

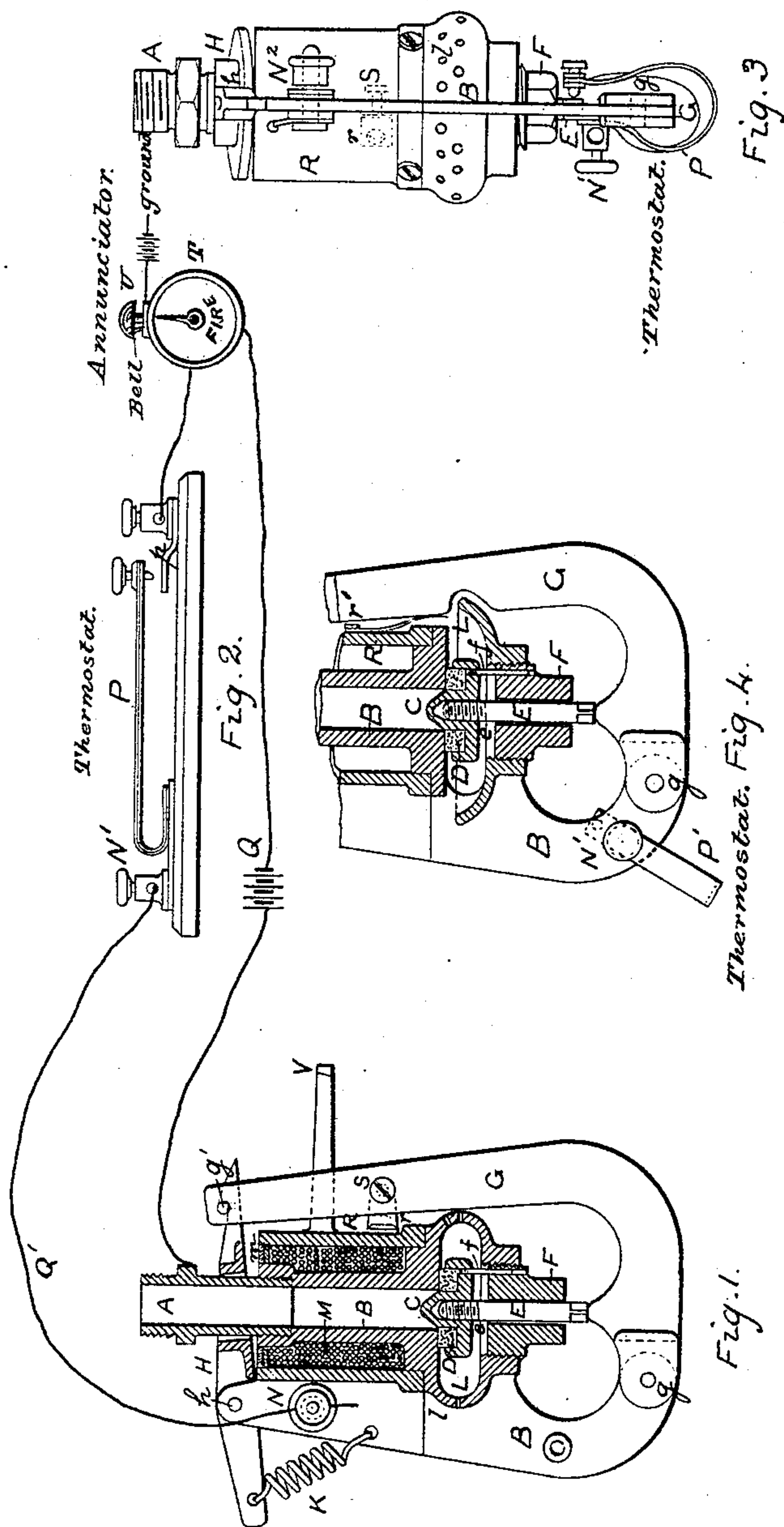
(No Model.)

A. THOMPSON & R. O. RITCHIE.

AUTOMATIC FIRE EXTINGUISHING APPARATUS.

No. 353,766.

Patented Dec. 7, 1886.



Witnesses
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UNITED STATES PATENT OFFICE.

ALFRED THOMPSON AND ROBERT O. RITCHIE, OF LONDON, ENGLAND.

AUTOMATIC FIRE-EXTINGUISHING APPARATUS.

SPECIFICATION forming part of Letters Patent No. 353,766, dated December 7, 1886.

Application filed June 1, 1886. Serial No. 203,786. (No model.)

To all whom it may concern:

Be it known that we, ALFRED THOMPSON and ROBERT ORD RITCHIE, British subjects, residing at London, England, have invented a certain new and useful Improvement in Automatic Fire-Extinguishing Apparatus, of which the following is a specification.

Our invention relates to automatic fire-extinguishing apparatus operated electrically by a rise in temperature of the chamber or building in which the apparatus is fixed; and our device is so constructed as to permit of immediate discharge of water over a considerable area of floor upon the rise of the temperature of the room or building above a certain maximum, and is capable of being tested at any time as to its efficiency. It can be operated mechanically at will, and can after operation be placed again in its former condition for service by any unskilled attendant.

In order that our invention may be the better understood, we now proceed to describe the same in relation to the drawings hereunto annexed, reference being had to the letters and figures marked thereon.

Like letters refer to similar parts throughout the drawings.

Figure 1 is a vertical section through our device. Fig. 2 is any known heat-indicator or thermostat when fixed apart from our extinguisher, by which our device is electrically operated by change of temperature. Fig. 3 is an outside end view of our device with thermostat attached. Fig. 4 is a modified detail of the water-valve chamber and modified contact for arm and attached thermostat.

