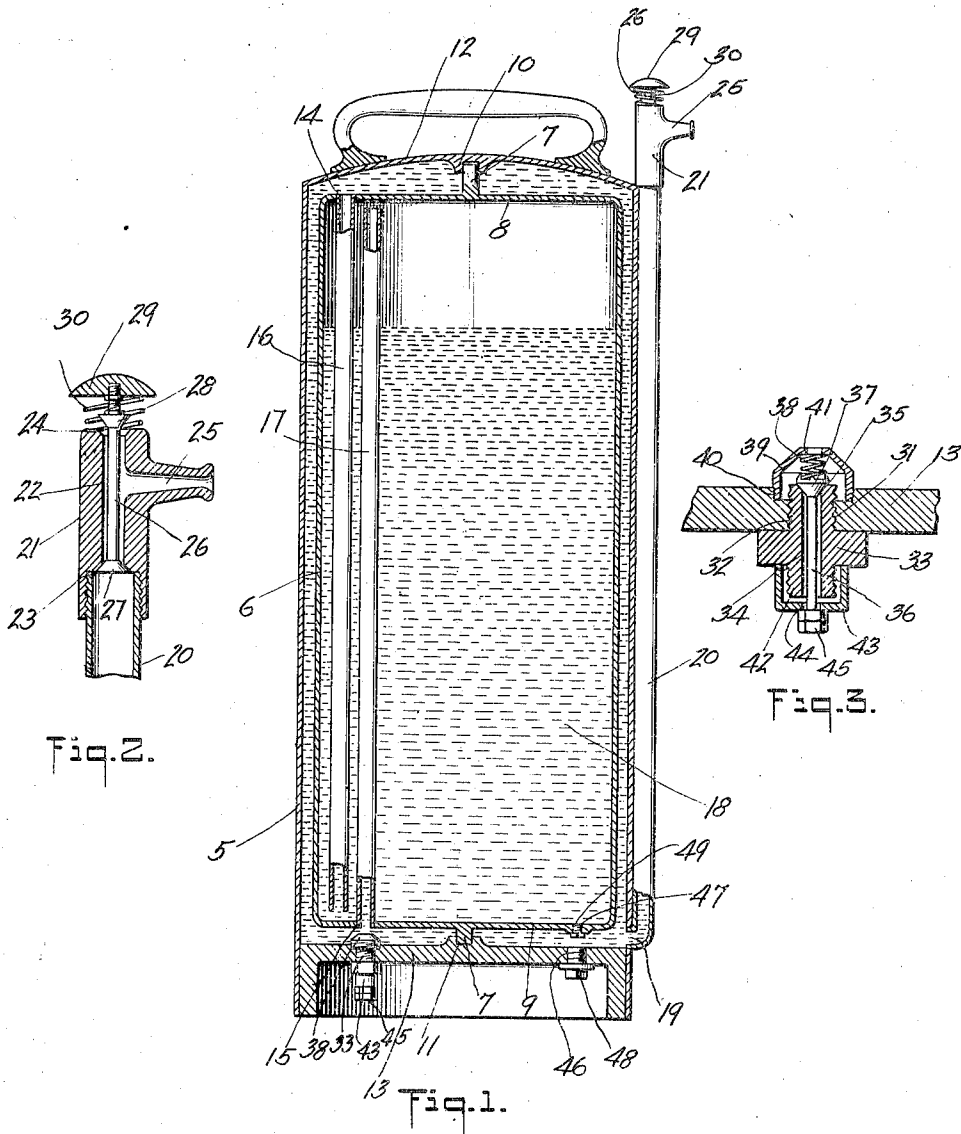


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D. E. MUIR.
FIRE EXTINGUISHER.
APPLICATION FILED DEC. 26, 1917.

1,302,829.

Patented May 6, 1919.



WITNESSES

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DAVID EDWARD MUIR, OF NEW YORK, N. Y., ASSIGNOR OF TWENTY-FIVE ONE-HUNDREDTHS TO ROBERT GILES, OF BROOKLYN, NEW YORK, TWENTY-FIVE ONE-HUNDREDTHS TO HENRY A. STEINBOCK, AND TWENTY-FIVE ONE-HUNDREDTHS TO THOMAS W. MCKNIGHT, OF NEW YORK, N. Y.

FIRE-EXTINGUISHER.

1,302,829.

Specification of Letters Patent.

Patented May 6, 1919.

