Aug. 14, 1951 J. SFREDDO 2,563,877

FIRE ALARM

Filed Aug. 22, 1949 2 Sheets-Sheet 1

Fig. 1.

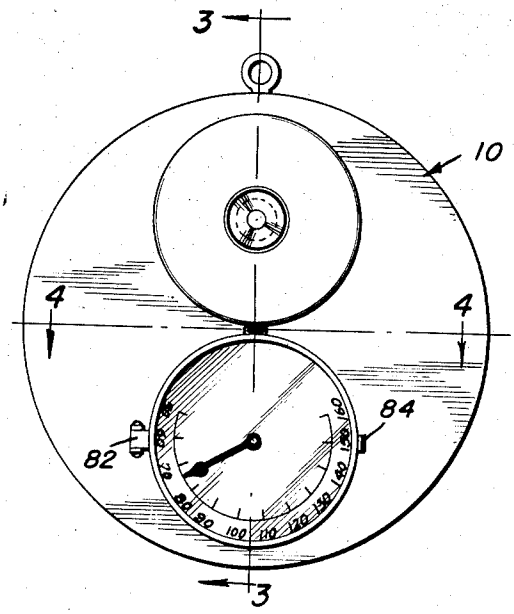


Fig. 2.

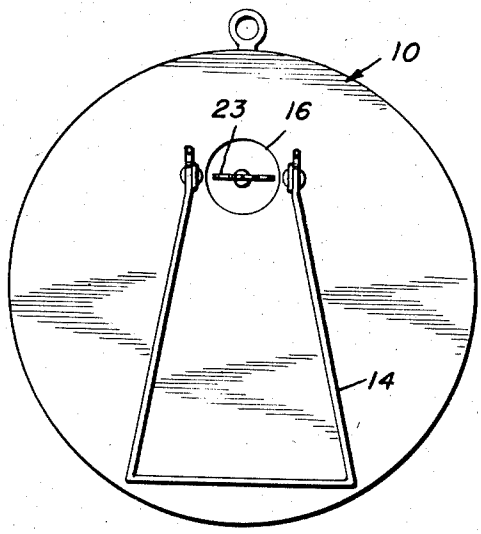


Fig. 3.

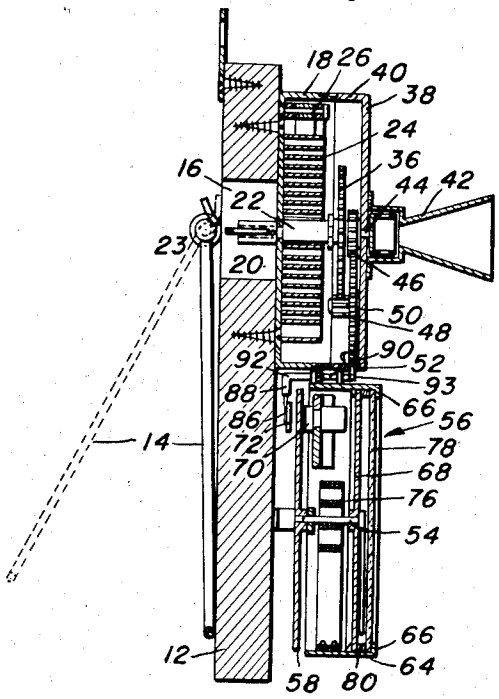
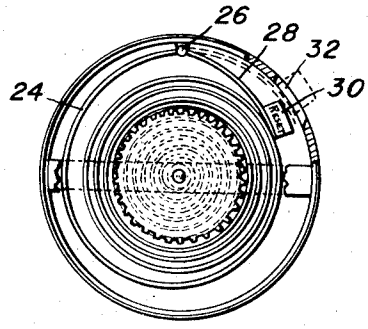


Fig. 5.



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FIRE ALARM

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Fig. 6.

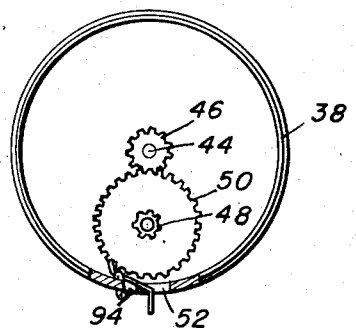


Fig. 7.

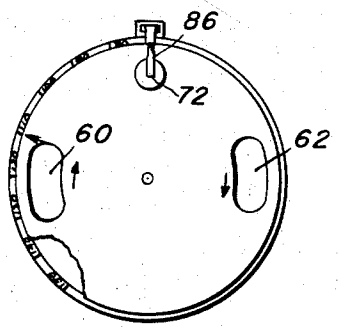


Fig. 8.

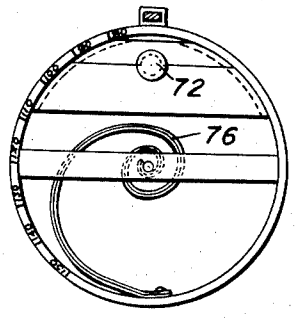


Fig. 9.

