

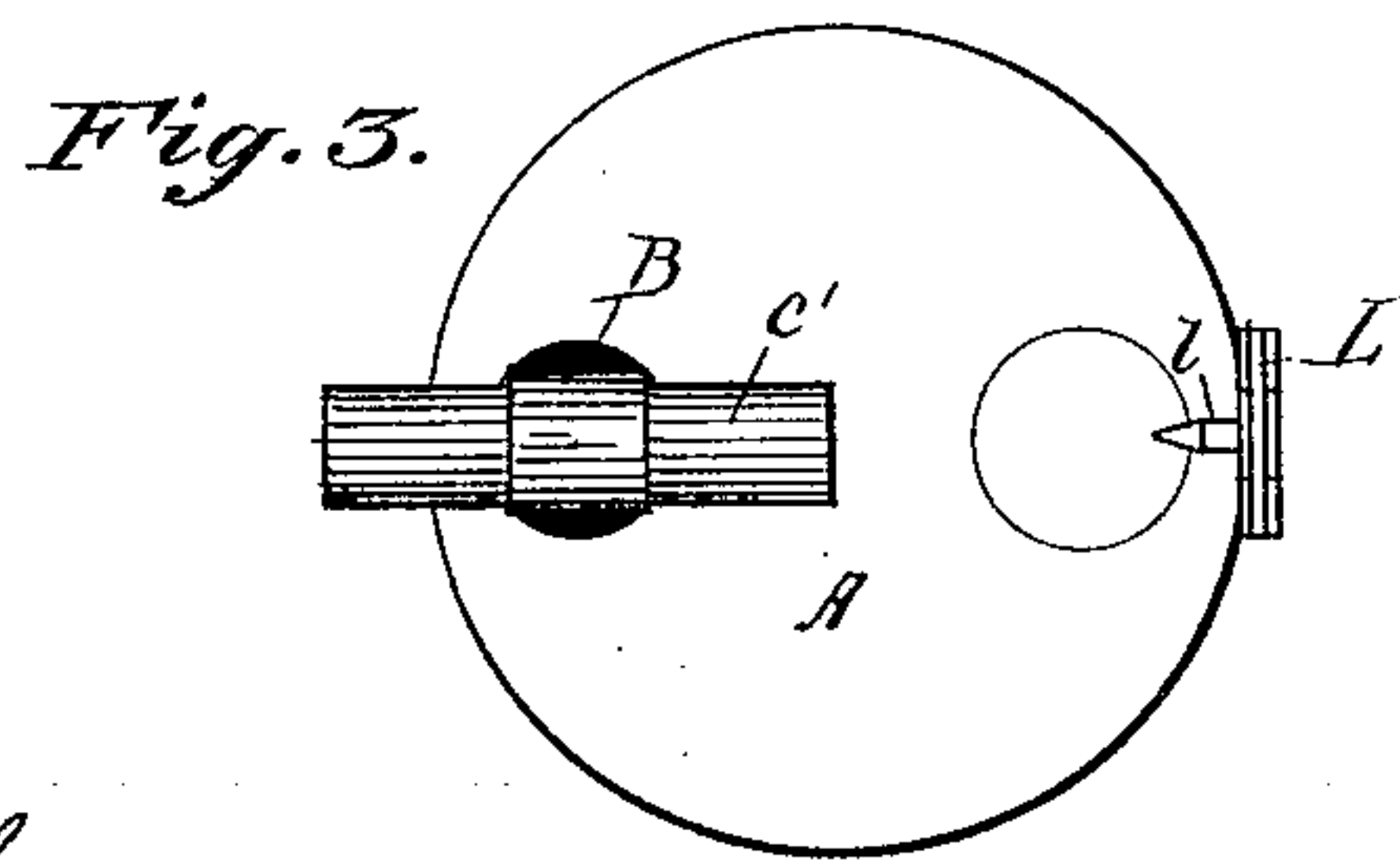
