July 6, 1954 J. GERACE 2,682,855

COMBINED ILLUMINATING DEVICE AND FIRE ALARM

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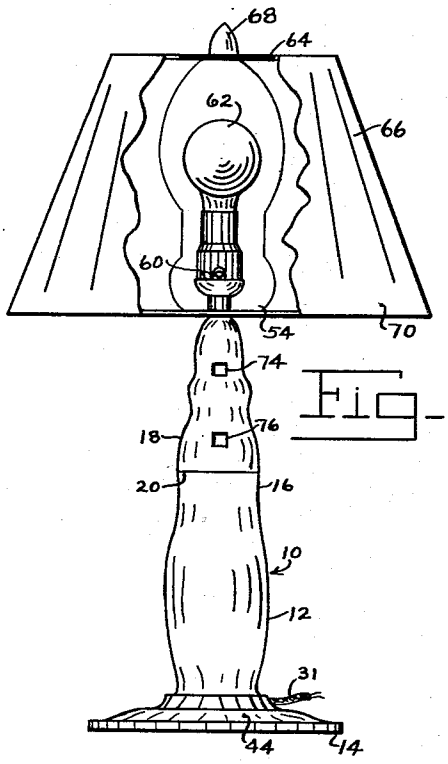


Fig_1

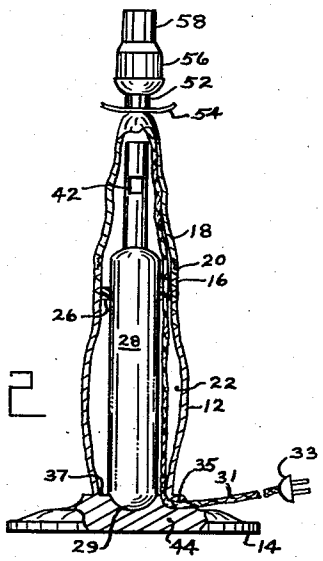


Fig_2

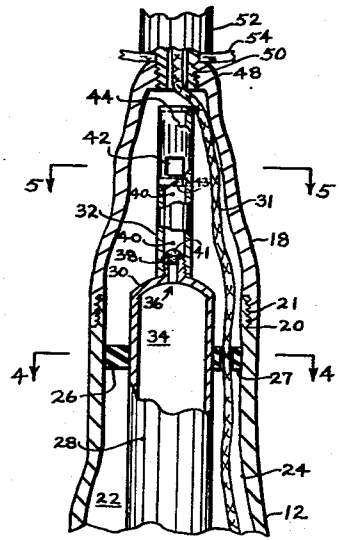


Fig_3

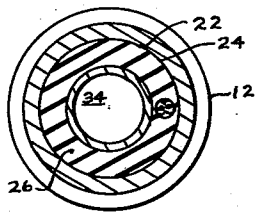


Fig_4

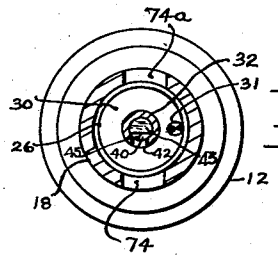


Fig_5

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COMBINED ILLUMINATING DEVICE AND FIRE ALARM

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9 Claims. (Cl. 116—106)

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This invention relates to illuminating devices and to fire alarm devices, and combinations thereof.

An object of the invention is to provide a novel and improved device adapted to cast illumination and including a major fire alarm device cooperatively constructed and arranged therein for use in conjunction therewith for giving an audible alarm sound immediately upon occurrence of fire.

Another object of the invention is to provide a novel and improved fire alarm device including inherently carried high pressure gas supply for actuating a sound producing element, with main housing means enclosing major portions thereof, and with illuminating means extending out of the main housing for casting useful illumination.

Still another object of the invention is to provide a novel and improved illuminating device projecting out of a supporting housing adapted to define an inner chamber with a fire alarm device disposed in the inner chamber, the supporting housing having novel means for supporting the fire alarm device, whereby the same is protected against premature actuation or damage due either to shocks, or to incidental ambient temperature changes of very short duration and not indicating the presence of fire.

Still a further object of the invention is to provide a novel combination illuminating device with fire alarm means, which may be disposed anywhere in an enclosed or open area, without requiring the use of elaborate or special hanging means, and which is characterized by the complete absence of the appearance of the presence therein of any fire alarm device, yet which is very effective and sturdy for its intended purposes.

