

Jan. 8, 1935.

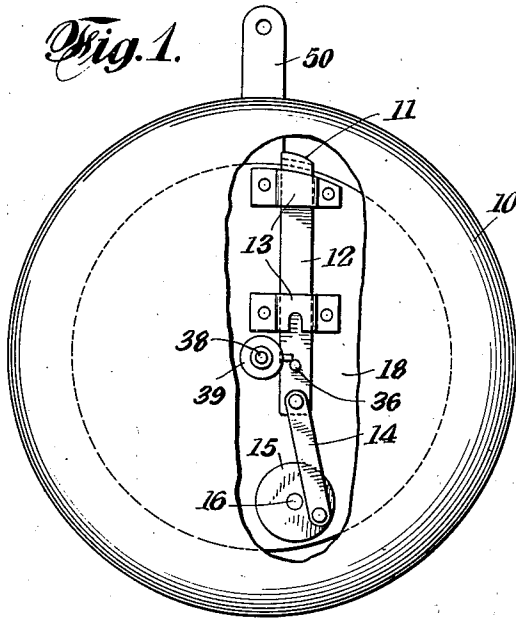
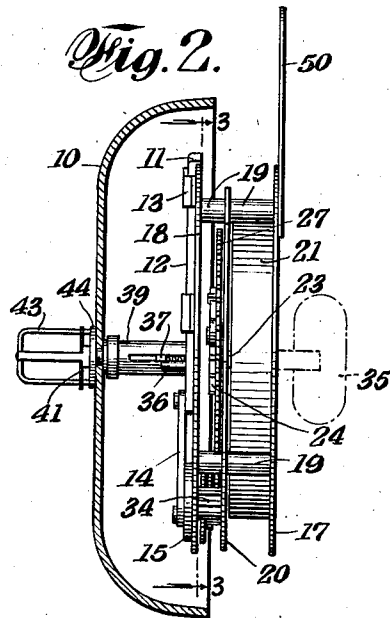
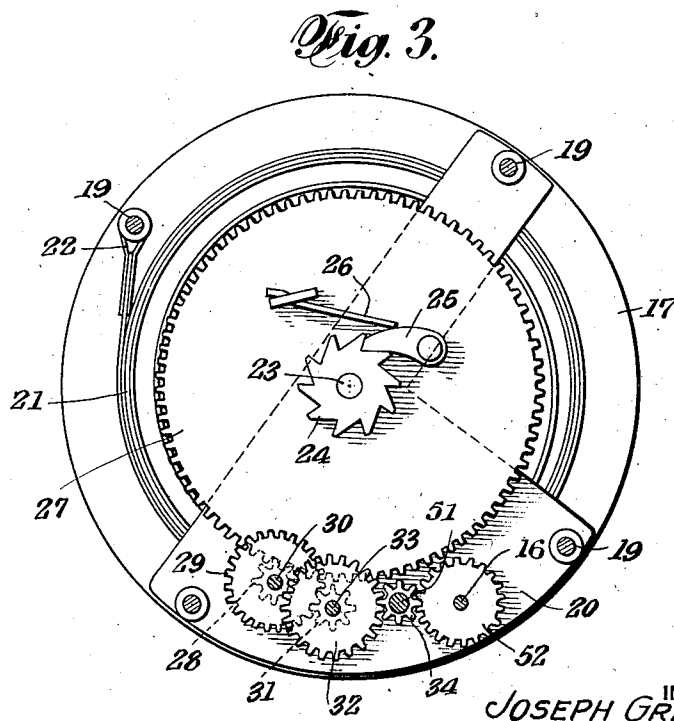
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1,987,590

FIRE ALARM DEVICE

Filed Jan. 2, 1934

2 Sheets-Sheet 1



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Fig. 4.

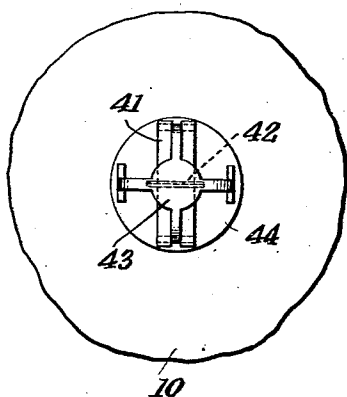


Fig. 5.

