J. W. STANTON.

Apparatus for Extinguishing Fire.

No. 202,067. Patented April 2, 1878.

Fig. 1.

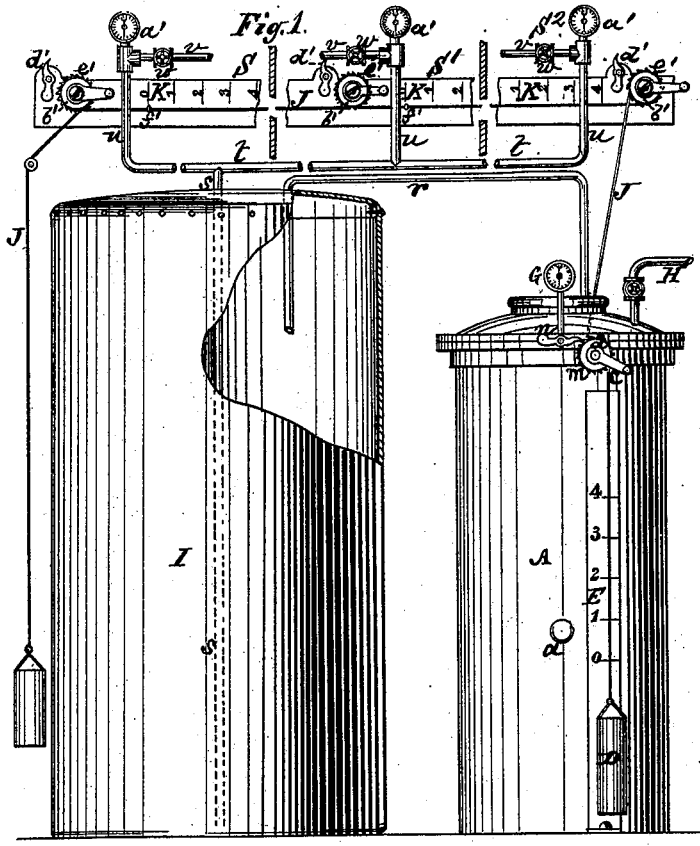


Fig. 2.

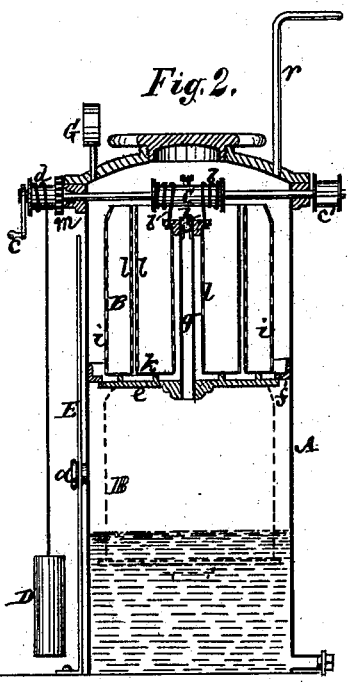
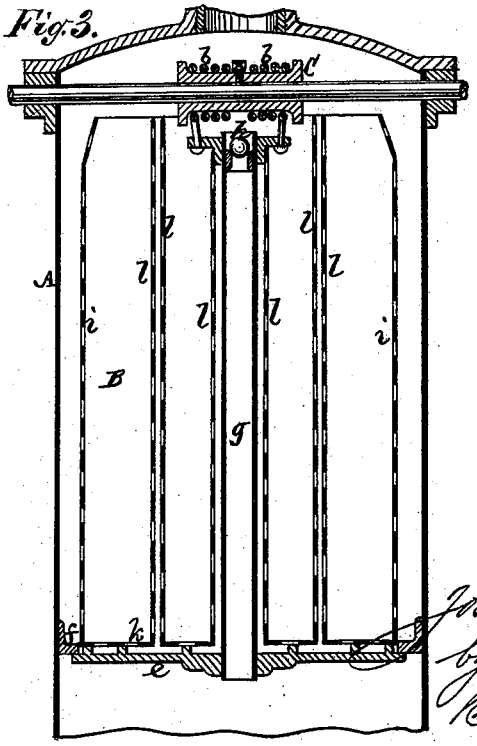


Fig. 3.



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JOHN W. STANTON, OF BROOKLYN, NEW YORK.

IMPROVEMENT IN APPARATUS FOR EXTINGUISHING FIRES.