A is a screwed union or nozzle of non-magnetizable metal, by which our device is attached to a branch from a water-main, the water-mains being conveniently distributed as desired, near the ceiling or ceilings of any chamber or building which it may be desired to protect from fire, a series of our devices being attached thereto at suitable intervals from one another, so as to cover the whole area of the floor with a discharge of water at need. The said nozzle A is attached to a core or barrel, B, of iron or other magnetizable material, forming a continuation of the water-passage, which is closed at the mouth by a valve, C, which may make a joint conveniently

upon a ring of india-rubber, D, fitted therein. A screw-spindle, E, is fitted into the said valve C, and is guided in a nut, F, the adjustment of the valve being effected by turning the spindle on its screw-thread *e*, where it fits into the valve. The valve is prevented from turning by a pin, *f*. The valve C is normally held closed against the water by the pressure on its spindle E of a lever, G. The said lever pivoting on a fulcrum, *g*, (which is made as part of the main casting or structure B,) engages by a pin, *g'*, in a recess of the armature lever H. H is pivoted on the framing at *h*, and is held up, so as to engage the pin *g'* of the lever G, by the tension of a suitable spring, K.

The water, on issuing from the valve C, is received into the annular chamber L, Figs. 1 and 4, whence it issues in any desired direction by suitable perforations, *l*, Fig. 1, or by a suitable orifice, as in Fig. 4.

Around the core or barrel B is wound a coil of insulated wire, M, which is inclosed after winding by a cylindrical shell, R, of iron or other magnetizable material forming part of the frame, which is secured to the inner core by screws, or in any convenient way. One end of the said coil is attached to the insulated set-screw N, Fig. 1, or N², Fig. 3, and thence to one set-screw, N', on any suitable thermostat or mechanical heat-indicator, P. This thermostat is shown detached from the extinguisher at Fig. 2, and attached to the extinguisher at P', Figs. 3 and 4. This thermostat, being constructed of metals of dissimilar expansion in accordance with the variations of temperature, will at a maximum temperature close a battery-circuit, Q', by touching a contact-piece, *p*, Fig. 2, or the frame, as in Figs. 3 and 4, the other pole of the battery being either connected direct to any part of the frame of our device, and thus to the other end of the coil of insulated wire M, or, equivalently, one pole of the battery may be put to earth, and one extremity of the coil being connected to the frame of our device, and thus also to the water-mains, may be considered as equally put to earth. The coil M being carefully insulated is closed by a ring, *m*, of vulcanized fiber or other suitable material, shellacked into place so as to be perfectly water-tight.

The connection of the earth end of the coil

M is made to frame in the following way: It is brought insulated through the external shell, R, and placed in metallic contact with a finger, *r*, Figs. 1 and 3, or *r'*, Fig. 4, the lever G making the metallic contact with this spring-finger by the set-screw S, or direct by its surface, the circuit being thus made through the lever G to earth. Any suitable annunciator, T, may be introduced into the circuit at a suitable position to attract attention, and is immediately operated by the closing of the electrical circuit by the thermostat P or P'. It may also be caused to operate an electrical bell, U, in an auxiliary circuit, to be closed in any known manner by the operation of our device.

Our apparatus works as follows: Upon any abnormal rise of temperature in a room or building, any suitable thermostat placed in a convenient and suitable position—such as P or P'—is thereby operated until it closes the electrical circuit through the battery Q, the annunciator T, and our device. Visible and audible indication by the annunciator T and auxiliary bell U is thus at once given of danger, and the electro-magnet M B R in our device causes the iron armature H to be attracted forcibly down upon the end of the said electro-magnet. The pin *g'* of the lever G is thus released from its detent, and the lever G falls against the stop V by its own weight, aided by the pressure of the water on the valve. The valve C is thus released and the water is allowed to escape, the electrical circuit being broken after it has fulfilled its purpose by the movement of the lever G away from the contact-finger *r* or *r'*. The discharge of water, spread over a considerable area, is thus continued until the apparatus is again closed, which can be easily effected by any unskilled person, by whom the lever G may be thrust back into place, forcing home the valve C and causing the pin *g'* of the lever G once more to engage in its detent. The appa-

ratus is thus once more ready for action, and can be tested experimentally at any time by artificially closing the electrical circuit through the thermostat or otherwise. The pressure upon the valve C to effect a water-tight joint may be adjusted at any time by turning the spindle E upon its screw-thread.

Having now particularly described and ascertained the nature of our said invention and in what manner the same is to be performed, we declare that what we claim is—

1. In an automatic electrically-operated fire-extinguishing device, the combination, with a battery-circuit, a suitable thermostat, and an electro-magnet and its armature, of the within-described water-outlet valve having a screw-stem, and a lever engaging with said stem and interlocked with said armature to close the valve, substantially as herein specified.

2. In an automatic electrically-operated fire-extinguishing device, an electro-magnet, M B R, and its spring-pressed or weighted armature H, surrounding the water-passage, substantially as herein specified, in combination with an outlet-valve, D, closed against the water-pressure, and a lever, G, interlocked with said armature to close said valve, and released by the attraction of said armature to open the water-outlet.

In testimony whereof we have signed our names to this specification, each in the presence of two subscribing witnesses.

ALFRED THOMPSON.

ROBERT O. RITCHIE.

Witnesses to the signature of Alfred Thompson:

SAM. P. WELDING,

JOHN C. FELL.

Witnesses to the signature of Robert Ord Ritchie:

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