

(No Model.)

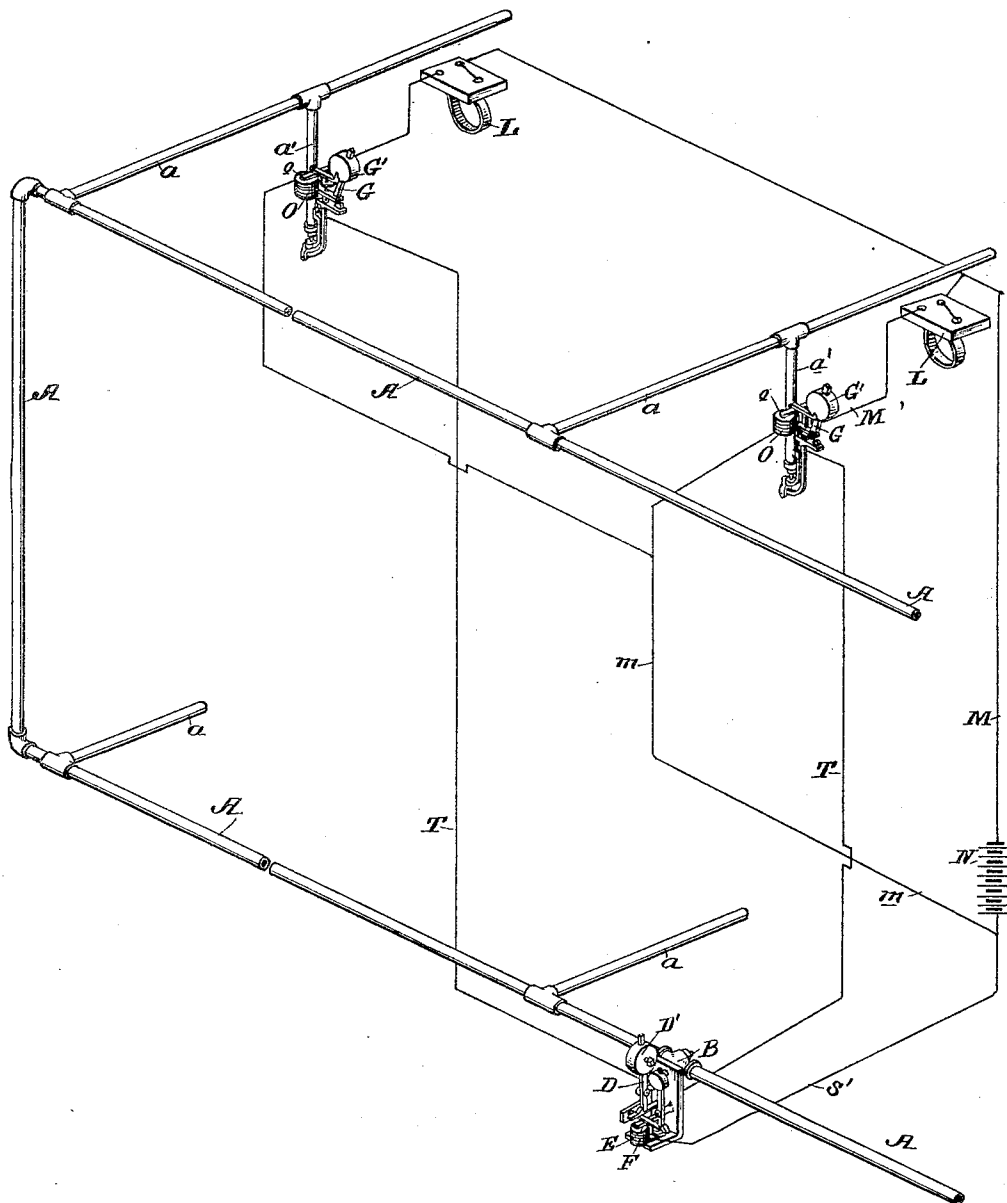
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J. WOLSTENCROFT & W. H. SOLEY.
FIRE EXTINGUISHER.

