H. H. COCKBURN.

FIRE EXTINGUISHING APPARATUS.

APPLICATION FILED DEC. 19, 1913.

1,128,412. Patented Feb. 16, 1915.

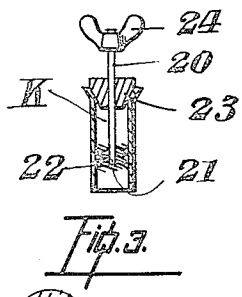


Fig. 3.

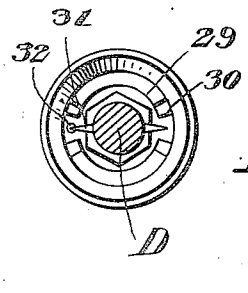


Fig. 2.

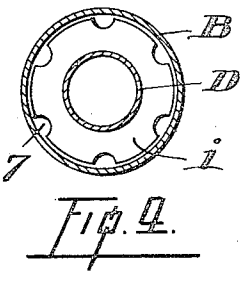


Fig. 4.

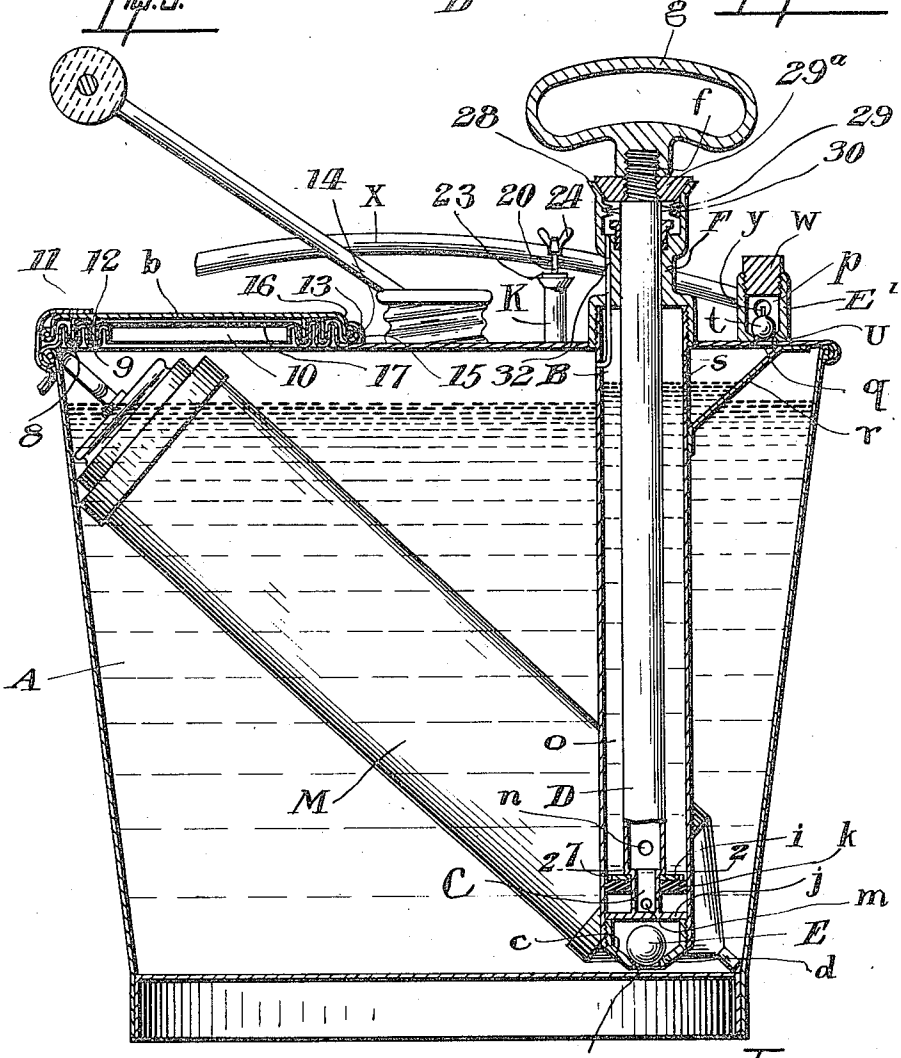


Fig. 1.

WITNESSES

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FIRE-EXTINGUISHING APPARATUS.

1,128,412. Specification of Letters Patent. Patented Feb. 16, 1915.

Application filed December 19, 1913. Serial No. 807,700.

To all whom it may concern:

Be it known that I, HENRY HERBERT COCKBURN, a subject of the King of Great Britain, and resident of Binscarth, in the Province of Manitoba, Dominion of Canada, have invented certain new and useful Improvements in Fire-Extinguishing Apparatus, of which the following is the specification.

