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ELECTRIC ALARM DEVICE

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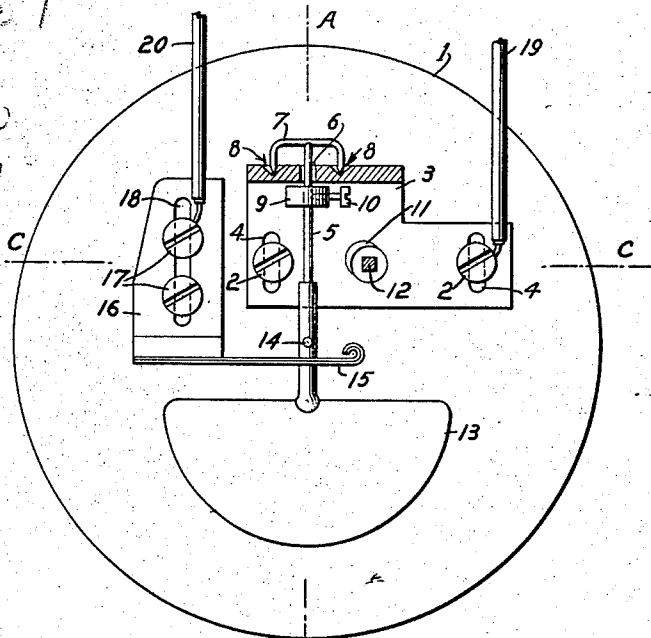


Fig. 1.

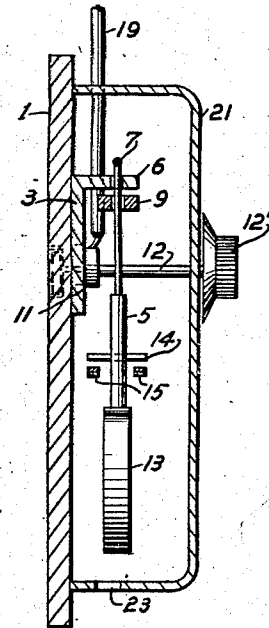


Fig. 2.

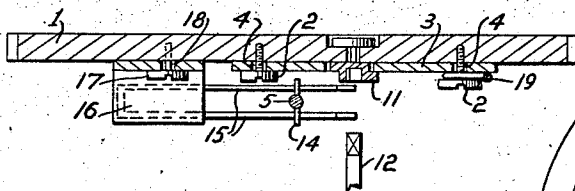


Fig. 3.

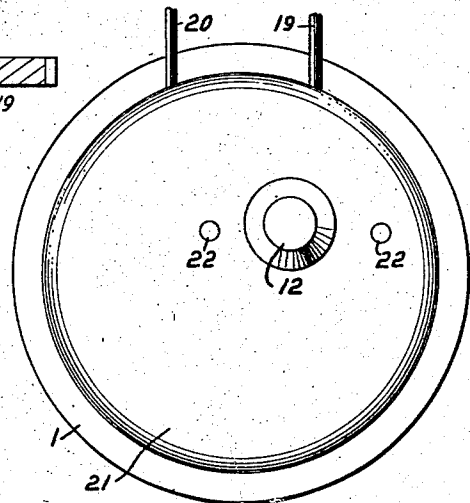


Fig. 4.

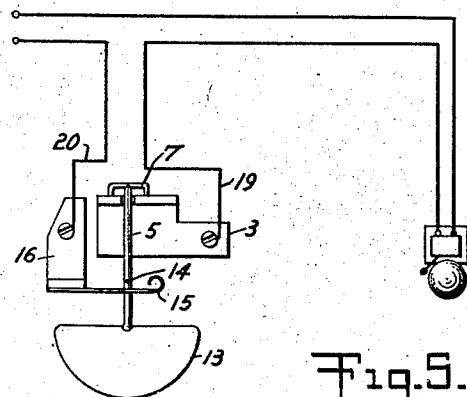


Fig. 5.

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ELECTRIC ALARM DEVICE

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6 Claims. (Cl. 200—138)

1

This invention relates to burglar and fire alarm devices, and more particularly to vibration and heat sensitive switches.

One object of the invention is to provide means highly sensitive to vibration and heat to close a circuit to an alarm device in the event of any attempt at burglary or fire, which means when disposed wherever desired will be a safeguard against such events.