No. 461,089.

Patented Oct. 13, 1891.

FIG. 1.



WITNESSES:

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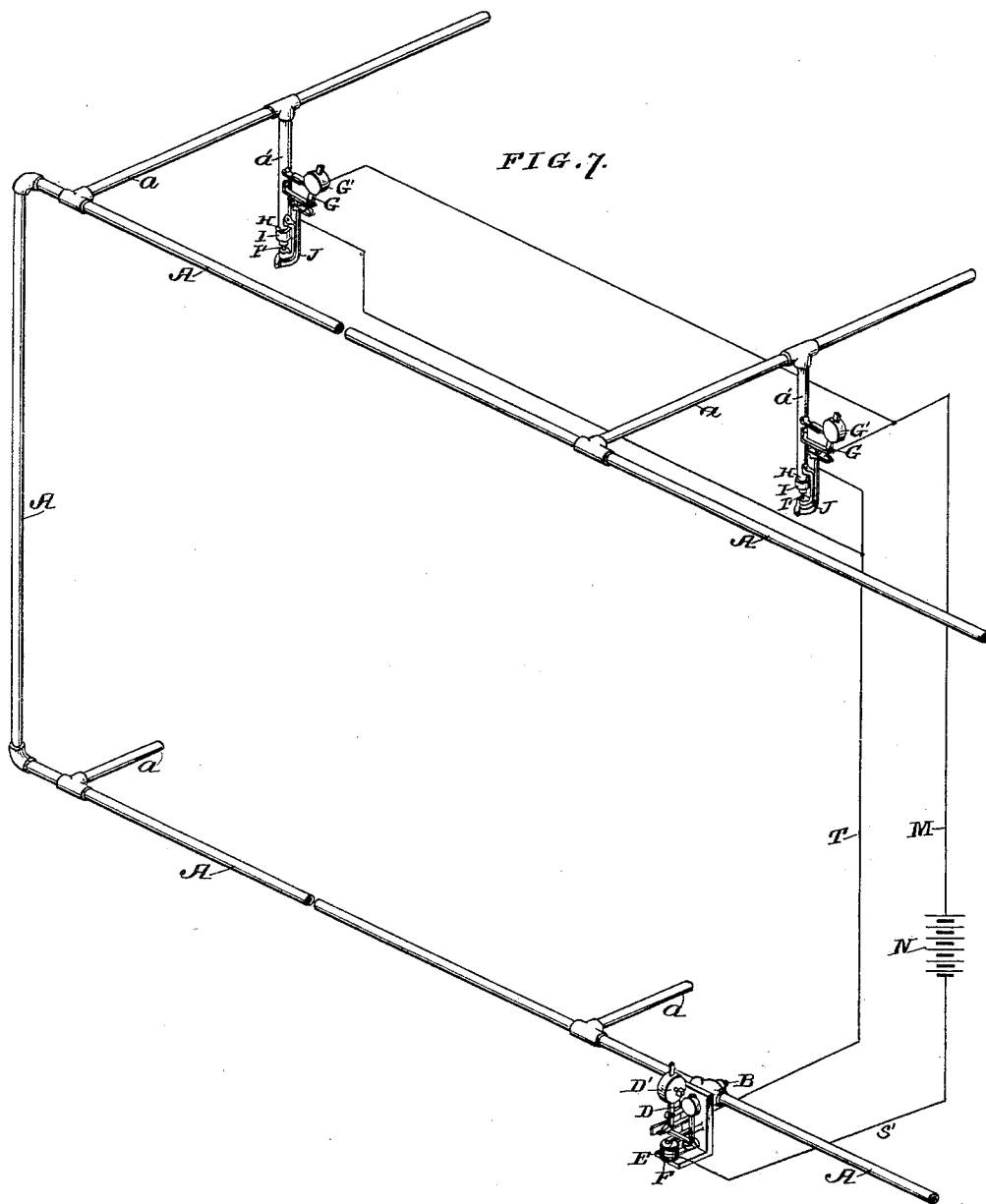
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UNITED STATES PATENT OFFICE.

