

J. S. TIBBETS.
Fire Extinguishers.

No. 143,203.

Patented September 23, 1873.

Fig. 1.

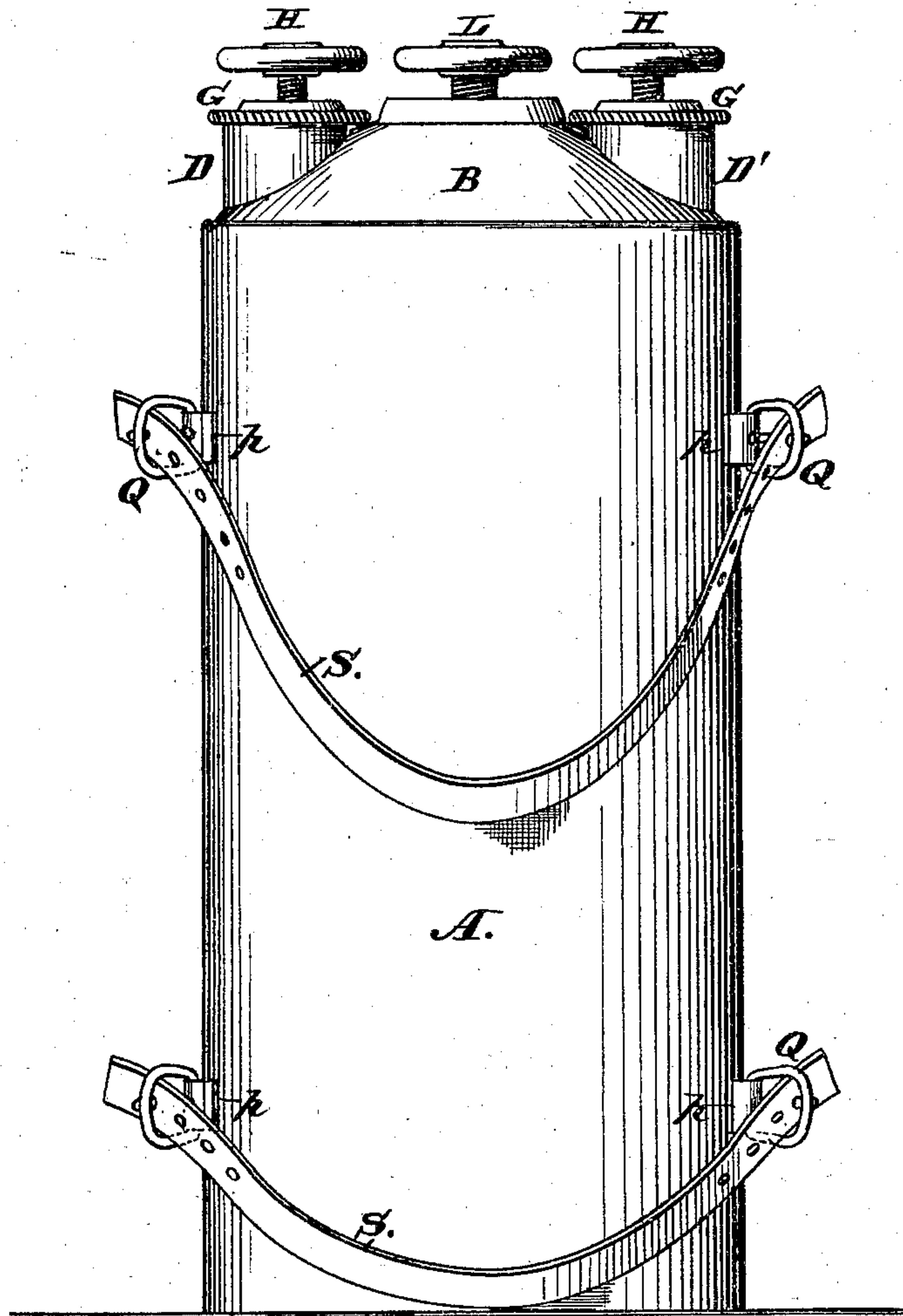
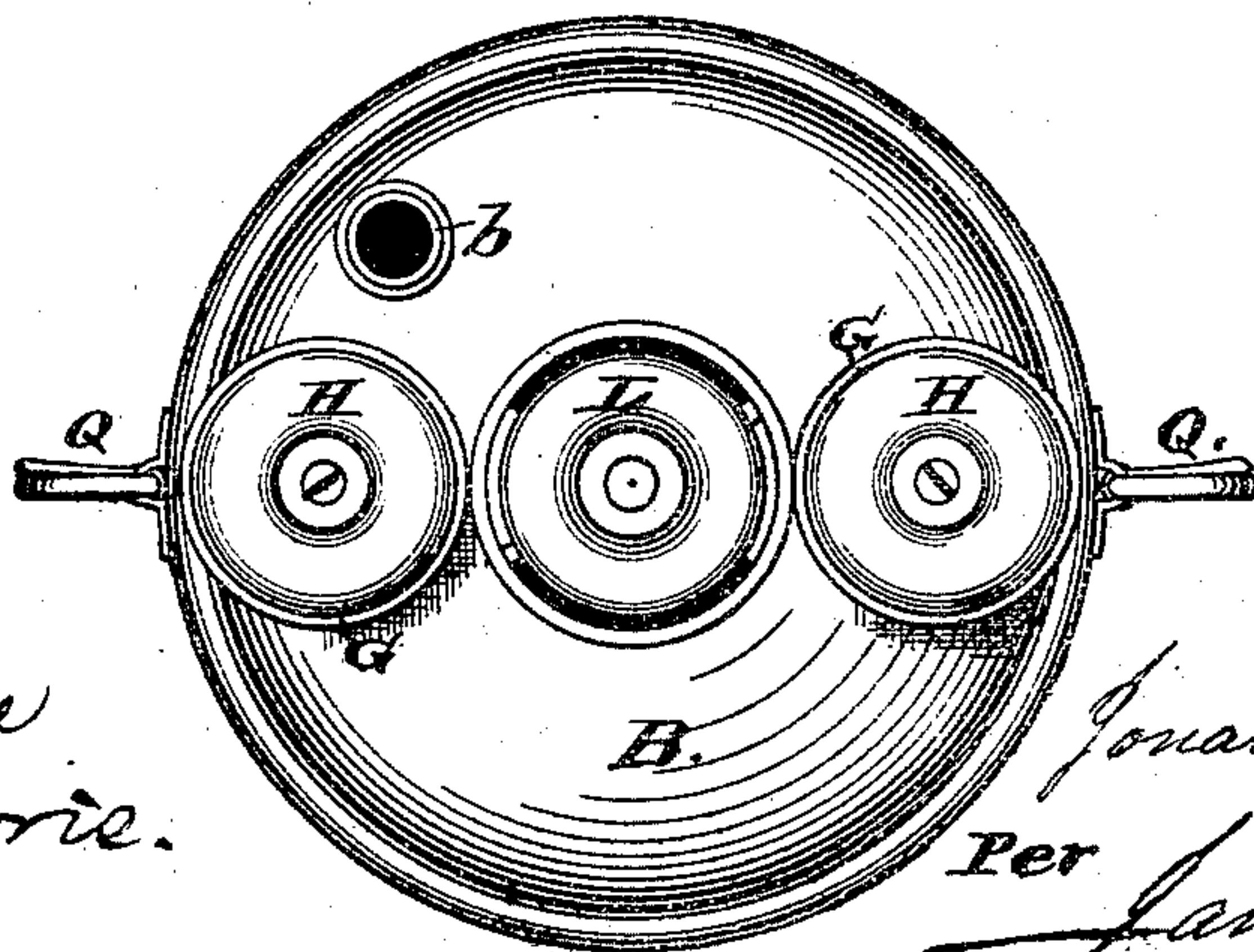


