F. GRINNELL.

Automatic Fire Extinguisher.

No. 231,715. Patented Aug. 31, 1880.

Fig. 1.

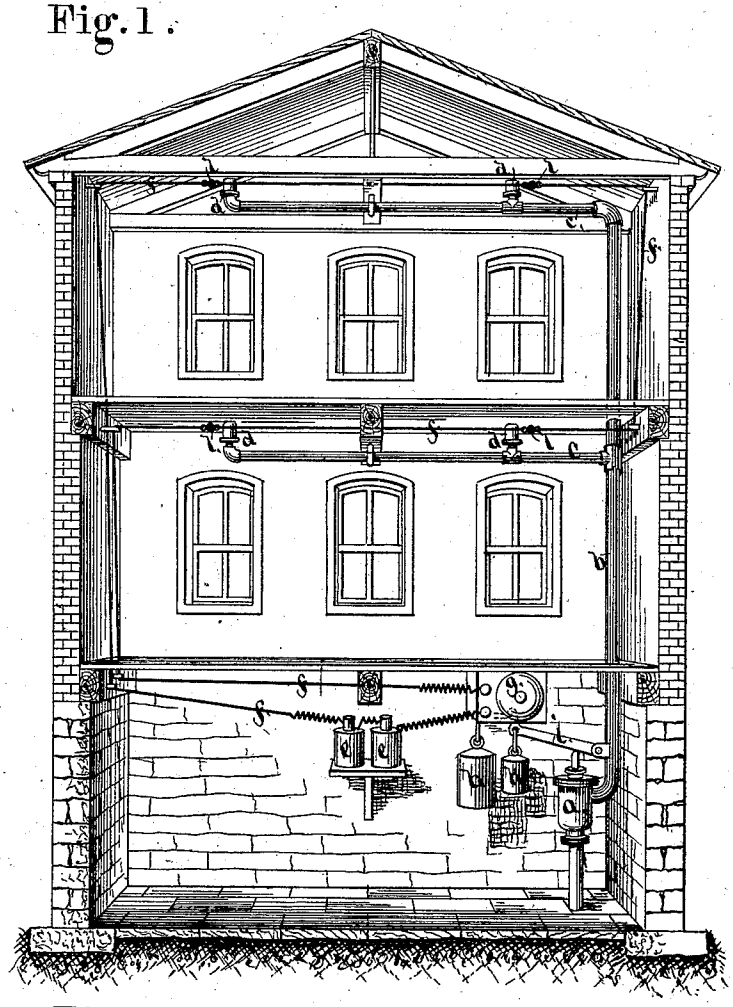


Fig. 2.

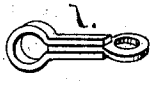


Fig. 3.



WITNESSES:

Joseph A. Miller Jr.

Wm. L. Ross.

INVENTOR:

Frederick Grinnell

by Joseph A. Miller III

Atty

N. PETERS, PHOTO-LITHOGRAPHER, WASHINGTON, D. C.

UNITED STATES PATENT OFFICE.

FREDERICK GRINNELL, OF PROVIDENCE, RHODE ISLAND.

AUTOMATIC FIRE-EXTINGUISHER.

SPECIFICATION forming part of Letters Patent No. 231,715, dated August 31, 1880.

Application filed February 28, 1880.

To all whom it may concern:

Be it known that I, FREDERICK GRINNELL, of the city and county of Providence, and State of Rhode Island, have invented a new and useful Improvement in Automatic Fire-Extinguishers; and I hereby declare that the following is a full, clear, and exact description of the same, reference being had to the accompanying drawings, forming part of this specification.

This invention has reference to that kind of automatic fire-extinguishers in which the heat of the fire releases the water or other fluid, which thus extinguishes the fire.

The invention consists in the combination, with a system of pipes arranged to distribute water or other fire-extinguishing liquid through a building, of a closed electric circuit extending through the building and connected with an electro-magnet, separable links secured together by solder fusible at a low temperature, said links being located in the closed circuit at any desired points throughout the building, and an alarm and supply-valve connected with and actuated by the operation of the electro-magnet, the parts being constructed and arranged substantially as will be hereinafter described, whereby the heat will melt the fusible solder and break the circuit and automatically sound the alarm, and also open the supply-valve.

