

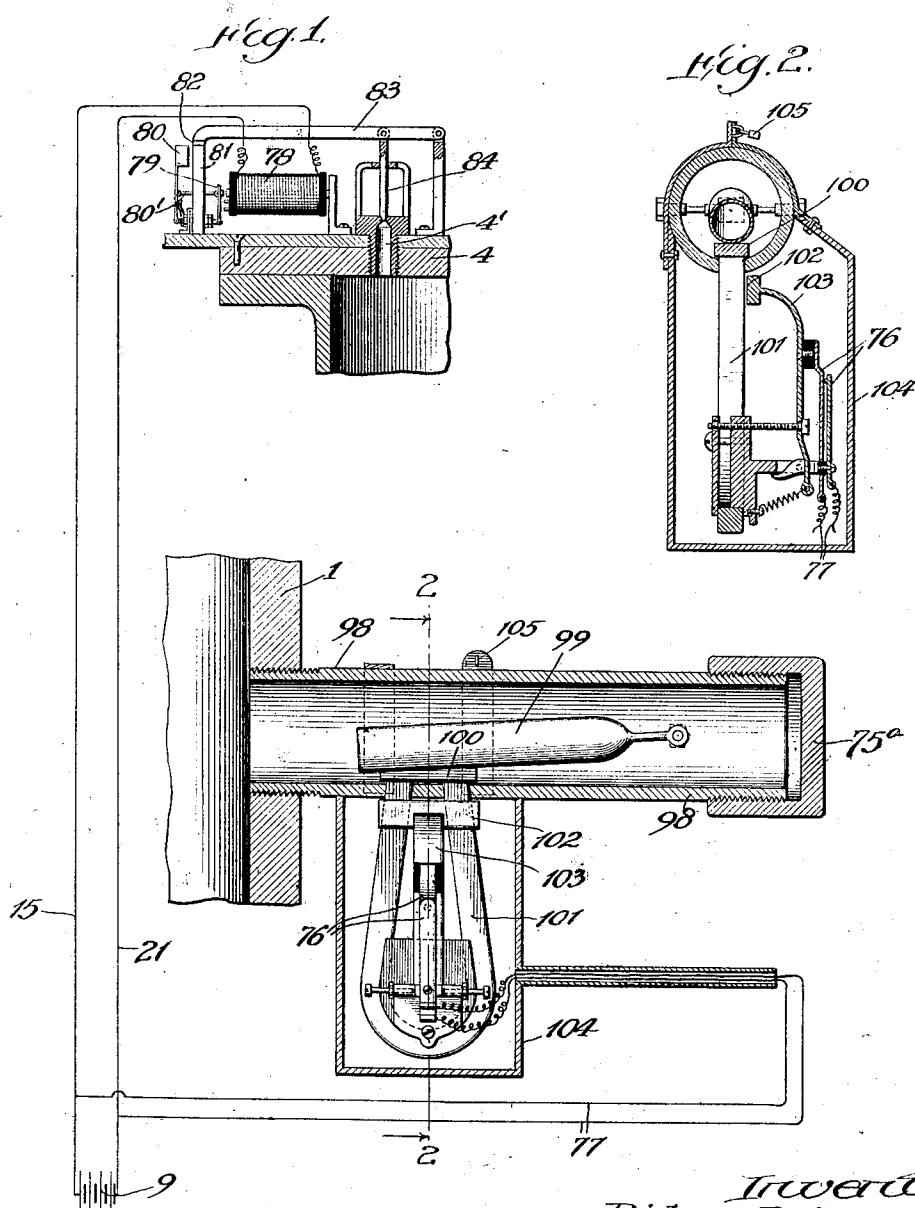
R. B. HEWITT & J. G. NOLEN.

FIRE PROTECTION DEVICE.

APPLICATION FILED APR. 6, 1907.

996,335.

Patented June 27, 1911.



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FIRE-PROTECTION DEVICE.

996,335.

Specification of Letters Patent. Patented June 27, 1911.

Original application filed May 29, 1903. Serial No. 159,232. Divided and this application filed April 6, 1907.
Serial No. 366,689.

To all whom it may concern:

Be it known that we, RICHARD B. HEWITT and JAMES G. NOLEN, citizens of the United States, both residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Fire-Protection Devices, of which the following is a specification.

This application constitutes a division of our application for patent for automatic fire extinguisher and signaling system, filed May 29th, 1903, Serial No. 159,232.

Our invention relates to fire protection systems and has for its salient object to provide a new and improved circuit controlling device, comprising a part for inclusion in or communication with the interior of the piping system, and electric circuit controlling contacts entirely outside of the piping, controlled by the movable part within the piping, the construction involving no movable parts extending through the piping.

Other and further objects of our invention will become apparent to those skilled in the art from the following description, taken in conjunction with the accompanying drawing, wherein,

Figure 1 illustrates in fragmentary section portions of a fire extinguisher piping system, and associated devices; Fig. 2 is a transverse section on line 2—2 of Fig. 1.

Referring now to the drawing, 1 indicates a fragment of a riser constituting part of the piping system of an automatic fire extinguisher system, and having at some suitable point in communication therewith, a structure 75^a, comprising a tube 98 screwed into the side of the riser and containing a swinging float 99. The float typifies any suitable movable element within the piping system, movable in response to changes of condition in such system. This float carries, for movement therewith, a soft iron armature 100, which we may term the controlling armature, adapted to rest normally in contact with the poles of the permanent magnet 101, which is permanently and stationarily se-

cured in such relation to the tube 98 that its poles extend through the tube 98 and are exposed at or beyond the interior surface thereof. Obviously the tube 98 or that portion thereof immediately surrounding the poles of the permanent magnet should be of diamagnetic material, such as brass. Without the tube 98, is arranged a second soft iron armature 102, which we may term the responsive armature, normally unattracted by the permanent magnet by reason of the latter's magnetism being normally completely absorbed by the armature 100. The responsive armature 102 is mounted on a lever 103 for pivotal movement, as suggestively illustrated in Fig. 2, and is normally spring-held in retracted position.

