Dec. 27, 1932. E. A. DAN 1,892,503

AUTOMATIC FIRE ALARM

Filed May 19, 1932

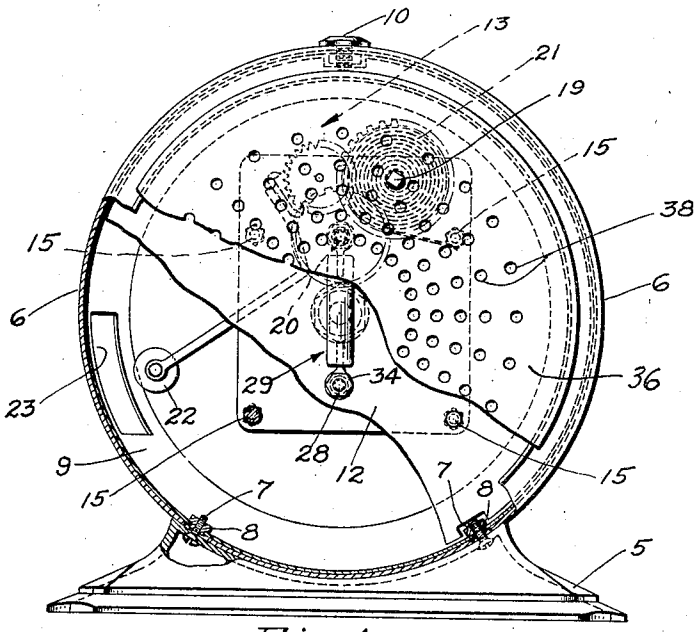


Fig. 1

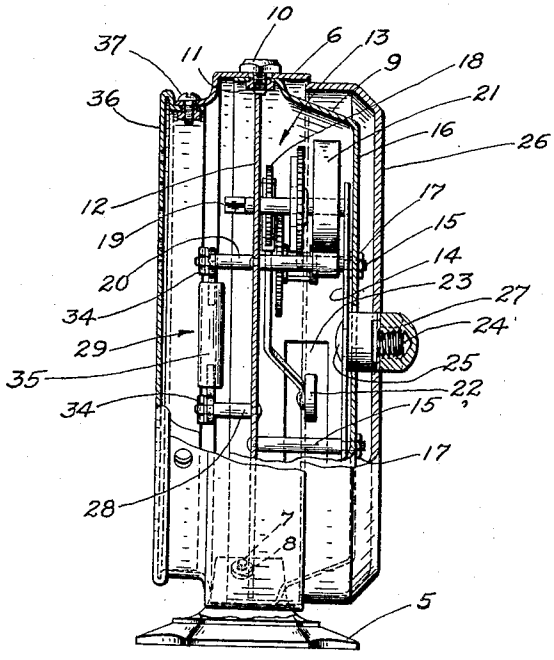


Fig. 2

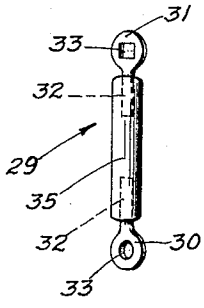


Fig. 3

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AUTOMATIC FIRE ALARM

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This invention relates to new and useful improvements in automatic fire alarms, and has for an object to provide an automatic fire alarm complete in itself and which is easily transportable and may be placed in any desired location.

Another object is to provide an automatic fire alarm of attractive appearance and which comprises but a few parts which may be inexpensively manufactured and easily assembled, and in which the operating parts are carefully enclosed to exclude dust and the like.

Other objects and advantages will become apparent from a consideration of the following detailed description taken in connection with the accompanying drawing wherein a satisfactory embodiment of the invention is shown. However, it will be understood that the invention is not limited to the details disclosed but includes all such variations and modifications as fall within the spirit of the invention and the scope of the appended claims.

In the drawing:

Fig. 1 is a front elevational view of the improved alarm, parts being broken away;

Fig. 2 is a view partly in side elevation and partly in section looking from the right of Fig. 1; and

Fig. 3 is an elevational view of the fusible element removed.

Referring in detail to the drawing, the improved alarm includes a base 5 to which is secured a ring-like open ended casing 6, the base and casing being secured together as by bolts or screws 7 passed through the base and threaded into nuts 8. A shallow housing or dust cap 9 has its open side disposed within the casing 6 and the nuts 8 are arranged within this dust cap or housing whereby the bolts 7 in addition to securing the base to the casing also assists in securing the dust cap to the casing. A bolt 10 at the upper side of the casing is threaded into a nut 11 within the dust cap 9 whereby the same is further secured to the casing.