Application filed December 26, 1917. Serial No. 208,879.

To all whom it may concern:

Be it known that I, DAVID E. MUIR, a citizen of the United States, and a resident of New York city, borough of the Bronx, in
5 the county of Bronx and State of New York, have invented a new and Improved Fire-Extinguisher, of which the following is a full, clear, and exact description.

My invention has for its object to provide a fire extinguisher having a receptacle disposed within an outer receptacle and containing an expelling fluid under pressure which is retained in the inner receptacle and which serves to expel a fire extinguishing
15 fluid of greater specific gravity than the expelling fluid, from the inner receptacle through the space between the inner and outer receptacles to the outlet in the outer receptacle. The expelling fluid is retained
20 in the inner receptacle and flows to the space between the inner and outer receptacle only when all the fire extinguishing fluid is discharged from the inner receptacle.

Another object of the invention is to provide a fire extinguisher which may be placed in any position without interfering with its usefulness.

Still another object of the invention is to provide a fire extinguisher from which may
30 be discharged a portion of its contents without endangering the operativeness of the fire extinguisher at a considerable period thereafter. This makes it possible to discharge the remainder of the fire extinguishing fluid
35 at some time later under the same operative conditions as in the first instance.

Additional objects of the invention will appear in the following specification in which the preferred form of my invention is
40 described.

In the drawings, similar reference characters refer to similar parts in all the views, in which—

Figure 1 is a sectional elevation showing
45 my fire extinguisher;

Fig. 2 is an enlarged fragmentary sectional view illustrating the discharge nozzle; and

Fig. 3 is an enlarged fragmentary sectional view illustrating the valve in the outer receptacle which is employed in filling the fire extinguisher.

My fire extinguisher is of the type in

which there is a receptacle disposed within an outer receptacle, there being a communicating means between the inner receptacle and the space between the inner and outer receptacles, so that the pressure of a fluid in the inner receptacle will serve to discharge
55 through a nozzle a fire extinguishing fluid contained between the receptacles.

With this class of fire extinguishers, there has always been danger that a considerable amount of air or other gas under pressure
65 in the inner receptacle would reach the space between the inner and outer receptacles where there would be danger that the gas would slowly leak away through the walls of the outer receptacle because of the pressure. This movement of the gas under pressure
70 from the inner receptacle to the space between the inner and outer receptacles would take place at times because of a change of position of the fire extinguisher or in some
75 cases by the discharge of a portion of the fire extinguishing fluid through the nozzle.

In my invention, the inner receptacle is movably mounted within the outer receptacle, so that the inner receptacle will move
80 when a position of the fire extinguisher is changed, to preserve the status of the fire extinguisher at all times and so prevent the escape of the gas, or other fluid of less specific gravity than the fire extinguishing fluid
85 under pressure from the inner receptacle to the space between the inner and outer receptacles with any change of position of the fire extinguisher. In my fire extinguisher the means of communication between the inner
90 receptacle and the space between the inner and outer receptacles is also controlled by the construction and the disposal of the said means so that the gas under pressure at the upper portion of the inner receptacle will
95 always serve to force the fire extinguishing fluid at the lower portion of the inner receptacle into the space between the inner and outer receptacles and through the discharge nozzle when the latter is opened
100 without reference to the position of the fire extinguisher.

By referring to the drawings, it will be seen that the outer receptacle 5 is preferably cylindrical in shape and that within this
105 outer receptacle 5 there is disposed an inner receptacle 6 which is also preferably cylin-

drical in shape. The capacity of the inner receptacle 6 is considerably greater than the capacity of the space between the inner receptacle 6 and the outer receptacle 5. The inner receptacle 6 has studs 7 which extend from its heads 8 and 9 and which are journaled in bearings 10 and 11 in the heads 12 and 13 of the outer receptacle 5. It will be understood that with this construction, it is possible for the inner receptacle 6 to rotate relatively to the outer receptacle 5. At one side of the axis of the inner receptacle 6, there is an orifice 14 in the head 8 of the inner receptacle 6, and an orifice 15 in the head 9 of the said inner receptacle.