JAMES WOLSTENCROFT AND WILLIAM H. SOLEY, OF PHILADELPHIA,
PENNSYLVANIA.

FIRE-EXTINGUISHER.

SPECIFICATION forming part of Letters Patent No. 461,089, dated October 13, 1891.

Application filed February 1, 1889. Serial No. 298,404. (No model.)

To all whom it may concern:

Be it known that we, JAMES WOLSTENCROFT and WILLIAM H. SOLEY, citizens of the United States, and residents of the city and county of Philadelphia, State of Pennsylvania, have invented a new and useful Improvement in Fire-Extinguishers, of which the following is a clear and exact description, due reference being had to the drawings which accompany and form a part of this specification.

This invention relates to devices for extinguishing fires in buildings by causing a supply of water to be turned on automatically and sprinkled wherever most needed. The object of said invention is to simplify and otherwise improve the mechanism used for such purposes, and in particular to make the device which opens each sprinkler act also as a means of opening the valve of the main pipe by closing circuit or otherwise, so that the current may flow freely through it.

In the accompanying drawings, Figure 1 represents a view in perspective of a system of water-pipes, circuit-wires, and the appliances connected therewith, which embody our invention. Fig. 2 represents a detail view, enlarged, in elevation, of the mechanism whereby the valve of the main water-pipe is immediately actuated. Fig. 3 represents a similar view of the device which immediately opens the sprinkler and closes the main circuit. Fig. 4 represents in detail vertical section, still further enlarged, the nozzle and rose of the sprinkler. Fig. 5 represents a modification of the device shown in Fig. 3, the views being similar. Fig. 6 represents a plan view of the device shown in Fig. 3. Fig. 7 is in all respects the same as Fig. 1, except that each sprinkler-controlling device shown herein is of the kind shown in Fig. 5.

A designates the main water-pipe supplying the branch pipes *a*, which run to the rooms and halls of a building for extinguishing fire.

B designates a valve working in a valve-casing B' in the line of said pipe and normally forced by a valve-spring B² into position for cutting off the water. The valve-stem *b* of said valve extends through the side of said casing and also through a fixed plate bracket C, so as to be in position to be struck by the lower end of a weighted lever

D, pivoted to a rigid arm C' of said plate or bracket C. The upper end of said lever carries the weight D' and inclines forward slightly, so that said weight will throw the lower end of said lever upward and backward against the end of the valve-stem, thereby forcing back the valve and turning on the water whenever said weighted lever D is released. Said lever is normally held by the engagement of a shoulder *d* on its lower end with a shoulder *e* formed on a spring-plate E, fastened to said bracket, this plate being the trip for the above-described valve-operating device. As shown in Figs. 1, 2, and 7, we generally prefer to operate this plate by an electro-magnet or pair of electro-magnets F, supported on a platform *f*, which extends rigidly out from the lower part of plate C and attracting an armature F', attached to the under side of spring-plate E.

G designates each of the weighted levers which open the sprinkling-nozzle H of the several rooms of the building. Each nozzle is provided with a removable cap I, which is also a rose, it being constructed with a solid central seat *i* and a series of perforations *i*² between this seat and the periphery. When the seat *i* is held against the end of the nozzle, the latter is closed. When the cap I is lowered a little, as in Fig. 4, the water, if turned on through the main pipe, will escape in a shower through said openings, and the annular space between the upper edge of the rose and the exterior of the nozzle. Each nozzle H forms the terminus of a short pipe *a'*, extending from one of the branch pipes *a*, and is detached therefrom by means of screw-threads *a*², Fig. 3. Each cap I is provided with a downwardly-extending rod I', detachable therefrom by means of screw-threads *i*³. The lower end of this rod rests normally on the horizontal lower part of a bent bar J, which is pivoted at its lower end to a bent bar J', rigid with nozzle H. When this lower part of bar J falls out of the horizontal position, the rod I' and cap I drop also, and the water, if turned on, showers, as above described. This pivoted bar J is normally held against displacement by the engagement of a shoulder *j* on its upper end with a shoulder *k* on the rear end of a small trip-lever K, piv-

