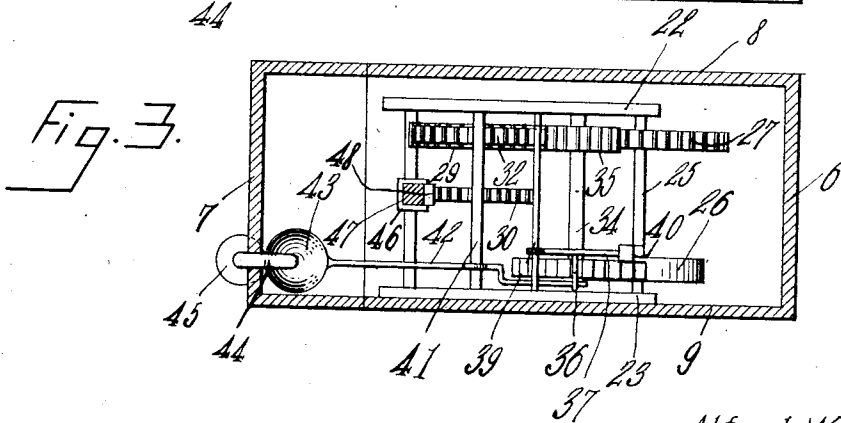
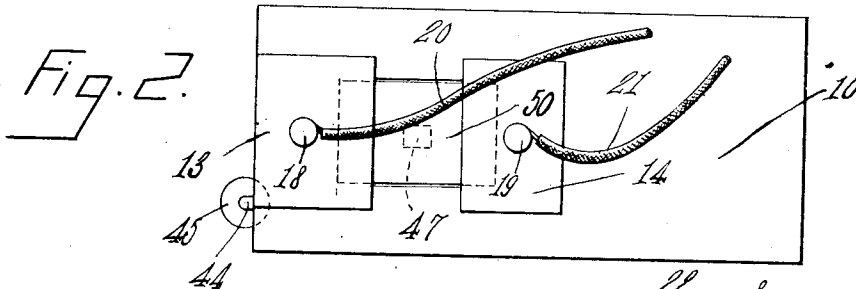
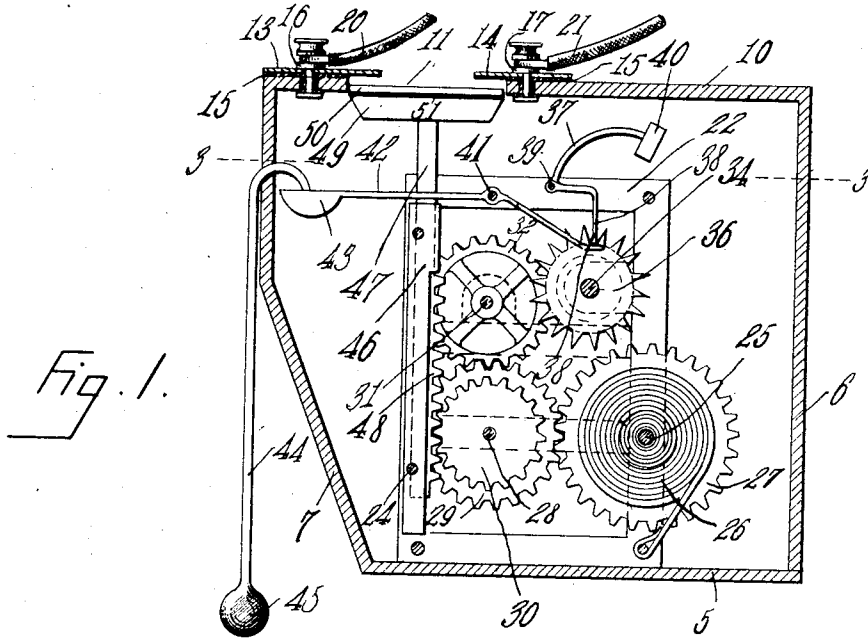


A. W. COMRACK.
FIRE ALARM.
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Patented July 4, 1911.



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FIRE-ALARM.

996,618.

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To all whom it may concern:

Be it known that I, ALFRED W. COMRACK, a citizen of the United States, residing at Olyphant, in the county of Lackawanna, State of Pennsylvania, have invented certain new and useful Improvements in Fire-Alarms; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

This invention relates to improvements in fire alarms and more particularly to the automatic type.

It has for its object the provision of a device of that kind provided with a motor which is adapted to be set in operation by an excessive rise in temperature.