Specification forming part of Letters Patent No. **202,067**, dated April 2, 1878; application filed February 20, 1878.

To all whom it may concern:

Be it known that I, JOHN W. STANTON, of the city of Brooklyn, in the county of Kings and State of New York, have invented certain new and useful Improvements in Apparatus for Extinguishing Fires, of which the following is a description, reference being had to the accompanying drawings, forming part of this specification.

This invention relates to fire-extinguishing apparatus in which a carbonic-acid-gas generator is used, and in which the acid cylinder or chamber has or may have combined with it a raising and lowering basket or perforated cage, and means for controlling the rise and fall of the basket within the cylinder from the exterior thereof.

The invention consists in various novel constructions of such basket or cage containing one of the chemical agents used in the generation of the said gas, and in various combinations, with said generator, of means for operating said basket, and for discharging a fire-extinguishing liquid by the pressure of said gas at different points or places, and means for separately controlling the action of the gas-generator from said points or places. Such apparatus may be used to advantage in hotels and other buildings, also on board ship for extinguishing fire in the hold and at different points or places throughout the vessel.

In the accompanying drawings, Figure 1 represents a front elevation of a fire-extinguishing apparatus constructed in accordance with my invention; Fig. 2, a vertical section, in a plane at right angles to Fig. 1, of the gas-generating portion of the apparatus; and Fig. 3, a similar view of said generator in part on a larger scale.

A is the outer case or vessel of a carbonic-acid-gas generator. This case is preferably in the form of an upright cylinder, and may be made of metal. The lower portion of said case or cylinder serves to contain the necessary acid, which is supplied to it by or through a nozzle, *a*, and the upper portion of said cylinder has within it a basket or cage, B, which contains the necessary salt that, when brought into contact with the acid, causes carbonic-acid gas to be evolved.

The acid may be sulphuric of any suitable strength, and the salt be soda or other carbonate of alkali.

I do not, however, restrict myself to any particular chemical agents for producing the fire-extinguishing gas.

When it is desired to liberate or produce the gas, the basket B, containing the soda, is lowered so as to more or less immerse it within the acid in the lower portion of the cylinder A, the quantity of gas or pressure generated being dependent upon the depth of the basket's immersion in the acid. The immersion and removal of the basket in and out of the acid may be effected by means of a windlass, C, and copper-wire rope or other suitable connection *b*, said windlass extending across the upper interior portion of the cylinder A, and being operated from the outside of the cylinder A by means of a crank, *c*, or otherwise. A balance-weight, D, connected by cord, wire, or chain with a pulley, *d*, on one end of the shaft of said windlass, serves to facilitate the operation of raising and lowering the basket B, and said upright, in being raised or lowered, moves up and down over or in proximity to a scale, E, by which the depth of immersion of the basket B in the acid within the lower part of the cylinder A, to produce a given pressure or quantity of gas, is or may be regulated.

G is a pressure-gage to indicate the pressure of the gas generated within the cylinder A, and H a pipe, controlled by a cock, for conveying the gas to one or more places when it is desired to use the gas directly in extinguishing a fire.

The basket B is of peculiar construction. Thus it is formed with a close bottom, *e*, that, when the basket is raised, shuts as a valve against an internally-projecting flange, *f*, within the cylinder A, to exclude all communication between the soda in the basket and the acid in the bottom of the cylinder A. It furthermore is constructed with an escape-pipe, *g*, up through it, closed by a valve, *h*, above, which opens by pressure from beneath. This escape-pipe serves to relieve the bottom of the basket from pressure of any gas that may be generated in the cylinder A by soda dropping from the basket into the acid be-

neath while raising the basket to close it against the flange *f*. But a prominent feature in the construction of said basket is the provision which is made by it for distributing the acid within the soda when the basket is lowered. To this end the basket is made not only with perforated outer sides *i*, but also with a perforated upper bottom, *k*, in free communication, through a space between it and the close bottom *e*, with the interior of the cylinder A when the basket is lowered away from the flange *f*; and, furthermore, said basket is fitted with one or more perforated cylinders or tubes, *l*, extending up through it. By such construction of the basket a more perfect or general distribution of the acid among the soda throughout the area of the basket is obtained.

Upon one outer end of the shaft of the windlass C is a ratchet-wheel, *m*, controlled by a pawl, *n*, which, when released, admits of the lowering of the basket B, and which, when engaged with the ratchet, serves either to hold the basket closed against the flange *f*, or to whatever extent it may have been lowered within the acid-holding portion of the cylinder A.

