

P. BONINI.
AUTOMATIC FIRE ALARM.
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931,377.

Patented Aug. 17, 1909.

Fig. 1.

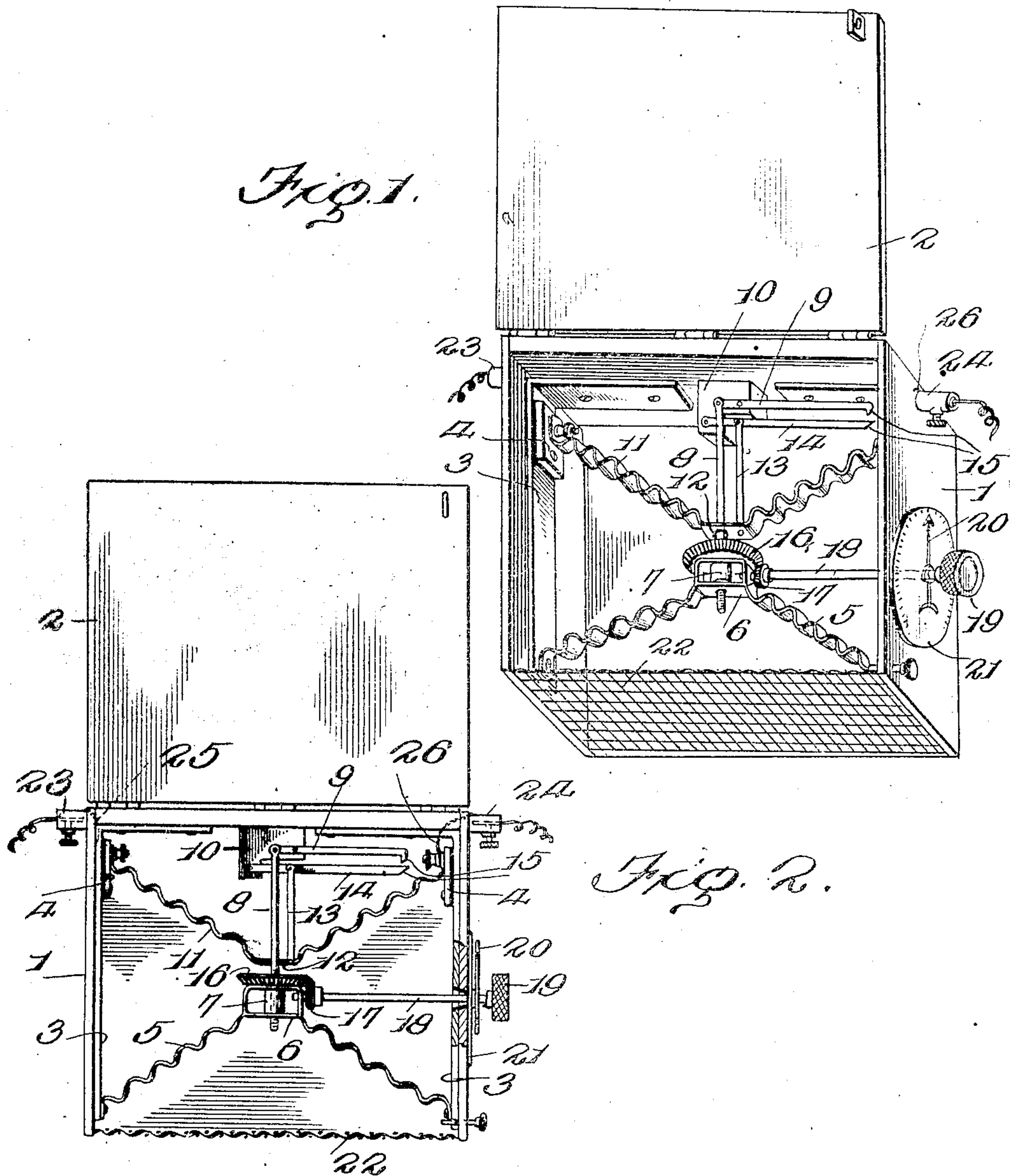


Fig. 2.

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AUTOMATIC FIRE-ALARM.

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Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, PIETRO BONINI, subject of the King of Italy, residing at New York, in the county of New York and State of New York, have invented certain new and useful Improvements in Automatic Fire-Alarms, of which the following is a specification.

This invention comprehends certain new and useful improvements in circuit closers of that type designed particularly for use in connection with fire alarms or like electric signals, and the invention has for its object an improved thermostat which embodies a peculiar arrangement of parts, whereby it is rendered susceptible of convenient and accurate adjustment, so as to regulate the degree of temperature at which the circuit will be closed, the device being also arranged to indicate the temperature for which the thermostat is set.

