduated scale f on the exterior of the casing. This scale may be the scale of a thermometer, as shown in Fig. 1. The index, in conjunction with the scale, indicates the position of the stationary contact d which may be set so that a circuit will be closed at any desired or predetermined temperature. The movable contact g is supported upon a spring h , the upper end of which is attached to a binding screw i on the upper cross-bar b^2 . The band j , the ends of which are secured to pins j' on the side bars b' of the frame, is doubled over the movable contact as shown in Fig. 2. This band is formed of a suitable material which contracts under the influence of heat. For example, it may be made of rubber treated with glycerin, ether and vaseline.

The spring h normally holds the movable contact g away from the stationary contact d , but, when the temperature within the casing, rises to a predetermined point, the band j contracts and the movable contact engages the stationary contact so as to close an electric circuit. Said circuit includes a suitable source of electricity as at k , an indicator or arm k' , binding posts k^2 k^3 , and conductors k^4 .

As it might happen that the band j might lose its elasticity or be destroyed in case the heat became intense, or might get worn out, we provide a second contact as at m , with which the movable contact may be drawn by the spring h . This second or auxiliary contact m takes the form of a ring supported by cross-bars m' , and it is connected electrically with the conductor k^4 as illustrated in Fig. 2.

The movable contact g is provided with a pin g' so that, when the spring h draws the movable contact

upward, the pin g' engages the stationary contact m and closes the circuit through the alarm or indicator.

An important feature of our invention is the arrangement of the thermostatic controlling member or band j in such manner that the main portion thereof extends in a direction approximately parallel with the path of movement of the movable contact g . This feature is illustrated in Fig. 2, where the two stretches of the band j , while inclined relatively to the path of movement of the movable contact g , are at the same time so nearly parallel with said path of movement, that their contraction gives a quick movement of considerable amplitude to the movable contact, the movement under the influence of heat being quicker and more extended than could be the case if the thermostatic controlling device were a metallic rod or wire moved by flexure caused by the the expansion of the device.

Applicants have discovered that by employing a thermostatic controlling device having substantially the characteristic of a band of rubber treated as hereinbefore described, and arranged so that considerable parts of it extend approximately parallel with the path of movement of the movable contact, the apparatus is made extremely sensitive, and capable of being adjusted to operate at any desired rise of temperature.

It will be apparent that the particular embodiment of the invention which we have described may be varied as to its details of construction without departing from the spirit and scope of the invention. It may be provided with various adjuncts as for instance there may be shields such as indicated at n near the attached ends of the flexible band j . The indicator or alarm may be located at any desired point remote from the circuit closing devices.

Having thus explained the nature of the invention and described a way of constructing and using the same, although without attempting to set forth all of the forms in which it may be made or all of the modes of its use, what we claim is:—

1. In a device of the character described, a stationary contact, a movable contact, yielding means for holding the movable contact away from the stationary contact, and a thermostatic controlling member composed of a material such as rubber, adapted to be contracted by heat for engaging said movable contact with the stationary contact.

2. In a device of the character described, a stationary contact, a movable contact adapted to approach and recede from the stationary contact, means for yieldingly holding the movable contact normally away from the stationary contact, and a thermostatic controlling member composed of a material such as rubber, adapted to be contracted by heat, and engaged with the movable contact, said member extending in a direction approximately parallel with the path of movement of the movable contact, whereby the contraction of said member causes a relatively rapid and ample circuit-closing movement of the movable contact.

3. In a device of the character described, a stationary contact, a movable contact adapted to approach and recede from the stationary contact, means for yieldingly holding the movable contact normally away from the stationary contact, and a thermostatic controlling member composed of a material such as rubber adapted to be contracted by heat, and engaged with the movable contact, said member having two stretches located at opposite sides of the mov-

able contact, and extending in a direction approximately parallel with the path of movement of the movable contact, whereby the simultaneous contraction of said stretches causes a circuit-closing movement of the movable contact.

4. In a device of the character described, a stationary contact, a movable contact adapted to approach and recede from the stationary contact, means for yieldingly holding the movable contact normally away from the stationary contact, and a thermostatic controlling member contractible by heat and engaged with the movable contact, said member being composed of a band engaged with fixed bearings, and extending therefrom to the movable contact in the form of a loop having side stretches, which extend in directions approximately parallel with the path of movement of the movable contact, and a connecting neck portion bearing on the movable contact.

5. In a device of the character described, a stationary contact, a movable contact adapted to approach and recede from the stationary contact, a spring which normally holds the movable contact away from the stationary contact, and a thermostatic controlling member composed of a material such as rubber adapted to be contracted by heat, and engaged with the movable contact, said member extending in a direction approximately parallel with the path of movement of the movable contact.

6. In a device of the character described, a stationary contact, a movable contact adapted to approach and recede from the stationary contact, means for yieldingly holding the movable contact normally away from the stationary contact, a thermostatic controlling member composed of a material such as rubber adapted to be contracted by heat and engaged with the movable contact, said member extending in a direction approximately parallel with the path of movement of the movable contact, and means for adjusting the stationary contact toward and from the normal position of the movable contact.

7. In a device of the character described, a stationary contact, a movable contact, a spring for holding said movable contact away from said stationary contact, and a band contractible by heat doubled over the movable contact, and having its ends fixed, for moving said movable contact towards the stationary contact, the stretches of the band between the movable contact and the fixed ends, extending in directions approximately parallel with the path of movement of the movable contact.

8. In a device of the character described, an electric circuit comprising an alarm and two separated stationary contacts, a movable contact between said stationary contacts, a spring for drawing the movable contact in one direction, a band adapted to be contracted by heat doubled over said movable contact for drawing the movable contact in the other direction, said band having stretches extending approximately parallel with the path of movement of the movable contact, and a casing inclosing said contacts, spring and band.

9. In a device of the character described, a casing, a frame in said casing having end and side bars, a spindle adjustably supported on the lower end bar, a spring connected to the upper end bar, a stationary contact on said spindle, a movable contact connected to said spring, and a band contractible by heat, and engaged with bearings on the frame and with the movable contact for moving said movable contact into engagement with the stationary contact, the said band having stretches extending approximately parallel with the path of movement of the movable contact.

In testimony whereof we have affixed our signatures, in presence of two witnesses.

EUGENE BUCCI.
QUIRINO CICHETTI.

Witnesses:

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A. L. FOLSOM.