Nov. 23, 1937. J. L. SEAT 2,099,828

PORTABLE FIRE EXTINGUISHER

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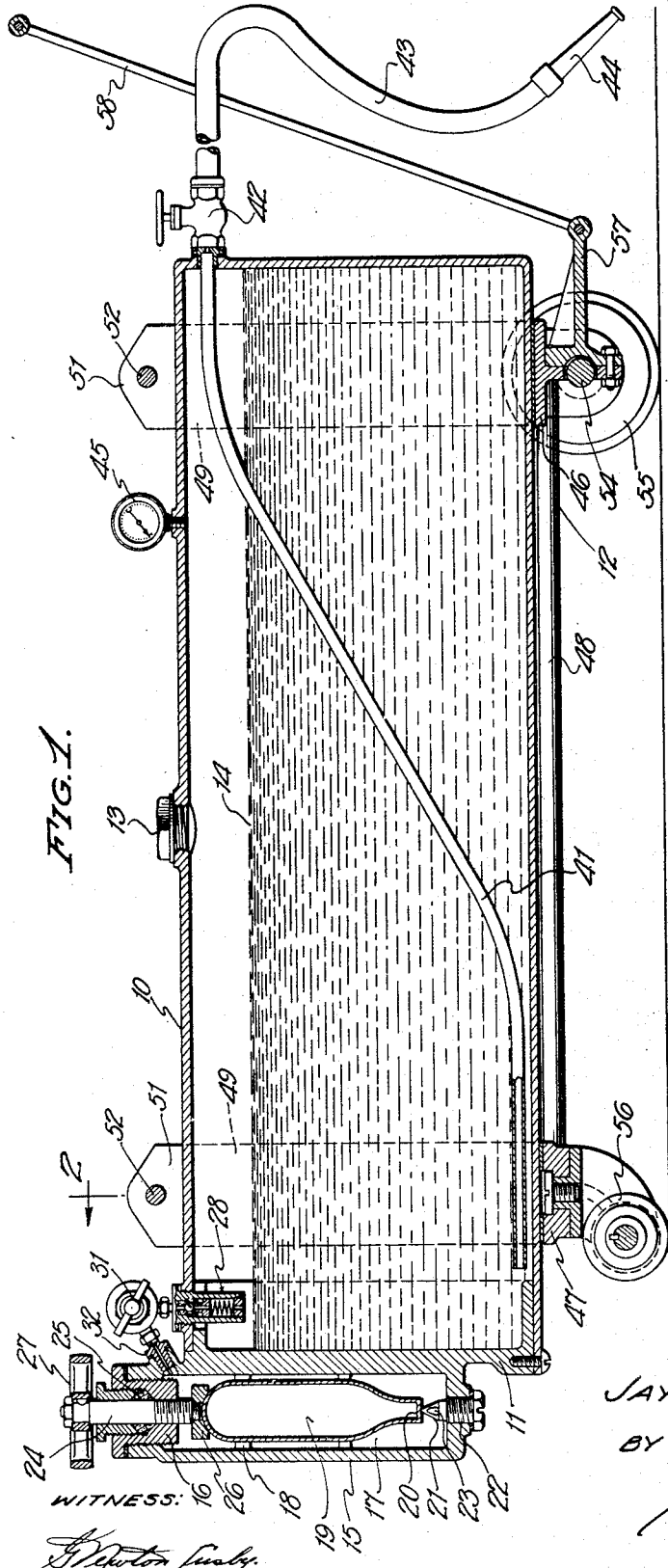


FIG. 1.

