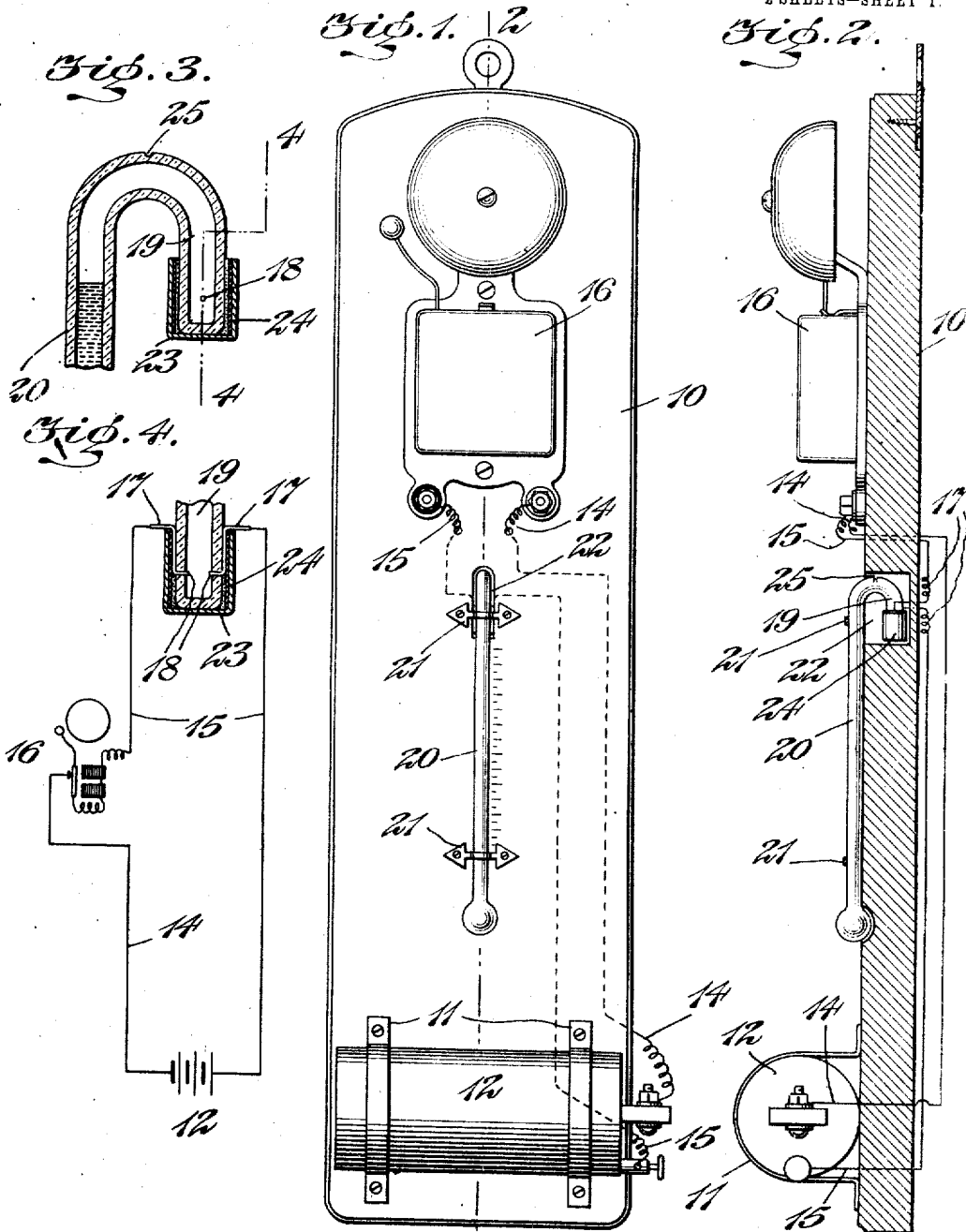


W. GOODCHILD.
FIRE ALARM.
APPLICATION FILED MAR. 18, 1909.

939,128.

Patented Nov. 2, 1909.
2 SHEETS—SHEET 1.