Another object is to provide a device of this type with a pendulum suspension highly sensitive to both vibrations and heat so as to prevent the same from working inefficiently.

The most outstanding feature of the apparatus resides in that it provides a pendulum mounted in such a manner as to act as the breaker of a circuit enclosing directly or indirectly one or more alarm elements (bells, lights, etc.). The breaking of the current takes place between the rod of the pendulum proper and one or more contact terminals located near the rod, these contact terminals being made of a good conducting material capable of deforming or expanding under the effect of heat.

In the case of a trespass or a theft taking place at the spot where the apparatus is located, i. e., when this device suffers any vibration due to these causes, the pendulum will take on an oscillation of such a magnitude as to cause its rod to touch the said terminal or terminals, thereby closing the electric circuit and producing the desired alarm.

In the case of a fire, the terminal or terminals will become deformed or will expand so that the pendulum, even if it stands still, will be touched by the said terminal or terminals to produce the closing of the electric circuit and, consequently, the said alarm, in the same manner as hereinbefore stated.

It is evident that the electric circuit may comprise an electromagnet, a relay, a motor, etc., to keep this circuit closed once it is closed or keep closed any other circuit comprising the alarm contrivances so as to have the alarm go on until it is interrupted by its corresponding switch.

In order that the invention may be readily understood and put into practice it is shown by way of example in the attached drawing by means of various illustrative figures wherein:

Figure 1 is a front view of the device according to the invention, with its lid removed, and showing the support of the pendulum in sectional view.

Figure 2 is a sectional view along the line A—A of the foregoing figure, with the lid on,

2

Figure 3 is a sectional view along the line C—C of Figure 1,

Figure 4 is a front elevational view on a reduced scale of the device, and

Figure 5 is the electric wiring diagram of the apparatus.

In the different figures of the drawing similar parts are indicated by the same reference numerals.

The construction in accordance with the model shown consists of an electrically insulating base 1 on which is mounted by means of screws 2 a support 3 made of a good conducting material. To provide for adjustment of support 3 these screws pass through lengthened holes 4 in the said support 3, as will be appreciated from Figs. 1 and 3.

On this bracket-like support 3 rests a pendulum rod 5 which passes through a slot 6 in the bracket and ends in an inverted cradle 7 having pointed ends. As is seen from Fig. 1, the cradle 7 rests in two conical cavities 8 in support 3 so as to cause the same to offer the least possible resistance when the pendulum oscillates. All these elements, i. e., support 3, rod 5 of the pendulum and cradle 7 are made of a good conducting material or materials.

In order to prevent the rod 5 from being accidentally dislodged from the support it is provided with a suitable means such as the ring 9 having a pressure-screw 10 and located near the bottom portion of the horizontal wing of support 3. In this manner, the cradle 7 of the pendulum cannot escape unless the pressure-screw 10 is loosened and the ring 9 moved down until the tips of the cradle can clear the conical cavities 8, as will be readily understood.

The support 3 may be equipped with any suitable means for controlling its position (low or high). This means, in the example of the drawing, is a simple eccentric 11 engaging a notch of the support and mounted on the base 1. It may be turned by means of a key or an instrument like the rod 12 one end of which is square shaped in cross section and engages the eccentric body 11 while the other end carries a knob 12' to operate it (Figs. 2 and 4).

The rod 5 suspended in the manner as has been described hereinbefore extends downwardly and receives at its lower end the weight 13 thus constituting the pendulum of the device. This rod 5 has intermediate the ends thereof a small bolt 14 extending therethrough and rigidly affixed thereto.

Near the bolt 14, at a different level, for ex-

ample, at a lower one, there are contact strips or wires 15 made of a material capable of becoming considerably curved or deformed under the effect of heat and being, at the same time, a good conductor. A suitable material for their construction is the so-called bimetal whose properties are well-known and which is composed of two rods joined together and having a different coefficient of expansion, also known as thermoscopes.

The aforementioned wires 15 are secured to a support 16 which is mounted on the base 1 by means of screws 17 that pass through a slot 18 of the support to permit adjustment of its height.

The electric connection of the device is, as in the case of ordinary circuit-breakers, effected in series with the elements and contrivances producing the corresponding alarm, the cables 19 and 20 being connected to the screws 2 and 11, respectively (Fig. 1).