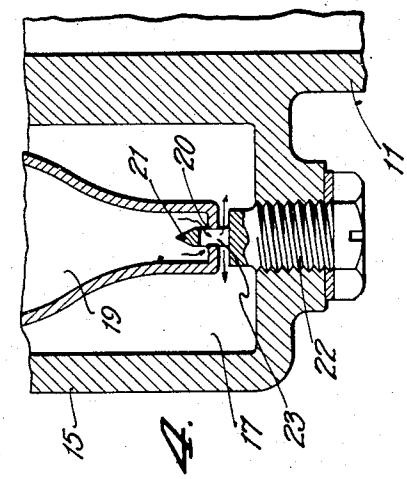


FIG. 4.

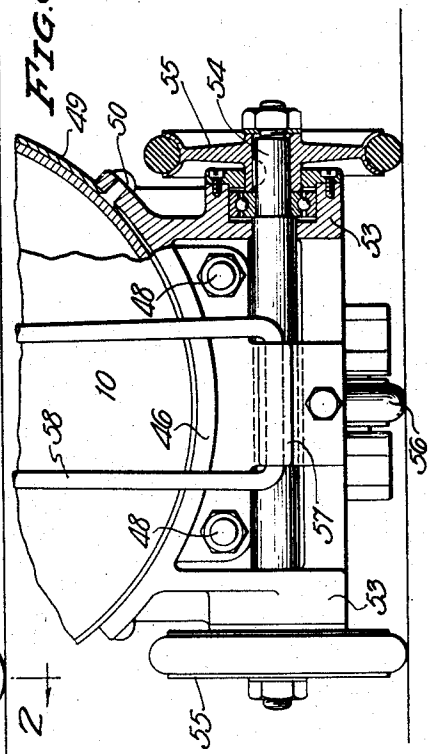


FIG. 3.

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FIG. 2.

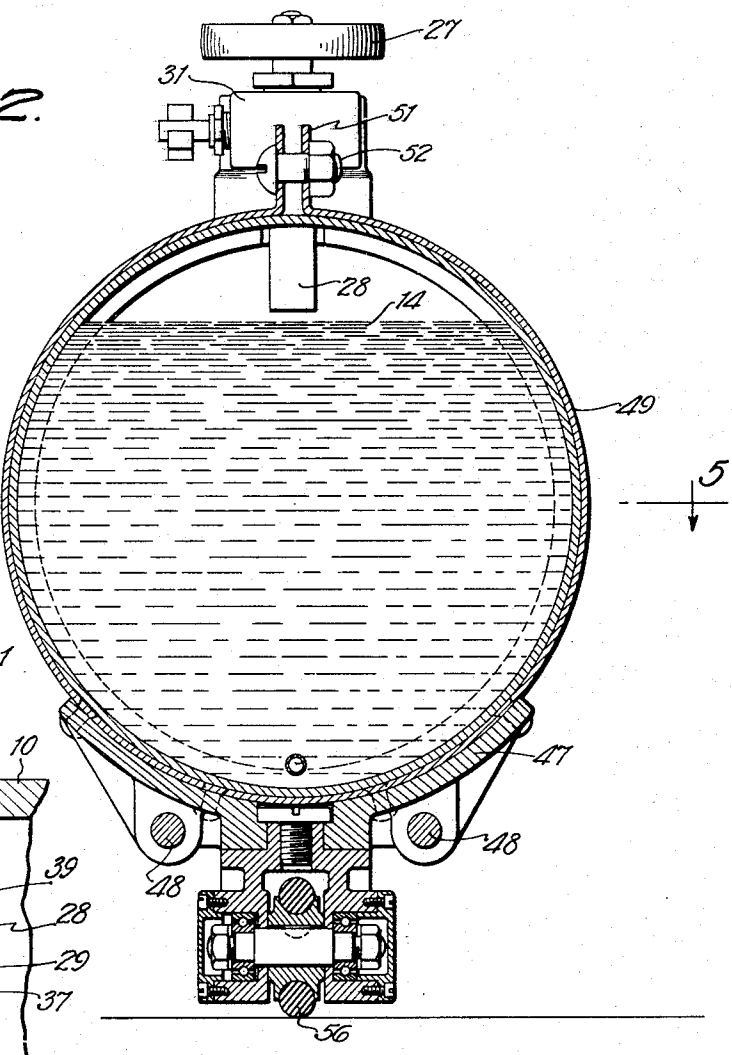


FIG. 6.

