

No. 685,586.

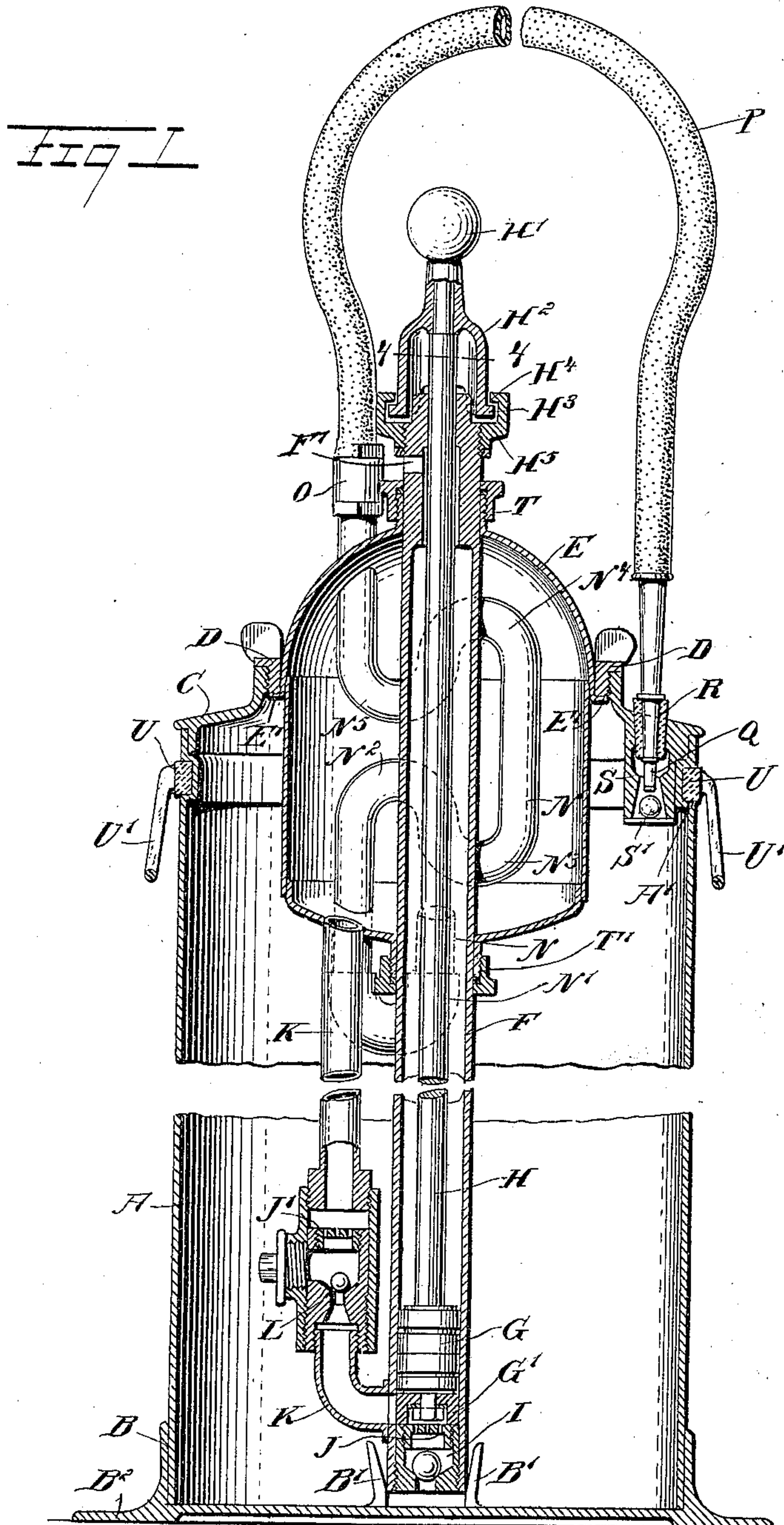
Patented Oct. 29, 1901.

E. H. ELLIS.
FIRE EXTINGUISHER.

(Application filed Oct. 10, 1900.)

(No Model.)

