

JOSEPH GARDNER.

Improvement in Fire Extinguishers.

No. 122,244.

Patented Dec. 26, 1871.

Fig. 1.

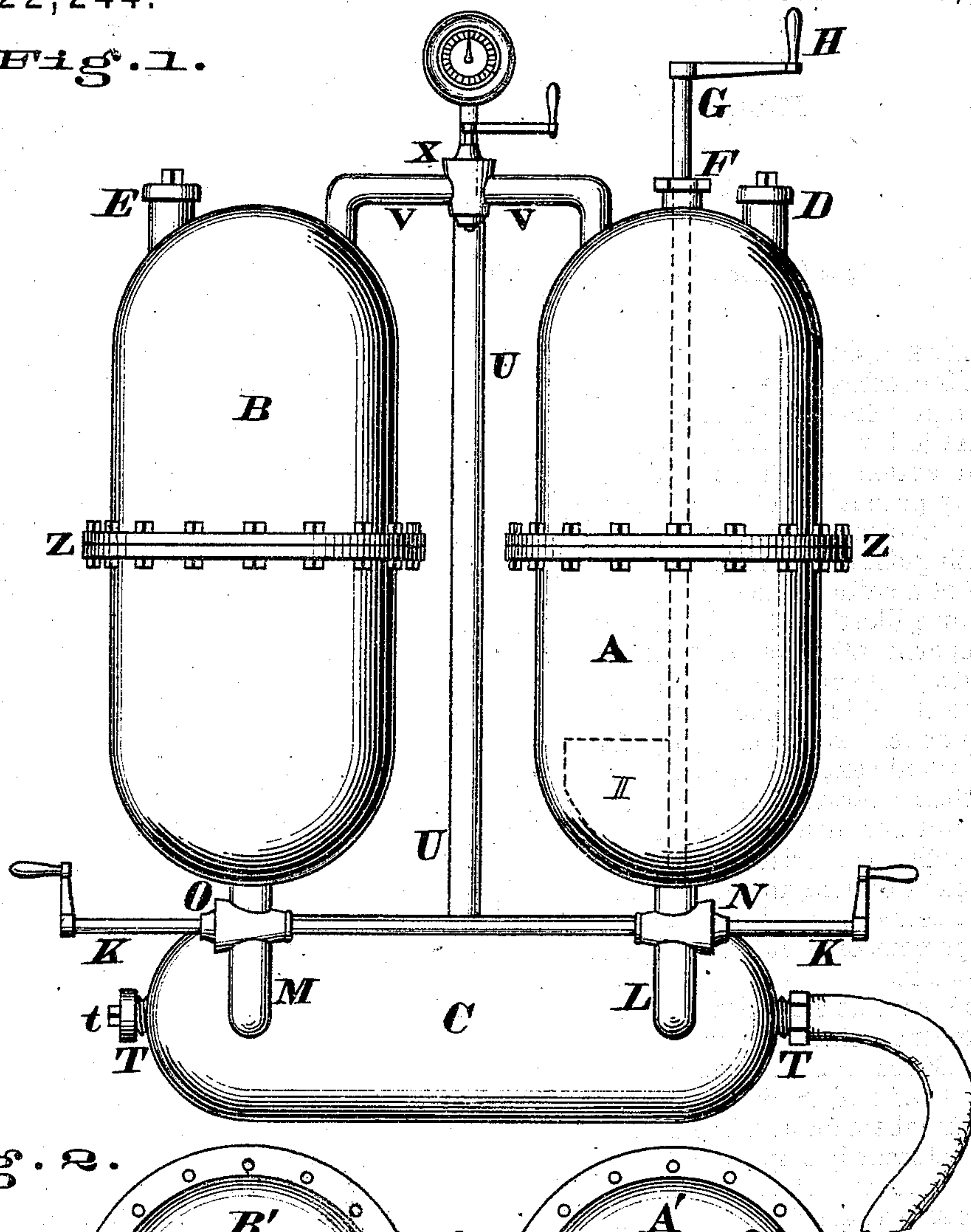
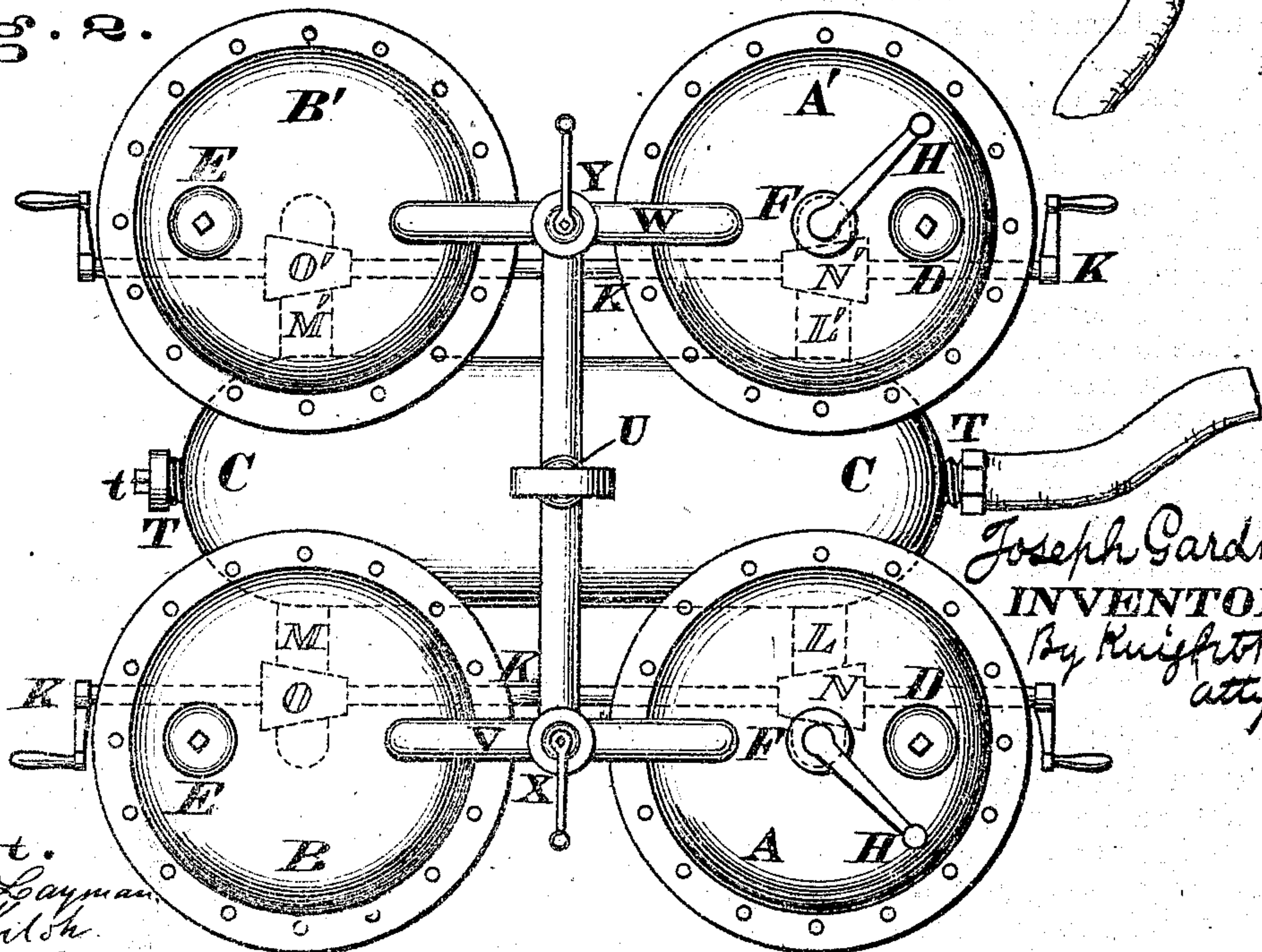


Fig. 2.



