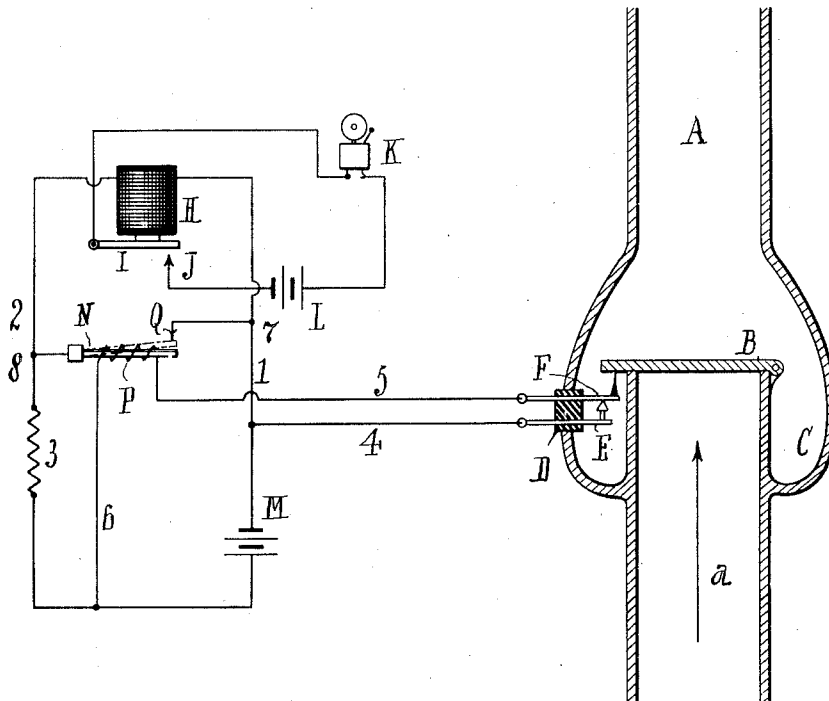


C. H. POOL.
THERMOSTATIC ALARM.
APPLICATION FILED MAR. 9, 1910.

983,861.

Patented Feb. 7, 1911.



Witnesses

May J. Mc Garry
Gertrude T. Gutter

Inventor

Clark H. Pool

by Lamb Benjamin
his Attorney

UNITED STATES PATENT OFFICE.

CLARK H. POOL, OF NEW YORK, N. Y., ASSIGNOR TO INTERNATIONAL ELECTRIC PROTECTION COMPANY, A CORPORATION OF NEW YORK.

THERMOSTATIC ALARM.

983,861.

Specification of Letters Patent.

Patented Feb. 7, 1911.

Application filed March 9, 1910. Serial No. 548,126.

To all whom it may concern:

Be it known that I, CLARK H. POOL, a citizen of the United States, residing at New York, in the county of New York and State of New York, have invented a certain new and useful Improvement in Thermostatic Alarms, of which the following is a specification.

The invention is an alarm device for indicating the lifting of a valve due to fluid pressure in the conduit containing said valve, when said pressure exceeds a predetermined limit, and which is so constructed that the alarm will not be given by momentary increases of pressure, or, in other words, until the valve has remained lifted for a predetermined period of time.

The accompanying drawing shows a part of a fluid conduit in section, and my alarm device in electrical diagram.

A is a conduit for fluids, the flow proceeding in the direction of the arrow *a*. B is a valve hinged within a chamber C in said conduit, and capable of being lifted by the current flow when said flow attains a certain predetermined pressure. In the wall of the valve chamber is a bushing D of insulating material, through which passes a fixed contact arm E and a spring arm F which carries a projection of insulating material. When valve B is on its seat, it presses down spring arm F to make contact with arm E.

H is an electro-magnet which controls the switch lever I to make and close circuit at the contact J. Included in circuit with said switch lever is a translating device K, here shown as an electric bell, and a battery L. Included in circuit with the electro-magnet H is another battery M and a thermostatic bar N, preferably made by soldering together longitudinal strips of steel and brass, which is supported at one end, and with its free end makes and closes circuit at Q. On said bar is a heating coil P.

Under normal conditions the magnet H is energized, thus attracting switch lever I and breaking circuit at J. Current in the coil P is also maintained, so that the bar N being heated by said coil opens circuit at Q, as indicated by full lines in the drawing. The circuit which energizes magnet H proceeds from battery M by wire 1 to magnet H, wire 2, resistance 3 and battery. The circuit which heats coil P proceeds from

battery M, wire 4, arms E, F, wire 5, coil P and wire 6 to battery.

When the valve B is lifted by the current flow attaining some predetermined pressure, circuit is broken between arms E, F. This cuts out the coil P, and the thermostatic bar no longer heated cools and after a certain period moves its free end into contact with point Q, as shown in dotted lines, thus closing circuit at that point. The shunt across wires 1 and 2 from junction 7 through bar N to junction 8 short-circuits magnet H, the switch lever I of which thereupon establishes local circuit at J from battery L to bell K, and thus the alarm is sounded.

An important advantage of this invention is that the alarm will not be sounded by openings of the valve when of brief duration, although the arms E, F may be momentarily separated as a consequence thereof. This is due to the fact that the thermostatic bar N will not respond to such rapid makes and breaks in the circuit including its heating coil, and hence will not be moved into contact with point Q unless the valve B remains open sufficiently long to allow the bar to cool and hence at its free end to swing sufficiently to close said contact. It frequently happens that in pipes conveying water, chance fluctuations of the current take place, and sometimes the opening and closing of taps produces water hammer enough to move the valve from its seat. If an alarm was given every time such a condition occurred, the device would be wholly untrustworthy as a safeguard against the danger of over-pressure of which it is intended to give warning. Hence the before described construction, which eliminates the trouble and insures proper action of the translating device or alarm at the proper time.

The time element in the thermostat can be controlled in various known ways—as by proportioning the coil, or the cross sectional area of the bar, so that the bar N will not close contact Q until some predetermined period has elapsed.

The object of the resistance 3 is to prevent short-circuiting the battery M when magnet H is short-circuited.

I claim:

1. A conduit for fluids, a valve therein, circuit terminals in said conduit one of said

terminals being a spring and normally held in contact with the other terminal directly by said valve when seated to close said conduit and separating from said other terminal to break circuit upon the lifting of said valve, an alarm device operating by said breaking of circuit, and means for retarding the operation of said device for a predetermined period of time.

10 2. A conduit for fluids, a valve therein, spring circuit terminals in said conduit normally held in contact directly by said valve when seated to close said conduit and separating upon the lifting of said valve, a source of current and a heating coil in circuit with said terminals, a thermostatic circuit closer, and an alarm device controlled by said circuit closer.

15 3. A conduit for fluids, a valve therein,

spring circuit terminals in said conduit normally held in contact by said valve when seated to close said conduit and separating upon the lifting of said valve, a source of current and a heating coil in circuit with said terminals, a thermostatic circuit closer, in shunt with said coil, a relay circuit including an alarm controlled by said circuit closer: the said thermostatic circuit closer operating to close said relay circuit to actuate said alarm after disestablishment of circuit in said heating coil by the lifting of said valve.

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

CLARK H. POOL.

Witnesses:

GERTRUDE T. PORTER,
MAY T. MCGARRY.