This invention relates to improvements in alarm devices and particularly to a device which automatically produces a prolonged clearly audible warning sound when the ambient temperature rises above a predetermined point. My alarm device comprises a sealed container having a compressed or liquified gas as its contents, a whistle adapted to puncture the seal and to be connected to the container with a gas tight seal, and fusible means sealing the mouth of the whistle and preventing its being sounded except when the predetermined temperature is reached.

According to my present invention I provide a closure adapted to cover the mouth of the whistle and which is applied externally to the body of the whistle by means of a suitable solder whose melting temperature may be predetermined. When a certain ambient temperature is reached in the area surrounding the alarm, the solder melts and the closure falls away from the whistle thereby permitting the gas to escape through the mouth of the whistle to produce the sound. The dropping off of the closure is also assisted by the pressure of the gas in the container.

I have also devised the alarm structure whereby the sealed containers of gas may be transported without the whistle so that there is no danger of damage, and the separate whistle portion of the alarm may be attached to the gas container at the place where the alarm is to be used.

Provision is also made for a hook on the whistle to permit the assembled alarm device to be hung in suitable places where the detection of dangerous rises in temperature is most critical.

Still other objects and advantages of my invention will be apparent from the specification.

The features of novelty which I believe to be characteristic of my invention are set forth herein and will best be understood, both as to their fundamental principles and as to their particular embodiments, by reference to the specification and accompanying drawings, in which:

Figure 1 is an elevation, partly in phantom outline, of the alarm device of the present invention;

Fig. 2 is an enlarged vertical cross section view, partly in phantom outline, taken on line 2—2 of Fig. 1; and

Fig. 3 is a still further enlarged horizontal cross section view taken on line 3—3 of Fig. 2.

Referring now to the drawings in detail, the alarm device of the present invention comprises a normally sealed container 11 in which is stored a gas or air under compression. Alternatively, the contents of the container may comprise a liquified gas which evaporizes at those temperatures at which the device is to be used, and at the same time is safely stored in the container which has comparatively thin metallic walls. These containers are available commercially at the present time for purposes other than that of the present invention, and it is this availability that enhances the utility of the present invention.

The top 12 of container 11 (see Fig. 2) has an axial opening 13 surrounded by a cylindrical neck 14 whose external surface is threaded. Across the internal aperture of neck 14 there is positioned a unitary puncturable seal 15 which normally maintains the container closed and is sufficiently strong to withstand the pressures generated by the contents of container 11.

The whistle attachment for the alarm device comprises a separate elongated tube 21 that is closed at its upper end by means of a plug 22 that forms a gas tight seal therewith. In the side of tube 21 is an opening forming a mouth 23 for the whistle with a portion of the wall of the tube being depressed inwardly to form a lip 24. Positioned over mouth 23 and extending beyond its boundaries is a closure plate 25 which is curved to the contour of tube 21 and which is bonded along all of its edges to tube 21 by means of solder 26 to form a gas tight seal over said mouth. The type of material that is utilized as solder 26 is characterized by the fusing point at which it is desired to melt, thereby releasing closure 25 from its position over mouth 23 of the whistle.

Attached to the lower end of tube 21 is an adapter bushing 31 whose internal aperture threadably engages threaded neck 14 of container 11. Positioned on the internal shoulder 32 of adapter 31 is a resilient gasket ring 33 of a suitable material such as rubber, neoprene or the like, which forms a gas tight seal between the whistle and neck 14 of container 11.

Positioned centrally of adapter 31 and connected to the lower end of tube 21 is a puncturing member 34 whose point 35 is adapted to break seal 15 in neck 14 of container 11 when the adapter 31 is threadably turned to engage neck 14. An axial passage 36 is provided in puncturing member 34 that extends through the sides of point 35 whereby the gas under pressure in container 11 moves into whistle tube 21.

While whistle tube 21 is being threadably attached to the container 11, the seal 15 of the container is punctured by point 35 of puncturing member 34 and the gas from container 11 escapes into the whistle tube, the escape of any gas being prevented by gasket 33 and plate 25. Thus it is seen that the whistle attachment and the container now form a unitary alarm device which contains gas under pressure.

When the ambient temperature around the alarm device reaches the predetermined fusing point of the sealing solder 26, the solder melts, releasing plate 25 and permitting the gas that is contained in the alarm under pressure to blow outwardly through mouth 23 to create a prolonged loud noise to arouse watchmen or sleepers in a building that may be threatened by fire.