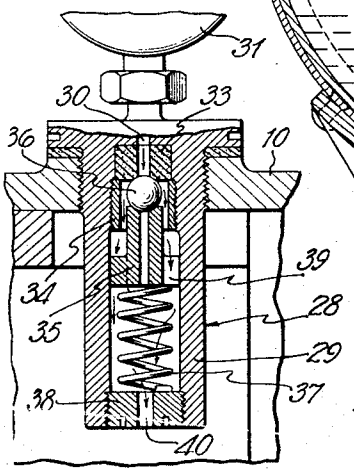
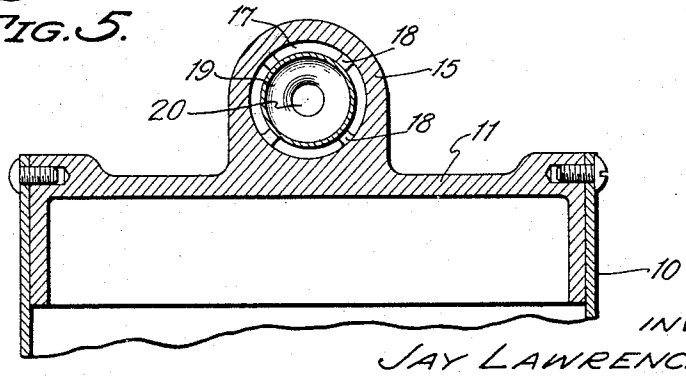


FIG. 5.



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UNITED STATES PATENT OFFICE

2,099,828

PORTABLE FIRE EXTINGUISHER

Jay Lawrence Seat, Fairfield, Conn.

Application January 3, 1935, Serial No. 200

3 Claims. (Cl. 169—31)

This invention relates to improvements in fire extinguishers.

The primary object of the invention resides in a fire extinguisher operable on the principle similar to that shown and described in my prior Letters Patent No. 2,016,301, granted October 8, 1935, that is, fluid pressure from rupturable cartridge is released into a chamber containing a fire extinguishing liquid for the purpose of expelling the liquid therefrom under pressure. In the construction embodied in the above mentioned patent, the same was designed for a small capacity hand extinguisher, whereas this invention embodies a portable fire extinguisher for a relatively large capacity of fire extinguishing liquid which necessitates a different construction and arrangement of parts from that shown in the said patent.

Another feature of the invention is the provision of a relatively large capacity fire extinguisher which is mounted upon a hand truck to enable the expeditious rolling of the same to the location of a conflagration to be extinguished.

A further object of the invention is to provide a pressure tight fire extinguisher which embodies a tank adapted to contain a supply of fire extinguishing liquid, there being a pressure cartridge compartment at one end of the tank for compactly supporting an elongated pressure cartridge in a position at right angle to the length of the tank to avoid the unnecessary lengthening of the tank or body without increasing the capacity.

A further feature is to provide a relatively large capacity fire extinguisher which after each use, the same may be quickly and easily refilled with fire extinguishing liquid, and the used pressure cartridge removed and replaced by a fully loaded one.

With these and other objects in view, the invention resides in the certain novel construction, combination and arrangement of parts, the essential features of which are hereinafter fully described, are particularly pointed out in the appended claims, and are illustrated in the accompanying drawings, in which:

Figure 1 is a vertical longitudinal sectional view showing the parts in inoperative position.

Figure 2 is an enlarged vertical transverse sectional view on the line 2—2 of Figure 1.

Figure 3 is a fragmentary front elevational view with parts shown in section.

Figure 4 is an enlarged detail vertical sectional view illustrating the manner in which the pressure cartridge is punctured to release the gaseous content thereof.

