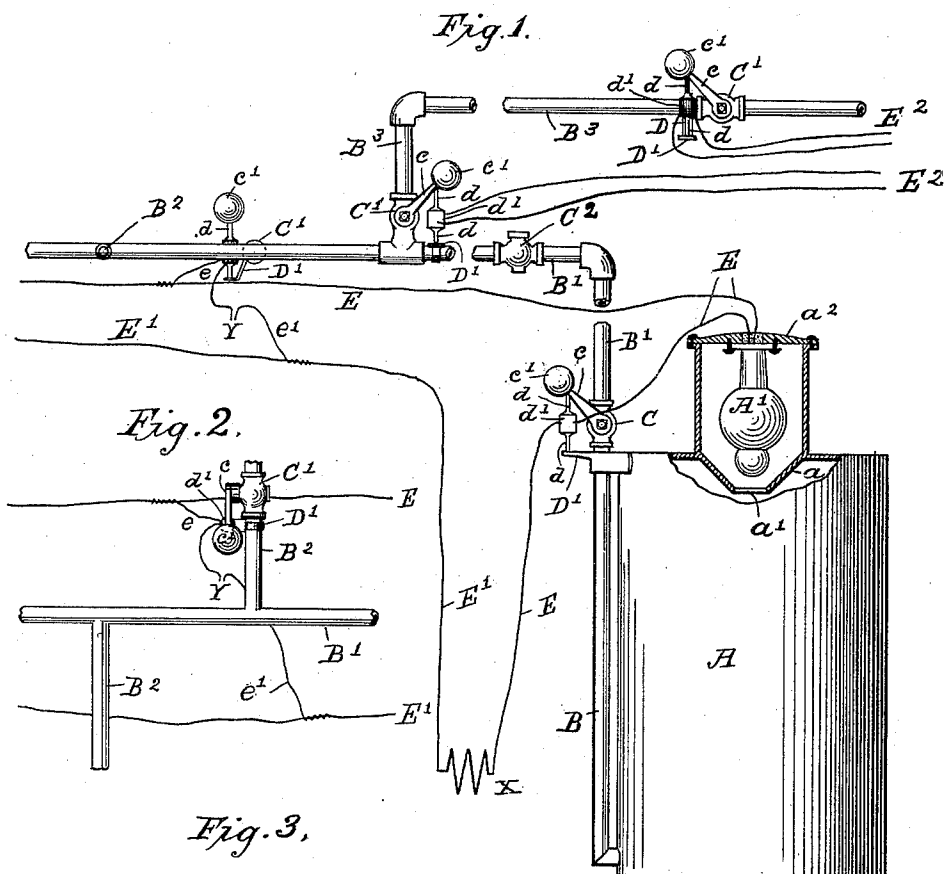


(No Model.)

C. M. RADFORD.
FIRE EXTINGUISHER.

No. 465,801.

Patented Dec. 22, 1891.



Witnesses
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UNITED STATES PATENT OFFICE.

CASSIUS M. RADFORD, OF EAST CONCORD, NEW HAMPSHIRE.

FIRE-EXTINGUISHER.

SPECIFICATION forming part of Letters Patent No. 465,801, dated December 22, 1891.

Application filed March 2, 1891. Serial No. 383,434. (No model.)

To all whom it may concern:

Be it known that I, CASSIUS M. RADFORD, a citizen of the United States, residing at East Concord, in the county of Merrimac and State of New Hampshire, have invented certain new and useful Improvements in Electric Releasing Devices for Fire-Extinguishers and Chemical Generators for Same; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

This invention relates to releasing devices for valves in water or chemical fire-extinguishing pipes and to the automatic mixing of the chemicals in a generator at the time of a fire, the object being to obtain the best possible results from the chemicals by keeping them separate until required for use and to prevent the accumulation of rust in the water-pipes by allowing them to remain empty and dry, except in case of fire in the apartments through which they run, when the supply-valve is opened by the action of heat.

My improved system involves the use of a chemical generator having two compartments, or a generator comprising two vessels for holding the chemicals, the contents of which are united by the application of electricity, and valves of suitable construction provided with a cartridge for holding them closed and to be exploded by electricity for opening the same. The electricity may be applied for the foregoing purposes by means of thermostats located one in each apartment of a building, and thus operate my improved system automatically, or it may be applied by other means at a safe distance from the burning apartment.