Fig. 2.



Witnesses
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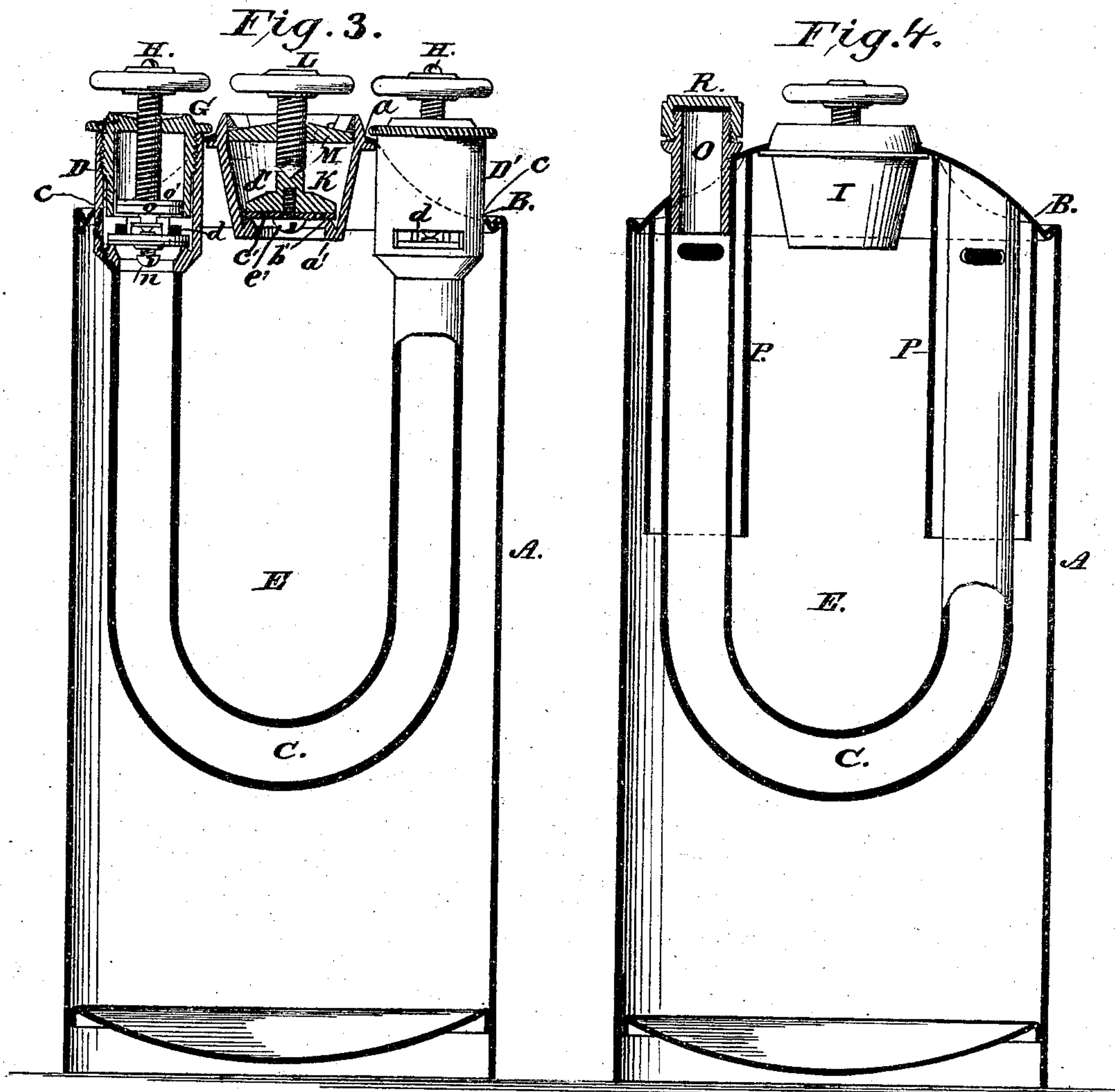


Fig. 5.