Figure 1 is a perspective view, showing the interior of a building provided with a system of automatic fire-extinguishers and a system of electric wires, and an apparatus by means of which an alarm may be given and the water let on. Fig. 2 is a perspective view of a link, and Fig. 3 is a view of another link, used to unite the wire and arranged to separate when subjected to heat.

In the drawings, *a* represents a valve governing the supply of water to a system of pipes distributed through a building. *b* is the main supply-pipe. *c c* are branch pipes. *d d* are distributers, preferably constructed so that the action of heat will open them ready to distribute the water let onto the system by the valve *a*. These distributers may be stationary rose-heads, revolving sprinklers, or sections of perforated pipe.

e represents an electric battery, from which a continuous wire, *f*, properly isolated, extends through the building and returns to the box *g*. A branch wire from the battery *e* also extends to the box *g*, and both wires are united with a magnet arranged to hold a catch or stop in contact with a mechanism operated by the weight *h*, so that as long as the circuit is closed the mechanism will be retained, and as soon as the circuit is broken the mechanism is released, and the weight *h* will operate the same and sound an alarm, either by striking against a gong, opening a steam or air whistle, or any other means by which notice is given that the circuit is broken. At the same time the mechanism will release the arm *i*, and the weight *k* will open the valve *a* and turn on the water.

l l are links placed at intervals through the building, each end being connected with the wire, so that they form a continuation of the electric circuit.

These links may be made in various ways, two kinds being shown. The one in Fig. 2 consists of a loop of sheet metal, between which a tongue is secured by a solder fusible at a low temperature.

The link shown in Fig. 3 is made of two pieces of metal provided with eyes by which they are secured to the wires and soldered together by a solder fusible at a low temperature.

When a fire breaks out and the temperature of the room is raised to the melting-point of the solder the links will separate, the circuit will be broken, and as the current ceases to pass through the magnet the armature in the box *g* is released, the weight *h* operates the mechanism by gravitation and sounds the alarm, while it also releases the valve and allows the water to flow into the system of pipes and out of the open distributer.

I prefer to use distributers which are closed by some device which is acted upon by the rise of temperature, so that only such distributers as are near the fire will be opened, and the discharge of the water is confined to the vicinity of the fire. This not only confines the damage by water, but such an arrangement is more effective, as it concentrates all the available water on the fire.

I do not wish to confine myself to any special device for giving the alarm, or to any

special device for turning on the water; but I do prefer that they should be operated by the breaking of the closed circuit to insure greater security; for when by any means the line of wire is disturbed the alarm will be sure to sound, and as the distributers are closed when there is no fire, there will be no damage by water when the same is turned on by a false alarm.

I am aware that a fire-indicator has been operated by the expansion of a metal strip located in a closed electric circuit extending throughout a building, and hence would have it understood that I make no claim to such construction and combination of parts.

Having thus described my invention, I claim as new and desire to secure by Letters Patent—

1. The combination, with a system of pipes arranged to distribute water or other fire-extinguishing liquid through a building, of a closed electric circuit extending through the building and connected with an electro-magnet, and an alarm and separable metal links secured together by solder fusible at a low temperature, said links being located in the closed circuit at any desired points throughout the building, the parts being constructed and arranged substantially as described, whereby the heat will operate to melt the fusible solder and break the circuit and automatically sound an alarm, substantially as set forth.

2. The combination, with a system of pipes arranged through a building and a valve for regulating the supply of water to said pipes, of a closed electric circuit extending through the building and connected with an electro-magnet, devices for operating the water-supply valve by the action of the electro-magnet, and separable links secured by solder fusible at a low temperature, said links being located in the closed circuit at any desired points throughout the building, the parts being constructed and arranged substantially as described, whereby heat will melt the fusible solder and break the electric circuit and automatically open the valve admitting water to the system of pipes, substantially as set forth.

FREDERICK GRINNELL.

Witnesses:
JOSEPH A. MILLER,
JOSEPH A. MILLER, Jr.