Within the open end of dust cap 9 there is disposed a plate 12. Arranged within the dust cap 9 at the inner or rear side of the plate 12 is a clock work mechanism 13 including a mounting plate 14 and four pins or bolts which pass through the mounting plate 14, the plate 12, and the forward side 16 of the cap 9. These pins may be headed over at the front side of plate 12 and at their opposite ends may carry nuts 17 as shown. The plate 12 completely fills the open side of the dust cap so as to protect the clock mechanism from dust, and the heat can circulate around the fusible element without affecting the clock work.

Mechanism 13 also includes a gear train 18 including shafts 19 and 20 and this gear train is to be driven as by a flat coil spring 21.

The shafts 19 and 20 project through the plate 12 and have their ends at the front side of the plate squared as shown whereby the shaft 19 is adapted to receive a winding key for winding of the spring 21 and whereby the shaft 20 may have a fusible element rigidly secured thereto as will later appear. A hammer or strike 22 is included in the clock work mechanism 13 and operates through an opening 23 provided for that purpose in a wall of the dust cap or housing 9. Also, a stud 24 is secured to the clock work mounting plate 14 as by being headed over as shown at 25, or otherwise, and this stud projects through the side 16 of the dust cap and has a bell or gong 26 centrally clamped on it as by a nut 27 whereby the bell is disposed to be engaged by the strike or hammer 22 to sound an alarm at the proper time.

Secured to the plate 12 to extend outwardly or forwardly therefrom is a stud or pin 28 arranged in spaced relation to the projecting end of the shaft 20 and as here shown in substantially vertical alignment with said shaft, although not necessarily so. The front or outer end of stud 28 may be rounded or otherwise and a fusible element 29 is connected at one end with said stud and at its other end with the squared portion of the projecting end of shaft 20. This fusible element 29 includes metal pins or wire portions 30 and 31 each including a stem portion 32 and each having an opening 33 in its outer end or head portion.

The opening 33 in the metal part 31 is

squared to fit over the squared end of the shaft 20 whereby said shaft may not turn in the opening. Preferably, the opening in the head of metal 30 is round in order that the said metal may swing about the stud 28 as will later appear. Nuts 34 may be used for securing the fusible element 29 onto the ends of the shaft 20 and stud 28. Intermediate the metals or wires 30 and 31 the fusible element includes a body portion 35 of suitable fusible or easily meltable material, such as wax or metal alloys which fuse at low temperatures, and it will be noted that the stems or shanks 32 of the wires are spaced apart and are connected by the body 35 and it will therefore be apparent that on the body melting the wires 30 and 31 will be independent of one another. However, while the element connects the shaft 20 with the stud 28 the clock work mechanism will be prevented from turning with the result that the hammer or strike 22 will not be operated to sound the bell 26.

A removable perforated cover or closure 36 closes the front side of the casing 6 and is secured thereto as by bolts 37. This cover is perforated as at 38 and the perforations may be arranged in any suitable manner, as for example to spell a trade-mark or the like. After the clock work mechanism is mounted within the casing the spring 21 may be wound up as by applying a key to the end of shaft 19. Also the fusible element 29 has its end 31 connected with the end of shaft 20 and its end 30 anchored to the end of the stud 28. This will prevent the spring from operating the clock work mechanism as the shaft 20 will be held against turning movement. The bell 26 is positioned and the closure 36 secured as by the screws or bolts 37 and the device may then be placed in any desired location.

Owing to the perforations 38 in the closure 36 air will circulate freely about the fusible element so that any change in the temperature of the atmosphere in the vicinity of the device will have its effect on the fusible element. There is a continuous effort on the part of spring 21 to rotate the shaft 20 and when the temperature of the atmosphere reaches a certain point as determined by the material 35 the said material will melt or soften and release the wire 31 with the result that the shaft 20 will be permitted to turn carrying the wire with it, the hammer or strike 22 being operated to engage the bell 26 and sound an alarm. As the pin 31 and any portion of the material 35 remaining attached to it is swung about by the shaft the pin 30, and the material remaining attached to it, will be brushed or knocked out of the way since the said pin 30 is turnable on the stud 28.