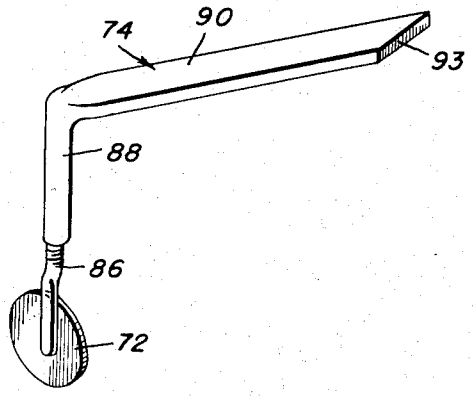
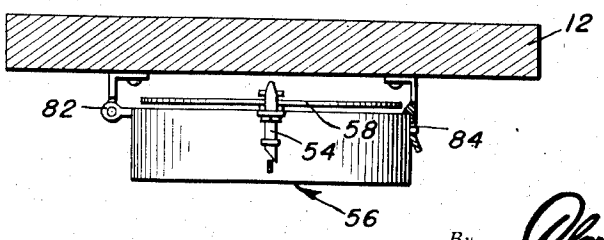


Fig. 4.



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2,563,877

UNITED STATES PATENT OFFICE

2,563,877

FIRE ALARM

John Sfreddo, River Edge, N. J.

Application August 22, 1949, Serial No. 111,603

5 Claims. (Cl. 177—311)

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This invention relates to fire alarms, and more particularly to improvements in the temperature responsive operating means for actuating the audible sound producing element of the alarm.

An object of this invention is to awaken and warn sleeping people of the presence of a fire.

Another object of this invention is to provide a simple and compact apparatus which will give an alarm having sufficient volume and duration to give ample warning of the peril of fire.

A further object is to devise improved actuating mechanisms for operating the audible sound producing element of the alarm.

A yet further object is to provide a spring wound temperature controlled alarm which will include a novel and improved construction for indicating when the alarm is set for operation and when it is run down.

A still further object is to provide a temperature responsive alarm including sound producing means operatively connected to a spring driven mechanism, novel and improved means for retaining the spring from actuating said sound producing means, and a thermostat independent of said spring allowing said spring driven mechanism to actuate the sound producing means at a selective temperature range.

These together with various additional objects of the invention, which will later become apparent as the following description proceeds, are attained by this fire alarm, the preferred embodiment of which has been illustrated by way of example only in the accompanying drawings, wherein:

Figure 1 is a front elevational view of the preferred embodiment of the fire alarm;

Figure 2 is a rear elevational view;

Figure 3 is a vertical cross sectional view as taken along line 3—3 in Figure 1;

Figure 4 is a horizontal cross sectional view taken along line 4—4 of Figure 1;

Figure 5 is an elevation view of a portion of the device of Figure 1 showing in greater detail portions of the spring means of the actuating mechanism;

Figure 6 is an elevational view, parts being shown in section, of the spring driven mechanism adapted to be used with the spring means shown in Figure 5;

Figure 7 is a view of parts of the temperature responsive portion of the present device;

Figure 8 is an elevational view of other parts of the temperature responsive portion showing the position of the thermostat in greatest detail; and,

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Figure 9 is an enlarged view of the catch used in the present fire alarm.

Referring now more particularly to the accompanying drawings wherein like numerals designate similar parts throughout the various views, attention is directed first to Figures 1–3 wherein the principle of the present invention is most clearly shown in the preferred embodiment. Reference numeral 10 generally denotes the fire alarm comprising the present invention and having a base 12 with a stand 14 pivotally secured thereto. The base 12 has an aperture 16 in its upper portions. A container having cylindrical side walls 18 and rear wall 20 is secured to the base 12 over the aperture 16 by means of screws or the like. A shaft 22 is journalled in the rear wall 20 of the container and its inner end extends into the aperture 16. A key or knob 23 is secured to the inner end of shaft 22.

A spring 24 coaxial with the shaft 22 is secured at one end to the shaft medially thereof. The other end of the spring is secured to a post 26 attached to the rear wall 20 adjacent the side wall 18. Pivotally secured on the post is an indicating marker comprising an arm 28 and a button 30. A slit 32 is angularly cut in the side wall 18 which the button 32 is adapted to pass through. Upon release and expansion of the spring 24 by means to be henceforth disclosed, the adjacent coil of the spring will press the button outwards of the slit 32. When the spring is wound by the key or knob 23, the button will fall within the container by force of gravity alone. Secured to the outer end of the shaft 22 is a sprocket wheel 36.