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JOSEPH GARDNER, OF LOUISVILLE, KENTUCKY.

IMPROVEMENT IN FIRE-EXTINGUISHERS.

Specification forming part of Letters Patent No. 122,244, dated December 26, 1871.

I, JOSEPH GARDNER, of Louisville, Jefferson county, Kentucky, have invented certain new and useful Improvements in Fire-Extinguishers, of which the following is a specification:

This invention, like the one which forms the subject of my patent of 14th of February, 1871, relates to that class of portable apparatus in which a fire-extinguishing gas is generated by the combination of a suitable acid solution with an alkaline one, and, like that of said previous patent, comprises separate alkaline, acid, and mixing-chambers; and my invention comprises an arrangement of the faucets which discharge from the acid and alkali chambers, respectively, into the mixing-chamber wholly exterior to said chambers, and so uniting their operative spigots as to make their opening and closing action simultaneous. My invention further comprises an arrangement of two or more pairs of acid and alkali chambers or reservoirs in connection with one mixing-chamber, an arrangement of equalizing-pipe or pipes, and other features.

Figure 1 is a side elevation, and Fig. 2 is a plan of a fire-extinguisher with my improvements.

A A' B B' are four separate cylindrical vessels, of which A A' and B B' are respectively reservoirs or chambers for alkaline and acid solutions such as customarily employed in this class of apparatus. C is my mixing-chamber. The said reservoirs are, at their upper ends, provided with screw-threaded caps D and E, which, when removed, permit said reservoirs to be charged with their appropriate compounds or solutions. Each alkaline-reservoir A A' has a stuffing-box, F, to receive a rod or shaft, G, whose upper end outside of the reservoir has a handle or crank, H, and whose lower end within the reservoir is armed with one or more blades or agitators, I. The above-described parts may be identical in form and operation with those in my patent aforesaid except in the isolation of the mixing-chamber, the duplication of the reservoirs, and the slight change in position of the screw-caps D and E, which permits the stuffing-boxes F of the alkaline stirrer to be independent of the screw-caps. Pipes L M L' M' connect the bottoms of the reservoirs with the mixing-chambers C, the said pipes being opened and closed by the cocks N O' N O', substantially as in my aforesaid patent, except that the said cocks are wholly exterior to the said chamber C and that the alkali and acid cocks of each respective pair have their plugs or spigots connected by a rod, K, so that opening or closing either

simultaneously opens or closes the other one. The chamber C has one or more nozzles, T, for attachment of suitable hose or pipe. When only one nozzle is used the other one is closed by a screw-cap, t. Rising from the top of the chamber C is an equalizing-pipe, U, which communicates, by branches V W, with the upper parts of the reservoirs. Cocks X Y enable the opening or closing one or both of these branches. This communication V, being opened, at once equalizes the pressure in the mixing-chamber and in the two or four, as the case may be, reservoirs, and consequently enables both acid and alkali to discharge into the mixing-chamber without hindrance and in proper relative proportions. A single pair of reservoirs may be employed, if desired, instead of four, as here shown; or, on the other hand, one or more additional pairs of reservoirs may be used in conjunction with one mixing-chamber. Over the customary forms of single-chambered extinguishers my triple or quintuple chambered apparatus has several very decided advantages. For example, no part of the vessels A B A B being required for gas, about eight times as much chemicals can be employed as in a single generating and containing chamber of their united capacity. The containing-chambers being separate from the generating-chambers, there is no need to use more chemicals at one time than is absolutely necessary; nor does it become necessary to recharge after every use of the apparatus; or, by the closure of one set of cocks, (discharge and equalizing,) one pair of chambers may be isolated and charged while the stream is being thrown with full force from the other, and, thus alternated, the action of machine may be kept up unremitting without shifting hose.