From the foregoing description it will be apparent that I have provided a self-contained fire alarm which may be readily moved about from place to place and deposited in the desired location. It may therefore be placed in any desired location, as on a shelf near the ceiling of a room, so that should a fire start it will be in a location which will become quickly heated. It can be easily carried from one room to another or placed on a stand near a bed to quickly sound an alarm should the bed clothing be set on fire, as by smoking. In short it can be placed in any location when it is thought there is danger of a fire starting. Further, it will be seen that the working parts, that is the clock work mechanism, is substantially fully enclosed to exclude dust and the like which might clog the mechanism and prevent its operating. Also, the fusible element is disposed at the outer side of the plate 12 whereby said element may be renewed or inspected without disturbing the clock work mechanism and the mechanism may be wound by applying a key to the shaft 19 simply by removing the cover 36 as when inspecting or renewing the fusible element. The device is of attractive appearance and it may be nickeled or finished in colors to further enhance its appearance.

Having thus set forth the nature of my invention, what I claim is:

1. In a portable self-contained automatic fire alarm, a base, a ring-like casing secured to said base, a plate within said casing and dividing it into a pair of open sided sections, a dust cap closing one side of said casing, a clock work mechanism disposed between and supported by said cap and plate, said clock work mechanism including a strike, a bell supported at the side of said cap opposite said plate and arranged to be engaged by said strike to sound an alarm on operation of said clock work mechanism, said clock work mechanism including a pair of operating shafts extending through said plate and of which one shaft is a winding shaft, an element at the side of the plate opposite said dust cap, a stationary stud at said side of the plate, said element anchored at one end to said stud and at its other end secured to the other of said shafts in a manner to prevent rotation of said shaft independent of the element whereby to prevent operation of the clock work mechanism, a removable perforated plate closing the side of said casing opposite said dust cap whereby the clock work mechanism may be wound without removing the dust cap and whereby air may circulate about said element, and said element adapted to soften and separate intermediate its ends on the temperature in its vicinity reaching a predetermined point whereby one of its ends may rotate with the shaft to which it is attached and permit operation of said clock work mechanism to sound an alarm.

2. In a portable self-contained automatic fire alarm, a base, a ring-like casing, a shal-

low member forming a dust cap open at one side, said dust cap arranged with its open side inwardly of said casing, means passing through said base, casing and dust cap and securing them together, a plate disposed in the open side of said dust cap, a clock work mechanism arranged within said dust cap and including supporting pins connecting the plate to the dust cap, said dust cap having an opening through a wall thereof, said clock work mechanism including a strike operating through said opening, a stud extending forwardly from said cap, a bell centrally supported on said stud in a position to be sounded by said strike, said clock work mechanism including a rotatable shaft extending rearwardly through said plate, an element within said casing at the rear side of said plate, a stud on said plate and extending rearwardly therefrom, said element rigidly secured at one end to said shaft to turn therewith and at its other end anchored to said stud, said element adapted to sever intermediate its ends on the application of heat whereby said shaft will be permitted to rotate and said clock work mechanism will operate to sound the bell, a plate removably secured to said casing and closing the front end thereof, and said plate perforated to permit air to circulate about said element whereby said element will be sensitive to temperature changes in the vicinity of the casing.

3. In a portable self-contained automatic fire alarm, a ring-like casing, a plate within said casing and dividing it into a pair of open sided sections, a dust cap closing one side of said casing, a clock work mechanism disposed between and supported by said cap and plate, said clock work mechanism including a strike, a bell supported at the side of said cap opposite said plate and arranged to be engaged by said strike to sound an alarm on operation of said clock work mechanism, said clock work mechanism including an operating shaft extending through said plate, an element at the side of the plate opposite said dust cap, said element anchored at one end to a stationary member and at its other end secured to said shaft in a manner to prevent rotation of said shaft independent of the element whereby to prevent operation of the clock work mechanism, a removable perforated plate closing the side of the casing opposite said dust cap whereby air may circulate about said element and said element is enclosed and protected from injury, and said element adapted to soften and separate intermediate its ends on the temperature in its vicinity reaching a predetermined point whereby one of its ends may rotate with the shaft to which it is attached and permit operation of said clock work mechanism to sound an alarm.

In testimony whereof I affix my signature.

ELLIS A. DAN.