It is well known that various types of solders are available or can be made to fuse at predetermined temperatures. Thus, a suitable solder having a preselected fusing temperature, may be prescribed for use in the present alarm device for setting it off at a predetermined ambient temperature depending upon the conditions at are to be met in different types of buildings or domiciles and conforming with municipal fire regulations comparable to those dealing with sprinkler systems.

In some embodiments, tube 21 may be made of a highly temperature conductive metal whereby ambient heat may be transmitted more rapidly to the sealing solder 26 to permit it to melt thereby releasing plate 25.

In other embodiments, it is to be understood that plate 25 may itself be made of a fusible material which will melt away from the mouth of the whistle when the ambient temperature rises to a predetermined point. It is contemplated that such fusible plates can be adapted for use in the present invention either as a unitary piece of fusible metal or as that portion of a cover plate 25 which is positioned directly over mouth 23 of the whistle. In those embodiments where a temperature fusible closure 25 is positioned in or over the mouth of the whistle, the
tube 21 of the whistle may be made of a substance other than metal, such as plastic, wood, or other suitable material. It is within the purview of the present invention to provide either unitary cover plates or composite plates positioned externally over the mouth of the whistle and which are adapted to free the mouth of the whistle at the predetermined temperature.

It is also contemplated that in some cases the whistle may be permanently attached to the container and that its effectiveness will be manifest by the utilization of a closure 25 over the mouth of the whistle for providing foolproof service, in that the release of the closure cannot possibly clog the whistle and prevent its sounding.

In order to provide a convenient means for positioning the alarm device in suitable places, such as at or near ceilings or other suitable places, a hook 37 may be threadably inserted into or otherwise attached to the plug 22 so that the device may be hung on suitable supporting means such as a bracket, nail, or the like.

In the specification, I have explained the principles of my invention, and the best mode in which I have contemplated applying those principles, so as to distinguish my invention from other inventions; and I have particularly pointed out and distinctly claimed the part, mode or combination which I claim as my invention or discovery.

While I have shown and described certain preferred embodiments of my invention, it will be understood that modifications and changes may be made without departing from the function and scope thereof, as will be clear to those skilled in the art.

I claim:

1. An alarm device comprising a container adapted to store a gas under pressure, a whistle adapted to be attached to said container with a gas tight seal, whereby the gas from the container enters into the space within the whistle, a mouth on said whistle adapted to create a noise when gas is emitted therethrough, a plate mounted externally over the mouth of said whistle, and sealing means connecting said plate to said whistle whereby a gas tight seal is maintained over said mouth, the melting temperature of said sealing means being selected to cause it to melt when a predetermined ambient temperature is reached around said whistle.

2. An alarm device comprising a whistle adapted to be attached to a container within which is stored a gas under pressure, means for attaching said whistle to said container, means for puncturing said container, whereby a gas tight seal when said container is punctured whereby said whistle forms a stationary chamber with the container for the gas under pressure, a mouth on said whistle adapted to create a noise when gas is emitted therethrough, a separable closure mounted externally over the mouth of the whistle, and sealing means connecting said separable closure to said whistle whereby a gas tight seal is maintained over said mouth, the melting temperature of said sealing means being chosen to cause it to release said separable closure from said whistle when a predetermined ambient temperature is reached around said whistle.

3. An alarm device comprising a container adapted to store gas under pressure, a whistle mouth on said container adapted to create a noise when gas is emitted therethrough, a separable closure mounted externally over the mouth of the whistle, and sealing means connecting said closure to said whistle whereby a gas tight seal is maintained over said mouth, the melting temperature of said sealing means being selected to cause it to release said closure from said whistle when a predetermined ambient temperature is reached around said whistle.

4. An alarm device comprising a container adapted to store gas under pressure, a whistle mouth on said container adapted to create a noise when gas is emitted therethrough, a fusible closure externally sealing the mouth of said whistle and preventing the escape of gas therethrough, the fusible temperature of said closure being selected to cause it to move outward and unseal the whistle mouth when a predetermined ambient temperature is reached around said device.

References Cited in the file of this patent

UNITED STATES PATENTS

2,626,585 Mendes Jan. 27, 1953
2,649,752 Showstack Aug. 25, 1953