Two tubes 16 and 17 are disposed in the inner receptacle 6, the tube 16 being secured to the head 8 at the orifice 14 and the tube 17 being secured to the head 9 at the orifice 15. The tube 16 extends to a point at a short distance from the head 9 and the tube 17 extends to a point at a short distance from the head 8. These tubes 16 and 17 not only serve to afford communication between the interior of the receptacle 6 and the space between the receptacles 5 and 6, but they also serve to weight the side of the receptacle 6 at which the orifices 14 and 15 are disposed. With this construction, when the fire extinguisher is disposed on its side and with the axis of the inner receptacle 6 horizontal, the tubes 16 and 17 will always be disposed at the bottom of the inner receptacle 6, no matter how the outer receptacle 5 may be rotated. This insures that the tubes 16 and 17 will at all times be covered by the fire extinguishing fluid 18 when the outer receptacle 5 is disposed horizontally, the gas under pressure which is preferably compressed air being disposed at all times above the fire extinguisher fluid 18.

Not only is it impossible for the compressed air to reach the tube 16 when the outer receptacle 5 is disposed in a horizontal position, but it will also be understood that while the compressed air disposed above the fire extinguishing fluid 18 will serve to force the fire extinguishing fluid 18 through one or both of the tubes 16 and 17 to the space between the receptacles 5 and 6, it will be impossible for the compressed air in any quantity to escape to the space between the receptacles 5 and 6 when the outer receptacle 5 is inverted. This is so, for whether the fire extinguisher is disposed in the position indicated in Fig. 1 of the drawings or is inverted, the compressed air will be disposed above the fire extinguishing fluid 18 in the inner receptacle 6 and it will press the fire extinguishing fluid 18 downwardly so that it may travel upwardly in the tube 16 or 17 which at that time is spaced from the head 8 or 9 of the inner receptacle 6, which at that moment is the bottom of the inner receptacle. The compressed air will also press

downwardly the fire extinguishing fluid which may be contained in the other tube which is spaced from the head 8 or 9, which at the moment is the top of the inner receptacle 6; the said compressed air in the last mentioned tube will not reach the space between the inner receptacle 6 and the outer receptacle 5 until substantially all of the fire extinguishing fluid 18 in the inner receptacle 6 is forced therefrom.

The outer receptacle 5 has an orifice 19 with which is connected an outlet pipe 20 preferably secured to the side of the outer receptacle 5 and leading to a nozzle member 21. As best shown in Fig. 2 of the drawings, this nozzle member 21 has an orifice 22 extending therethrough with a valve seat 23 at the outlet pipe 20 and a valve seat 24 at its other end. The nozzle member 21 is also provided with a nozzle 25 which leads from the orifice 22 from a point between the valve seats 23 and 24. In the said orifice 22, there is a valve stem 26 with a valve 27 for cooperating with the valve seat 23 and a valve 28 for cooperating with the valve 24. The said valve stem 26 extends beyond the valve 28 and is provided with a thumb piece 29, a spring 30 being disposed around the valve stem 26 between the nozzle member 21 and the thumb piece 29 for holding the valve 27 yieldingly on its valve seat 23. It will be understood that by pressing down on the thumb piece 29 against the tension of the spring 30, the valve 27 will be removed from its valve seat 23 and the valve 28 will be forced against its valve seat 24 to permit the discharge of the fire extinguishing fluid through the nozzle 25.

The head 13 of the outer receptacle 5 has a threaded orifice 31 in which meshes a thread 32 on a valve member 33, the valve member 33 being provided with an orifice 34 extending therethrough, the valve member 33 having a valve seat 35 at the inner end of the said orifice 34. In the orifice 34, there is a valve spindle 36 having a valve 37 at its inner end for cooperating with the valve seat 35. The valve 37 is held yieldingly on its seat 35 by a spring 38 which engages at one end the valve 37 and at the other end a cap 39 which is secured to the inner side of the head 13 by means of screw threads 40. There is an orifice 41 in the cap 39. The outer end of the valve member 33 has a threaded nipple 42 through which the orifice 34 extends, the said nipple being provided with connection for a pump coupling. There is normally disposed on the valve member 33 around the nipple 42 a cap 43 having an orifice 44 through which the outer end of the valve spindle 36 is disposed, this outer end of the valve spindle being threaded to receive nuts 45, the said nuts engaging the cap 43 to hold the valve spindle

36 outwardly with its valve 37 at the valve seat 35 to make certain that the valve seat 35 is closed irrespectively of the operation of the spring 38. The orifice 34 and the orifice 41 are in alinement, not only with each other, but they are so positioned that the inner receptacle 6 may be rotated to dispose its orifice 15 in the same alinement. There is also a port 46 in the head 13 of the outer receptacle 5, and a port 47 in the head 9 of the inner receptacle 6, it being possible to rotate the inner receptacle 6, so that the port 47 will be disposed substantially in alinement with the port 46. The ports 46 and 47 are threaded, the port 46 being normally closed by a threaded plug 48 and the port 47 being normally closed by a threaded plug 49.