Another object of the invention is to provide a novel and improved combination illuminating device and fire alarm device, constructed in a unique manner so that the device does not have any indication in its outward appearance that it incorporates a very effective fire alarm, looking instead like a very attractive and efficient shaded luminaire or table lamp.

Another object of the invention is to provide a novel combination illuminating device and fire alarm device which may be disposed at any selected place within a room, for example, and for the dual purpose of casting illumination, and additionally for reacting quickly and automatically to any predetermined degree of temperature rise in the vicinity thereof, by the sounding of a considerably prolonged loudly audible alarm sound.

Still another object of the invention is to provide a combination illuminating device and inherent fire alarm device, and in which means is provided for circulating freely, the ambient air in the vicinity, inside the device to react instantly to predetermined unusual temperature increases, and which is simple in design, inexpensive to manufacture, and in which the fire alarm unit is readily removable and replaceable without the use of tools, or destruction of the device at all.

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Other objects and advantages of the invention will become apparent from the following description of a preferred embodiment thereof as illustrated in the accompanying drawings, forming a part hereof, and in which,

Figure 1 is an elevational view of my novel and improved device completely assembled ready for use, and incorporating a light directing and controlling lampshade which is partly broken out to illustrate the construction.

Figure 2 is a sectional elevation of the device shown in Figure 1.

Figure 3 is a sectional elevation similar to that of Figure 2, showing the intermediate portion of the device, the alarm sounding means being further broken out to illustrate its construction, the view being in fragment.

Figure 4 is a sectional plan view taken on plane 4—4 of Figure 3.

Figure 5 is a sectional plan view taken on plane 5—5 of Figure 3.

In the protection of the home, office and other buildings against fire, many problems are encountered. Not the least of these is the cost of installation of an adequate fire alarm system, with its usually necessary complicated electrical circuits, wires, switches, heat responsive devices, and bells. Then there is always the possibility of mechanical or electrical failure of the device, due perhaps, to forgetfulness to turn on switches, or to replace used batteries, or fuses, or to other causes. The main thing is to sound the alarm as quickly as possible, and when the system fails, this cannot be done, so that the danger is enhanced by reliance upon such a device, especially when, as in the home, continuous periodic inspection and servicing thereof would impose prohibitive cost.

The present invention combines a fire alarm device for sounding a loudly audible alarm, with an attractive and highly useful illuminating device, and may be disposed anywhere at all, even right in a bedroom, living room, basement, or other desired location, without use of tools, and will function immediately when the temperature at that location rises to the predetermined level. The alarm sounded is very loud, and can be heard at least about a quarter of a mile away under ordinary conditions, and even further, much further when it is quiet, as at night.

In order to understand clearly the nature of the invention, and the best means for carrying it out, reference may now be had to the drawings, in which like numerals denote similar parts throughout the several views.

As shown, I provide a major housing 10 including a waist portion 12 extending upwardly from and preferably integral with a stable relatively massive base portion 14, which is smoothly stepped as seen in the elevational views, and is circular when viewed in plan. The lower surface of the base 14 may be plane as seen in Figure 2, so as to be stably supportable upon a table

top, desk, or other suitable surface. The central portion 44 of the massive base 14, is solid, and has a rounded socket recess 29 formed in the floor 37 of its interior chamber 22. The walls of the waist portion 12 may be "bellied out" as shown in Figures 1 and 2, being relatively thin compared to the thickness of the base. A casing 28, having a hollow interior chamber 34 and a rounded lower end, is inserted into the chamber 22, from the upper end portion opening 16 of the main housing.

The rounded lower end of the casing 28 fits smoothly into the socket recess 29 as seen in Figure 2, and the casing 28 extends upwards through the chamber 22, passing snugly through the central opening of an annular resilient gasket 26, formed of rubber or other suitable material and having its outer perimeter fitting snugly inside the inner surface of the chamber 22, indicated at 24, the chamber 22 being substantially cylindrical commencing about at location 24 and upwards to the upper extremity of the housing end portion 16. The lower housing portion is reduced in outside diameter above the dividing line 20, being threaded externally as at 21, to threadedly engage with the matching internal threads on the lower end portion of the housing closure member 18.

The housing closure member 18 may be shaped suitably in the attractive manner shown, and its interior wall surface is preferably contoured as seen in the views, to permit free and unimpaired circulation of air around the upper interior of the chamber 22 above the gasket 26, and around and through the outside and inside of the alarm sounding member 32. The member 32 comprises a hollow cylindrical tube having an axial bore 40, closed at the top by a cap 44, and open at the bottom, being internally threaded at its lower end as seen in Figure 3, to engage over the outside threads on the upper extension tube 38 of the housing 34, projecting upwards from rounded top 30.