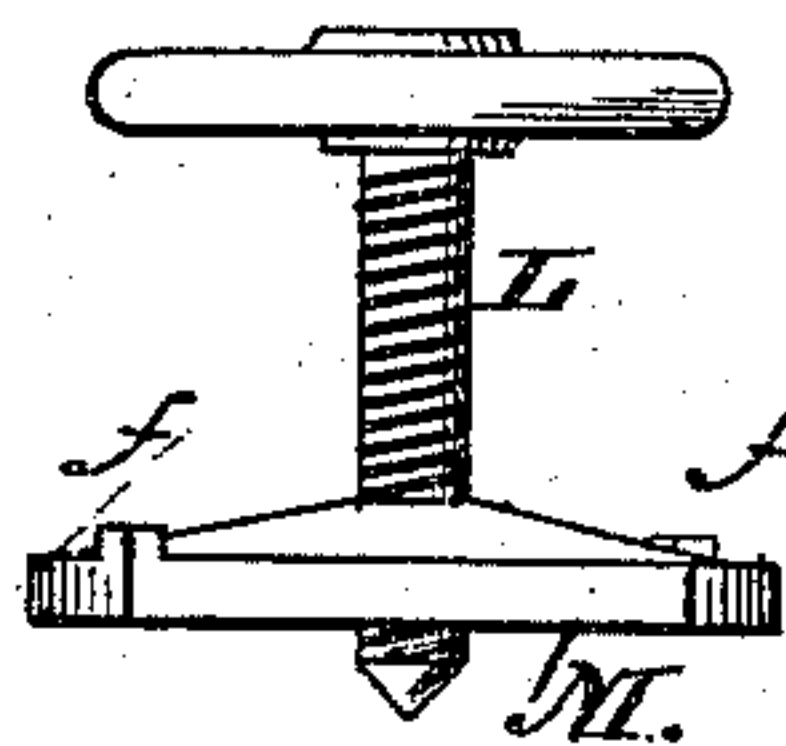


Fig. 6.