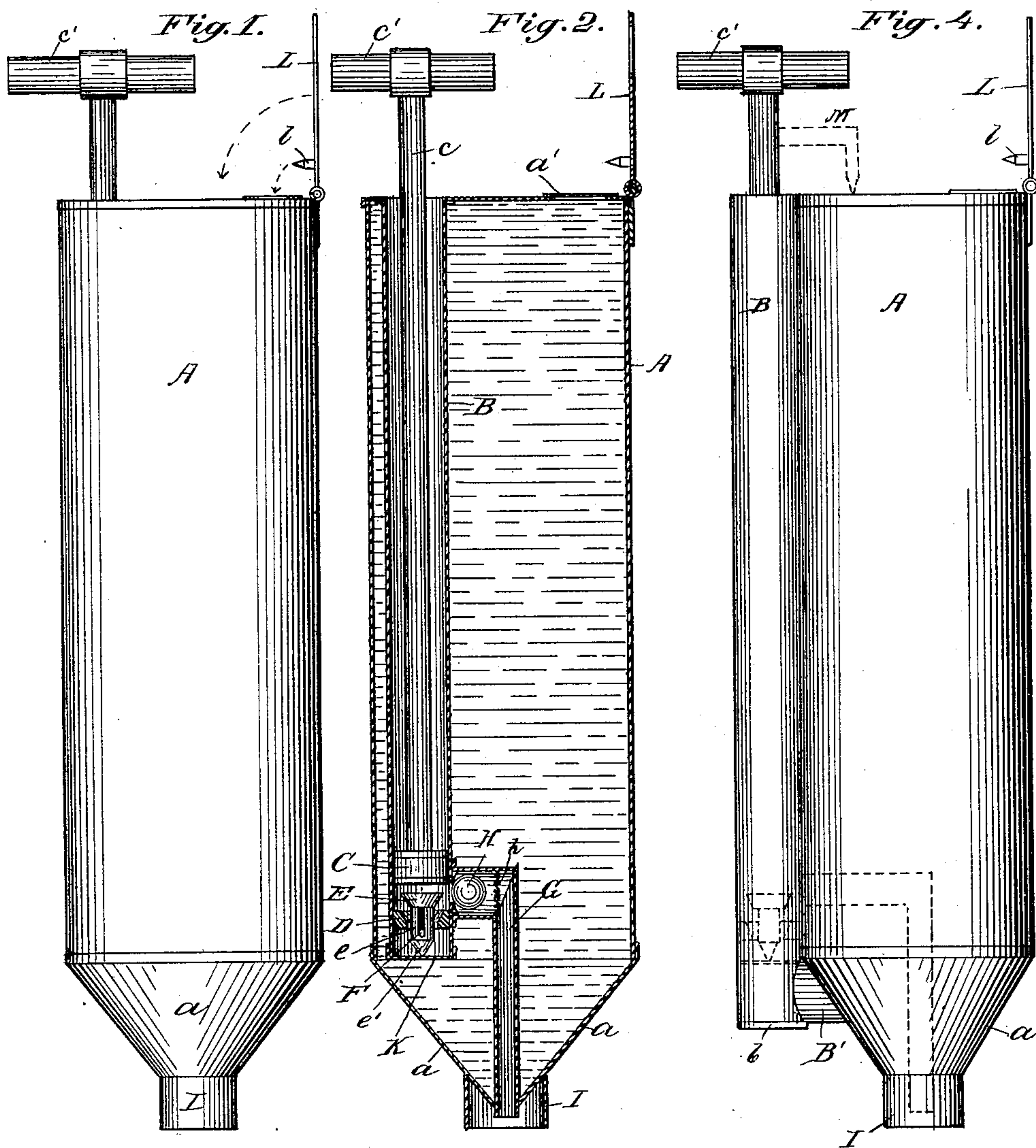
(No Model.)