oted to an arm or table K', which is rigid with said nozzle. The outer end of said trip-lever is arranged so that the weighted lever G will strike it in falling, and thereby release the bent bar J from the trip-lever K. The lever G is pivoted at its lower end to the said arm or table K' and inclines, so that the weight G', when released, will carry it down on the outer end of said trip-lever. As shown in Fig. 5, this tendency may normally be held in check by means of a fusible joint *g*, connecting a short rearwardly-extending arm *g'* of said weighted lever to a corresponding arm *g''*, extending forward from said nozzle. Of course the outbreak of fire near the fusible joint *g* will melt it and the weight G' will fall, with the result described.

As a rule we prefer to employ instead of these last devices a thermostat L of any known construction suitable to our purpose, circuit-wires M M' *m m*, a battery or other generator N, a pair of electro-magnets O, an armature *o*, controlled by said magnets, a trip-hook P, attached to said armature and engaging one side of a notch *p* in said weight, and a spring Q, which forces said hook into such engagement. The circuit is from generator N, through wire M, to the thermostat L, thence (when said thermostat is expanded by heat) through wire M' to electro-magnets O, thence by a short wire to an insulated contact-spring R, attached to nozzle H, and thence through a contact-plate *r*, with which the spring R is normally held in contact, and through wire *m*, leading from *r* to the generator N again. The spring-contact R is held against plate *r*, which may be a spring or not, as preferred, by the pressure of pivoted bar J, which is provided with an insulated stud *s* for that purpose. The circuit above described, therefore, endures for an instant only, its immediate effect being to energize the magnets O, which by attracting armature *o* draw the trip-hook P away from the weight G' and allow the lever G to fall, with the results before described. The contact-spring R, being thereby freed from the pressure of pivoted bar J, flies outward from *r* against another contact-plate S, and thereby closes the main circuit. This plate S has insulated attachment to arm J' aforesaid, and a circuit-wire T runs from it to the electro-magnets F, which operate the valve B, as described. Another wire S' ex-

tends from said magnets to the generator N, completing the circuit.

Each nozzle has its thermostat and its short-circuit wires connecting, as above described, so that the main circuit may be made through any one of them.

Having thus described our invention, what we claim as new, and desire to secure by Letters Patent, is—

1. A weighted lever, a device for holding it against falling, a thermostat-magnet and trip-hook for freeing it from said device, a trip-lever actuated by the fall of said weighted lever, and a pivoted arm released by said trip-lever, in combination with a cap, which is also a rose or sprayer supported by said bar, and a nozzle on which said cap fits for closing the same, but which is allowed to discharge through and above said cap when the latter descends, as set forth.

2. A valve, a main water-pipe controlled thereby, a spring bearing on said valve to close said pipe, and a weighted lever arranged to strike the stem of said valve and open it when released, in combination with a trip-engaging said lever, an armature to which said trip is attached, a magnet operating said armature, and circuit-wires and circuit-closing devices operating automatically, for the purpose set forth.

3. The contact-spring R, the contact-plates *r* and S, arranged as stated, the circuit-wires communicating severally with said spring and plates, and the pivoted bar J, bearing against said spring R to force it into contact with *r*, in combination with the weighted lever G and intermediate device for removing said pivoted bar from spring-contact R, the trip armature and magnet for freeing said weighted lever, the wires, thermostat, and generator completing the circuit, the valve-operating devices included in said circuit, and the main water-pipe and valve controlled by said devices, substantially as set forth.

In testimony of which invention we have hereunto set our hands at Philadelphia, Pennsylvania, this 22d day of December, 1888.

JAMES WOLSTENCROFT.
WILLIAM H. SOLEY.

Witnesses:

G. I. HARDING,
ABRM. J. DAVIS.