Referring now more particularly to Figures 3 and 6, it will be seen that a cover comprising a front wall 38 and cylindrical side wall 40 is in alignment with and adapted to be secured to the side walls 18 of the container. A siren or other sound-producing device 42 is secured to the front wall 38 of the cover and has its drive shaft 44 having a drive gear 46 secured thereon extend within the cover. Journaled on the cover below the drive gear 46 are pinion contact gear 48 and transmitting gear 50 adapted and positioned to engage sprocket wheel 36 and drive gear 46, respectively. The side wall 40 of the cover has an aperture 52 therein for a purpose to be described in the succeeding portions of the specification.

Below the gear train assembly previously described, a shaft 54 is journaled in a housing 56 and a circular plate 58 is rotatably secured on

the shaft 54 at its innermost end. As shown best in Figure 7, the plate 58 has a pair of opposed, elongated, arcuate apertures 60 and 62. The housing 56 comprises a cylindrical side wall 64 having flanges 66 inturned at the outmost end thereof, and an indicating plate 68 secured intermediate the ends of the side wall 64. Suitably mounted within the housing 56 is a magnet 70 adapted to become selectively aligned with an aperture 60 or 62 in the plate 58. On the other side of the plate 58 and opposed to the magnet 70 is a disk surface 72 of a catch member designated by reference numeral 74. The disk 72 is constructed of a magnetic metal while the plate 58 is made of a light-weight non-magnetic material such as aluminum or magnesium. The diameter of the disk 72 is substantially the width of the apertures 60 and 62 and the disk 72 is adapted to pass through an aperture and contact the magnet under certain specified conditions.

A spring thermostat 76 is provided having its ends terminally secured to the shaft 54 and the wall 64. A glass cover 78 is secured between the flanges 66 and an annular gasket 80. Suitable indicative reference marks are positioned on the indicating plate 68 as shown in Figure 1 and suitable reference marks are placed on the inner end of the side walls as shown in Figures 7 and 8. A reference arrow is positioned adjacent the aperture 60 on the plate 58. The housing is hinged as at 82 for opening and inspection, and latching means, shown at 84, is provided to secure the housing in operative position.

The catch 74, as shown best in Figures 3 and 9, comprises the disk 72 having a stem 86 threaded into the leg 88 of the catch 74 extending downwardly from the central portion 90. The central portion 90 is slidably held by bearings 92 mounted on the side wall 64, and terminates in an angular cam surface 93. An upwardly extending, angularly divergent release stop arm 94 is engageable with the cam surface 93 of the catch 74 and is adapted to engage the transmitting gear 50.

The operation of the device is as follows: The key 23 is wound to tension the spring 24 which allows the re-set button 30 to fall through the aperture 32.

The disk 72 is removed from contact with the magnet 70 by a slight finger pressure on the cam surface 93 of the catch.

The plate 58 is rotated on the shaft and secured thereto with the arrow adjacent the aperture 60 indicating a selective operating temperature as seen on the side wall 64.

At the set temperature, the aperture 60 will be in alignment with the magnet 70 and the disk 72 will be drawn therethrough. The release stop arm will then be pushed out of engagement with the transmitting gear 50 due to the transverse movement of the catch and the action of the cam surface 93. The transmitting gear 50 will then be rotated due to the action of spring 24 on sprocket wheel 36 and pinion contact gear 48. The driver gear 46 of the siren 42 will then be rotated by the transmitting gear 50, thus sounding the alarm.

Since, from the foregoing, the construction and advantages of the device may be readily understood, further explanation is believed to be unnecessary.

However, since numerous modifications will readily occur to those skilled in the art after a consideration of the foregoing specification and accompanying drawings, it is not intended to limit the invention to the exact construction shown and described, but all suitable modifications and equivalents may be resorted to which fall within the scope of the appended claims.

Having described the invention, what is claimed as new is:

1. In a fire alarm including a sounding device, a gear train operating said sounding device, spring means for actuating said gear train, a catch engaging one member of said gear train for holding said gear train against rotation until a predetermined temperature is reached; temperature responsive means for releasing said catch comprising a plate having apertures adapted to selectively align with said catch, said catch being positioned adjacent one side of said plate, and magnetic means positioned adjacent the other side of said plate, said magnetic means urging said catch to disengage said member of said gear train when said aperture is in alignment with said catch.

2. The structure of claim 1 wherein said apertures comprise elongated arcuate slots.

3. The structure of claim 2 wherein said catch comprises a disk of a diameter not greater than the width of said slots.

4. The structure of claim 1 including a shaft and a housing, said shaft being journaled in said housing, said magnetic means being secured to said housing, said plate being secured to said shaft.

5. In a fire alarm including a sounding device, a gear train operating said sounding device, spring means for actuating said gear train, a catch engaging one member of said gear train for holding said gear train against rotation until a predetermined temperature is reached; temperature responsive means for releasing said catch comprising a plate having apertures adapted to selectively align with said catch, said catch being positioned adjacent one side of said plate, and magnetic means positioned adjacent the other side of said plate, said magnetic means urging said catch to disengage said member of said gear train when said aperture is in alignment with said catch, said catch comprising a disk.

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