WITNESSES
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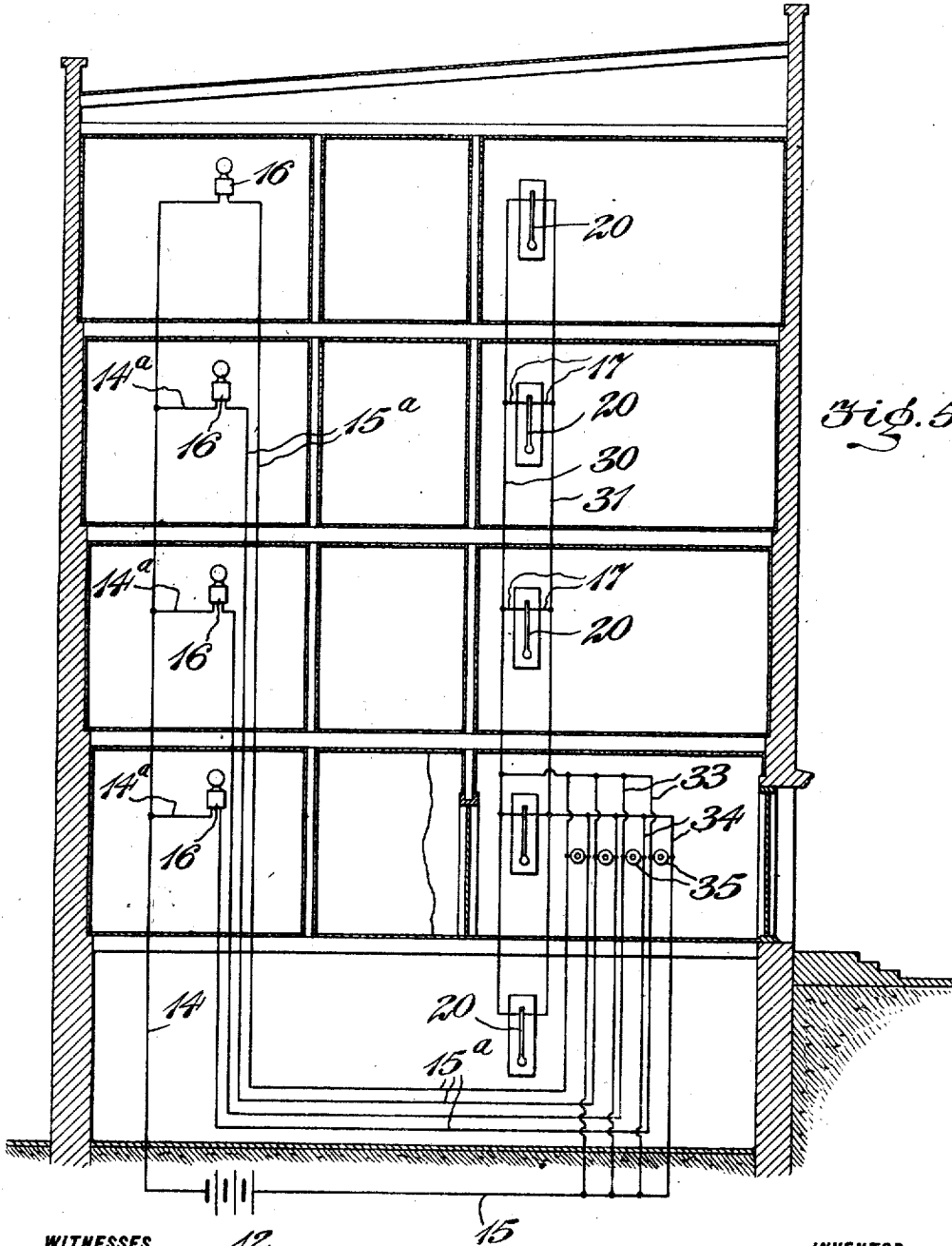
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UNITED STATES PATENT OFFICE.

WALTER GOODCHILD, OF NEW YORK, N. Y., ASSIGNOR TO JOHN GOODCHILD, OF NEW YORK, N. Y.

FIRE-ALARM.

939,128.

Specification of Letters Patent.

Patented Nov. 2, 1909.