2 Sheets—Sheet 1.



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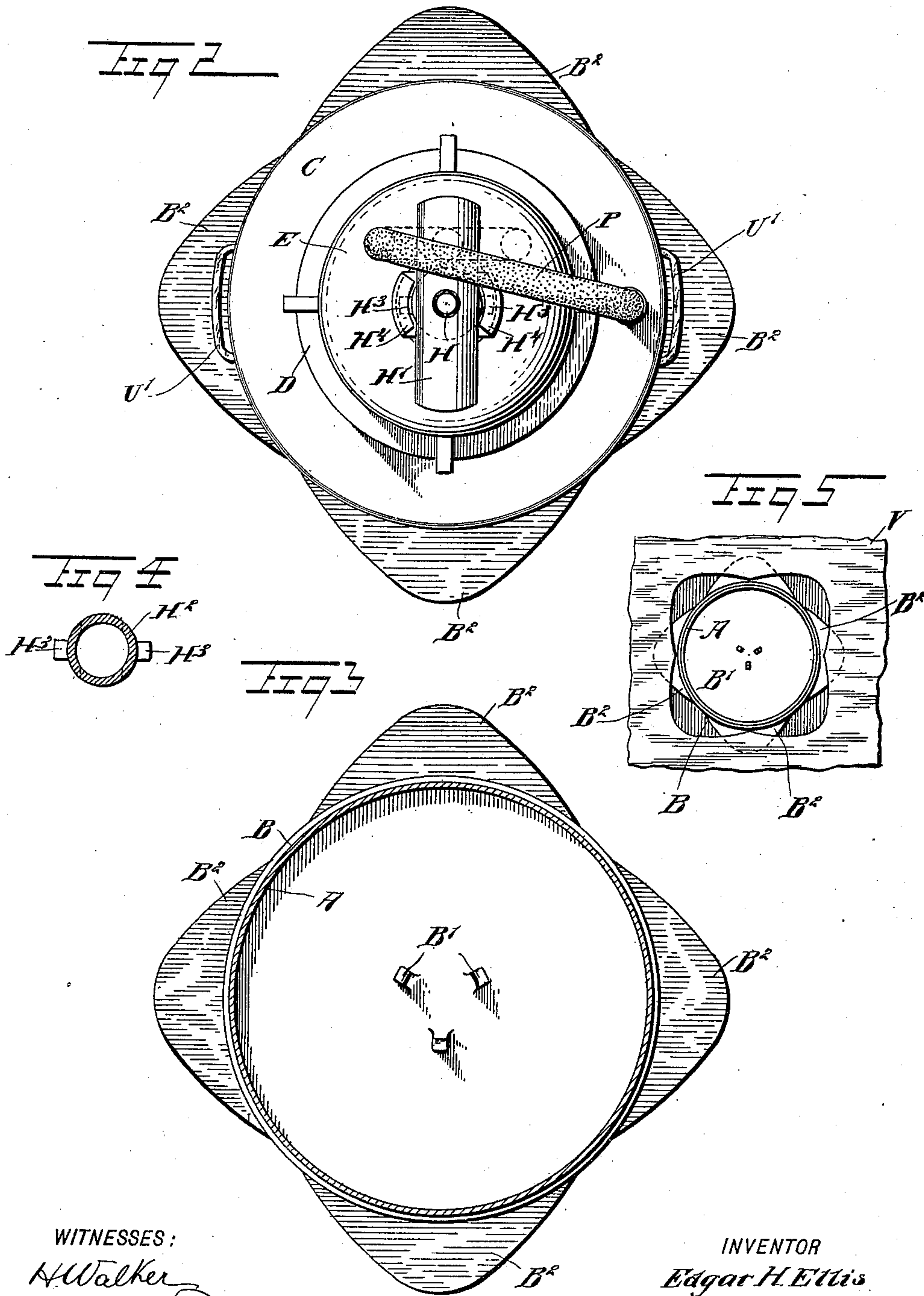
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UNITED STATES PATENT OFFICE.

EDGAR H. ELLIS, OF BROOKLYN, NEW YORK.

