Dec. 1, 1959 J. D. KOUNDAKJIAN 2,915,742

COMBINED ILLUMINATION DEVICE AND FIRE ALARM

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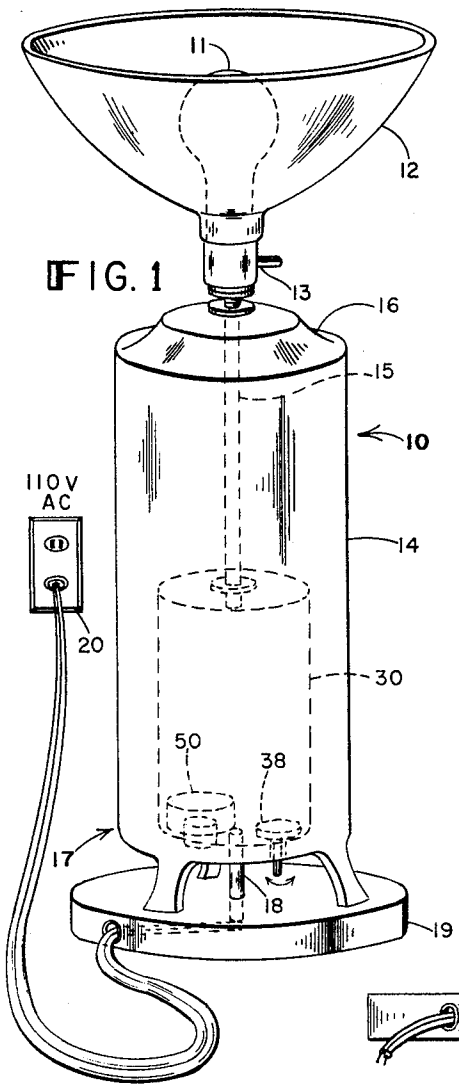


