

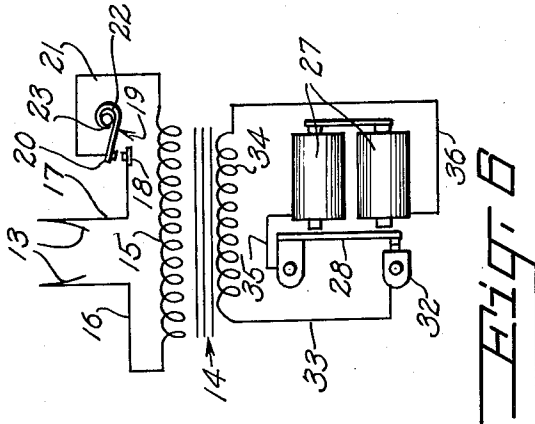
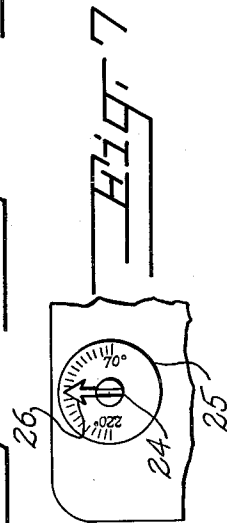
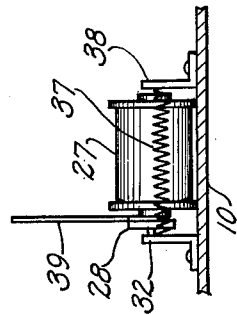
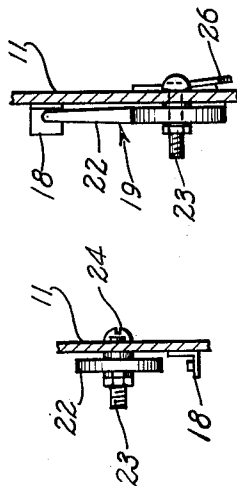
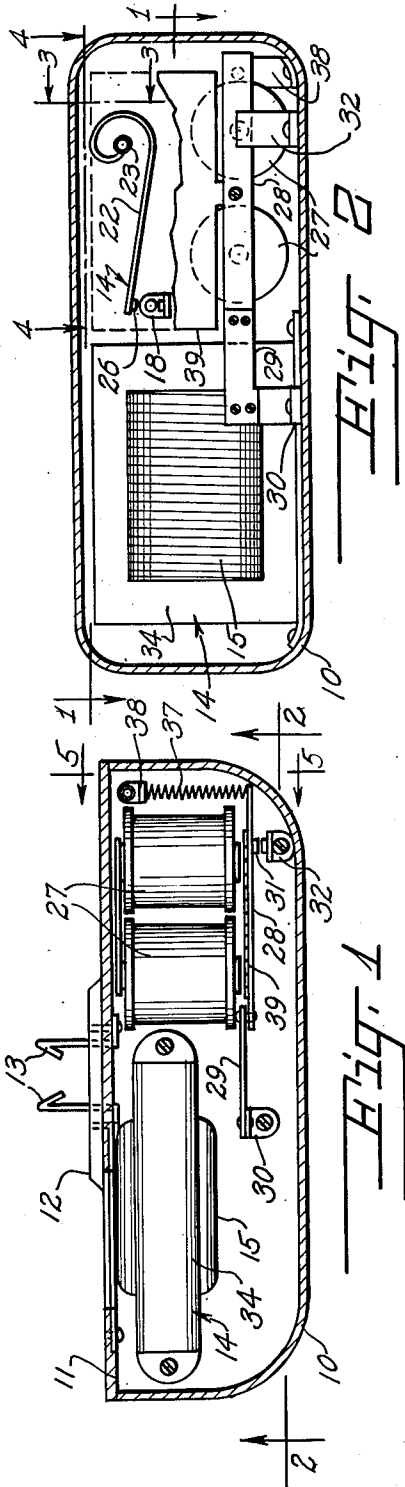
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PORTABLE FIRE ALARM DEVICE

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PORTABLE FIRE ALARM DEVICE

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1 Claim. (Cl. 177—311)

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This invention relates to improvements in alarm signal devices and more particularly to an improved unitary, electrically operated fire alarm signal device adapted to be plugged into an electrical convenience outlet and supported thereby to give an audible alarm if subjected to a temperature indicating the presence of fire in the space contiguous thereto.

It is among the objects of the invention to provide an improved, electrically operated, portable signal device which may be plugged into a conventional electrical convenience outlet to be bodily supported by the outlet or which may be supported at some location remote from an outlet and electrically connected thereto by a suitable extension cord, which will give a loud, clear, continuous and distinctive audible signal when the temperature in the space contiguous thereto exceeds a predetermined value, which is simple in construction and includes a minimum number of simple parts most of which are of conventional design readily available on the market, which is neat and attractive in appearance and may be installed without any changes in or additions to the wiring of the building or other structure in which it is used.

Other objects and advantages will become apparent from a consideration of the following description in conjunction with the accompanying drawing wherein:

Figure 1 is a longitudinal cross-section of an alarm signal device illustrative of the invention taken substantially on the lines 1—1 of Figure 2.

Figure 2 is a transverse cross-section taken substantially on the line 2—2 of Figure 1.

Figure 3 is a fragmentary cross-section taken substantially on the line 3—3 of Figure 2, and including an end elevation of a thermostatic switch constituting an operative component of the device.

Figure 4 is a fragmentary cross-section taken substantially on the line 4—4 of Figure 2 including a top plan view of the thermostatic switch shown in Figure 3.