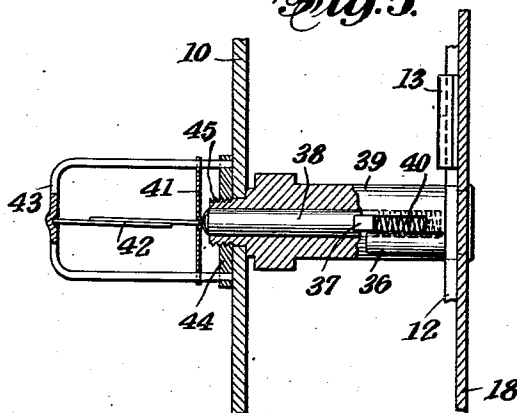


Fig. 6.

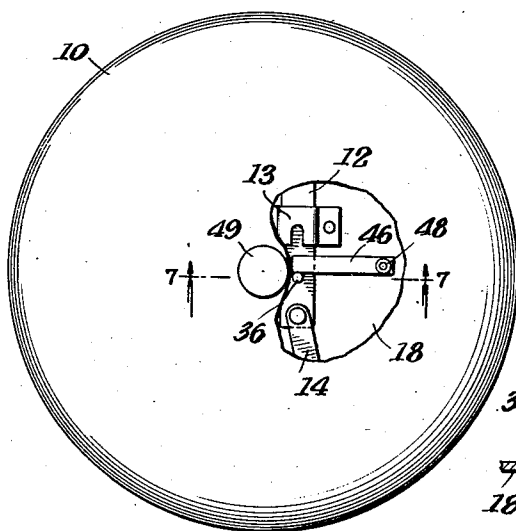
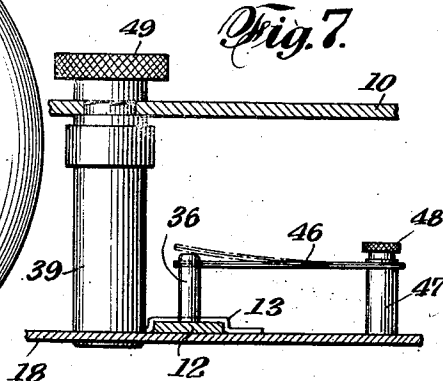


Fig. 7.



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FIRE ALARM DEVICE

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3 Claims. (Cl. 116—106)

REISSUED

This invention relates to fire alarm devices, and more particularly to improvements in self-contained devices which produce an audible signal when certain parts thereof attain a predetermined temperature.

Heretofore, there have been produced fire alarm devices provided with thermostatic or similar temperature responsive means to close an electric circuit when a predetermined temperature is reached, the closing of the electric circuit causing the energization of a solenoid to ring a bell or the like. Such devices, however, have been found objectionable in that they are essentially dependent upon a source of electrical energy; and in many instances the very fire which the device is intended to detect may destroy the electrical wiring and disconnect the source of electrical energy so that the fire alarm device becomes ineffective to produce an alarming signal as desired. In other words, such devices are not reliable; and reliability is very important in fire alarm devices.

It is, therefore, an object of this invention to provide a self-contained fire alarm device, which does not rely in any way upon an external source of energy, said device being provided with temperature responsive means to cause the device to produce an alarming signal when a predetermined temperature is attained.

A further object is the provision of a fire alarm device of simple structure, having the parts thereof constructed and arranged so that there is no likelihood of the device getting out of order, and enabling the device to be readily and conveniently manufactured at a low cost.

These and other objects are attained by the novel construction, combination and arrangement of parts hereinafter described and shown in the accompanying drawings, constituting a material part of this disclosure, and in which:

Fig. 1 is an elevational view of the device, with a part broken away to show internal details thereof.

Fig. 2 is a sectional view of the device.

Fig. 3 is a sectional view taken on line 3—3 of Fig. 2.

Fig. 4 is a plan view of a temperature responsive device used in the fire alarm device.

Fig. 5 is a sectional view showing the arrangement of the temperature responsive device in connection with detent means used in the fire alarm device.

Fig. 6 is an elevational view of a fire alarm

device having a modified form of temperature responsive means.

Fig. 7 is a sectional view showing temperature responsive and detent means used in the modified form.