FIG. 1

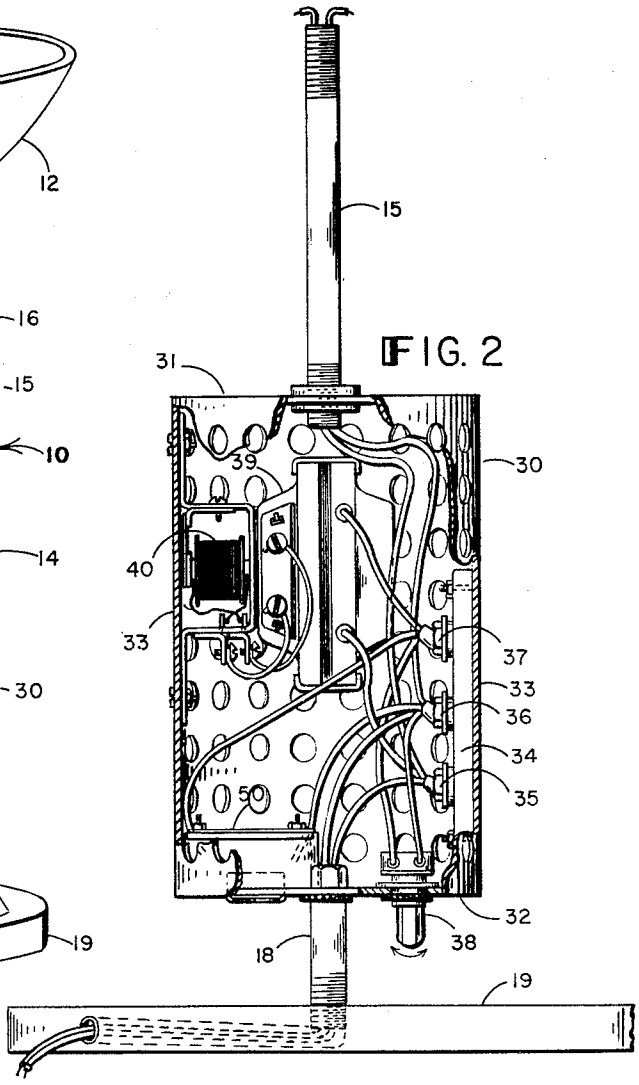


FIG. 2

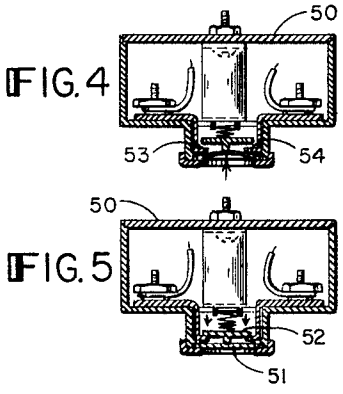


FIG. 4

FIG. 5

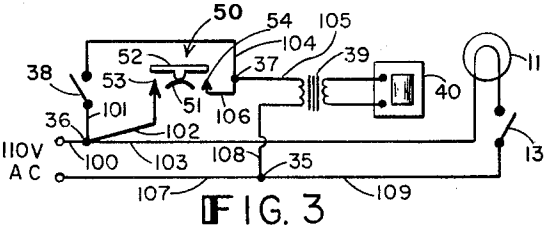


FIG. 3

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COMBINED ILLUMINATION DEVICE AND FIRE ALARM

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4 Claims. (Cl. 340—227)

This invention relates to fire alarm devices and more particularly to one to be used in combination with an illuminating device.

A primary object of my invention is to provide a self-contained, automatic, audible fire alarm cartridge which may be readily substituted for wiring of a conventional illuminating lamp having a body of sufficient size and contour to enclose such a cartridge.

Another object of the invention is to provide, when assembled, a novel combination of an illuminating device with concealed fire alarm means, which device may be positioned in its normal location in keeping with the decor of the area to be protected.

A further object of the invention is to provide an automatic operating and automatic self restoring fire alarm unit which may be fully concealed.

This invention has certain advantages over previously described devices. There are no chemicals, gas tanks, fusible plugs, or pellets required for its operation and no elements to be replaced after each operation. It is inexpensive and easy to install. It is of particular value in hotels or large buildings where table and floor lamps are usually located in each room and where local fire alarm detector means are very important. Ready means for testing purposes are always available. No special wiring is required, the lamp being connected in the usual manner.

Further objects, advantages, and a fuller understanding of the invention will hereinafter appear from the following description illustrative of the invention and shown in the accompanying drawings in which:

Fig. 1 is a front view in perspective of a lamp showing the position of my novel fire alarm cartridge.

Fig. 2 is a front view of the cartridge with part of its perforated wall broken away to show one position of the components with associated wiring.

Fig. 3 is a schematic wiring diagram of the components shown in Fig. 2.

Fig. 4 is a sectional view of an open, heat-responsive self-restoring switch before operation.

Fig. 5 is a switch after operation.

The device consists of a conventional electric illuminating lamp with an automatic fire detecting and audible alarm unit concealed within the body of the lamp. This unit is in the form of a cartridge with a pair of lead-in wires and a pair of leadout wires which may be readily substituted for the usual central stem and wiring of the lamp.

Referring to the drawings, the device therein shown, as illustrative of one embodiment of my invention comprises an ornamental lamp **10** having a conventional lighting element **11**, a suitable shade **12**, and a light switch **13**. The lamp **10** has an exterior body **14** suitable for interiorly enclosing an automatic fire detecting and alarm unit having a central upper hollow post **15**, a central lower hollow post **18**, said posts being perpendicularly aligned and connected together by a rigid hollow multiperforated cartridge enclosure **30**. The lamp **10** has a

positioning fixture cap **16**. The body **14** has an open bottom **17** spaced from lamp base **19**. The lamp and enclosed alarm unit are connected to a current supply **20**. The cartridge **30** has a top **31**, a bottom **32**, and multiperforated sides **33**. The upper post **15** extends upwardly from an orifice in the top **31** while the lower post depends downwardly from an orifice in the bottom **32**. The cartridge **30** encloses and supports on its interior surface a wiring strip **34** with wiring terminals **35**, **36**, and **37**, an exposed test switch **38**, a step down transformer **39**, audible signalling means **40** wired to the low voltage side of said transformer, and an exposed heat responsive switch **50**, having a metallic snap heat responsive self-restoring diaphragm **51** operating a two point switch **52** making contact between terminal posts **53** and **54**.

The terminal **35** connects together leads **107**, **108**, and **109**; terminal **36** connects together leads **100**, **101**, **102**, and **103**; terminal **37** connects together leads **104**, **105**, and **106**; lead **100** connects terminal **36** to one side of the 110 v. supply; lead **101** connects terminal **36** to one side of switch **38**; lead **102** connects terminal **36** to one side of switch **50**; lead **103** connects terminal **36** to one side of lighting element **11**; lead **104** connects terminal **37** to other side of switch **38**; lead **105** connects terminal **37** to one side of the high voltage side of transformer **39**; lead **106** connects terminal **37** to other side of switch **50**; lead **107** connects terminal **35** to other side of the 110 v. supply; lead **108** connects terminal **35** to the other side of the high voltage side of transformer **39**; and lead **109** connects terminal **35** to switch **13**. The switch **38** is connected in parallel with switch **50**, this network being in series with the high voltage side of transformer **39** and connected across the 110 volt supply.