J. E. LONG.

HAND FIRE EXTINGUISHER.

No. 368,293.

Patented Aug. 16, 1887.



Attest:

John A. Cabot
G. A. Atkins

Inventor:

John E. Long
By Andrew W. Steger
Att'y:

UNITED STATES PATENT OFFICE.

JOHN E. LONG, OF NEW YORK, N. Y.

HAND FIRE-EXTINGUISHER.

SPECIFICATION forming part of Letters Patent No. 368,293, dated August 16, 1887.

Application filed October 20, 1885. Serial No. 180,394. (No model.)

To all whom it may concern:

Be it known that I, JOHN E. LONG, a citizen of the United States, and a resident of New York, in the county of New York and State of New York, have invented certain new and useful Improvements in Hand Fire-Extinguishers, of which the following is a specification.

My invention relates to a hand fire-extinguisher; and it belongs to that class wherein a hand pump or syringe is combined with a portable tank or reservoir, in the latter of which is stored a supply of chemical fluid, such as will when thrown on a fire generate fire-extinguishing gas or gases.

Heretofore in this class of fire-extinguishers the pump or syringe has been so connected with the tank or reservoir that the gas-producing liquid has at all times free access to the said pump or some of its working parts, and as a result the said parts are attacked by the chemicals of the fluid, corroded, and rendered inoperative, especially in cases where the extinguisher has been stored for some time. A further trouble has been the want of an air-vent through which a supply of air may enter the reservoir to replace the fluid drawn therefrom.

My invention is to obviate these two objections; and it consists in first closing the connection between the reservoir and the pump by means of a thin diaphragm placed between the pump and the reservoir, and providing for the breaking of this sealing disk when it is desired to operate the pump. This latter result I preferably accomplish by placing the sealing-disk immediately below the seat of the check-valve and forming a sharp point upon the lower end of the valve, so that a downward pressure or blow upon the valve will cause it to puncture the diaphragm to form an opening through which the fluid may enter the pump. To facilitate this action of the valve its seat is formed in an extension of the pump-cylinder and the valve is mounted to move axially in line with the pump-chamber, so that when the piston is moved in it may be pressed upon the valve from above. To admit of this arrangement of the valve it is obvious that the delivery-pipe from the pump must be made to pass out at the side of the pump-cylinder. The device for admitting air to the reservoir con-

sists of a sharp-pointed rod mounted upon an external movable arm so that its point may be brought against the wall of the reservoir and caused to puncture the same. I preferably mount this point upon an arm pivoted to the upper end of the reservoir, which arm may also form a hook by which the extinguisher may be suspended when not required for use. This puncturing-point may, however, be made to project downward from and be attached to the outwardly-projecting portion of the pump-plunger, so that the same movement that drives down the valve to break the sealing between the pump and the reservoir will form an air-vent in the upper end of the reservoir.

My invention further consists in a guard to protect the spout or nozzle of the extinguisher.

In the accompanying drawings, Figure 1 is a side view of a hand fire-extinguisher embodying my invention. Fig. 2 is a longitudinal section through the same. Fig. 3 is a top view; and Fig. 4 shows a modification in the mounting of the pump.

It has heretofore been considered advantageous to inclose the pump or syringe within the reservoir, and in the principal figures I have adhered to this form of extinguisher, though it may be found better to mount the pump upon the outside of the reservoir, and in Fig. 4 I have shown this arrangement.

The construction as shown in Figs. 1, 2, and 3 is as follows:

A is a reservoir, preferably cylindrical and terminating at its lower end, in a conical nozzle, *a*. B is a pump or syringe cylinder, and is mounted to project longitudinally within the reservoir near one side thereof throughout its length and through its upper head, and this cylinder B is provided with a close-fitting plunger, C, having an operating-rod, *c*, extending out past the end of the reservoir and terminating in a handle, *c'*, of a size and form to be conveniently grasped in the hand. Near the lower end of the pump-cylinder B is formed an annular valve-seat, D, and into this seat is fitted to open inwardly a valve, E, having an elongated stem, *e*, extending through and below the valve-seat and sharpened to a point at its lower end, *e'*. The stem *e* of the valve is slotted longitudinally, and a pin, F, is passed through this slot and riveted into the sides of

the cylinder B, so as to form a guide for the valve and also to limit its movement. A spout or delivery-tube, G, is led from the cylinder B above the valve-seat D, and is made to extend through the conical end *a* of the reservoir and out through the wall thereof at the apex of the cone. A ball-valve, H, opening outwardly from the pump, is placed in this tube where it joins the pump-cylinder, there being a wire net-work, *h*, secured across the tube to limit the movement of the ball. This ball-valve may be replaced by any other well-known form of valve which may be adapted for the work.