When filling the fire extinguisher, the receptacle 5 is inverted, the plugs 48 and 49 are removed, the plug 49 being removed through the port 46. The nozzle 25 may then be opened and the fire extinguishing fluid may then be poured into the inner receptacle 6 and also into the space between the inner receptacle 6 and the outer receptacle 5. When a sufficient amount of the fire extinguishing fluid is poured into the fire extinguisher, the ports 46 and 47 are closed by the plugs 48 and 49. The nuts 45 and the cap 43 are then removed and a pump coupling is connected with the threaded nipple 42 in a manner well understood, after which air is forced into the fire extinguisher which is preferably in the position indicated in Fig. 1 with the orifice 15 disposed substantially in alinement with the orifice 41. When the pressure has reached a predetermined point in the fire extinguisher, the pump coupling is removed, the cap 43 is replaced and is secured in position by the nuts 45 as has been explained. The receptacle 5 is then inverted which will cause any air which may be disposed between the inner receptacle 6 and the outer receptacle 5 to move to the head 13. When this has been done, the nozzle 25 is opened and the pressure within the fire extinguisher will force the said air contained between the inner receptacle 6 and the outer receptacle 5 out to the nozzle through the outlet pipe 20. When all the air in the space between the inner receptacle 6 and the outer receptacle 5 has then been discharged the nozzle should be closed. The fire extinguisher is then ready for service, and it will be understood that the compressed air will be contained in the inner receptacle 5, no matter to what position the fire extinguisher may be moved. It will also be understood that with a discharge of a portion of the fire extinguishing fluid, the compressed air will not escape from the inner receptacle 6 and the space between the said inner receptacle 6 and the outer receptacle 5.

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

1. In a fire extinguisher, a receptacle, a second receptacle movably mounted within the first receptacle and having two means leading in different directions and communicating at all times with the space between the inner and the outer receptacles, and discharge means for the outer receptacle.

2. In a fire extinguisher, a receptacle, a second receptacle pivoted within the first receptacle weighted at one side of its axis and free to move relatively to the first receptacle, the second receptacle having means at all times communicating with the space between the inner and outer receptacles, and a discharge means for the outer receptacle.

3. In a fire extinguisher, a receptacle, a second receptacle pivoted within the first receptacle and weighted at one side of its axis and having at its said side, means affording communication between the inner receptacle and the space between the first and the second receptacles, and discharge means for the first receptacle.

4. In a fire extinguisher, a cylindrical receptacle, a second cylindrical receptacle disposed within the first receptacle and pivoted to the latter on a longitudinal axis, the second receptacle being weighted at one side of its axis and having at its said side means affording communication between the second receptacle and the space between the first and the second receptacles, and discharge means for the first receptacle.

5. In a fire extinguisher, a receptacle, a second receptacle disposed within the first receptacle and pivoted thereto, the second receptacle having an outlet at one side of its axis, a tube in the second receptacle disposed substantially parallel with its axis and secured to the second receptacle at its outlet, and discharge means for the first receptacle.

6. In a fire extinguisher, a receptacle, a second receptacle disposed within the first receptacle and pivoted thereto, the second receptacle having two orifices, one at each end and at one side of its axis, two tubes in the second receptacle secured thereto, one around each orifice, and discharge means for the first receptacle.

7. In a fire extinguisher, a cylindrical receptacle, a second cylindrical receptacle disposed within the first receptacle and pivoted thereto on a longitudinal axis, the second receptacle having an orifice in each of its heads at one side of its axis, two tubes in the second receptacle disposed substantially parallel with the axis of the second receptacle and secured to the heads of the second receptacle, one around each orifice.

8. In a fire extinguisher, a receptacle, a second receptacle disposed within the first receptacle and provided with two outlets,

one at the top and the other at the bottom, two tubes in the second receptacle secured thereto, one around each outlet, and discharge means for the first receptacle.

5 9. In a fire extinguisher, a receptacle, a second receptacle disposed within the first receptacle and pivoted thereto, the second receptacle having an outlet at one side of its axis, a tube in the second receptacle disposed substantially parallel with its axis and secured to the second receptacle, a discharge for the first receptacle leading from one of its ends and a valve controlling the discharge.

