Jan. 2, 1962 L. R. RUBIN 3,015,811

PORTABLE FIRE ALARM UNIT

Filed March 9, 1959

Fig. 1

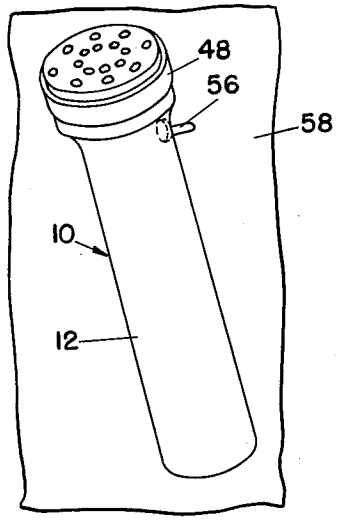


Fig. 2

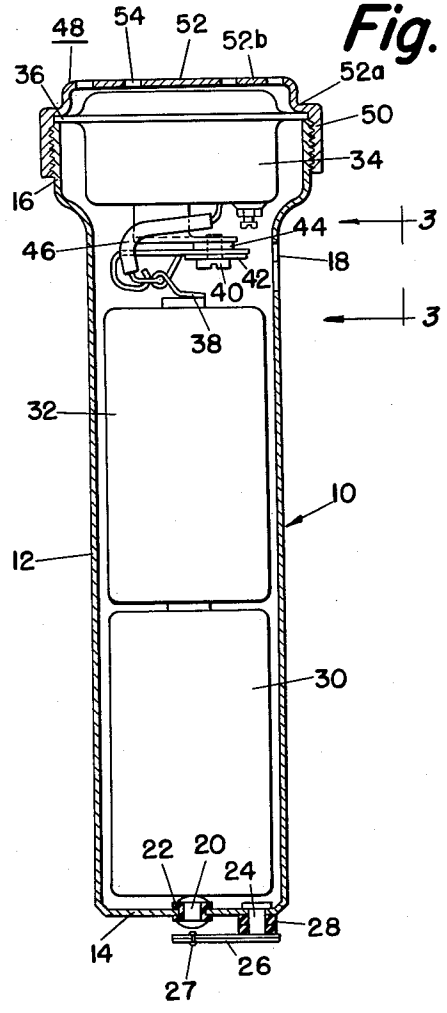
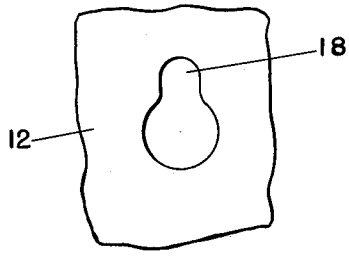


Fig. 3



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United States Patent Office 3,015,811 Patented Jan. 2, 1962

3,015,811

PORTABLE FIRE ALARM UNIT

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Filed Mar. 9, 1959, Ser. No. 797,958
2 Claims. (Cl. 340—227)

The present invention relates to a portable fire alarm unit, and more particularly to a self-contained fire alarm unit adapted to be mounted on a wall, ceiling, or other surface of a room, or other space to be served by the fire alarm unit.

It is an object of the present invention to provide a novel portable fire alarm unit.

It is another object of the present invention to provide a self-contained fire alarm unit which can be easily mounted on a wall, ceiling, or other surface of a room without the necessity for electric wiring or the need of special tools or special skill.

It is still another object of the present invention to provide a portable fire alarm unit which is of simple construction so that the batteries for operating the unit can be easily and quickly replaced when necessary.

It is a further object of the present invention to provide a portable fire alarm unit which can be easily tested from time-to-time to determine whether the unit is in good operating condition.

Other objects will appear hereinafter.

For the purpose of illustrating the invention there is shown in the drawings a form which is presently preferred; it being understood, however, that this invention is not limited to the precise arrangements and instrumentalities shown.

FIGURE 1 is a perspective view of the portable fire alarm unit of the present invention mounted on a wall or like surface.

FIGURE 2 is a sectional view, partly in elevation, of the portable fire alarm unit of the present invention.

FIGURE 3 is an elevational view taken along line 3—3 of FIGURE 2.

Referring initially to FIGURE 2, the portable fire alarm unit of the present invention is generally designated as **10**.

Fire alarm unit **10** comprises a hollow, cylindrical, metal casing **12** having a bottom wall **14**. The top end portion **16** of the casing **12** is flared radially outwardly, and is threaded on its external surface. Casing **12** has a keyhole slot **18** therethrough just below the flared top end portion **16** of the casing **12**. A doubleheaded, metal contact **20** extends through the center of the bottom wall **14** of the casing **12**, and is secured to the bottom wall **14**. A bushing **22** of an electrical insulating material fits between the contact **20** and the bottom wall **14** so as to electrically insulate the contact **20** from the bottom wall **14**. A headed, metal pin **24** extends through the bottom wall **14** spaced radially from the contact **20**. A bimetal switch arm **26** is secured at one end to the end of the pin **24** which is outside the casing **12**. Switch arm **26** extends across the contact **20**. A contact button **27** is secured to the outer end of the switch arm **26** in alignment with the contact **20**. Washers **28** of electrical insulating material surround the pin **24** between the bottom wall **14** and the switch arm **26**. Washers **28** space the switch arm **26** from the bottom wall **14** a distance so that the switch arm **26** is normally spaced from the contact **20**.