Application filed March 13, 1908. Serial No. 484,302.

To all whom it may concern:

Be it known that I, WALTER GOODCHILD, a citizen of the United States, and a resident of the city, county, and State of New York, have invented certain Improvements in Fire-Alarms, of which the following is a specification.

This invention relates to certain improvements in fire alarms, and more particularly in that class of such devices which are electrically actuated, and the object of the invention is, in part, to provide an alarm device of this character of a simple and comparatively inexpensive nature, wherein the several operative parts of the device are so compactly constructed and arranged as to be capable of being conveniently transported from place to place and applied for use in desirable locations, and in part, to provide a device of this character having a novel and improved construction and arrangement of circuit closing means adapted to afford greater accuracy and certainty of operation during practical employment of the device.

The invention consists in certain novel features of the construction, and combinations and arrangements of the several parts of the improved fire alarm, whereby certain important advantages are attained, and the device is rendered simpler, less expensive, and otherwise better adapted and more convenient for use, all as will be hereinafter fully set forth.

The novel features of the invention will be carefully defined in the claims.

In order that my invention may be the better understood, I will now proceed to describe the same with reference to the accompanying drawings, wherein—

Figure 1 is an elevation of a fire alarm device embodying my improvements; Fig. 2 is a sectional view taken lengthwise through the device in the plane indicated by the line 2—2 in Fig. 1; Fig. 3 is an enlarged fragmentary sectional view taken lengthwise through the upper part of the circuit closing means, and showing certain features of construction which will be hereinafter referred to; Fig. 4 is a somewhat diagrammatic view showing the several circuit connections of the device, and illustrating certain features of the circuit closing means, a fragment of which is shown in section in the plane indicated by the line 4—4 in Fig. 3, and Fig. 5 is a somewhat diagrammatic view showing

the application of my improvements in connection with the bell wiring of a building.

Referring first to Figs. 1 to 4, inclusive, wherein my improvements are shown applied to a portable fire alarm device, 10 represents a suitable supporting board or plate, the upper part of which is provided with an eye whereby it may be suspended from a nail or hook in any preferred location, and 12 represents a dry cell, which may be of any preferred kind, being herein shown as made in the well known cylindrical form, and being supported upon the lower end of the board or plate 10 by means of spaced metal straps 11, 11.

14 and 15 represent conductors extended from the terminals of the battery cell 12 upwardly along the board or plate 10 and having their upper ends connected electrically with the binding posts of an electric bell 16 or equivalent alarm device which is secured upon the upper part of the board or plate 10. Although not illustrated herein, it will be evident that these conductors 14 and 15 may be embedded in the material from which the board or plate 10 is formed, preferably at the back thereof, so as to be concealed and protected against mechanical injury as much as possible. One of the said conductors, as 15, includes spaced terminals, 17, 17, which are embedded in the opposite sides of a downwardly and rearwardly bent portion 19 integrally produced upon the upper end of a mercurial thermometer tube 20, the main vertically directed portion whereof is extended downwardly along the front side of the board or plate 10, between the bell or alarm 16 and the battery cell 12, and is secured in position thereon in a well known way by means of transversely extended clips 21, 21, so that its mercurial column may be conveniently read upon a scale produced upon the board or plate.

The board or plate 10 is recessed opposite to the upper end of the thermometer tube 20, as shown at 22, so as to produce a chamber wherein the rearwardly and downwardly bent upper end portion 19 of said tube is received, and one of the clips 21 is extended across the front side of said chamber 22, while the back of said chamber is closed, so that in case the tube should be fractured, its bent upper end portion 19, wherein the spaced terminals 17, 17 are embedded, will be retained in said chamber 22, and will be

prevented from being accidentally dislodged therefrom.

The pendent extremity of the downwardly and rearwardly bent upper end portion 19 of the thermometer tube is also provided with a protective cap or casing 23, which is herein shown as made in the form of a metallic cup, wherein said end of the tube is received and held by means of cement or the like, a ply of insulating material of any preferred kind being shown at 24, as being interposed between the cup and the spaced terminals 17, 17 so as to prevent closure of the circuit by contact of said terminals upon the metallic cap or casing 23.