A lid 21 covering the device as a protecting means (Figs. 2 and 4) has the necessary orifices or openings for the said cables 19 and 20 to pass therethrough (provided they do not pass through the base 1), as well as the openings 22 (Fig. 4) for the insertion of a screw driver to operate the screws 2 whenever it is desired to adjust the position of the support 3 by means of the knob 12' and the eccentric 11, and opening 23 (Fig. 2) to allow heat to pass in case of a fire.

The device operates as follows:

With the apparatus put in the place where it is needed, for example, a door, a display-window, a vehicle, etc., and the electric current connected thereto, any movement of such door, window, etc., will induce a vibration which, in turn, will cause the pendulum to oscillate immediately.

When the pendulum swings, rod 5 will make contact with one of the wires 15 or with both, thereby closing the electric circuit which will start the alarm installation.

Again, when there is a fire, the heat received by the wire or the wires 15 will cause the same to form an arch or bend towards and make contact with the through-bolt 14 of the rod 5, whereby the circuit is closed as in the foregoing case, even if the pendulum remains motionless.

To increase the heat sensitivity of the device, the rod 5, or a portion thereof, may be made of a material having a high coefficient of expansion, so that the bolt 14 may touch the wires 15 for the desired purpose.

In certain cases, the bolt 14 may be dispensed with, if the direction in which the wires 15 are bent is towards the rod 5, the electric circuit being closed in the same manner in the event of a fire.

To sensitize the apparatus or to condition to the temperature ranges of summer and winter, all that is necessary is to raise or lower the position of support 3 by the aid of its adjusting means, viz, the eccentric 11, rod 12, knob 12' and screws 2.

Also, the wires 15 may be spaced from rod 5 and its bolt 14, as may be deemed necessary.

What is claimed is:

1. A heat and vibration sensitive switch, comprising a non-conducting base, a pendulum support connected to said base, a pendulum rod carried by said support, a second support connected to said base, at least one thermoscopic rod connected to said second support and adjacent said pendulum rod, and a bolt carried by said pendulum rod extending transversely through the same and adjacent said thermoscopic rod.

2. A heat and vibration sensitive switch, comprising a non-conducting base, a pendulum support adjustably connected to said base, a pendulum rod carried by said support, a second support adjustably connected to said base, at least one thermoscopic rod connected to said second support and adjacent said pendulum rod, and a bolt carried by said pendulum rod extending transversely through the same and adjacent said thermoscopic rod.

3. A heat and vibration sensitive switch, comprising a non-conducting base, a pendulum support connected to said base, said support having a slot formed therein and two conical cavities spaced from said slot, a pendulum rod extending through said slot, an inverted cradle member at one end of said pendulum rod adapted to seat in said conical cavities, a second support connected to said base, at least one thermoscopic rod connected to said second support and adjacent said pendulum rod, and a bolt carried by said pendulum rod extending transversely through the same and adjacent said thermoscopic rod.

4. A heat and vibration sensitive switch, comprising a non-conducting base, a pendulum support connected to said base, a pendulum rod at least part of which has a high coefficient of expansion carried by said support, a second support connected to said base, at least one thermoscopic rod connected to said second support and adjacent said pendulum rod, and a bolt carried by said pendulum rod extending transversely through the same and adjacent said thermoscopic rod.

5. A heat and vibration sensitive switch, comprising a non-conducting base, a pendulum support connected to said base, said support having a slot formed therein and two conical cavities spaced from said slot, a pendulum rod extending through said slot, an inverted cradle member at one end of said pendulum rod adapted to seat in said conical cavities, a ring slidable on said rod and below said support, said ring having a threaded aperture formed therein, a screw in said aperture for frictional engagement with said pendulum rod, a second support connected to said base, at least one thermoscopic rod connected to said second support and adjacent said pendulum rod, and a bolt carried by said pendulum rod extending transversely through the same and adjacent said thermoscopic rod.

6. A heat and vibration sensitive switch, comprising a non-conducting base, a pendulum support connected to said base, a pendulum rod carried by said support, an eccentric rotatably mounted in said base and engaging said support for moving said support on said base, means connected to said eccentric for rotating the same, a second support connected to said base, at least one thermoscopic rod connected to said second support and adjacent said pendulum rod, and a bolt carried by said pendulum rod extending transversely through the same and adjacent said thermoscopic rod.

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