My invention will be fully set forth in the following specification and claims and clearly illustrated in the accompanying drawings, forming a part thereof, of which—

Figure 1 represents one of my improved chemical generators in broken elevation, showing a discharge-pipe which may lead to various apartments in a building, to which is connected a water-supply pipe, and suitable valves which are supplied with my improved automatic electric-operating appliances. Fig. 2 is a broken plan view of the main pipe from generator, with branch pipes, and valves

which may be opened singly upon occasion by my improved electrical appliances. Fig. 3 is an enlarged detached view of one of my improved cartridges and a portion of the electric wires passing therein, by means of which the cartridge is exploded for operating a valve. Fig. 4 is an enlarged detached sectional view of the vessel which is placed in a generator and which contains one of the chemicals, and a cartridge with the electric wires passing therein, by which the vessel is exploded and its contents precipitated upon the chemicals in the bottom of the chemical generator.

Similar reference-letters indicate corresponding parts throughout the various views.

The chemical generator A may be of any desired size and provided with one or more discharge-pipes B, to which a main conductor B' may be coupled, from which any number of branch conductors B² may be passed into various apartments. Near the top of this generator a concaved horizontal division *a* is provided, having an orifice *a'*, connecting the upper with the lower compartment. The top or cover *a*² of the generator is firmly secured thereon, and should be packed or sealed, so as to prevent leakage when the chemicals are being converted into gas. Part of the chemicals might be deposited in the upper chamber of the generator by arranging a cover for the orifice *a'*, which could be opened by electricity; but I prefer to use for this purpose a separate vessel A', the lower part of which is made somewhat thinner than its remainder, and in the small and thin bottom portion is placed a cartridge A², which may be exploded by means of electric wires passing through the cover *a*² of the generator down through the neck of the vessel A' and into said cartridge, the said vessel A' being suspended from the cover *a*² of the generator A. If desired, the neck of the vessel A' may be sealed, in addition to an ordinary cork, by plaster-of-paris or its equivalent, which at the same time will seal the neck of said vessel to the cover *a*², and also fill up and seal the opening in said cover through which the electric wires leading to the cartridge pass, as shown in Fig. 1.

Valves C are supplied upon all the conductors B' and their branches B² of the con-

struction shown at C of the main conductor B', Fig. 1, having valve-handles *c*, provided with weights *c'* at their outer end, and these may be arranged so that the valve is closed when said handle is elevated, and open by force of gravity, or vice versa. These valve-handles are held up by supports D, consisting of two props *d*, united by means of a shell *d'*, which may be composed of glass, wood, or cardboard, containing any convenient explosive or combustible material, as shown in Fig. 3. These shells *d'* are exploded by electricity passing upon wires, which enter the shells and are connected therein by a piece of platinum wire *e*, which ignites the explosives, thus breaking the shell and causing the props *d* to become separated and to fall.

Various supports D' may be applied to the pipes at the points required to carry the lower end of the valve-handle supports D, as indicated.

From a battery X two wires E E' are passed through a building, taking the course of the main pipe or conductor B'. Of these two wires the wire E is connected with the shell *d'* of the valve C in the manner shown in Fig. 3, said wire passing thence to and connecting in the same manner with the cartridge *a*² of the chemical-jar A', located within the generator A.

Each branch conductor B² will be provided with a valve C', having counterweighted handles *c*, which are held elevated by an explosive prop D.

The wires E E' are disconnected, except at the time of fire being present at any point along the line, and then they are instantly connected in the following manner: A branch wire *e*, connecting with a cartridge, as seen in Fig. 3, is attached to the wire E and a branch *e'* to the wire E', and their free ends Y are

connected with a thermostat in a manner to cause them to complete a circuit from the battery through both wires E E' at such time as the temperature shall have reached a given point, at which time the valve C at generator is instantly opened and the chemicals in the jar A' precipitated upon those in the lower part of the generator and allowing the pressure of gas free exit through the conductors B B' B² to the apartment where the fire is. In case the use of water may be also desired a check-valve C² will be placed upon the pipe B' to prevent the entrance of water to the generator, and a water-conductor B³ connected with the pipe B' at a point forward of said check-valve, and upon this water-conductor B³ may be placed one or more of the valves C', whose valve-handle props D will be exploded by independent wires E, which may be operated at a safe distance from the fire.

Having described my invention, what I claim is—

In a fire-extinguisher, the combination, with a gas-generator, of pipes communicating therewith, provided with weighted valves, a support on the pipe for each valve, a separable prop for each valve, one end of which rests upon the support and the other end engages with the weighted portion of the valve, said prop comprising a shell and two end pieces projecting from the shell, an explosive in the shell, and the wires of an electrical circuit communicating with the explosive within the shell.

In testimony whereof I affix my signature in presence of two witnesses.

CASSIUS M. RADFORD.

Witnesses:

J. B. THURSTON,
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