Figure 5 is a fragmentary cross-section on the line 5—5 of Figure 1 showing an end elevation of an electro-magnetic vibrator constituting an operative component of the device.

Figure 6 is a diagrammatic wiring diagram of the electrical components of the device.

Figure 7 is a rear elevation of a fragmentary portion of the device showing the adjustment of the thermostatic switch shown in Figures 3 and 4.

With continued reference to the drawings the device has an enclosing casing comprising a hol-

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low ventilated front cover member 10 detachably secured to a flat backing plate 11 preferably formed of insulating material. The backing plate may be centrally provided on its rear back side with a re-inforcing plate 12 providing a second plate portion through which extends a pair of prongs or fingers 13 adapted to be received in a conventional electrical convenience outlet to electrically energize the alarm device and simultaneously support the device from the convenience outlet.

A transformer generally indicated at 14 is secured to the casing and has one side of its primary winding 15 electrically connected by a conductor 16 with one of the fingers 13. The other finger 13 is electrically connected by a conductor 17 with one contact 18 of a thermostatic switch generally indicated at 19, the other contact 20 of which is connected by a conductor 21 with the opposite side of the transformer primary winding 15.

In the thermostatic switch illustrated the contact 18 is a fixed contact supported on the backing plate 11 and the contact 20 is a movable contact carried at the outer end of a coiled bi-metallic strip 22 the opposite end of which is secured to a rotatable pin 23 journaled in a bushing provided in the backing plate 11 and having at the outside of the backing plate a head provided with a transverse slot 24 by means of which the pin may be rotated to adjust the switch. A dial 25 is mounted on the outside of the backing plate surrounding the pin 23 and is properly indexed to indicate the setting of the thermostatic switch. A pointer 26 may be attached to the pin and movable over the dial indicia to accurately indicate the switch setting.

With the arrangement above described, when the bi-metallic element 22 brings the contact 20 against the fixed contact 18 the circuit including the primary winding 15 of the transformer 14 will be closed.

A pair of parallel solenoid coils 27 are secured to the casing and a vibrator bar 28 extends across the outer ends of these coils. One end of the bar 28 is rigidly connected to the corresponding end of a leaf spring 29 the opposite end of which is secured to a fixed bracket 30. A movable contact 31 is carried by the bar 28 opposite a fixed contact member 32 which provides a limit stop for movement of the bar away from the adjacent end of the coils 27. An electrical conductor 33 connects the fixed contact 32 with one side of the secondary winding of the transformer 14 and a conductor 35 connects one side of the coils 27

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with the bar 28 through the bracket 30. A conductor 36 connects the opposite side of the coils with the opposite side of the secondary winding. Thus, when the circuit including the primary winding 18 of the transformer is closed the secondary winding will be energized and when the contacts 31 and 32 are together current will flow through the secondary winding and through the coils 27 energizing the coils to attract the bar 28 thereby separating the contact 31 from the contact 32 and interrupting the coil energizing circuit. This causes the bar 28 to vibrate in the conventional manner of buzzers, bell ringers, and similar devices.

Bar 28 is resiliently urged away from the coils 27 by a compression spring 37 interposed between the outer end of the bar and a fixed bracket or abutment 38, the strength of spring 37 being sufficient to quickly move the bar away from the coils but insufficient to prevent movement of the bar by the magnetic attraction of the coils when energized. This spring has the effect of increasing the rapidity of vibration of the bar 28 and thereby raising the pitch of the audible signal produced by the device. A flat plate 39 is secured to the bar 28 and projects laterally therefrom to magnify the sound effect produced by vibration of the bar.

While the device is particularly useful as a portable fire alarm, it may be given a sufficiently wide range of adjustment, as for example, the range included between 70° and 220° Fahrenheit as indicated in Figure 7, which would render it useful for various other purposes. For example, the device might be placed in a brooder house to give an alarm if the temperature within the house reached a value dangerous to the health of chicks housed therein or could be used in a green-house, tobacco curing bar, or any other structure or building in which it is necessary or desirable to keep the temperature below a predetermined maximum value.

The device is light in weight, neat and attractive in appearance, and completely portable so that it may be quickly and easily installed in any location in which there is a conventional electrical convenience outlet plug. It requires no changes in or additions to the ordinary house wiring and

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is quickly and positively responsive to any temperature rise above the temperature value for which it is set.

The invention may be embodied in other specific forms without departing from the spirit or essential characteristics thereof. The present embodiments are, therefore, to be considered in all respects as illustrative and not restrictive, the scope of the invention being indicated by the appended claim rather than by the foregoing description, and all changes which come within the meaning and range of equivalency of the claim are, therefore, intended to be embraced therein.

What is claimed:

A portable, unitary alarm device for indicating a temperature above a predetermined value in the space contiguous thereto comprising a casing having a back plate and a front cover detachably secured to said back plate, a pair of fingers projecting from the back side of said plate for reception in an electrical convenience outlet to support and electrically energize said device, a transformer mounted at the front side of said plate, an electrical connection between one of said fingers and one side of the primary winding of said transformer, an adjustable thermostatic switch mounted on the front side of said plate, an electrical connection between one contact of said switch and the other side of said primary winding, an electrical connection between the other contact of said switch and the other of said fingers, an electro-magnetic vibrator mounted at the front side of said plate, and electrical connections between said vibrator and the opposite sides of the secondary winding of said transformer to operate said vibrator upon closing of said thermostatic switch.

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REFERENCES CITED

The following references are of record in the file of this patent:

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