As, however, it is not always desirable to inject the fire-extinguishing gas directly upon the fire, but to use it either for the purpose of inducing a pressure upon any suitable gas-extinguishing liquid, or for impregnating the latter with said gas, and for inducing a pressure of the gas upon said liquid to expel it, I employ a separate tank or cylinder, I, into which a pipe, *r*, serves to conduct the gas as generated within the cylinder A.

The pipe *r* may be conducted to, or nearly to, the bottom of the tank I, and ascending from said tank, at a point near its bottom, is a discharge-pipe, *s*, for the liquid in said tank, which discharge-pipe connects with a general distributing-pipe, *t*. From this general distributing-pipe *t* are any number of branches, *u v*, leading to different rooms on the same floor of a building, or to different stories of the building, or to different chambers or localities. These branches may each be provided with a separate indicator, *a'*, to indicate the pressure of the liquid or gas controlling it, and with a separate cock, *w*, for discharging the fire-extinguishing liquid from either of said combined branches *u v*.

J is a wire rope or chain, arranged to extend throughout the several rooms or places within which the branches *u v* are arranged. This wire or chain passes over or around pulleys *b'* in the chambers or spaces occupied by the branches *u v*, and around a pulley, *c'*, on the shaft of the windlass C, to which it is made fast at one end.

The pawl *n* is in constant gear with the ratchet *m*, except when it is desired to lower the basket B, when said pawl is liberated. This liberation of the pawl *n* may be done either directly by hand or by any one or other of the pulleys *b'* in the room or place in which there is a fire to be extinguished without losing time to relieve it directly by hand. To make the latter course available—that is, the indirect release of the pawl *n* by either pulley *b'*—said pawl *n* is weighted, so that when turning or straining on the windlass C in a direction to release the pawl *n* by means of a crank or handle on said pulley *b'*, the pawl *n* clears the ratchet *m*, and the basket B is at liberty to drop into the acid till arrested by throwing a pawl, *d'*, into gear with a ratchet, *e'*, on or connected with either pulley *b'*. In this way or by these means the basket B may be controlled, as regards its immersion in the acid of the cylinder A, from any one of the chambers or compartments S S^1 S^2 in which the pulleys *b'* are arranged, and the liquid from the tank I expelled by the pressure of the gas derived from the cylinder A be restricted to such compartment to extinguish a fire therein. This lowering of the basket B from one or more of the compartments S S^1 S^2 may be adjusted to determine or increase, if necessary, to any desired extent the amount of gas generated by providing the wire rope J with a series of knots or projections, *f'*, arranged to travel over or in close relation to scales K, divided to correspond with the scale E of the gas-generator.

Thus the apparatus may be controlled as regards its extinguishing action from different points at different distances apart, and from any number of chambers or compartments, three only being shown by way of illustration.

Various equivalents for the windlass C, including a screw, may be used to raise and lower the basket B and suitable changes in the details for operating such lifting and lowering device may be made. Thus rods and cranks may take the place of wire ropes or chains and pulleys.

I claim—

1. The rising and falling basket B, constructed with a close bottom, *e*, in combination with the flange or projection *f* within the cylinder A, essentially as and for the purpose herein described.

2. The rising and falling basket, having perforated sides, a perforated upper bottom, and one or more perforated distributing cylinders or tubes within it, substantially as and for the purpose specified.

3. The rising and falling basket B, having a close bottom, *e*, and constructed with a vent or escape-tube, *g*, essentially as described.

4. In an apparatus for extinguishing fire by the joint action of carbonic-acid gas and a liquid expelled by the pressure of said gas, the combination, with the adjustable cage or vessel containing one of the agents used in the generation of the gas, of means separately controllable from different points or places to liberate and control the action of said cage, and distributing pipes or branches, also sepa-

rately controllable from said points or places, for regulating the discharge at said points or places of the liquid expelled by pressure of the gas, essentially as described.

5. The combination of the gas-generating cylinder or vessel A, the rising and falling basket B within said cylinder, the windlass C, the ratchet *m* and its pawl *n*, the tank I, the pipes *r s*, the liquid-distributing pipe *t*, having branches leading to different points or places, the wire rope J, the pulleys *b'*, the ratchet *e'*, and the pawls *d'*, substantially as and for the purpose herein set forth.

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