Another object is the provision of an audible signal which is adapted to be operated by an electric circuit closer actuated by the motor.

A further object is the provision of a controlling mechanism which normally locks the motor and is adapted to be actuated to release the motor by a heat actuated agent.

With these and other objects in view as will more fully hereinafter appear, the present invention consists in certain novel details of construction and arrangement of parts, hereinafter fully described, illustrated in the accompanying drawings and more particularly pointed out in the appended claim; it being understood that various changes in the form, proportion, size and minor details of the device may be made without departing from the spirit or sacrificing any of the advantages of the invention.

In the accompanying drawings forming part of the specification:—Figure 1 is a vertical sectional view of the device. Fig. 2 is a plan view thereof. Fig. 3 is a sectional plan view taken on the line 3—3 of Fig. 1. Similar numerals of reference are employed to designate corresponding parts throughout.

As shown in the drawings, a casing is provided which may be of any suitable material and has a bottom 5 which is arranged to be secured to the upper face of a ceiling or between the latter and upper floor. Rising from the opposite ends of the floor 5 are the opposite end walls 6 and 7 and rising from the opposite longitudinal sides of the bottom 5 are the opposite side walls 8 and 9;

the side and end walls are all of the same height and their upper edges are connected by the top or closure 10. The latter is provided adjacent one end with an enlarged angular opening 11. A pair of contact plates designated by the numerals 13 and 14 are disposed on the upper face of the top 10 and insulated therefrom as shown at 15. The contact plates may be of any suitable material and are oblong in contour and are so arranged that their opposed inner ends will overhang a portion of the opening 11 with a considerable space between the said opposed inner ends. The contact plates 13 and 14 are held in place by means of a pair of binding posts 16 and 17 which are provided with the usual screw ends 18 and 19. Conducting wires 20 and 21 have their terminals connected with the binding posts 16 and 17 in the usual manner. These conducting wires lead to the audible signal and batteries (not shown).

Located within the casing is a spring motor having the clock work mechanism. As shown the motor consists of a pair of side frames 22 and 23, which are spaced apart and held connected by means of cross pieces 24 located adjacent the sides of the frames. Journaled in the opposite frames 22 and 23 are the opposite end portions of a main shaft 25, the outer end of this shaft is non-cylindrical and adapted to receive the usual clock key. Secured to a cross piece in the frame is one end of a coil spring 26, the opposite end of which is secured to the shaft 25. The shaft 25 is further provided adjacent the spring with a spur wheel 27 which is keyed to said shaft. A second shaft 28 is journaled adjacent the opposite side of the frame and has keyed thereto a spur wheel 29, the teeth of which mesh with the teeth of the spur wheel 27 and keyed to the shaft 28 and adjacent the spur wheel 29 is a similar spur wheel 30, the function of which will appear later. Journaled in the side plates 22 and 23 and disposed above and substantially in a vertical plane with the shaft 28 are the opposite ends of a shaft 31 and keyed to this shaft is a toothed idler, the teeth of which mesh with the teeth of the spur wheel 29. Journaled in the side plates 22 and 23 and above the plane of the shaft 31 and adjacent the opposite side of the frame is a shaft 34 which has keyed thereto a pinion 35, the teeth of which mesh with the teeth of the idler 32 and keyed to the shaft 34 and ad-

jacent the pinion 35 is what will subsequently be termed a toothed fly wheel 36.

A dog 37 preferably formed of a single piece of curved metal is provided at one end with a down-turned projection 38. The dog 37 has adjacent its intermediate portion a shaft 39 to which it is fixedly secured, the opposite ends of the shaft 39 being journaled adjacent the upper edges of the side plates 22 and 23. That terminal of the dog 37 remote from the down-turned end 38 extends above the upper edges of the frames 22 and 23 and is provided at its extremity with a weight 40, the function of which is to overbalance the dog and hold the projection 38 between the teeth of the fly wheel 36. Thus it will be seen when the parts are in this position and the motor wound that movement of the motor will be prevented by virtue of the projection 38 being in engagement with the teeth of the fly wheel 36, and hence the dog and the fly-wheel constitute a stopping mechanism for the motor.