FIRE-EXTINGUISHER.

SPECIFICATION forming part of Letters Patent No. 685,586, dated October 29, 1901.

Application filed October 10, 1900. Serial No. 32,599. (No model.)

To all whom it may concern:

Be it known that I, EDGAR H. ELLIS, a citizen of the United States, and a resident of the city of New York, borough of Brooklyn, in the county of Kings and State of New York, have invented a new and Improved Fire-Extinguisher, of which the following is a full, clear, and exact description.

The invention relates to portable fire-extinguishers using a fire-extinguishing fluid in a closed receptacle; and the object of the invention is to provide a new and improved fire-extinguisher which is simple and durable in construction, very effective in operation, and arranged to prevent leakage or evaporation of the fluid, and thereby maintain the practical efficiency of the apparatus for any length of time.

The invention consists of novel features and parts and combinations of the same, as will be fully described hereinafter and then pointed out in the claims.

A practical embodiment of the invention is represented in the accompanying drawings, forming a part of this specification, in which similar characters of reference indicate corresponding parts in all the views.

Figure 1 is a sectional side elevation of the improvement. Fig. 2 is a plan view of the same. Fig. 3 is a sectional plan view of the receptacle. Fig. 4 is a sectional plan view of part of the locking device for locking the pump-plunger to the pump-cylinder, the section being on the line 4 4 in Fig. 1; and Fig. 5 is a reduced plan view of the fastening-plate for removably holding the receptacle in position on a truck or other support.

The improved fire-extinguisher is provided with a receptacle A of suitable dimensions and formed with a base B and a cover C, having a threaded opening in which screws an externally-threaded ring D, abutting with its inner end on an annular flange E', formed externally on a pressure-chamber E, surrounded by said ring D, and extending with its lower portion into the receptacle A and with its upper portion to the outside above the ring D. The pressure-chamber E supports a pump for forcing the liquid contained in the receptacle out of the same upon the fire, as hereinafter more fully described, the said pump comprising a cylinder F, extending centrally through

the pressure-chamber E and soldered or otherwise fastened thereto. The lower end of the cylinder F fits upon angular lugs B', formed on the bottom of the base B inside of the receptacle A, the extreme lower end of said cylinder being a distance above the base to permit a ready flow of the liquid into the pump-cylinder.

In the pump-cylinder F is mounted to reciprocate a plunger G, formed with the usual cups, of rubber or other material, to prevent leakage, the plunger being secured on a plunger-rod H, extending up in the cylinder F and through the upper end thereof, as is plainly shown in Fig. 1. On the outer end of the plunger-rod H is removably secured a handle H', adapted to be taken hold of by the operator to reciprocate the plunger G in the cylinder F. On the shank of the handle H' is formed a downwardly-extending cap H², formed with outwardly-extending flanges H³, adapted to fit under lugs H⁴, extending inwardly, and formed on a nut H⁵, screwing on the upper threaded end of the cylinder F, directly above the air-inlet opening F' for the cylinder F.

When the flanges H³ are under the lugs H⁴, as shown in Figs. 1 and 2, then the plunger-rod H and with it the plunger G are locked in position in the cylinder F, and when it is desired to operate the pump for the purpose described then the operator first gives a quarter-turn to the handle H', so as to cause the flanges H³ to move out from under the lugs H⁴ to permit of drawing the plunger-rod and with it the plunger G outward for pumping purposes.

When the apparatus is not in use, the projections H³ engage the lugs H⁴ and lock the plunger and its rod in position in the cylinder F, as previously mentioned, the plunger G then standing in a lowermost position within the cylinder F, as shown in Fig. 1. On the lower end of the plunger G is secured a cap G', of rubber or other material, extending over a screen J, held in a suction ball-valve I, screwed or otherwise fastened in the lower end of the cylinder F, said cap G' covering the outlet K to prevent passage of the liquid through the suction-valve I to the said outlet K at the time the apparatus is not in use, and the plunger G is located in a lower-