The interior chamber 34 is filled with gas under high pressure, which would normally be free to be discharged upwards through the bore in the tube 38 in the direction of the arrow at 36 in Figure 3, but for the presence of a blocking mass of a low melting point alloy 41 seated in the tube 38. This alloy is so designed and formed that it will melt quickly when a predetermined ambient temperature has been reached, such as for example, a temperature of about 135 degrees Fahrenheit. When the alloy 41 melts, or even softens around its points of contact with the tube 38, the high pressure of the air or gas inside the chamber 34 will immediately push it out of place, allowing the high pressure gas to rush upwards at a controlled rate of flow, in the direction of arrow 36, inside the alarm sounder whistle tube bore 40, through a constricted chordal opening 45 in a blocking disc 43 as seen in Figures 3 and 5, just below the whistle opening 42, the bore 40 above the opening 42 being also hollow, so that a loud whistle sound is produced. Figure 5 shows the blocking disc 43 disposed inside bore 40, one chordal portion of the disc 43 being cut away to define the chordal opening 45. Figure 3 is partly broken out to expose the disc 43 and its flattened chordal edge facing the observer. The high pressure of the tank chamber 34 makes this whistle assume a full tone, and it is audible for quite a distance, at least a quarter of a mile and even further at night.

There are two openings 74 and 74a formed in the walls of the housing closure or dome 18, at substantially the same level as the opening 42 in the whistle sounder 32. At the same time, the dome member 18 is provided with a pair of openings 76, corresponding in position to the openings 74 and 74a, but lower down, as seen in Figure 1, so that the ambient air is free to enter into the interior of the dome 18, and to circulate into and out of the same, to adequately reflect the temperature outside the housing 12, and in addition, permits the compressed air or gas inside the tank chamber 34 to flow out of the housing upon release through the whistle opening 42, at a predetermined rate depending upon its pressure and the size and characteristics of the openings through which it passes upon leaving the chamber 34. It is seen that the audible alarm sound will continue for a considerable length of time, many minutes, or even a half hour or longer, to permit the occupants of a house to be aroused from the deepest slumber, and to escape therefrom quickly and without danger of being overcome in their sleep. The sound also will carry for a considerable distance outside the building, to warn firemen and others so that they may fight the fire.

An electric lighting cord 31, having a pair of conductive wires passing therethrough, and a plug 33 at one end, for insertion into the electric outlets of a building, extends through an opening or duct 35 in the base portion 44, as seen best in Figures 1 and 2, entering the chamber 22, and extending upwards between the housing 38 and the interior wall surface 24 of the housing 12. The wires extend through an opening 27 in the gasket 26, in the manner shown in Figures 3 and 4, and thence upwards through the side of the hollow dome 18, through the axial bore in the depending lower extension 59 of the socket bushing 52. The latter has its extension 50 threaded into the upwardly open axial bore formed in the upper end 48 of the dome 18, which is correspondingly threaded for secure engagement. A fastening strip 54 has an opening which is also penetrated by the lower extension 50 as seen in Figures 2 and 3, being securely held in place upon taking up the bushing 52 by tightening its lower extension in the bore.

The fastening strip 54 extends upwards as seen best in Figure 1, on both sides of the socket shell 56, with its upper ends coming together at the top as seen in Figure 1, and engaging with an upstanding externally threaded bushing which passes through an opening formed in the top central portion 64 of the lamp shade 66. A nut 68 is threaded onto this threaded bushing to secure the lamp shade frame tightly in position. The upper extension 58 of the socket shell 56 conceals a threaded socket receptacle for engagement with the base of the lamp bulb 62 to provide illumination. Pushing in one end of the switch button 60 seen in Figure 1, will turn on the lamp, casting controlled illumination regulated by the lamp shade 66 and extending out of the lower end portion 70 thereof, and also through the lampshade 66 itself if formed of translucent material. The upper end 64 of the lampshade is open, permitting free circulation of air therethrough.

