

(No Model.)

M. L. BOSWORTH.
CHEMICAL FIRE EXTINGUISHER.

No. 515,460.

Patented Feb. 27, 1894.

Fig 1.

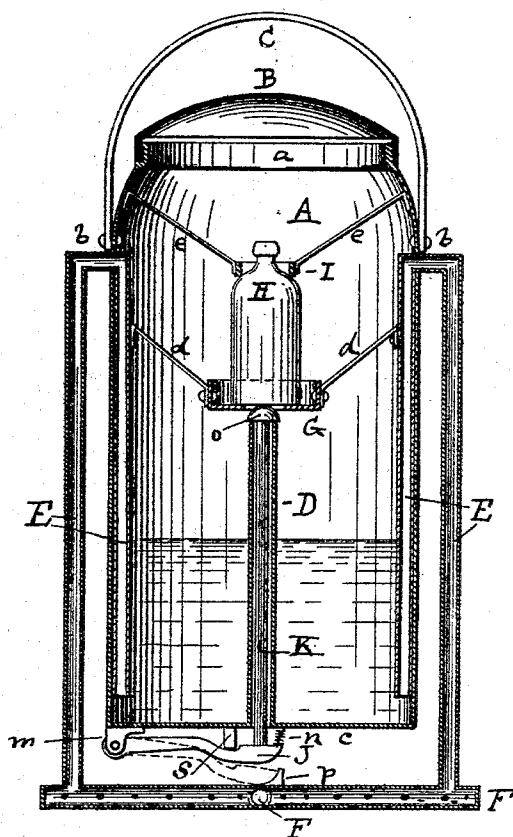
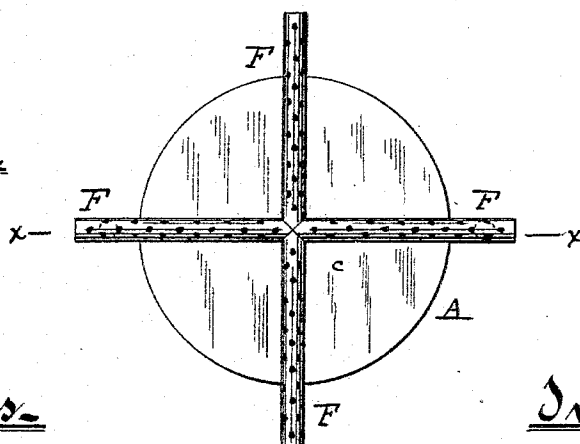


Fig 2.



Witnesses.

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CHEMICAL FIRE-EXTINGUISHER.

SPECIFICATION forming part of Letters Patent No. 515,460, dated February 27, 1894.

Application filed August 29, 1892. Serial No. 444,340. (No model.)

To all whom it may concern:

Be it known that I, MARTIN L. BOSWORTH, of the town of Warren, in the county of Bristol, in the State of Rhode Island, have invented a certain new and useful Improvement in Chemical Fire-Extinguishers; and I declare the following to be a specification thereof, reference being had to the accompanying drawings.

Like letters indicate like parts.

Figure 1 is a view of my improved fire-extinguisher in diametrical, vertical section on line *x x* of Fig. 2. Fig. 2 is a bottom plan view of my invention.

My invention is an automatic extinguisher for fires, and relates to the class of chemical fire-extinguishers, having a tank to contain water and means to discharge the same, and also having, within said tank, a breakable vessel or receptacle to contain a chemical substance, which is discharged into the water, when said vessel is broken, thereby charging the water with carbonic-acid gas.

My invention consists in the combination of parts and the construction of the device, as hereinafter particularly specified and as set forth in the claims.

A is a tank, preferably made of sheet metal and cylindrical in shape; but it may be made of any suitable material and in any other suitable form. It has a screw-threaded cover B fitting upon a neck *a*. It is suspended by a bail C, fastened at *b* and is hung upon a hook from the ceiling of a room, or otherwise properly supported in place. A central, open tube D extends up through the bottom *c* of the tank to a considerable height within the tank. Pipes E E extend up within the tank A from a point near the bottom thereof, are bent near the top of the tank and pass out and down outside the tank and enter discharging pipes F, which are perforated as shown. An annular, flanged shelf G is supported with the tank by the braces *d*. A bottle H, of glass or other fragile material, rests upon said annular shelf. A collar or ring I, held by braces *e*, surrounds the neck of the bottle, so as to prevent its vertical displacement upon said shelf.

On the bottom *c* of the tank, upon the under side thereof, are lugs *m*. A hammer J is pivotally mounted in said lugs and its end or

head extends to a central position beneath the tank, as shown. A spiral or other spring *n* properly mounted, gives to the hammer a forcible upward movement when the latter is free to move and a block *s*, extending from the bottom of the tank A, serves as a stop to limit the upward travel of the hammer when the latter is actuated by the spring.