A pair of standard 1.5 volt dry cell batteries **30** and **32** are mounted one above the other in the casing **12**. The batteries **30** and **32** are arranged in series with the bottom battery **30** seated on the contact **20**. An electrically actuated alarm device **34** is mounted in the top end portion **16** of the casing **12**. Alarm device **34** may be of any well known sound producing type, but preferably comprises an electric horn. The metal casing of the alarm device **34** has an annular flange **36** which is seated on the top end of the top portion **16** of the casing **12**. A metal spring contact **38** is secured to the alarm device **34** by a screw **40**. Washers **42** and **44** of electrical insulating material surround the screw **40** on opposite sides of the spring contact **30** to electrically insulate the spring contact **38** from the alarm device **34**. Spring contact **38** engages the top terminal of the battery **32** with sufficient pressure to hold the battery **32** tightly against the battery **30**, and the battery **30** tightly against the contact **20**. A wire **46** electrically connects one side of the sound producing mechanism of the alarm device **34** to the spring contact **38**. The other side of the sound producing mechanism of the alarm device **34** is internally connected to the casing of the alarm device **34**, which in turn is electrically connected to the switch arm **26** through the casing **12**.

A cap, generally designated as **48**, is secured to the top end portion **16** of the casing **12**, and extends across the open end of the casing **12**. Cap **48** comprises a cylindrical rim **50**, and a cover **52**. The rim **50** of cap **48** is internally threaded to match the external threads on the top end portion **16** of the casing **12**. The cover **52** of the cap **48** has a flat peripheral portion **52***a* which is secured to the rim **50**, and a raised central portion **52***b*. The raised central portion **52***b* of the cover **52** of cap **48** has a plurality of holes **54** therethrough. The cap **48** is secured to the casing **12** by threading the rim **50** around the top end portion **16** of the casing **12** until the peripheral portion **52***a* of the cover **52** of cap **48** engages the top surface of the flange **36** of the alarm device **34**. Thus, the alarm device **34** is securedly mounted to the casing **12**.

The fire alarm unit **10** of the present invention is used in the following manner:

As shown in FIGURE 1, the fire alarm unit **10** is mounted on a nail or hook **56** secured to a wall **58** by inserting the outer end of the nail or hook **56** through the keyhole slot **18** in the casing **12** of the fire alarm unit **10**. The fire alarm unit **10** is thus supported on the wall **58** with the cover **52** of the cap **48** facing upwardly, and the bottom wall **14** of the casing **12** facing downwardly. Since the fire alarm unit **10** is self-contained, it can be easily and quickly mounted anywhere in a room without the necessity for special electrical wiring or the need of special tools or special skill. Also, since the fire alarm unit **10** is relatively small and compact, it can be easily carried from place to place if necessary.

In the event of a fire, the heated air from the fire heats the bimetal switch arm **25** so that the switch arm **26** moves the contact button **27** into engagement with the contact **20**. This completes the electrical circuit through the batteries **30** and **32** and the alarm device **34** so that the alarm device **34** is operated to sound an alarm signal. After the fire has been extinguished, and the air around the fire alarm unit **10** has cooled down, the switch arm **26** will return to its normal position with the contact button **27** spaced from the contact **20**.

To insure that the fire alarm unit **10** is always in good operating condition, it is desirable from time-to-time to test the fire alarm unit **10**, particularly to determine whether the batteries **30** and **32** have sufficient voltage to operate the alarm device **34**. This can be easily accomplished without the necessity of removing the fire alarm unit **10** from the wall **58** by merely pressing the contact button **27** against the contact **20** to complete the electrical circuit through the batteries **30** and **32** and the alarm device **34**. When the pressure applied to the con-

tact button 27 is released the resiliency of the switch arm 26 automatically moves the contact button 27 away from the contact 20. In the event that the batteries 30 and 32 become worn out, they can be easily replaced by removing the cap 48 and lifting out the alarm device 34. The batteries 30 and 32 can then be removed from the casing 12 and replaced with fresh batteries. Since there are no wires permanently connecting the alarm device 34 with the batteries 30 and 32, and with the casing 12, the batteries 30 and 32 can be easily replaced without the need of any special tools or special skill.

The present invention may be embodied in other specific forms without departing from the spirit or essential attributes thereof and, accordingly, reference should be made to the appended claims, rather than to the foregoing specification as indicating the scope of the invention.

I claim:

1. A fire alarm unit comprising a hollow metal casing, a contact extending through and secured to said casing, means electrically insulating said contact from said casing, a bimetal switch arm mechanically and electrically secured to the outside of said casing, said switch arm extending across and normally spaced from said contact, batteries in series within said casing, one of said batteries being in direct abutting electrical engagement with said contact, an audible alarm device, means mechanically and electrically securing said alarm device to said casing, a resilient contact biasing said batteries together and in engagement with the contact secured to said casing, said resilient contact being electrically connected to said alarm device, and at least one perforation in a portion of said casing to admit audible signals from said alarm device.

2. A fire alarm unit in accordance with claim 1 wherein said means for mechanically and electrically securing said alarm device includes a removable cover on said casing, said alarm device having a radially outwardly extending flange of sufficient size so that said flange may be clamped to said casing by said removable cover, and said cover being the portion of said casing having the perforation to admit audible signals from said alarm device.

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