With these and other objects in view that will more fully appear as the description proceeds, the invention consists of certain constructions, arrangements and combinations of the parts that I shall hereinafter fully describe and then point out the novel features thereof in the appended claims.

For a full understanding of the invention, reference is to be had to the following description and accompanying drawings, in which:

Figure 1 is a perspective view of a thermostat constructed in accordance with my invention, and Fig. 2 is a front elevation thereof.

Corresponding and like parts are referred to in the following description and indicated in all the views of the drawings by the same reference characters.

In carrying out my invention, I provide a thermostatic device mounted in a housing 1 which may be of any desired or approved construction, or design, except as hereinafter noted, and the interior of which is preferably rendered accessible by means of a suitable hinged door 2. Two bars 3 are secured to the top of this housing and depend therefrom in close proximity to two opposite sides of the housing, each of these bars carrying at its upper end an insulated block 4. Electrically connected to the lower ends of the bars 3 is an inverted V-shaped thermostatic member 5 which is preferably formed of corrugated zinc or other suitable metal and which is provided at its apex or middle

point with a bearing 6 in which is loosely mounted a nut 7. This nut is designed to work upon a lower threaded extremity of a vertically disposed connecting rod 8 which is pivotally secured at its upper end to one end of a horizontally disposed lever 9 and is arranged to operate the same, said lever being fulcrumed at an intermediate point upon and insulated from a supporting block 10 depending from the top of the housing as shown. 11 designates a second thermostatic member which is also constructed of corrugated metal and is V-shaped in form, and which is connected at its ends to the opposite blocks 4 with its middle point in vertical alinement with and in slightly spaced relation to bearing 6 of the other thermostatic member, said thermostatic member 11 being formed near its middle with an insulated opening 12 extending therethrough to permit the connecting rod 8 to pass upwardly for operative connection with the lever 9. Secured to the thermostatic member 11, preferably near the middle point of the same, is a vertically disposed connecting rod 13 which is designed to operate a second lever 14 and for this purpose has its upper end pivotally secured to the same at an intermediate point thereof, said lever being fulcrumed at one end on and insulated from the supporting block 10 and extending in the same direction as the lever 9, although positioned somewhat below the same. The free extremity of the lever 9 is preferably hooked as shown, and is designed to engage the corresponding end of the lever 14 in case of a fire, and said extremities of the levers thus constitute contact points 15 which may be provided with platinum surfaces, if desired, in the manner common to the art.

In practice it will be found necessary to regulate the normal space between the contact points 15 to prevent sparks from jumping across this gap when the thermostat is electrically connected with the fire alarm system, and as one means for accomplishing this I provide a bevel gear wheel 16 which is rigidly secured to the nut 7, preferably above the bearing 6 and which engages a relatively small bevel pinion 17 carried on one end of a horizontally disposed shaft 18, the shaft being journaled at said end in the bearing 6 and extending outwardly therefrom through an insulated opening in one side wall of the housing and terminating upon the exterior of the same in a head or

knob 19. With this construction it will be manifest that means are afforded whereby the nut 7 may be conveniently adjusted upon the connecting rod 8 in order to regulate the gap between the contact points, by the mere rotation of the knob 19 in one direction or the other. In the present instance the projecting end of the shaft carries a hand 20, which is designed to rotate over a dial 21 that is secured to the corresponding side of the housing and is suitably graduated so that when the parts have been adjusted the hand will indicate at just what temperature the thermostat will be influenced to cause the contact points 15 to engage.

The wall of the housing adjacent to the thermostatic member 5 is preferably perforated, as illustrated at 22, and the thermostat is designed to be positioned in the wall, or floor, or ceiling of a building; preferably the latter, with the perforated wall 22 outermost so that the interior of the thermostat will be in communication with the room. When placed in this position the thermostatic members 5 and 11 will expand equally under ordinary temperatures, but when an abnormal temperature is suddenly developed in the room, as in the case of fire, the heat will first come in contact with the thermostatic member 5, as the latter is positioned nearer the perforated wall 22, and such thermostatic member will thus expand under the influence of the heat at a greater rate than the thermostatic member 11, so as to rock the lever 9 a greater distance than the lever 14, thereby effecting engagement of the contact points 15.