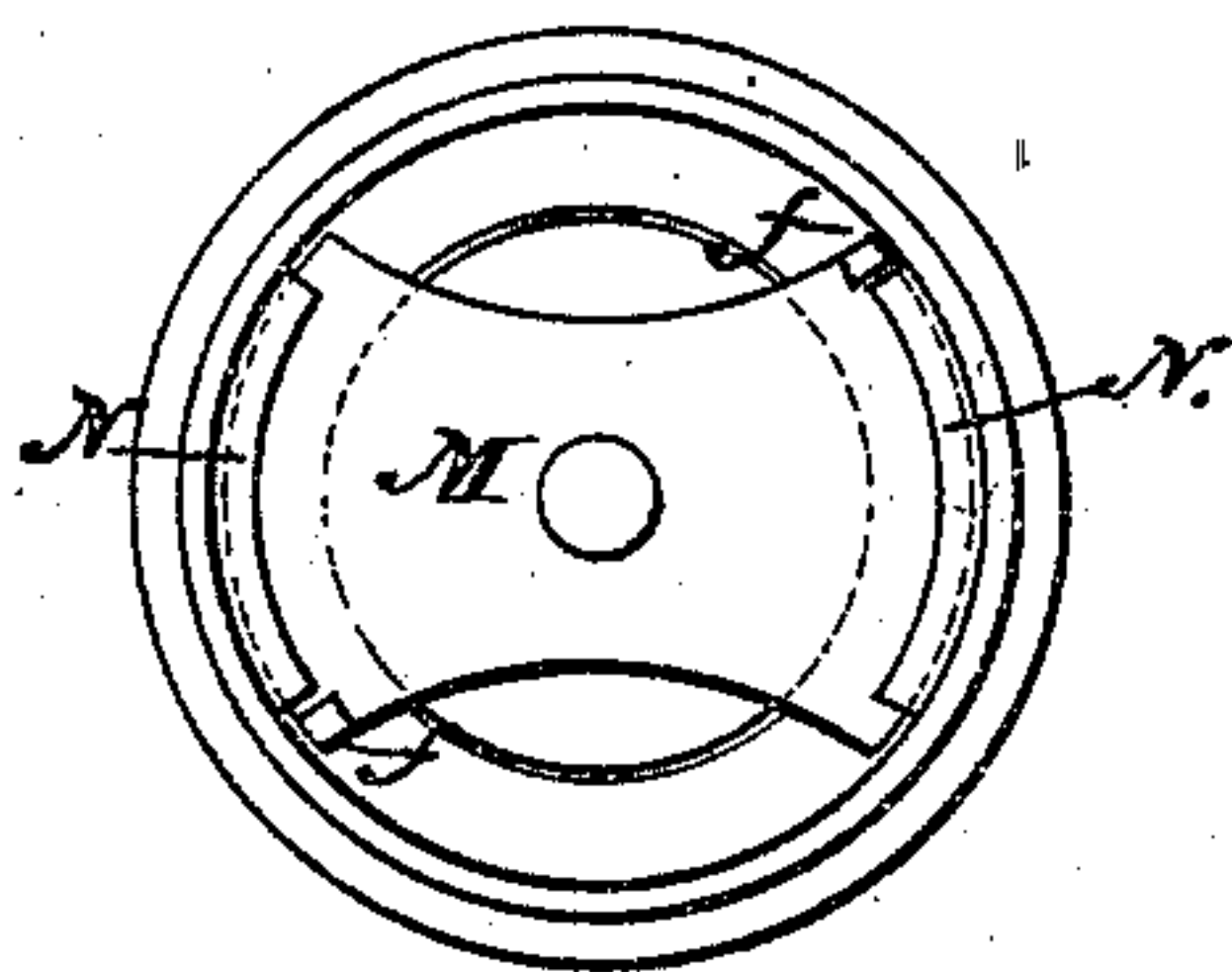
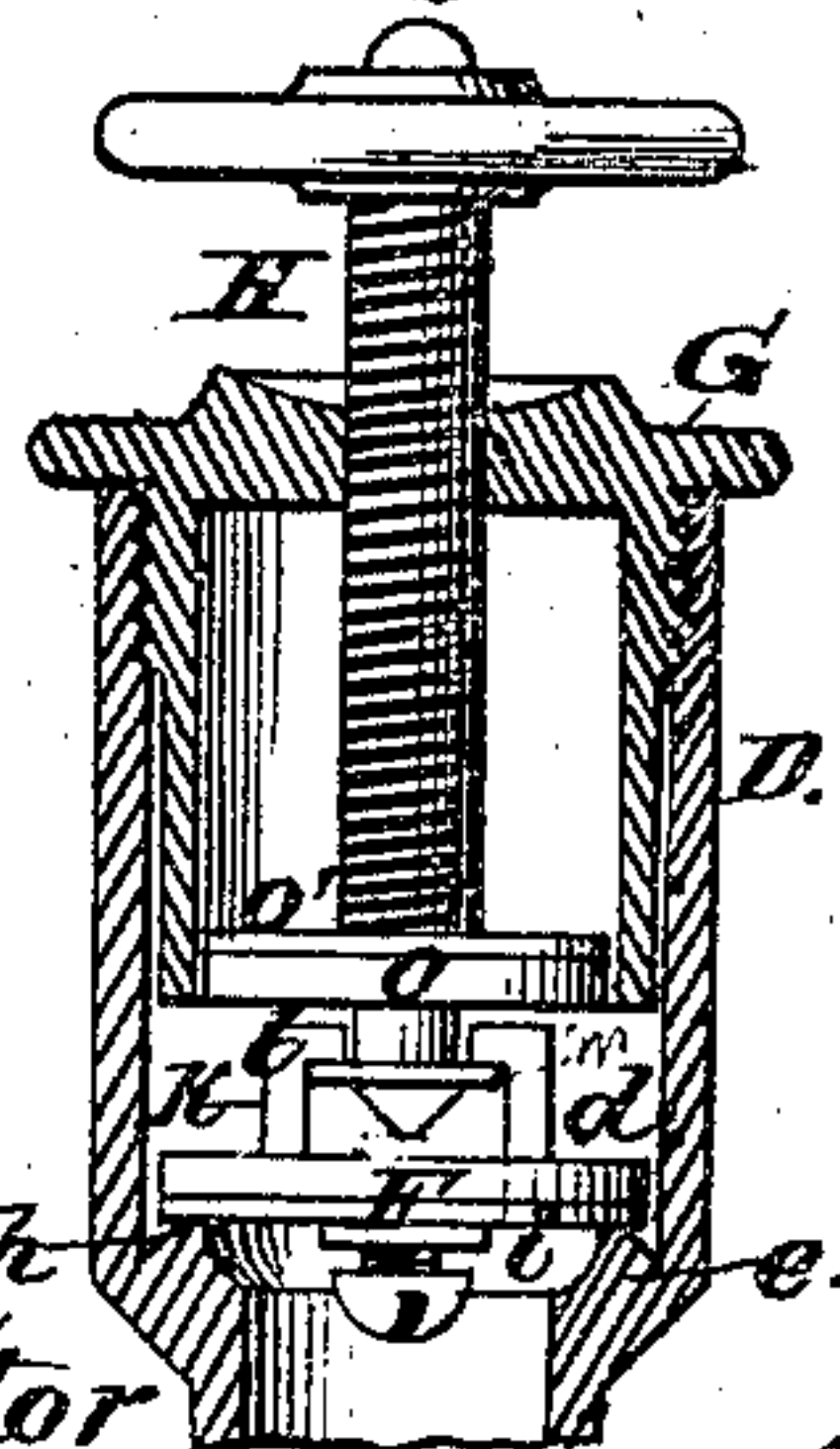
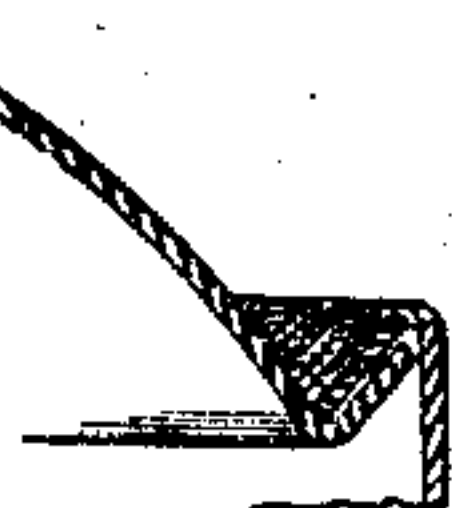