My invention relates to improvements in fire extinguishing apparatus, and the objects of the invention are to hermetically seal the interior of such fire extinguishing apparatus and to allow the communication of air therewith as found desirable, and it consists essentially of the improved construction hereinafter more particularly described by the following specification.

Figure 1 is a sectional view of the improved fire extinguishing apparatus. Fig. 2 is a plan view of the air controlling means located in the stuffing box. Fig. 3 is a detail of the auxiliary air controlling means. Fig. 4 is a transverse section of the pump cylinder on the line 2—2 of Fig. 1.

Like letters of reference refer to like parts in the several drawings.

Referring to the drawings, A is the receptacle for the fire extinguishing liquid, such receptacle being of any suitable shape, that shown being in the form of a pail, such pail being provided with a cover having an aperture 10 located therein normally closed by an auxiliary covering *b* which is hinged by a flange 16 to the spindle 13 supported in the brackets 14 and 15 in the top of the cover. To prevent deterioration of the contents of the receptacle a plurality of grooves 8 and 9 are formed in the cover about the aperture 10 and the cover *b* is provided with downwardly extending flanges 11 and 12 extending into these grooves. In closing the cover a piece of tin foil 17 or similar substance is preferably stretched across the aperture and grooves and the grooves are also filled with wax or a like sealing substance.

Extending through the top of the pail and secured thereto is a pump cylinder B, the lower end of which is closed by the externally screw threaded plug *c* provided with a port Z surrounded by a conical valve seat *d* on which seats a ball E. Operating in the pump cylinder is a piston head C secured to and formed integral with the piston rod D which extends upward through the top of the pump cylinder and is supported by a suitable stuffing box F having screw threaded engagement with the top of the cylinder. The stuffing box F is further provided with a flange extending from the upper face thereof and formed integral therewith, the outer edge 28 of the said flange being splayed outwardly, thereby forming a suitable seating for a plug 29^a. The top of the piston rod is provided with a reducing screw threaded portion *f* on which screws the handle *g*, the plug or valve 29^a being located between the shoulder formed on the said piston rod and the bottom face of the said handle *g*. The piston rod D makes an air tight connection with the stuffing box F and this is brought about by means of the packing or stuffing gland having a threaded engagement with the said stuffing box F. 29 represents threads extending around the inner periphery of the said upwardly extending flange formed on the stuffing box F, the said threads extending only partially around and being disposed at a suitable angle thereto. In conjunction with the said thread 29 there is a lower thread 30 which extends slightly beyond the upper thread, thereby forming a suitable guiding means, the object of which will be made clear hereafter. The piston rod D is further provided with pins 31 which are located on the outer periphery thereof and attached in any suitable manner to the said rod, that preferably chosen being by means of a screw threaded engagement.

32 represents a pipe or conduit extending from the upper face of the packing or stuffing box F and projecting into the cylinder B, the lower end of the said pipe passing through the cylinder walls into the interior A of the pail.

K represents a pipe or conduit located in the cover and extending therethrough, the outer end of the said conduit being splayed outwardly, thereby forming a convenient seating for a plug to be located thereon.

20 represents a spindle extending through the conduit K, such spindle being provided with a pin 21 fixed in its outer periphery, said pin being designed to engage with threads 22 located in and extending partially around the inner periphery of the said conduit K. 23 represents a plug or valve of conical formation and of any suitable material rigidly attached to the said spindle 20 and designed to engage with the

outer splayed end of the conduit K, the outer end of the said spindle 20 being further provided with a handle 24 designed to operate the same. To admit air into the interior of the receptacle the handle 24 is turned in one direction, thereby removing the valve or plug 23 from the outer splayed end of the conduit K allowing the air to enter the casing A.

The piston C consists essentially of two annular plates *i* and *j* of slightly less diameter than the inside of the cylinder B and spaced apart to leave an annular space between and a vertically movable packing ring *k* located between the two annular plates. The annular plates *i* and *j* preferably have notches 7 formed in their edges to enable the liquid to more readily flow past the same. The piston rod D has one set of ports *m* affording communication between the interior thereof and the annular space *l* between the two annular plates *i* and *j*, and a second set of ports *n* affording communication between the interior of the piston rods and the annular space *o* between the cylinder and piston rods.