10 10. In a fire extinguisher, a receptacle, a second receptacle disposed within the first receptacle and provided with two outlets, one at the top and the other at the bottom, two tubes in the second receptacle secured thereto, one around each outlet, a discharge for the first receptacle leading from one of its ends and a valve controlling the discharge.

15 11. In a fire extinguisher, a receptacle, a second receptacle pivoted within the first receptacle, the second receptacle having an outlet at one side of its axis, a filling port in the first receptacle adapted to register with the outlet, means to close the port, and discharge means for the first receptacle.

20 12. In a fire extinguisher, a receptacle, a second receptacle pivoted within the first receptacle, the second receptacle having an outlet at one side of its axis, a tube in the second receptacle secured thereto around the outlet, a filling port in the first receptacle adapted to register with the outlet, means to close the port, and discharge means for the first receptacle.

25 13. In a fire extinguisher, a receptacle, a second receptacle disposed within the first receptacle and pivoted thereto, the second receptacle having two orifices, one at each end and at one side of its axis, two tubes in the second receptacle secured thereto, one around each orifice, discharge means for the first receptacle, the first receptacle having a port at one end for registering with one of the outlets in the second receptacle, and means for closing the port.

30 14. In a fire extinguisher, a receptacle, a second receptacle disposed within the first receptacle and pivoted thereto, the second receptacle having two orifices, one at each end and at one side of its axis, two tubes in the second receptacle secured thereto, one around each orifice, the first receptacle having a port at one end for registering with one of the outlets in the second receptacle, means for closing the port, and a discharge outlet for the first receptacle leading from one of its ends.

35 15. In a fire extinguisher, a receptacle, a second receptacle disposed within the first receptacle and pivoted thereto, the second

receptacle having two outlets one at each end at one side of its axis, two tubes in the second receptacle secured thereto, one around each outlet, the first receptacle having a port at one end for registering with one of the outlets in the second receptacle, means for closing the port, the first receptacle having another opening in one of its ends, means to close the last mentioned opening, and the second receptacle having an opening for registering with the second mentioned opening in the first receptacle, means to close the opening in the second receptacle, and discharge means for the first receptacle.

40 16. In a fire extinguisher, a receptacle, a second receptacle smaller than the first receptacle and disposed therein, the second receptacle being provided with means communicating at all times with the space between the first and second receptacles, a fire extinguishing fluid in the space between the two receptacles and also partially filling the second receptacle, a fluid of less specific gravity than the fire extinguishing fluid under pressure and filling the remainder of the second receptacle, discharge means for the first receptacle, and means to retain the second mentioned fluid in the second receptacle before and after a portion of the fire extinguishing fluid is discharged from the first receptacle irrespective of the position in which the fire extinguisher may be held.

45 17. In a fire extinguisher, a receptacle, a second receptacle smaller than the first receptacle and disposed therein, there being an orifice in the second receptacle, a tube disposed in the second receptacle and secured thereto around the orifice, a fire extinguishing fluid in the space between the receptacles and also partially filling the second receptacle, a second fluid of less specific gravity than the fire extinguishing fluid under pressure and filling the remainder of the second receptacle, and discharge means for the first receptacle.

50 18. In a fire extinguisher, a receptacle, a second receptacle smaller than the first receptacle disposed therein and pivoted thereto, the capacity of the second receptacle being greater than the capacity of the space between the two receptacles, the second receptacle having an outlet at one side of its axis, a tube in the second receptacle disposed substantially parallel with its axis and secured to the second receptacle around its outlet, a fire extinguishing fluid in the space between the two receptacles and also partially filling the second receptacle, a fluid under pressure filling the remainder of the second receptacle, and discharge means for the first receptacle.

55 19. In a fire extinguisher, a receptacle, a second receptacle disposed within the first receptacle and pivoted thereto, the capacity

of the second receptacle being greater than the capacity of the space between the two receptacles, the second receptacle having two outlets, one at each end at one side of its axis, two tubes in the second receptacle secured thereto, one around each outlet, a fire extinguishing fluid disposed in the space between the two receptacles and also partially filling the second receptacle, a fluid under pressure filling the remainder of the second receptacle, and discharge means for the first receptacle.

