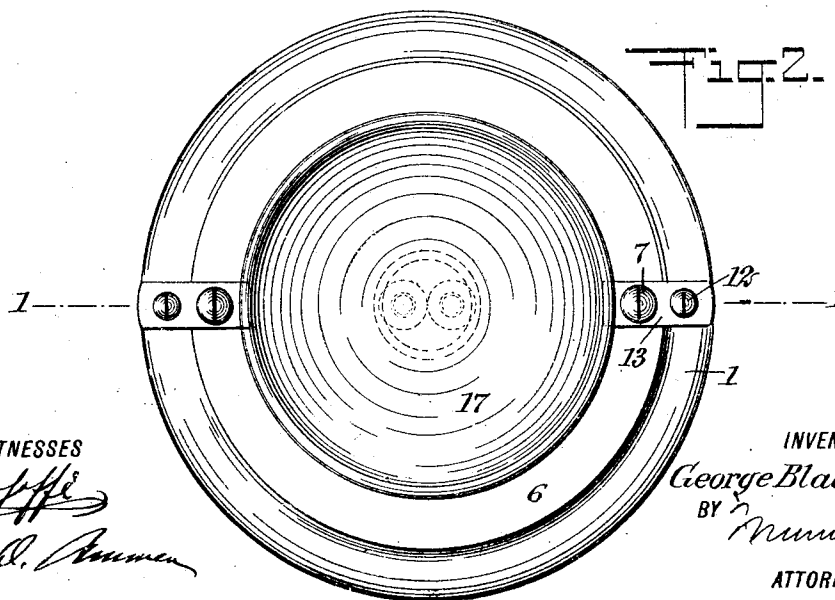
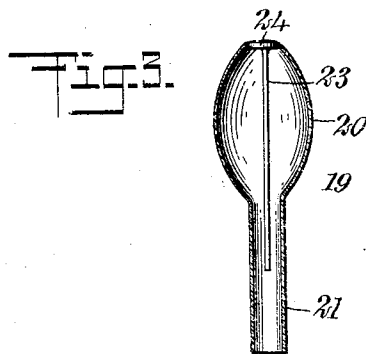
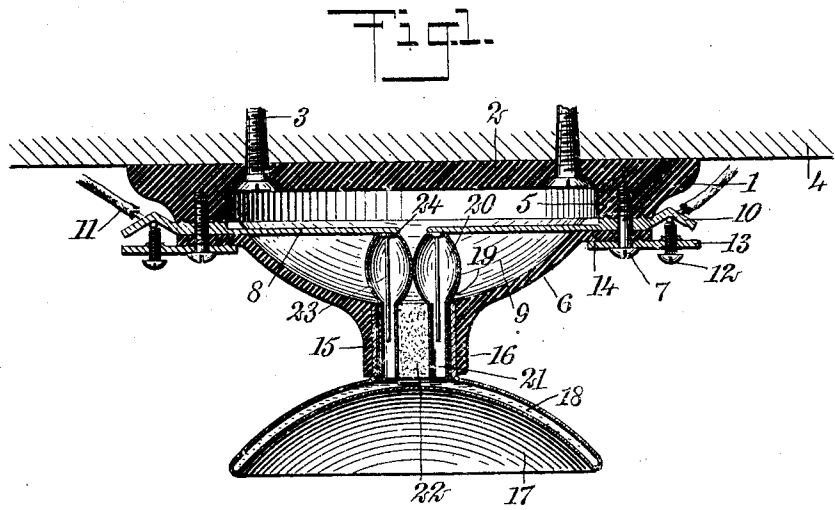


G. BLACKHALL.
THERMO ELECTRIC FIRE ALARM.
APPLICATION FILED MAR. 2, 1909.

954,373.

Patented Apr. 5, 1910.



WITNESSES
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UNITED STATES PATENT OFFICE.

GEORGE BLACKHALL, OF TORONTO, ONTARIO, CANADA.

THERMO-ELECTRIC FIRE-ALARM.

954,373.

Specification of Letters Patent.

Patented Apr. 5, 1910.

Application filed March 2, 1909. Serial No. 480,898.

To all whom it may concern:

Be it known that I, GEORGE BLACKHALL, a subject of the King of Great Britain, and a resident of Toronto, in the Province of Ontario and Dominion of Canada, have invented a new and Improved Thermo-Electric Fire-Alarm, of which the following is a full, clear, and exact description.

This invention relates to fire alarms, and is especially useful in buildings, such as factories or warehouses, for the purpose of giving an alarm in case of fire. It is also intended to be used in the holds of ships or in other situations where a local rise in temperature may be utilized to indicate the existence of a fire.