My novel and improved combined illuminating device and fire alarm device may be placed in any desired location. It does not have the appearance of a fire alarm device at all, and hence is not objectionable as it does not give the appearance of the presence of impending danger from

fire, which would and is always psychologically bad. It actually is a lamp and is used as such. But it is also a fire alarm device and is used as such, being combined with the lamp in a novel manner. It can be quickly taken apart to permit inspection of the fire alarm sounder, and replacement thereof when used up. The tank 34 can be refilled with high pressure gas and used again and again as needed, and at low cost. Although an embodiment has been illustrated showing a table lamp, it will be understood that it also can be in the form of a floor lamp, and also in the form of a lamp like a wall bracket, which is hung on a wall. However, I prefer the embodiment shown.

Although I have described my invention in specific terms, it will be understood that various changes may be made in size, shape, materials and arrangements without departing from the spirit and scope of the invention.

I claim:

1. A device of the character described, comprising base means having a chamber formed therein, sound producing means cooperatively disposed in said chamber in said base means, pressurized means constructed and arranged for actuating said sound producing means, and normally closed valve means interposed intermediate said sound producing means and said pressurized means and blocking actuation of said sound producing means by said pressurized means, and means automatically brought into action in the presence of excess heat for actuating said normally closed valve means to unblock access of said pressurized means to said sound producing means, whereby an audible sound is produced thereby.

2. The construction according to claim 1, characterized further in that there is a duct communicating between said sound producing means and said pressurized means, and in which said means automatically brought into action in the presence of excess heat comprises a metallic alloy fusible at the temperature of said excess heat to unblock said valve.

3. The construction according to claim 1, characterized further in that said base means comprises a lower base housing having a chamber recess formed therein and upwardly open, and an upper base housing having an upper chamber recess formed therein and complementary to said lower chamber recess to define in cooperation therewith, a said chamber, said upper base housing being removably engageable with and supported by said lower base housing.

4. The construction according to claim 1, characterized further in that said base means comprises a base platform member, continuous annular side walls integrated therewith and extending upwardly therefrom to form therewith an upwardly open chamber recess, socket means formed in the floor of said upwardly open chamber recess, an upper base housing having an upper chamber recess formed therein and downwardly open, said upper base housing being constructed and arranged for releasable engagement with the upper end of said upwardly open chamber recess, for being supported thereby, and combining therewith to define a composite chamber, the sound producing means disposed in said upper base housing recess, pressurized means as aforesaid disposed in said upwardly open chamber recess for actuating said sound producing means, and access means communicating between the interior of said upper base housing recess and the outside, for conducting sound produced therein to the outside.

5. The construction according to claim 1, wherein said sound producing means comprises a tubular whistle pipe with constricted passageway for producing a powerful loud sound, and wherein said pressurized means comprises a housing containing gas under high pressure and of substantial quantity, whereby, upon actuation of said normally closed valve means to unblock flow of said gas to actuate said tubular whistle pipe, a tremendously loud sound is produced, and continues to be produced for a long period of time.

6. An alarm device comprising a lower base member adapted to rest upon a surface disposed therebelow for being supported thereon, an upper base member carried by said lower base member and extending upwards therefrom, and having a hollow chamber formed therein, sound producing means disposed inside said hollow chamber, pressurized gas container means in said hollow chamber and connected to said sound producing means for actuating the same to produce sound upon flow of gas therethrough, temperature responsive normally closed valve means normally blocking the connection between said gas container means and said sound producing means to block flow of gas through said sound producing means, said temperature responsive valve means comprising a valve closing member constructed and arranged to open when a predetermined ambient temperature is reached to unblock said flow passageway, and with said hollow chamber having at least one sound carrying outlet formed in a wall thereof to carry sound outwards therethrough.

7. An alarm device according to claim 6, wherein said upper base member is divided into upper and lower sections removably engageable with each other, whereby, upon disengaging said upper section of said upper base member, the interior of said hollow chamber is exposed to view for access thereto.

8. An alarm device according to claim 6, wherein said upper base member is vertically elongated and is divided into upper and lower removably mutually engageable sections, whereby, upon disengaging the upper section of said upper base member, the interior of said hollow chamber is exposed for access thereto, and wherein said hollow chamber has a socket formed in the inner floor surface thereof to receive and support said pressurized gas container means, and annular means carried on the inner surfaces of said hollow chamber and constructed and arranged for engaging said pressurized gas container means and maintaining the same in spaced relation to the side walls of said hollow chamber means.

9. An alarm device according to claim 6, characterized further in that said lower base member and said upper base member are releasably engaged with each other in the upper end of the lower base member and the lower end of the upper base member, to form a lamp base which opens intermediate its upper and lower ends to afford access to the interior thereof.

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