The discharge nozzle E′ is secured to the top of the receptacle A, and is formed with a hollow body portion *p*, and inlet ports *q* provided with a valve seat *u* and ball valve *t* which, when the fire extinguisher is not in use, is adapted to prevent the inflow of air into the receptacle A. The outlet port is connected to the discharge hose *x*, and a pin *y* is provided which normally prevents the ball *t* from seating against the hose port and overcomes the liability of its sticking thereto. A conducting spout *r* extends between the port *q* and the outside of the cylinder B and ports *s* are provided in the side of the cylinder B affording communication between the interior of the same and the spout *r*.

To enable the extinguisher to be used by more than one person an auxiliary or supplemental extinguisher M is located within the larger receptacle, preferably being in the form of a syringe.

In the operation of the device the receptacle having been filled with any desired fire extinguishing liquid, the handle *g* is grasped and given one half turn by means of which the pins 31, which were adapted to engage with the threads 29 and 30, are freed therefrom, so permitting of the rod D being drawn upwardly. By this means the valve or plug 29 is removed from the seating 28 and air is permitted to flow through the pipe 32 into the interior A of the receptacle.

An auxiliary device is also provided, consisting of the conduit K having the conical plug or valve 23 located in the upper splayed edge thereof. This plug is rigidly mounted on the spindle 20 and is operated by means of the handle 24 rigidly attached to the outer end of the said spindle. By turning the handle 24 in a clockwise direction the plug or valve 23 is removed from its seating and the air allowed to enter by this means into the interior A of the receptacle or pail.

In the operation, the packing ring *k* moves downwardly on to the bottom annular plate *j* and a vacuum being formed in the bottom of the cylinder, the liquid in the receptacle rushes into the bottom of the cylinder, raising the feed valve E and the bottom portion of the pump cylinder is filled. In the downward movement of the piston rod, the packing ring *k* moves to the upper position against the plate *i* and the liquid in the bottom portion of the cylinder, passes around the plates *j* in through the ports or passages *m* and out through the ports or passages *n*, into the annular space *o*, and so in this operation the top portion of the cylinder is partially filled. In the next upward movement of the piston and piston rods a portion of the contents of the cylinder above the piston is forced out through the spout *r* and discharge nozzle E′ unsealing the ball in doing so. In the next downward movement of the piston, the packing ring *k* again assumes its position against the upper plate *i*, and the contents of the bottom portion of the cylinder rushes through the piston into the annular space above, and a portion of the contents of the top part of the cylinder is again forced out through the discharge nozzle. This operation may be repeated as often as desired and thus, at each stroke of the piston, whether upward or downward, the liquid is forced through the discharge nozzle. The discharge on up and down strokes may be equalized by proportioning the area of the piston rod D to the cylinder B. It will be clear that since the volume of liquid which occupies the space below the piston, when the said piston is at its extreme upward stroke, is twice the volume which can be contained on the upper side of the piston, owing to the fact that the piston rod occupies half the volume of the said upper space, discharge must necessarily take place during both the upward and downward stroke of the piston.

It is observed that when the device is not in operation the ball *t* rests on its seat and closes the port *q* so that no air can enter into the receptacle.

The amount of discharge on the down stroke is, of course, proportional to the diameter of the piston rod, for it is the insertion of the piston rod into the cylinder B already filled with liquid, which causes part of the liquid therein to be discharged through the hose as above described.

It will be observed that by unscrewing the stuffing box F, the piston rod and piston may be removed, permitting access to the

ball valve E and allowing the packing ring *k* to be cleansed or inspected. When the extinguisher is not in use the liquid is filled into the casing A to a predetermined level. The conduit K is closed by means of the valve 23, thereby preventing the air from entering into the said casing A. In closing the valve located in the top of the plunger rod the pin is adapted to be guided by the bottom thread 30 thereby facilitating the pin being located between the thread 29 and the thread 30.

What I claim as my invention is:

A fire extinguisher of the class described consisting of a casing adapted to be filled with a chemical fire extinguisher, of a cover located in the said casing, a cylinder, a stuffing box adapted to make screw engagement with the outer end thereof, the upper face of the said stuffing box being provided with an upwardly extending flange, threads located in and extending partially around the inner periphery of such upwardly extending flange, a piston rod operating in the said cylinder, such piston rod being provided with pins located in its outer periphery, said pins being designed to engage with the said threads, a plug located on the upper end of such piston rod and designed to engage with the upper end of the said upwardly extending flange, and a pipe extending through the said stuffing box, the lower end of the said pipe being located in the said casing, as and for the purpose specified.

In witness whereof I have hereunto set my hand in the presence of two witnesses.

HENRY HERBERT COCKBURN.

Witnesses:

BEATRICE BRESSER,

F. E. BARBER.