Fig. 7.



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Fig. 8.



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UNITED STATES PATENT OFFICE.

JONATHAN S. TIBBETS, OF JEFFERSONVILLE, INDIANA.

IMPROVEMENT IN FIRE-EXTINGUISHERS.

Specification forming part of Letters Patent No. **143,203**, dated September 23, 1873; application filed September 8, 1873.

To all whom it may concern:

Be it known that I, JONATHAN S. TIBBETS, of Jeffersonville, in the county of Clarke and State of Indiana, have invented certain new and useful Improvements in Fire-Extinguishers, of which the following is a specification:

This invention relates to that class of fire-extinguishers in which chemicals, such as sulphuric acid, bicarbonate of soda and water, or other analogous substances, are employed to extinguish fires, the vessel or reservoir containing the same being adapted to be carried on the back of a person by means of straps or mounted upon transporting-wheels. My invention consists in arranging within a metallic vessel of any preferred construction a pipe made of lead or other non-corrosive material, capable of receiving, holding, and resisting the action of the acid placed therein, said pipe being rigidly or otherwise securely placed within the alkali-chamber, and made to communicate with the same and with the external atmosphere, at either or both ends, through the medium of one or more valves or stoppers, said pipe being connected with a bushing having one or more openings, arranged so that they will be within the said chamber, so that, if the pipe be charged with sulphuric acid and the vessel likewise charged with bicarbonate of soda and water, they will remain out of contact with each other until the vessel with the pipe is turned to a horizontal position and air admitted, or the valves opened, when the union of the acid and alkali will instantly occur, and the self-prepared solution be capable of being ejected with force through a separate opening, to which is connected the usual hose-pipe. My invention further consists in surrounding the perforated leaden or other non-corrosive pipe with a case or sleeve, in such a manner as to form an intermediate air-chamber, closed at the top by means of the surface to which the pipe and the case are secured, in such a manner that if the pipe be charged with an acid and the vessel with bicarbonate of soda and water the latter solution will rise in the air-space, but not on a level with the solution in the vessel, thus being prevented from mingling or mixing with each other through the openings in the lead pipe or bushings connected with the same, so