most position by the locking device on the handle, above referred to. The outlet K is in the shape of a pipe opening into the bottom of the pressure-chamber E, and in the said outlet is arranged a ball-valve L, containing a screen J' for normally closing the outlet K to the pressure-chamber E. From the bottom of the pressure-chamber E leads a discharge-pipe N, containing a number of bends N' N² N³ N⁴ N⁵ for forming a plurality of liquid seals, so that the discharge-pipe N is sealed no matter in what position the apparatus is placed. The pipe N extends through the roof of the pressure-chamber E, to the outside thereof, and the outer end of said pipe N is connected by a suitable coupling O with a hose P, carrying a discharge-nozzle Q, provided with a stopper R, adapted to be inserted in a vent S, arranged in the cover C for the receptacle A, so that said vent is closed by the stopper R at the time the apparatus is not in use; but when the apparatus is to be used the operator removes the nozzle and its stopper R from the vent, so that the latter is used in the usual manner for supplying air to the receptacle A during the pumping operation. The vent S preferably contains a ball-valve S' for closing the said vent S when the receptacle A is moved into an angular position, so as to prevent outflow of the liquid from the receptacle A through the vent S.

In order to prevent leakage of fluid between the pressure-chamber E and the pump-cylinder F, suitable stuffing-boxes T T' may be employed, as is plainly shown in Fig. 1.

In order to allow of conveniently carrying the apparatus about from one place to another, the upper end of the receptacle A is preferably formed with an annular groove A', into which fits a strap U, of leather or other material, having handles U', adapted to be taken hold of by the operator for the purpose mentioned. The base B is formed with outwardly-extending flanges B², preferably arranged in the shape of a star or the like and adapted to fit under a retaining-plate V, carried by a truck or other suitable support, the retaining-plate having an opening corresponding to the shape of the flanges B², so that the said flanges may be passed through the opening in the retaining-plate to bring the flanges under the retaining-plate upon giving the receptacle a quarter-turn. (See Fig. 5.) By this simple means the receptacle is removably attached to a suitable support.

In order to fill the receptacle A with fire-extinguishing fluid, the operator unscrews the ring D and removes the pressure-chamber E and with it the pump from the receptacle. As the latter is now open, it can be readily filled with the fire-extinguishing fluid, and when this has been done the pressure-chamber E, with the pump rigidly attached thereto, is placed back in position, and then the ring D is screwed down so as to securely hold the pressure-chamber and the pump in

position on the receptacle. The operator takes hold of the nozzle and places the stopper R in position on the vent S, so as to hermetically close the latter and prevent escape of gas that may generate or be contained in the receptacle A. The apparatus is now either fastened to a suitable support on a truck or the like or is placed on a table, floor, or the like to be ready for immediate use.

When the apparatus is at rest, the plunger G is locked in a lowermost position by the flanges H³ of the cap H² engaging the fixed lugs H⁴, the plunger-cap G' then closing the outlet K and the suction-valve I at the screen J, so that the liquid contained in the receptacle A cannot pass through the outlet into the pressure-chamber E.

When the apparatus is to be used, the operator gives a quarter-turn to the handle H' to unlock the plunger, as previously described, and then removes the nozzle Q from the vent S, after which the operator works the handle H', so as to reciprocate the plunger G in the cylinder F and force the liquid contained in the receptacle A out of the same into the pressure-chamber E, from which the liquid passes to the discharge-pipe N and hose P into the nozzle Q and to the fire to be extinguished.

After the apparatus has been used for its legitimate purpose it is refilled, if necessary, as above described, and then placed back on its support, the nozzle Q being inserted in the vent S to close the same and the plunger G locked in a lowermost position in the cylinder F, for the purpose previously described.

It is understood that after the first use of the apparatus the several bends N' N² N³ N⁴ N⁵ contain liquid and form liquid seals for preventing leakage of any gas no matter in what position the apparatus may be placed. It is understood that in apparatus of this class in which a fire-extinguishing liquid is used it is very essential that no leakage whatever takes place of any liquid or gas contained in the receptacle A, so that the apparatus remains very effective for a long time.

