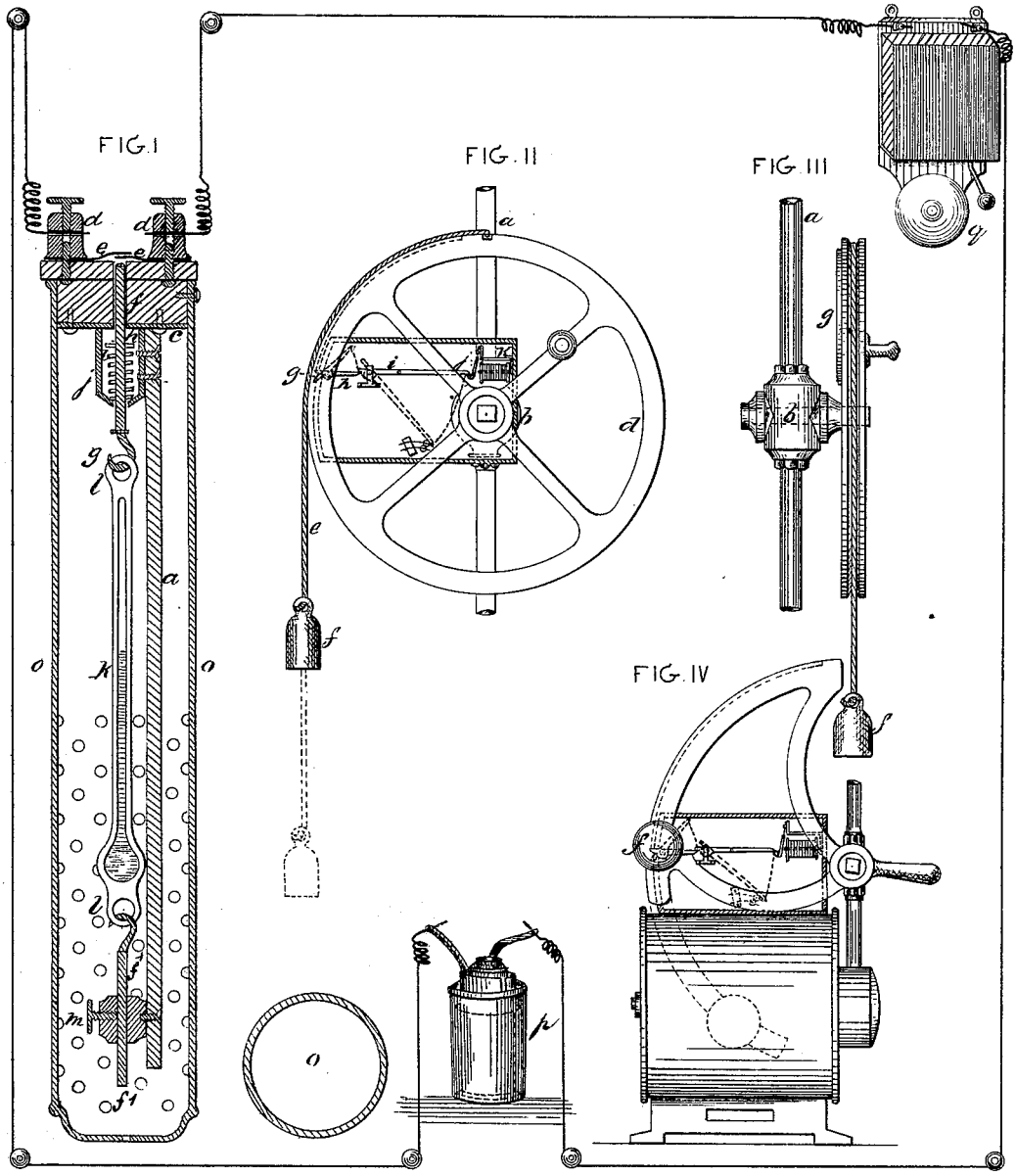
# A. A. FRECOT.

## Electro-Magnetic Fire and Gas Intercepter.

**No. 198,371.** **Patented Dec. 18, 1877.**

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# UNITED STATES PATENT OFFICE.