At the conical end *a* of the reservoir I place a cylindrical ring, I, to surround and project beyond the end of the spout or delivery-tube G and to form a guard therefor. Before filling the reservoir A with the extinguishing-fluid, a disk or diaphragm, K, is sealed into or upon the end of the pump-cylinder B, so as to hermetically close it against the passage of the fluid, and this disk, when in position, is made to hold the valve E in a raised position above the seat D, as shown in Fig. 2, the point *e'* of the valve bearing upon the disk. The reservoir A is preferably filled through an opening, *a'*, in its upper end, and after the reservoir has been so filled the opening is closed by soldering over it a disk of thin metal. It is through this thin closing disk that I preferably form the air-vent, as follows:

L is an arm pivoted to the side of the reservoir so as to swing inwardly over the upper end thereof, and it is provided with an inwardly-projecting spike, *l*, at such a distance from the pivotal point of the arm L that, when the latter is caused to swing over, the point of the spike will bear upon and puncture the closing-disk of the reservoir. The arm L may be perforated or formed into a hook at its upper end, so that it may be suspended from a hook to support the extinguisher when not needed for use. In lieu of this swinging arm and its spike I may make use of a pointed arm, M, (see dotted lines in Fig. 4,) projecting laterally and downwardly from the plunger-rod *c* of the pump.

The operation of my device is as follows: Suppose the sealing disk K to be in position, the reservoir filled with the gas producing fluid, and the reservoir closed by a disk over the opening *a'*. It is obvious that as long as the sealing-disk K remains unbroken none of the fluid can enter the pump, and its working parts will suffer no deterioration during storage. If, now, it is desired to project the fluid upon a fire, it is only necessary to force the plunger C down upon the valve E, and the pointed stem *e* of the latter will perforate the disk K, and the fluid may be drawn into the

pump and forced out through the nozzle or delivery-tube G. Before operating the pump it will be necessary to swing over the arm L and cause the spike thereon to puncture the closing-disk at *a'*.

In Fig. 4 I have shown the pump-cylinder B as mounted upon the exterior of the reservoir A and connected therewith at its lower end by a lateral passage, B'. In this case the sealing-disk K is placed in the cylinder above the passage B, and the end of the cylinder is closed by a cap or disk, *b*.

The advantage offered by this construction is that after the device has been used the disk K may be more readily renewed before refilling the reservoir.

Having described my invention, what I claim is—

1. In a hand fire-extinguisher comprising a reservoir and a pump mechanism connected therewith, a frangible sealing-disk located between the reservoir and the working parts of the pump to prevent the fluid entering the pump till the seal is broken, substantially as and for the purpose set forth.

2. In a hand fire-extinguisher, the combination, with a portable reservoir and with a pump connected therewith, of a sealing-disk placed between the reservoir and the working parts of the pump, and means whereby the said disk may be broken away by a movement of the pump-plunger to admit the fluid to the pump, substantially as and for the purpose set forth.

3. In a hand fire-extinguisher, the combination, with a portable reservoir and with a pump connected therewith, of the valve E, with pointed stem *e*, valve-seat D, sealing-disk K, delivery-tube G, and valve H, all substantially as set forth.

4. In a hand fire-extinguisher, the combination of the reservoir A, pump cylinder B, plunger C, valve and valve-seat E D, sealing-disk K, delivery-tube G and valve H, guard I, and pivoted arm L, with spike to form an air-vent, all substantially as and for the purpose set forth.

5. In a hand fire-extinguisher, the combination, with a portable reservoir and a pump connected therewith, of a spike or point mounted upon an external movable arm and adapted to be moved or swung into position to puncture the wall of the reservoir to form an air-vent, as set forth.

Signed at New York, in the county of New York and State of New York, this 15th day of October, A. D. 1885.

JOHN E. LONG.

Witnesses:

G. O. J. CLARK,
HENRY A. HOYT.