In the use of the device, the board or plate 10 is suspended at any desired situation whereat fire is thought to be most likely to occur, and the mercurial column rising within the thermometer tube 20 in unison with the fluctuations of temperature will, if the temperature rise to an excessive or dangerous degree, be forced into the downwardly and rearwardly bent upper end portion 19 of said tube, and therein will complete the electric circuit between the spaced terminals 17, 17, so that the current will be caused to flow from the battery 12 through the windings of the bell magnet by way of the conductors 14 and 15, and cause the bell to be sounded during such time as the temperature is thus elevated, or until the device shall have been destroyed.

The rearwardly bent upper end portion 19 of the thermometer tube, being housed within the chamber 22 of the board or panel 10, is effectively concealed and protected against mechanical injury, and is maintained in position therein even though the tube be broken or cracked by the flames or heat, and to insure the retention within said upper bent end portion 19, of such part of the mercurial column as may have been forced therein even after the tube shall have been cracked or broken by excessive rise of the temperature, I have shown the curved part of the tube provided with a weakened part 25, which may be a file kerf or the like, adapted to define the point of fracture of the tube in case the same be broken by heat.

From the above description of my invention, it will be seen that the improved alarm device constructed in accordance therewith is of an extremely simple and comparatively inexpensive nature, and is particularly well adapted for use by reason of the accuracy and certainty of its operation, and it will also be evident from the above description that the device is susceptible of considerable change without material departure from the principles and spirit of the invention, and for this reason I do not desire to be understood as limiting myself to the precise formation and arrangement of the several parts of the device as herein set forth in carrying

out my invention in practice. For example, it will be evident that the device is capable of embodiment in alarms not especially designed for portable use as above described, and in Fig. 5 I have shown the application of my improvements to an alarm device connected with a house wiring system. In this figure I have illustrated the several floors of a building provided with bells 16, 16, connected in parallel by conductors 14^a, 14^a with one of the main conductors, 14 leading to the battery 12, and having similar parallel connections at 15^a, 15^a with the other conductor 15 leading to the battery. Each of the parallel conductors 15^a, 15^a includes a push-button 35, such as are commonly provided at the entrances to apartment houses.

30 and 31 represent conductors extended from the basement to the several floors of the building, and wherewith the spaced terminals 17, 17 of several of the circuit closing devices, comprising mercurial thermometer tubes 20, 20 with the embedded terminals as above described, are connected in parallel. One of such circuit closing devices may, for example, be provided in the hall entrance to each apartment. The conductors 30 and 31 are connected with conductors 33 and 34, respectively, in parallel with the several push-buttons 35, so that should a fire occur in proximity to either of the circuit closing devices, the rise of the mercurial column will establish communication between said conductors 30 and 31, and thereby complete the circuit from the battery 12 through each bell 16, so as to cause an alarm to be sounded upon each floor of the building.

Having thus described my invention, what I claim and desire to secure by Letters Patent is—

1. A device of the character described having a supporting panel having a chamber provided with an opening at the outer surface of the panel, a battery and a bell carried by the panel, a mercurial thermometer tube extended upon the outer surface of the panel below said chamber and provided with an upper part rearwardly directed in said chamber, and an extremity pendent from said rearwardly directed upper part within said chamber, and circuit connections extended from the battery to the bell and including spaced terminals embedded in the pendent extremity of the thermometer tube within said chamber of the panel, and adapted for electrical communication through the mercurial column thereof upon the rise of temperature.

2. A circuit closing means for fire alarm devices and the like, having a mercurial thermometer tube provided with a pendent laterally bent upper portion sealed at its lower extremity and adapted to receive the mercurial column upon elevation of temperature.

ture, spaced terminals embedded in said pendent laterally bent portion of the tube and adapted for communication through the mercurial column upon the rise of temperature, and a metallic casing arranged to inclose the sealed extremity of the pendent portion of the tube to prevent fracture thereof.

In witness whereof I have hereunto signed my name, in the presence of two subscribing witnesses.

WALTER GOODCHILD.

Witnesses:

J. D. COPLINGER,

A. F. CONNETT.