The generating-chamber, being always open, (by at least one of its ventages,) is never subject to an excessive pressure; and, when done with for the time being, ceases to generate gas; and, as all pressure then ceases, there is no leakage of material, as occurs, more or less, with the extinguisher of the common form.

Over the apparatus described in my previous patent the present arrangement, by its duplication of containing-chambers, is multiplied to that extent in efficiency and permanence of action because a single generating-chamber suffices for several pairs of containing-chambers.

The exterior arrangement of the discharging-cocks enables the ready inspection or repair of them, and dispenses with stuffing-boxes, while

their simultaneous action is a saving of time and simplification of their use.

Apparatus comprising two or more pairs of containing-chambers may be mounted on a wheeled carriage whose frame supports the flanges Z of the reservoirs and a platform for the operator convenient to the chambers, or may occupy a fixed location in some convenient part of the building it is intended to protect.

The equalizing-pipe to any pair of reservoirs may be so connected with their discharging-cocks as to be opened and closed simultaneously with said cocks; or said pipe may be destitute of cocks, or may be furnished with one or more valves adapted to close automatically in the event of such an accidental overturning of the apparatus as would spill the chemicals from one reservoir to another. This arrangement enables a constant stream of gas and mixed fluids to be kept up indefinitely by the alternate exhausting and filling of one set of chambers while the other set is in a reserve condition as to fullness, this being performed without shifting the hose from one part of the apparatus to another.

By this arrangement of gradual mixing of contents of chambers a much larger volume of chemicals may be used and yet the pressure be less than by any other arrangement hitherto devised; thus dispensing with much cost for and weight of material for construction of machine. As there are always free openings in the machine, all pressure necessarily ceases as soon as the cocks communicating with mixing-chambers are closed.

The operation of my device in its most complete form is as follows: The apparatus being properly mounted on wheels, all the reservoirs are filled with their proper chemicals, (no room being required in my extinguisher for gas,) and a hose being attached to one ventage, the other remaining closed, on reaching the fire the cocks N O are opened more or less, according to the necessity of the case, and in a few seconds a mingled stream of gas and non-combustible fluid will issue from the hose and may be directed onto the fire. Should another hose be required it may be attached to the remaining ventage and two streams be used. Should an increase of gas or of pressure be required the remaining reservoirs may be brought

into play or action; or, as soon as one pair of chambers is exhausted, they may have all communicating-cocks closed and the other set of chambers put in action while the first-named set are being recharged. The instant that the conflagration is extinguished the cocks N O are closed and the residue of acid and alkali in the reservoirs is reserved in complete efficiency for future use.

I do not claim an apparatus in which a pump is necessary for forcing one or more liquids into a mixing-chamber. My apparatus is so arranged as to dispense entirely with a pump. I am aware also that fire-extinguishers have been made with separate chambers for containing chemicals for producing carbonic-acid gas, said chemicals being brought together in a common pipe. My invention differs from this in providing a separate chamber to afford opportunity for successful and complete mixing.

Claims.

I claim as new and of my invention—

1. The provision, in a portable fire-extinguisher, of one or more pairs of reservoirs and a generating-chamber, with which they communicate by two simultaneously-acting cocks or valves, substantially as and for the purpose set forth.

2. In a fire-extinguisher of three, five, or more chambers, the combination of the pipes L M, external cocks N O, and an equalizing-pipe or pipes U, (with or without valves or cocks,) all as set forth.

3. In this connection, the simultaneously-acting cocks N O, communicating from the reservoirs to the mixing-chambers, and exterior to the latter, for the object designated.

4. The provision, in connection with a mixing or generating-chamber, of two or more pairs of acid and alkali chambers, arranged and adapted to operate substantially as set forth.

In testimony of which invention I hereunto set my hand.

JOSEPH GARDNER.

Witnesses:

GEO. H. KNIGHT,
JAMES H. LAYMAN.

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