A plunger K, having a head *o*, extends through the tube D. The head *o* of the plunger rests upon the upper end of said tube and the bottom of the plunger rests upon the upper plane surface of the head of the hammer J. The plunger head *o* is below and in close proximity to the bottom of the bottle H, the annular shelf G, by its central aperture, exposing the bottle to the action of the plunger, as hereinafter described.

A seat *p*, of metal, is secured to the upper surface of one of the discharge pipes F and is adapted to receive the convex or lower surface of the hammer-head. The hammer is depressed, against the action of the spring *n*, to the position indicated in Fig. 1 by dotted lines, and the spring *n* is thereby expanded. The hammer-head is then soldered to said seat *p* by a soft solder, fusible at a comparatively low temperature, say 140°, and the hammer is thus permanently fastened in the position shown by the dotted lines.

The tank A is filled with water to a proper height and the bottle is filled with the chemical substance, which generates the carbonic-acid gas. The device, being now ready for operation whenever the circumstances require, is hung by the bail upon any desired support in the apartment which is to be protected from fire. When a fire occurs in the apartment, as soon as the air in the room is heated to the degree at which said solder is fusible, the solder is melted and the hammer J, being no longer able to resist the action of the spring *n*, is drawn upward by the spring with great force and strikes against the lower end of the plunger K, thus driving the plunger upward within the tube D. The hammer is arrested in its upward travel by the stop *s*, which blow is communicated by the momentum of the plunger so caused to the bottom of the fragile receptacle H and breaks it. When the momentum of the plunger in its upward travel is expended by the breakage

of the bottle thereby, the plunger drops again by its weight down into the tube until prevented from further descent by the head *o* thereof coming into contact with the upper 5 open end of said tube. The collar *I* serves to hold down the bottle *H* upon the shelf *G*, so that the bottle is not displaced by the blow of the plunger *K*, but must be broken thereby. The chemical substance, contained in the vessel 10 *H*, then falls by its own weight, through the shattered bottom of said vessel, into the water below, in the tank; and carbonic-acid gas is thus generated which causes the effervescence of the water and the gaseous pressure, as in other chemical fire extinguishers. 15 The water thus charged with carbonic acid gas escapes from the tank through the pipes *E*, into and out of the perforated discharge pipes *F* and the fire is quickly smothered and 20 extinguished. The plunger *K* should be of a sufficient length to strike a free blow upon the bottom of the bottle *H*, when it is hit by the hammer *J*, and then to fall back by its weight upon the upper end of the tube.

25 The enlarged head *o* of the plunger, in combination with the upper end of the tube *D*, forms a valve, and is useful to prevent the escape of the gas, down through the tube to the external atmosphere. The gas and water 30 are thus compelled to force their way out through the pipes *E*, *F*, and the water, charged with gas, is delivered in jets, thus covering a wider area. If desired, a packing may be put on the plunger beneath the head *o*, or 35 upon the upper end of the tube *D*, to close the opening there more effectually.

It is evident that, instead of solder as a detaining means to hold the hammer against the operation of the spring, any mechanical 40 thermostat may be used to engage said hammer, until the device is actuated by heat; as, also, that the hammer may be so constructed and located as to operate by gravitation, when it is released, instead of being actuated by a 45 spring; but these modifications are mechani-

cal equivalents of the elements above specified and are within the scope of my invention.

So far as I am aware, I am the first to provide a chemical fire-extinguisher with automatic devices to break the vessel, which holds 50 the chemical substance, and precipitate the same into the water in the tank, when such automatic devices are released by heat and are free to work.

I claim as a novel and useful invention and 55 desire to secure by Letters Patent—

1. In a chemical fire-extinguisher having a tank, discharge pipes and a fragile receptacle for chemicals, the combination of the tube *D* opening through the tank bottom, and the 60 plunger *K* mounted and movable in said tube and provided with an enlarged head *o*, which in conjunction with the end of said tube is adapted to serve as a valve, and a hammer mounted upon the tank and adapted to actu- 65 ate the plunger substantially as and for the purpose specified.

2. The improved automatic fire-extinguisher herein described, consisting of the tank *A* having the cover *B*, the central tube *D*, the 70 plunger *K* mounted and movable in said tank and provided with a valve or head *o*, the pipes *E* extending from said tube and opening into the pipes *F*, the pipes *F* having perforations, the annular shelf *G* and collar *I* 75 supported in the tank by braces *d e*, the fragile vessel *H* supported in position by the shelf *G* and ring *I*, the seat *p* secured to one of the pipes *F*, the stop *s* extending from the bottom of the tank the hammer *J*, pivotally mounted 80 upon the tank, adapted to enter the seat *p* and fastened therein by an easily fusible solder and provided with a spring *n*, all operating and substantially as and for the purpose specified.

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Witnesses:

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