When the several parts are in the position shown in Fig. 1, then any gas or liquid that passes through the hose P and nozzle Q is returned to the receptacle A by way of the vent S, so that none of the gas or liquid is lost. By having the pump attached to the pressure-chamber and the latter extended into and removably secured to the receptacle A a very compact apparatus is had and convenient access can be had to any of its parts for repairs or other purposes.

When the tank is filled with liquid and the machine has not been used, the traps are empty of liquid; but the pressure of the liquid in the receptacle is sufficient to press the ball-valve S' in the vent against the opening in the nozzle, and thus allows of no escape of the gases from the receptacle. When the extinguisher has been used, then one or more of the traps are filled with liquid, and the

tank not being full the ball-valve does not press against the nozzle-opening; but escape of gas is impossible beyond the first filled trap—that is, from the receptacle. Likewise
 5 air cannot escape from the pressure-chamber beyond the first filled trap no matter in what position the extinguisher may be placed—upside down, for instance. Furthermore, when the traps are once filled, as they are af-
 10 ter the machine has been used, it will be impossible to empty all of the traps no matter in what positions the extinguisher may be placed. The strength of the solution in the receptacle and that which may be left in the
 15 traps is left unimpaired. There can be no escape of gases or fluid at any time if the plunger is locked and the nozzle is placed in the vent. The device is positively hermetically sealed, and in fighting fire the first por-
 20 tion of the solution is of the same strength as the last, which is not the case in most extinguishers as heretofore constructed.

Having thus fully described my invention, I claim as new and desire to secure by Letters
 25 Patent—

1. A fire-extinguisher, comprising a receptacle for containing a fire-extinguishing fluid, a pump extending into said receptacle and having its handled plunger-rod extending to
 30 the outside of the receptacle, and a pressure-chamber removably secured in said receptacle and carrying said pump, the said pressure-chamber having an outlet-pipe opening into the pressure-chamber near the bottom
 35 thereof, the said outlet-pipe having a plurality of reversely-arranged bends located within the pressure-chamber, and so arranged that one or more of said bends will remain sealed if the receptacle should be overturned, the
 40 outlet end of said pipe being connected with a hose having a discharge-nozzle, as set forth.

2. A fire-extinguisher having a receptacle for containing a fire-extinguishing fluid and provided with a vent, a pump extending into
 45 said receptacle, a pressure-chamber into which the liquid is pumped from the receptacle, the said pressure-chamber having an outlet provided with a plurality of reversely-arranged bends for sealing the fluid, and a
 50 discharge-nozzle connected with the outlet from the pressure-chamber and provided with a stopper for closing said vent when the apparatus is not in use, the said vent having a valve arranged to close the vent if the re-
 55 ceptacle should be tipped over, the bends of the outlet-pipe being so arranged that one or more of them will remain sealed if the receptacle should be overturned, as set forth.

3. A fire-extinguisher having a receptacle
 60 for containing a fire-extinguishing fluid, a pressure-chamber carrying a pump arranged to rest on the bottom of said receptacle, and a wing-nut screwing in the cover for said receptacle and engaging an annular flange
 65 exteriorly on said pressure-chamber, as set forth.

4. A fire-extinguisher having an outlet for a

fire-extinguishing liquid, said outlet having a series of reversely-arranged bends for seal-
 ing the apparatus and preventing the leakage 70 of the fire-extinguishing fluid, the said bends being so arranged that one or more of them will be sealed should the receptacle be tipped over, as set forth.

5. A fire-extinguisher having a pressure- 75 chamber and an outlet therefor, the said outlet being provided with a plurality of traps for sealing the liquid and preventing leakage thereof and so arranged that one or more of
 80 said traps will remain sealed if the receptacle should be overturned, as set forth.

6. A fire-extinguisher having a pump comprising a pump-cylinder, a pump-plunger, and a locking device for locking the plun-
 85 ger to the cylinder, said locking device comprising a nut adjustable on the upper end of the cylinder and having inwardly-extending flanges at its upper end, and a cap on the
 90 pump-plunger and formed with outwardly-extending lugs adapted to fit under the flanges of the nut, as set forth.