Referring to Fig. 1, the fire alarm device is shown to include a bell 10 of the gong type, which produces an audible signal by impact with the curved tip 11 of a plunger 12, slidable in guides 13 and pivotally connected to a link 14, the latter being pivotally and eccentrically connected to a crank wheel 15, which is fixed to and rotates with a shaft 16 supported by a plate 20, which is between the plates 17 and 18, and connected to plates 17 and 18 by posts 19.

Positioned between plates 17 and 20 is a coiled flat spring 21, of the clock type, having one end 22 attached to a post 19, the other end of the spring being attached to the shaft 23, to which is fixed a ratchet wheel 24 engaging a pawl 25 which is urged into position by a spring 26, (see Fig. 3).

Attached to shaft 23 is a large gear 27, meshing with a pinion 28 fixed to a shaft 30, to which is also fixed a gear 29, engaging a pinion 31 on shaft 33, which has fixed thereto a gear 32, engaging pinion 34 which is fixed to shaft 51 and engages the gear 52, fixed to shaft 16, to which the crank wheel 15 is attached. The spring may be wound by a key 35 of the conventional type in the well known manner.

Projecting from the plunger 12 is a pin 36 which is adapted to engage an arm 37 projecting at right angles from a rod 38 slidable in the tubular member 39, and normally urged out of the path of pin 36 by a compression spring 40. The rod 38 is held down, against the action of spring 40, by a strip of metal 42 which is fusible at a predetermined temperature. The strip of fusible metal 42 is positioned in a frame 43 and bears against a brace 41, which directly engages the rod 38. The frame 43 is attached to a plate 44, which engages the threaded portion 45 of the member 39.

In operation, when a predetermined temperature is caused by a fire or otherwise, the metal strip 42 fuses and allows the rod 38 to release the plunger 12. Unwinding of spring 21 will cause rotation of the crank wheel 15 to rapidly reciprocate the plunger 12, so that the curved end 11 thereof will strike the gong 10 and produce an alarming sound, which will continue for an appreciable length of time. The device may be placed in condition to again give an alarm when a predetermined temperature is reached by providing the device with a new fusible strip 42.

In Figs. 6 and 7 are shown details of a modified form of detent for preventing movement of the plunger 12. In this form, the pin 36 is normally engaged by a flat strip 46 of thermostatic metal 5 lying in a plane parallel to the plane in which the plunger moves. The strip 46 is attached to a post 47 by means of a knurled nut 48. The bell or gong 10 is secured to the tubular member 39 by means of a similar knurled nut 49.

10 In operation, when the strip 46 is heated to a predetermined temperature, it will curl outwardly as shown in dotted lines in Fig. 7, to release the pin 36 to allow free reciprocation of the plunger 12, as above explained. Attached to wall 17 is 15 a tab 50 having an aperture to enable the device to be conveniently hung on a wall.

From the above description, it will be seen that I have provided a simple and effective self-contained fire alarm device which will automatically 20 produce an audible signal when a predetermined temperature has been attained; and which is not dependent upon outside sources of energy, such as an electric current, for its operation.

The foregoing disclosure is to be regarded as 25 descriptive and illustrative only, and not as restrictive or limitative of the invention, of which obviously an embodiment may be constructed including modifications without departing from the

general scope herein indicated and denoted in the appended claims.

Having thus described my invention, what I claim as new and desire to secure by Letters Patent, is

1. In a fire alarm device, a bell, a plunger, means to guide the plunger in a straight line, spring means to reciprocate the plunger into contact with the bell, and fusible means to prevent movement of the plunger until a predetermined temperature 10 has been reached.

2. In a fire alarm device, a bell, a plunger, a crank connected to the plunger, spring means to rotate the crank to cause the plunger to reciprocate into contact with the bell, a pin projecting 15 from the plunger, and a strip of thermostatic metal mounted adjacent the plunger and engaging the pin to prevent movement of the plunger until a predetermined temperature has been reached.

3. In a fire alarm device, a bell, a plunger, means to reciprocate the plunger into and out of contact with the bell, a pin on the plunger, and a strip of thermostatic metal mounted adjacent the 20 plunger and engaging the pin to prevent movement of the plunger until a predetermined temperature has been reached.

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