The invention consists in the construction and combination of parts, to be more fully disclosed hereinafter and particularly set forth in the claims.

Reference is to be had to the accompanying drawings forming a part of this specification, in which similar characters of reference indicate corresponding parts in all the views, and in which—

Figure 1 is a vertical section through a device constructed according to my invention, and showing the same as attached to a ceiling, this view being a section on the line 1—1 of Fig. 2; Fig. 2 is a bottom plan of the device; and Fig. 3 is a vertical section through a terminal bulb, two of which are embodied in the device.

Referring more particularly to the parts, 1 represents a base plate which is of circular form, having a depressed center 2 through which screws or other fastening devices 3 pass, which attach the plate to the ceiling 4. By reason of the depressed center, this base presents an annular boss 5, and upon this boss there is seated a dished cap or cover 6. The base 1 and the cap 6 are of insulating material. The cap is attached to the base by means of fastening screws 7 passing through conductor plates 8, which are arranged radially and project in to a point near the center of the chamber 9, which is formed between the base and the cap. The outer ends of these conductor plates project beyond the base, and are bent upwardly, so as to form angular seats or binding posts 10 to receive the wires 11 of an electric circuit. These wires are clamped against the seat by means of binding screws 12, which are mounted in binding plates 13 through which the aforesaid screws 7 pass. The inner extremities

of these plates 13 are provided with spurs 14, which engage the face of the dished cap and prevent the plates 13 from moving out of alinement with the conductor plates. The lower portion of the cap 6 is formed into a tubular central sleeve 15, which projects downwardly, as shown. Within this sleeve, there is received the neck 16 of a mercury-holder or bowl 17. This mercury-holder is in the form of a shell having a double wall so that a narrow spherically-curved space 18 is formed, in which mercury is placed. The double wall presents a convex outer plate or wall and a concave inner wall or plate and these plates conform to each other, as shown. In the space 9 within the body of the device are provided two terminal bulbs 19. The bodies 20 of these bulbs are egg-shaped and have elongated necks 21 which extend downwardly into the interior of the neck 16. In the space surrounding the necks 21, a suitable filler or packing material 22 is placed. At the upper ends of the bulbs 19, terminals 23 are attached by means of large flat heads 24, which are exposed above the bulbs. These terminals 23 are in the form of stems which extend down centrally into the necks 21. The terminal bulbs are placed in position so that the heads 24 are in engagement with the under sides of the conductor plates 8.

When the device is in operation, a suitable quantity of mercury is placed in the mercury-holder 17. On account of the peculiar construction of the mercury-holder, it will be evident that a very large surface is presented with respect to a relatively-small quantity of mercury. Furthermore, the form of the device is admirably adapted to concentrate the ascending currents of warm air which move toward the ceiling. When the temperature of the mercury-holder rises sufficiently by reason of a fire in the same room or locality, the mercury rises in the necks 21 of the bulbs 19 and forms a bridge between the terminals 23. In this way, an electric circuit is closed, and an alarm will be given.

With the construction described, it will be evident that if the bowl or mercury-holder 17 should become broken, it can be replaced by removing the cap 6 without disturbing any other parts of the device.

In the practical application of the invention the length of the terminal stems will be adapted for a predetermined temperature.

For instance, if the device is to be used in an engine room it may be arranged to close the circuit at 150° to 200°, though in an adjoining room, if desired, the length of the terminal stems may be greater so as to adapt the device to close the circuit at 100°. This gives the device great utility and adaptability. In any particular system any number of different rooms or compartments could be wired so as to give an alarm at different temperatures, depending on the locality at which the fire breaks out.

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

1. A device of the class described having a mercury holder formed of a pair of thin curved shells conforming to each other and disposed close together to form a retaining chamber for a thermo-sensitive liquid, presenting a great superficial area and a relatively small capacity, said holder having an upwardly projecting neck, a pair of terminal bulbs having terminals with heads disposed at the upper ends of said bulbs and

having stems extending downwardly into said neck, and conductor plates in contact with said heads and adapted to conduct the current therefrom.

2. A device of the class described, having a bowl for holding mercury and having an upwardly-projecting neck, a cap having a downwardly-projecting sleeve receiving said neck, terminal bulbs disposed above said cap and projecting downwardly into said neck, said terminal bulbs having terminal stems extending downwardly into said neck and adapted to be bridged by the mercury, said terminal stems having heads exposed at the upper ends of said bulbs, and conductor plates in contact respectively with said heads.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

GEORGE BLACKHALL.

Witnesses:

D. S. TOVELL,
E. MERNER.