long as the vessel is kept in a vertical or inclined position, the top being uppermost, this result being secured by the air being compressed in its chamber, and thus serving as a partition to prevent the acid traversing the pipe or the alkaline solution entering the pipe, unless the vessel be brought to a horizontal position.

In the accompanying drawings, Figure 1 is an elevation of my improved fire-extinguisher in a complete condition. Fig. 2 is a top view of the same. Fig. 3 is a vertical section of my invention, the case or sleeve being removed. Fig. 4 is a similar view, illustrating the sleeve or case around the pipe, one end of the pipe being closed. Fig. 5 is a detached view of the bridge-plate and compressing-screw. Fig. 6 is a top view of the bridge-piece and bushing. Fig. 7 is a detached sectional view of the bushing, valve, compressing-screw, &c., of the acid-chamber. Fig. 8 is a detached view of the preferred manner of securing the head to the body of the vessel.

In the drawings, the letter A designates a cylindrical or other suitable vessel or reservoir, made of sheet-copper or other preferred material, of a sufficient thickness to withstand with safety the internal pressure to which such vessels are subjected. The head B of the vessel is preferably secured in position by means of a lap or hook joint, as shown in Fig. 8, although other well-known means of uniting the two together may be employed. The head is perforated with openings *a b c*, to receive the bushings for the mouth of the vessel, the nozzle for the hose, and the acid-pipe. Within the vessel A is rigidly or otherwise arranged a pipe, C, constructed of a U shape or horse-shoe form, and made of lead or other suitable material capable of resisting the action of the acid placed therein. Each end of this pipe or tube is connected with a nozzle or bushing, D D', passing down through the openings *c* in the head B, the lower end of the said nozzle or bushing projecting into the chamber E, being provided with passages or openings *d d*, which are closed or opened by a suitable stopper or valve, so as to cut off or effect a communication between the acid-pipe C and the alkali-chamber, the separation of the acid and alkaline solution, when the vessel is

charged, being so perfect and effectual as to admit of the vessel being placed in any position, or subjected to the roughest handling or transportation, without any liability of a union of the ingredients.

It will thus be seen that the passages in the bushing can be controlled by a stopper or valve of ordinary construction; hence I do not confine myself to any particular form or construction.

In order to secure a perfect liquid and air tight seal to the acid-pipe, and admit of its being opened and closed with ease and facility, I form upon the inside of the nozzle or bushing, at or near its lower end, a lateral flange, *e*, from which rises an inverted V-shaped or knife-edged projection, *h*, upon which the packing *i* of the valve *F* is compressed and held by a screw working down through a flanged cap or plug, *G*, which screws down upon the nozzle or bushing.

The disk of the valve is provided with vertical standards *k k*, having flanges *l l*, approaching, but not coming in contact with, each other, in such a manner as to engage with the groove *m* of the screw *H*, so that said screw can be made to lift or depress the valve without causing the valve or the packing to rotate on the valve-seat, the object of such being to retain the packing in a smooth condition, and enable it to be compressed evenly and uniformly at all points, whereby is produced a perfect air and liquid tight joint. The packing is secured upon the valve by means of a set-screw, *n*, which can also serve as an adjusting medium between the valve and conical point of the compressing-screw *H*. Immediately above the groove *m* on the screw is fixed or formed a disk, *o*, upon the top of which is arranged a packing, *o'*, so that when the valve passes down by the passages *d d* upon its seat by the action of the screw to close the acid-chamber the alkaline solution, being free to enter the passage, will be prevented from passing into the interior of the flanged cap, and thus leakage prevented through the screw-threads. In the opening through which the alkaline solution is introduced, such as water and bicarbonate of soda, is arranged an inwardly-projecting bushing, *I*, the surface of which is, by preference, slightly conical. Upon the interior of this bushing, near its lower end, is formed a horizontal flange, *a'*, upon which the valve *K* or its packing *e'* has its seat. This valve, in the present illustration, is composed of a disk, *d'*, into which passes a set-screw, *e'*, for the purpose of confining the packing *e'* in position. This valve, with its packing, is forced down and compressed upon the knife-edged seat *b'* by a screw, *L*, the point of which presses directly upon the center of the valve, thus causing the valve and packing to be uniformly and evenly seated to form a hermetically-sealed joint or connection. The screw passes through a bridge-plate, *M*, having stops *f*, which bridge-plate, upon being secured within the bushing,