20. In a fire extinguisher, a receptacle, a second receptacle within the first receptacle and free to move relatively thereto at all times, the second receptacle having means communicating from its portion which at the moment is its bottom with the space between the first and the second receptacles and irrespective of the position in which the fire extinguisher may be held, and discharge means for the first receptacle.

21. In a fire extinguisher, a receptacle, a second receptacle within the first receptacle and free to move relatively thereto at all times, the second receptacle having means communicating at all times from its portion which at the time is its bottom with the space between the first and the second receptacles and irrespective of the position in which the fire extinguisher may be held, and discharge means for the first receptacle.

22. In a fire extinguisher, a receptacle, a second receptacle within the first receptacle and free to move relatively thereto at all times, the second receptacle having outlet means to the space between the first and second receptacles which by the movement of the second receptacle relatively to the first receptacle will at all times be at the bottom thereof regardless of the position of the first receptacle.

23. In a fire extinguisher, a receptacle, a second receptacle within the first receptacle and free to move relatively thereto at all times, the second receptacle having outlet means communicating at all times with the space between the first and second receptacles which by the movement of the second receptacle relatively to the first receptacle will at all times be at the bottom thereof regardless of the position of the first receptacle.

24. In a fire extinguisher, a receptacle, a second receptacle pivoted within the first receptacle and weighted at one side of its axis and having at its said side means affording at all times communication between the inner receptacle and the space between the first and second receptacles, and discharge means for the first receptacle.

25. In a fire extinguisher, a receptacle, a second receptacle disposed within the first receptacle, the second receptacle having two orifices, one at each end, two tubes in

the second receptacle secured thereto, one around each orifice, and discharge means for the first receptacle.

26. In a fire extinguisher, a receptacle, a second receptacle pivoted within the first receptacle and having means communicating at all times with the space between the first and second receptacles, and discharge means for the first receptacle.

27. In a fire extinguisher, a receptacle, a second receptacle pivoted within the first receptacle, the second receptacle being weighted at one side and having at its said side means affording at all times communication between the second receptacle and the space between the first and second receptacles.

28. In a fire extinguisher, a receptacle, a second receptacle disposed within the first receptacle movable relatively thereto and provided with an outlet, a filling port in the first receptacle with which the outlet in the second receptacle is adapted to register, means for closing the filling port, and discharge means for the first receptacle.

29. In a fire extinguisher, a receptacle, a second receptacle disposed within the first receptacle and free to move relatively thereto, the second receptacle having means affording communication between the interior of the second receptacle and the space between the first and second receptacles which by the movement of the second receptacle relatively to the first receptacle will at all times be at the bottom thereof regardless of the position of the first receptacle, a filling port in the first receptacle with which the said means are adapted to register, means for closing the filling port, and discharge means for the first receptacle.

30. In a fire extinguisher, a receptacle, a second receptacle disposed within the first receptacle movable relatively thereto and provided with an outlet and a port, two ports in the first receptacle adapted to register with the outlet and the first port, means to close the ports in the first receptacle, and discharge means for the first receptacle.

31. In a fire extinguisher, a receptacle, a second receptacle disposed within the first receptacle and movable relatively thereto, the second receptacle having two independent means disposed at opposite ends of the second receptacle, and communicating at all times with the space between the first and second receptacles.

32. In a fire extinguisher, a receptacle, a second receptacle pivoted within the first receptacle and movable relatively thereto, the second receptacle having two independent means disposed at opposite ends of the second receptacle, and communicating at all times with the space between the first and second receptacles.

33. In a fire extinguisher, a receptacle, a

second receptacle smaller than the first receptacle and disposed therein, the second receptacle being provided with means communicating at all times with the space between the first and the second receptacles, a
5 fire extinguishing fluid in the space between the two receptacles and also partially filling the second receptacle, a fluid of less specific gravity than the fire extinguishing fluid
10 under pressure and filling the remainder of the second receptacle, discharge means for the first receptacle, and means to retain the second mentioned fluid in the second receptacle before and after a portion of the fire

extinguishing fluid is dispensed from the 15 first receptacle and irrespective of the position in which the fire extinguisher may be held.

34. In a fire extinguisher, a receptacle, a second receptacle within the first receptacle, 20 the second receptacle having means communicating from its portion which at the time is its bottom with the space between the first and the second receptacles and irrespective of the position in which the fire ex- 25 tinguisher may be held, and discharge means for the first receptacle.

DAVID EDWARD MUIR.