In order that the dog may be lifted from engagement with the teeth of the fly wheel when the temperature has risen above a certain point the following construction is employed:—By referring now to the drawings it will be seen that journaled in the side plates 22 and 23 and adjacent their upper edges and located adjacent the side remote from the dog 37 are the opposite ends of a shaft 41. Keyed to this shaft is the intermediate portion of a controlling lever 42, one end of which extends between the frame plates 22 and 23, to a point in alignment with the down-turned end 38 of the dog upon which it bears upwardly. The opposite end of the controlling lever 42 extends between the frame plates and projects considerably in advance thereof, and terminates at a point adjacent the side walls 7 of the casing. This terminal of the controlling lever 42 is provided with a cup-shaped receptacle 43.

It might here be stated, that the weight of the dog is sufficient to overcome the combined weights of the receptacle 43 and that portion of the lever lying between the receptacle and its pivotal point 41, so that when the parts are in position as shown at 41 the lever will be unable to lift the dog from engagement with the fly wheel.

By referring now to Fig. 1 it will be seen that a mercury tube 44 is located on the exterior of the casing and adjacent the side wall 7. The lower end of this mercury tube terminates in the usual bulb 45 which is designed to extend through the ceiling and into the room. The upper end of the tube 44 is curved laterally and extends through the opening in the side wall of the casing and overhangs the receptacle 43. Thus it will be seen when the tube is filled with mercury or the like to a point adjacent its

curved open end that the mercury will flow through the open end and into the receptacle 43 when the bulb 45 becomes sufficiently heated. The parts are so adjusted that a small quantity of mercury flowing from the tube into the receptacle 43 will be sufficient to overcome the weight exerted on that end of the lever in engagement with the dog, whereby the latter will be lifted from engagement with the fly-wheel 36, thus permitting the motor to operate.

In order to close the circuit between the plates 13 and 14 when the heat has caused the mercury to flow into the receptacle 43 the following construction is employed:—By referring now to the drawings it will be seen that the side plate 23 is provided adjacent one face with a guide 46, extending throughout the length of the plate and disposed adjacent that side of the frame through which the lever 42 projects. That side of the guide 46 facing the opposite side of the frame is open and slidably fitted in the guide is the shank 47 of a circuit closer. The shank corresponds in length to the height of the frame and is substantially rectangular in cross section and is provided on one of its faces with a rack 48, the teeth of which extend through the open side of the guide and mesh with the teeth of the spur gear 30 on the shaft 28. The upper or outer end of the shank 47 has securely fitted thereto an enlarged head 49 which is of a size to nicely fit within the opening 11 in the top 10. The upper face of this head is provided with a contact plate 50 which is insulated from the head as shown at 51. The contact plate 50 is of a size to span the distance between the contact plates 13 and 14. Thus it will be seen when mercury flows into the receptacle 43 as before described, and the dog lifted from engagement with the fly wheel 36 that the rotation of the spur gear 30 will raise the contact closer to position to bear on the contact plates 13 and 14, whereby the circuit will be closed and the alarm sounded.

From the foregoing it can be seen that I have provided a device which is exceedingly simple in structure and comparatively inexpensive to manufacture, embodying few parts and these so arranged that the danger of derangement will be reduced to a minimum. It will be further observed that the device may be regulated to operate at various temperatures according to the diameters of the tube and bulb and the quantity of mercury contained therein.

Having thus described my invention what is claimed as new, is:—

In a fire alarm, a casing provided with an opening, a normally open electric circuit having terminal contacts therein located on opposite sides of said opening and projecting partially thereacross, a rack bar mounted for movement in said casing, a conductor

plate on one end of said rack bar adapted
to move into the opening and connect said
terminal contacts to close said circuit, a
spring motor for actuating said rack bar,
5 a two armed dog pivoted in said casing and
having the end of one arm adapted to en-
gage the fly wheel of the motor to hold the
motor inoperative, a weight on the end of
the other arm of said dog constantly tending
10 to move the end of the first named arm into
engagement with the fly wheel of the motor,
a lever pivoted in said casing, having one
end in engagement with the arm of the dog
which engages the fly wheel of the motor
15 and provided at its opposite end with a re-

ceptacle, a tube mounted on said casing and
having one end overhanging the said recep-
tacle, said tube containing a substance actu-
ated by heat to flow into the receptacle and
depress the same, whereby the opposite end 20
of the lever will move the end of one arm of
the dog from engagement with the fly wheel
of the motor against the influence of the
weight on the arm of said dog.

In testimony whereof, I affix my signa- 25
ture, in presence of two witnesses.

ALFRED W. COMRACK.

Witnesses:

ERNST MEYER,

HARRY SPATT.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents,
Washington, D. C."