7. A fire-extinguisher having a pump comprising a cylinder having an inlet and an outlet, a plunger working in said cylinder and provided with a cap for closing said inlet 95 and outlet, and a device for locking said plunger to the cylinder at the time the plunger-cap closes said inlet and outlet, the said locking device comprising a nut arranged to
 100 screw on the pump-cylinder and having inwardly-extending flanges, and a cap on the upper end of the pump-plunger and provided with outwardly-extending lugs adapted to fit under the flanges of the nut, as set forth.

8. A fire-extinguisher, comprising a recep- 105 tacle for containing a fire-extinguishing liquid, a pressure-chamber extending within the top of said receptacle, means for removably connecting the pressure-chamber with said receptacle, a pump for pumping the contents 110 of the receptacle into said pressure-chamber, the pump-cylinder being provided with an inlet and an outlet, the outlet of the cylinder being connected with the pressure-chamber, a plunger working in said cylinder and pro- 115
 120 vided at its inner end with a cap for closing said outlet and said inlet, and a locking device for exteriorly locking the plunger to said cylinder at the time the plunger-cap closes said inlet and said outlet, the said locking de-
 vice being adjustable, as set forth.

9. A fire-extinguisher, comprising a recep-
 125 tacle for containing a fire-extinguishing liquid, a pressure-chamber removably connected with said receptacle, a pump for pumping the contents of the receptacle into said pres-
 130 sure-chamber, the said pump-cylinder being provided with an inlet for the liquid, and an outlet connected with the pressure-chamber, an outlet-pipe for the pressure-chamber hav-
 ing a series of bends, a nozzle connected with
 said outlet-pipe, a plunger working in said
 cylinder and provided with a cap for closing
 the inlet and outlet of the cylinder, and an

adjustable locking device for said plunger, as set forth.

10. A fire-extinguisher, comprising a receptacle for containing a fire-extinguishing fluid, 5 a pressure-chamber removably connected with said receptacle, a pump for pumping the contents of the receptacle into the pressure-chamber, a pipe connecting the outlet of the pump with the pressure-chamber, and a discharge-pipe for the pressure-chamber, the said 10 pipe leading from the bottom of the pressure-chamber and then extending through the pressure-chamber, and out at the top thereof, the said pipe having a bend below the pressure-chamber and a plurality of reversely-arranged bends within the pressure-chamber 15 and so arranged that one or more of said bends will remain sealed if the receptacle should be tipped over, substantially as set forth.

20 11. A fire-extinguisher having a receptacle for containing a fire-extinguishing liquid, a pressure-chamber removably connected with the said receptacle, a pump for pumping the contents of the receptacle into said pressure-chamber, said pump being rigidly secured to 25 the pressure-chamber, the pump-cylinder extending through said chamber, lugs on the bottom of the receptacle, for receiving the lower end of the pump, and a ring screwing 30 into the top of the receptacle and engaging said pressure-chamber and locking the latter and the pump in place on the receptacle, as set forth.

12. A fire-extinguisher having a receptacle

for containing a fire-extinguishing fluid, a 35 pressure-chamber extending into the top of the receptacle, a ring screwing into the top of the receptacle, and engaging the pressure-chamber to lock the same in place, and a pump for pumping the contents of the receptacle 40 into said pressure-chamber, the pump-cylinder extending centrally through the pressure-chamber and projecting above and below the same, and rigidly secured to said pressure-chamber at the points where it passes through 45 the top and bottom of the same, whereby all the working parts of the extinguisher are secured together and may be readily removed from the receptacle, as set forth.

13. A fire-extinguisher having a receptacle, 50 a vent for the same and containing a ball-valve, a pressure-chamber having an outlet-pipe for the fluid provided with a plurality of bends so arranged that one or more of said bends will remain sealed if the receptacle 55 should be overturned, a pump for pumping the fluid from the receptacle into the pressure-chamber, and a nozzle connected with the outlet-pipe and having a stopper fixed thereon for insertion in said vent to hermetically 60 close the same as set forth.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

EDGAR H. ELLIS.

Witnesses:

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JNO. M. RITTER.