by causing it to traverse beneath the bearings or lugs *N*, arranged opposite to each other in the bushing, will be retained by the stops *f*, to prevent it turning as the screw is forced down upon the valve.

The valve and screw may, when desired, be connected with each other, so that by operating the screw the valve will be lifted or depressed.

To charge the vessel the caps *D D'*, with their screws and valves, are removed, and sulphuric acid introduced into the pipe *C* until the same is filled, the acid rising to equal height in both branches of the pipe, when the screw-caps, screws, and valves are placed in position and the valves compressed upon their seats, the result being that the acid is safely secured in its chamber. The mouth of the vessel is now opened and bicarbonate of soda and water, or other suitable ingredients, introduced in proper proportions until the chamber *E* is filled; the mouth is then closed by its valve, and the process of charging the vessel is completed.

This arrangement of mechanism enables me to retain the acid and alkaline solution separate from each other, the union of the same only occurring when the valves are opened and the vessel arranged in a horizontal position.

In some instances it will be found desirable to construct the apparatus upon a very economical scale by dispensing with the valves, valve-seats, and operating-screws; and to accomplish this I make but one opening in the head *B*, (besides the opening to receive the nozzle for the hose-pipe,) and arrange therein a bushing or nozzle, to which one end of the acid-pipe *C* is secured, the other end of the said pipe being permanently closed and connected with the interior of the vessel, each arm of the pipe being perforated near its upper end, as at *d' d'*, so as to have a communication with the alkali-chamber, thus admitting of the filling of the tube with an acid, the air being expelled at the opposite end by the entrance of the acid, and, further, permitting the union of the two ingredients when desired.

To prevent the acid and alkali from accidentally mingling and uniting with each other upon the vessel being slightly inclined from a vertical position, I surround both arms of the acid pipe or tube, for a suitable distance, with a sleeve or case, *P*, and connect the upper portions thereof with the interior of the vessel, so as to have a closed top. By this means an intermediate chamber is created between the acid-pipe and the sleeve, the air in which serves as a partition or medium for preventing the union of the ingredients, since the air in said chamber is compressed by the introduction of the alkaline solution in the chamber *E*. In this arrangement the acid and alkali can be brought into union with each other by simply removing the screw top or stopper to admit air simultaneously with the chang-

ing of the vessel from a vertical to a horizontal position.

The exterior of the vessel is provided with buckles Q, arranged thereon so as to face each other, said buckles being connected with the vessel by metallic loops *p*, in such a manner as to be free to turn upon their axis, the object of the buckles being to admit of adjusting the straps S, by which the vessel is carried, to accommodate different-sized persons.

I claim as my invention—

1. The pipe C for containing the acid, made of lead or other non-corrosive material, arranged within the alkali-chamber of a fire-extinguisher, and made to communicate internally at both ends with the said chamber

by means of transverse openings *d*, and with the external atmosphere at one or more points by means of a controlling valve or stopper, substantially as described.

2. The pipe C, arranged within the alkali-chamber E, and surrounded at its ends with the fixed case or sleeve P, to create an annular air-space, substantially as and for the purpose specified.

In testimony that I claim the foregoing I have hereunto set my hand this 8th day of September, 1873.

JONATHAN S. TIBBETS.

Witnesses:

JAMES L. NORRIS,
A. H. NORRIS.