The thermostat is adapted to be connected up in an electric alarm circuit through the instrumentality of two binding posts 23 and 24 arranged at the opposite sides of the housing, the binding post designated 23 being electrically connected by a wire 25 to the adjacent bar 3, while a wire 26 connects the other binding post 24 with the upper thermostatic member 11. The current enters the thermostat by one of the binding posts, say the binding post 23 and passes through the wire 25 and the corresponding bar 3 to the lower thermostatic member 5. From the latter the current passes through the nut 7 and thence along the connecting rod 8 to the lever 9. When the contact points 15 are engaged upon a sudden change of temperature, the current passes from the lever 9 to the lever 14 and from the latter to the upper thermostatic member 11 through the medium of the connecting rod 13, the current leaving the thermostat by way of the wire 26 and the binding post 24 and continuing along the circuit to effect the actuation of suitable alarm mechanism.

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

1. A thermostat comprising thermostatic

members constructed of expansible material and insulated from each other, levers carrying normally spaced contact points, and connecting rods secured to the thermostatic members and pivoted to the respective levers, one of the connecting rods having a positive and adjustable connection with the corresponding thermostatic member, as and for the purpose specified.

2. A thermostat comprising thermostatic members constructed of expansible material and insulated from each other, levers carrying normally spaced contact points, connecting rods secured to the thermostatic members and the respective levers, and a threaded connection between one of the connecting rods and the corresponding thermostatic member.

3. A thermostat comprising thermostatic members constructed of expansible material and insulated from each other, levers carrying normally spaced contact points, connecting rods secured to the thermostatic members and the respective levers, a positive and adjustable connection between one of the thermostatic members and the corresponding connecting rod, and means for regulating said connection to effect different adjustments of the parts.

4. A thermostat comprising thermostatic members constructed of expansible material and insulated from each other, levers carrying normally spaced contact points, a nut carried by one of the thermostatic members, and connecting rods secured to the respective levers and to the thermostatic members, one of the connecting rods being adjustably engaged with the nut.

5. A thermostat, comprising separate thermostatic members constructed of expansible material, and one of which is provided with a bearing, a nut loosely mounted in the bearing, levers carrying normally spaced contact points, and connecting rods secured to the respective levers and thermostatic members, and one of which has one end threaded and adjustably engaged by the nut, as and for the purpose specified.

6. A thermostat, comprising a housing, separate thermostatic members mounted in the housing and constructed of expansible material and one of which is provided with a bearing, a nut loosely mounted in the bearing, carrying normally spaced contact points, connecting rods secured at one end to the levers and at their other ends to the respective thermostatic members, one of said connecting rods being threaded and having an adjustable engagement with the nut, a gear wheel rigid with the nut, a shaft journaled at one end in the bearing and extending outwardly therefrom through the housing, and a pinion provided at said end of the shaft and meshing with the gear wheel, as and for the purpose specified.

7. A thermostat comprising insulated ther-

mostatic members constructed of expansible material, and one of which is provided with a nut, levers carrying normally spaced contact points, connecting rods carried by the
 5 thermostatic members and secured to the respective levers, one of the connecting rods being threaded and engaged with the nut, and means for turning the nut.

8. A thermostat comprising insulated ther-
 10 mostatic members constructed of expansible material, and one of which is provided with a nut, levers carrying normally spaced contact points, connecting rods carried by the
 15 thermostatic members and secured to the respective levers, one of the connecting rods being threaded and engaged with the nut, and gearing for turning the nut.

9. A thermostat comprising expansible
 20 thermostatic members, one of which is provided with a nut, levers carrying normally spaced contact points, connecting rods carried by the thermostatic members and secured to the respective levers, one of the connecting rods having a threaded engagement
 25 with the nut, and a rotatable shaft having a gearing connection with the nut.

10. A thermostat comprising expansible

thermostatic members, levers carrying normally spaced contact points, connecting rods secured to the thermostatic members and to
 30 the respective levers, a positive and adjustable connection between one of the thermostatic members and the corresponding connecting rod, means for regulating said connection to effect different adjustments of the
 35 parts, and indicating means actuated by said regulating means.

11. A thermostat comprising expansible
 thermostatic members, levers carrying normally spaced contact points, connecting rods
 40 secured to the thermostatic members and the respective levers, a positive and adjustable connection between one of the thermostatic members and the corresponding connecting
 45 rod, a shaft for regulating said adjustable connection, a hand rigid with the shaft, and a dial over which the hand is adapted to be rotated by and upon the turning of the shaft.

In testimony whereof I affix my signature in presence of two witnesses.

PIETRO BONINI. [L. S.]

Witnesses:

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