76 indicates spring contacts, one whereof is connected to the lever 103 for movement therewith. The arrangement, of course, should be such that the movement of the armature 102 into contact with the magnet 101 is sufficient to cause the change in the circuit conditions established through contacts 76, that is to say, to break the connection if the contact is normally closed or to make the connection if the contact is normally open in the particular embodiment in hand. As here illustrated, contacts 76 are normally closed. By this arrangement it will be seen that when water enters the tube 98 it moves upward the float 99, typical of any movable part moving in response to change in conditions within the fire extinguishing system, the movement of said float 99 forcibly withdrawing the armature 100 from contact and proximity with the poles of magnet 101. This withdrawal of the controlling armature 100 from the magnet occasions an increase in the effect of the magnet upon the armature 102, which we may term the responsive armature, which is accordingly attracted to the magnet and which by its movement causes the operation of the circuit controlling springs.

On the return of the float and its armature to normal position the magnetic lines of

force are short circuited through the controlling armature, and the magnetic attraction for armature 102 so diminished that the latter is retracted by its spring. Thus it will be seen that the device described is of a character to open and close the circuit, in response to movements of a part within the closed piping system without the use of any movable parts extending through the piping, or through the tubing 98, magnetism constituting the medium of association between the float or other movable device within the inclosed piping, and the external circuit controlling parts. For protection of the external parts of the device, we may provide a casing 104 secured to the part 98 by a suitable padlock 105.

Obviously the circuit controlling device which we have described may be applied in diverse ways for various purposes, where the making or breaking of an electric circuit may be utilized to control machines or devices the action whereof should respond to changes of conditions within the sprinkler system.

In the suggestive showing in Fig. 1, 4 indicates a fragment of a valve shell, the interior whereof may at times be under pressure, and 4' a port therein, which it may be desirable to open to relieve the pressure whenever the float 99, heretofore described is raised by the flow of water. The port 4' is normally closed by a valve member 84, carried by pivoted lever 83, the free extremity whereof bears a responsive armature 82, associated with and normally magnetically maintained in contact with a permanent magnet 81. A second controlling armature 80 is provided and arranged in proximity to, but out of contact with the pole of the magnet 81, such armature 80 being pivotally mounted and connected through a link 80' with an armature 79 of an electromagnet 78. A convenient circuit arrangement for connection of the electromagnet 78, and the circuit closer 76, is illustrated diagrammatically. In such illustration 9 indicates a battery as a suitable source of electric supply, and 15 and 21 indicate line wires leading to opposite terminals of the coil of electromagnet 78. 77 indicates a shunt, or short circuit bridging the wires 15 and 21 and including therein the contact points 76.

In operation it will be seen that normally the electromagnet 78 is substantially deenergized, as it is short circuited by the shunt 77, closed through contacts 76. When, however, the float 99 moves and contacts 76 are broken, as heretofore described, current flows through the magnet 78 energizing it and causing it to attract its armature 79, which through its mechanical connection 80' draws over the controlling armature 80 into

contact with the permanent magnet 81, decreasing the magnetic effect upon the responsive armature 82, which is practically released through the magnetic short circuit afforded by an armature 80, so that the valve member 84 is no longer held with any degree of force to close the port 4', and fluids under pressure restrained by said valve 84 may readily escape therepast.

While we have herein described in some detail a specific embodiment of our invention, we do not desire to be understood as limiting ourselves to the particular use or the specific construction herein described further than as specified in the claims.

Having thus described our invention, what we claim and desire to secure by Letters Patent, of the United States, is:

1. The combination with a liquid receptacle, of a bi-polar magnet having its polar extremities projecting into the receptacle, a floatable armature confined within the receptacle, arranged to travel in alinement with the polar extremities toward and from the latter, and a spring retractable armature outside of the casing, arranged for attraction by the magnet when the floatable armature is remote from the magnet poles.

2. The combination of a liquid receptacle, a bi-polar magnet having its poles projecting through the receptacle, an armature pivoted within the receptacle for movement in the plane of the magnet into or out of contact with its poles, an armature pivoted without the receptacle, and signaling means controlled by said second armature.

3. The combination of a closed receptacle, a bi-polar magnet having its polar extremities presented to the receptacle, an armature within the receptacle spanning the magnet poles and moving toward and from their ends in substantially the plane of the magnet; an armature without the receptacle, spanning the magnet poles and movable toward and from their sides at some distance from their extremities; and signaling means responsive to movements of the last said armature.

4. The combination with a vertical water pipe, of a receptacle extending horizontally therefrom and opening thereto, and otherwise closed throughout, said receptacle having pivoted therein a float adapted to move in a generally vertical direction between the walls of the receptacle, a magnet permanently mounted upon the receptacle with its polar ends projecting through the receptacle, an armature for said magnet upon the float, adapted when the float is in one extreme of its movement to substantially short circuit the poles of the magnet, a second armature mounted outside of the receptacle movable toward and from the magnet at

right angles to the path of movement of the first said armature and arranged to be attracted by the magnet except when the latter is short circuited by the first said armature, a spring for withdrawing the second said armature from the magnet, and signaling devices responsive to movement of the second said armature.

In testimony whereof we hereunto set our hands.

RICHARD B. HEWITT.
JAMES G. NOLEN.

In the presence of—
GEO. T. MAY, Jr.,
FORÉE BAIN.

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