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## IMPROVEMENT IN ELECTRO-MAGNETIC FIRE-ALARM AND GAS-INTERCEPTER.

Specification forming part of Letters Patent No. **198,371**, dated December 18, 1877; application filed April 25, 1876.

*To all whom it may concern:*

Be it known that I, ALEXANDRE ATHÉNODORE FRÉCOT, of Paris, in France, have invented an Improved Fire-Alarm and Gas-Intercepter, of which the following is a specification:

This invention consists in an improved apparatus for signaling the outbreak of fires, and at same time, when so required, cutting off the gas from the burning premises.

Figure 1 of the accompanying drawing is a vertical section of the alarm arrangement. Fig. 2 is a side view of this alarm, in connection with the intercepting apparatus. Fig. 3 is an end view of the same.

*a*, Fig. 1, is a metallic bar, set in a block of vulcanite or other insulating material, the under side of which is provided with a metallic disk, *c*. On the top of this block are set the binding-screws *d d*, in communication with the conductors and with the two contact-springs *e e*, and through the center of the same slides a metal rod, *f*, provided at its lower end with a hook, *g*. Near the top of this rod is set a shoulder-piece, *h*, against which bears the upper end of the spiral spring *i*. *j* is a socket, inclosing and guiding this spiral spring. *k* is a tube similar to that of an ordinary thermometer, provided at each end with a ring, *l*. This tube being charged with water, mercury, or other suitable liquid, is heated to any given number of degrees beyond the normal temperature of the premises to be protected, and, thus heated, is sealed at the level of the expanded liquid. When mounted, as shown in the drawing, it is drawn downward to the distance necessary for bending the spring *i*, at which point the stalk *f'* of its retaining-hook *l* is secured by the pressure-screw *m*.

*o* is a perforated tubular sheath inclosing the whole apparatus, which may be set at any convenient point or points of the premises to be protected. *p* is the battery, and *q* the alarm-bell.

When, through the outbreak of a fire, the temperature in the vicinity of the apparatus is raised beyond the degree to which the dilatation of the liquid in the tube *k* has been adjusted, the bulb of the latter bursts and liberates the spring *i*. The latter, forcing upward the rod *f*, presses together the contact-springs *e e* to complete the circuit and bring into play the alarm-bell *q*, which continues to sound until the current is again interrupted.

Figs. 2, 3 are side and end views of the alarm above described, combined with the gas-intercepting apparatus. In these figures, *a* is the inlet-pipe; *b*, the stop-cock, on the key of which is fixed a grooved pulley, *d*, carrying a cord or chain, *e*, terminated by the counterpoise *f*. *g* is a stop-piece on the pulley, bearing on one end of the trigger *h*, the free extremity of which is held by one end of the lever *i*. The opposite extremity of this lever rests in a notch formed in the keeper *j* of the electro-magnet *k*, which is included in the circuit of the battery and alarm apparatus, Fig. 1. When the circuit is completed by the rupture of the tube *k* of the alarm, the keeper *j*, attracted by the magnet, sets free the lever *i* and trigger *h*, thus disengaging the counterpoise *f*, which, in falling, carries round the pulley *d*, and closes instantaneously the stop-cock.

Fig. 4 represents a modification of the arrangement, in which the movable counterpoise is replaced by a fixed weight, *f*, secured to the rim of the pulley.

It is obvious that the apparatus above described may be applied to the instantaneous opening or closing of steam or water pipes; and that, if preferred, the electro-magnetic attachment may be replaced by any suitable mechanical equivalent for setting in motion the alarm-bell and disengaging-gear.

I am aware that tubes charged with mercury and other liquids have been employed in steam and fire gages or alarms, and therefore lay no exclusive claim to the same; but

What I claim is—

1. The metallic bar *a*, thermometer *k*, the hooked rod *f*, having stop or shoulder *h*, the spring *i*, the hooked rod *f'*, set-screw *m*, the contact-springs *e e*, binding-nuts *d d*, and suitable conductors, an electric battery, and an alarm-bell, all combined, constructed, and operating substantially as described, for the purpose specified.

2. The combination of the bar *a*, thermomter *k*, rods *f f'*, spring *i*, set-screw *m*, springs