In operation, the activation of manual switch **13** energizes lighting element **11** for conventional illumination purposes. The operation of the protruding manual test switch **38** throws 110 volts across the high voltage side of transformer **39** operating audible signal **49** connected across the low voltage side. This allows for ready testing as to the operative condition of the audible signal.

A rise in temperature above the critical operating temperature of the switch used, causes the metallic, self-restoring diaphragm **51** of heat responsive automatic switch **50** to operate actuating the audible alarm signal, which continues to emit a signal until the lamp is disconnected from the current supply or the temperature falls below the critical temperature of the switch used, which, in the embodiment shown, is approximately 140° F. The self-restoring diaphragm **51** is exteriorly positioned so that it is always exposed to contact with the surrounding atmosphere. As shown in this embodiment, it protrudes through the bottom **32** of the cartridge **30** which is covered by the lamp body **14** having an open bottom **17** spaced from lamp base **19**, thus permitting direct access between diaphragm **51** and the surrounding air.

The preferred cartridge described above is rigid and perforated. However, less preferably, it may be any rigid open cartridge such as a cage cartridge, where rigid vertical bars connect the top and bottom and are used for mounting of the strip, transformer and signalling device. It is preferable that the opening **17** in the lamp body be sufficiently large to allow the alarm sound to come out. However, less preferably, an orifice may be made in the side of the body for sound emission.

While the preferred embodiment of my invention has been described in detail, it will be understood that I do not wish to be limited to the particular construction set forth, since various changes in the form, material, proportions, and arrangements of parts, and in the details of construction may be resorted to without departing from

the spirit and scope of the invention, or destroying any of the advantages contained in the same, heretofore described and defined in the following claims.

I claim:

1. An automatic fire detector and alarm unit adapted to be installed vertically within a lamp having a suitable body portion, comprising a rigid, hollow, open cartridge, a central upper hollow post, a central lower hollow post, an audible electrical signalling device, a wiring strip provided with suitable wiring terminals, a manually operated test switch, and a self-restoring heat responsive alarm switch; said upper and lower posts being rigidly connected together in perpendicular alignment by said cartridge, said upper post extending upward from an orifice in the top of said cartridge, said lower post depending downwards from a correspondingly positioned orifice in the base of said cartridge; said wiring strip, signalling device, and heat responsive alarm switch being enclosed within said cartridge and mounted on the interior walls of said cartridge, said lamp body portion enclosing said alarm unit and having an exterior opening adjacent said signalling device, said heat responsive switch and said test switch.

2. Claim 1, wherein said audible signalling device comprises a step-down electrical transformer and low-voltage audible signal means.

3. Claim 1, wherein the open cartridge is of perforated construction.

4. The combination of an electric lamp of the character described having an exterior body, a base for said body spaced therefrom, a standard lighting element and an associated light switch, and an automatic fire detector and alarm unit positioned within said body; said unit comprising a rigid, hollow, perforated cartridge, a central upper hollow post and a corresponding central lower hollow post; said upper and lower posts being rigidly connected together in perpendicular alignment by said perforated cartridge; said upper post extending upward from an orifice in the top of said cartridge; said lower post depending downwards from a correspondingly positioned orifice in the base of said cartridge; said cartridge enclosing and supporting on its interior surface a step-down electrical transformer, an audible signalling device connected to the low voltage winding of said transformer, a wiring strip provided with suitable wiring terminals, a manually operated test switch and a self restoring heat responsive alarm switch; said lower post containing lead-in wires; said upper post containing line wires to said lighting element and supporting said lighting element and associated light switch; said terminals on said wiring strip providing for the termination of said lead-in wires, the termination of said line wires, the connection of said test switch in parallel with said heat responsive switch and the connection of said switches in series with the high voltage winding of said transformer across said lead-in wires; said exterior body having openings adjacent to said test switch and said heat responsive switch, said wired and equipped cartridge and posts being adapted to be installed in substitution for a conventional interior wiring post.

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