Figure 5 is an enlarged detail horizontal sectional view on the line 5—5 of Figure 2.

Figure 6 is an enlarged vertical sectional view of the pressure check valve.

Referring to the drawings by reference characters, the numeral 10 designates a cylindrical tank closed at one end by a removable end plate 11 and which tank is suported in a horizontal position upon a wheel truck 12. The top of the tank 10 is provided with a filling opening closed by a removable plug 13 to enable the tank 10 to be filled with a chemical fire extinguishing fluid of the non-pressure type 14. The tank is filled with the fluid 14 to a point short of the top of the tank to provide space for a head of pressure for expelling the liquid 14 from the tank during operation of the extinguisher.

Formed integral with the end plate 11 is a casing or housing 15, the same being provided with an opening in the top thereof closed by a removable screw plug 16. The interior of the casing or housing 15 constitutes a pressure cartridge chamber 17 and extending inwardly and radially from the walls of the chamber are lugs 18 which act as seats for supporting the pressure cartridge 19 in an inverted position within the chamber and in spaced relation to the walls thereof. The neck end of the cartridge 19 is provided with a rupturable seal or closure 20, which rests upon the pointed end 21 of a piercing member 22, which member is threaded through the bottom wall of the casing 15. The pointed end 21 of the piercing member is provided with openings 23 to enable the pointed end to pierce the seal 20 and release the contents of the cartridge through the openings 23 into the chamber 17.

For the purpose of manually forcing the sealed end of the pressure cartridge against the piercing element, I provide a stem 24 which is threaded into the plug 16, the joint between the stem and the plug being sealed by a gland 25. The inner end of the stem 24 carries a head 26 which is provided with a seat corresponding in shape to the inverted bottom end of the cartridge 19, whereas the outer end of the stem is provided with a manipulating handle 27 to facilitate turning of the stem 24 during operation for the piercing of the pressure cartridge. The opening in the top of the casing 15 is of a size to facilitate the insertion of the cartridge 19 into the chamber 17 upon the removal of the plug 16.

Supported by the top of the tank 10 adjacent the end plate 11 is a check valve 28 which is intended to permit the passage of fluid pressure

from the chamber 17 to the tank 10 and to prevent back pressure from the tank 10 to the chamber 17. The check valve 28 comprises a cylindrical casing 29 threaded in the top of the tank 10, while the top of the casing 29 is provided with an opening 30 communicating with a control valve 31 which is in turn connected by a coupling 32 to the casing adjacent the top thereof. Thus it will be seen that a passage is provided between the top of the pressure chamber 17 and the interior of the tank 10, that is, through the manual control valve 31 and the coupling connecting the valve respectively with the check valve 28 and the interior of the cartridge casing 15.

Seated within the top of the check valve casing 29 is a packing ring 33, secured in position by a ring 34 threaded within the casing 29. Slidable vertically within the casing 29 is a member 35 provided with a seat for supporting a ball 36. A spring 37 is interposed between the lower end of the member 35 and the closure plug 38 which is threaded in the bottom of the casing 29. The spring 37 tends to act upon the member 35 to seat the ball 36 against the packing 33 to close the passage connecting the tank with the pressure chamber 17. The member 35 is provided with openings 39 to permit of the passage of fluid pressure through the check valve when the ball 36 is unseated, and which fluid pressure passes from the casing 29 through an outlet 40 in the closure plug 38.

Extending from the top of the front wall of the tank 10 toward the rear end of the tank, is an outlet tube 41, the rearwardly extending end of the tube terminating adjacent the bottom of the tank 10. The front end of the tube 41 connects with a control or regulating valve 42, which is in turn connected to a length of hose 43 having a nozzle 44 at the free end thereof.

Mounted on top of the tank 10 is a pressure gage 45 for visibly indicating the pressure within the tank 10 during operation of the extinguisher.

The wheel carriage 12 comprises a chassis consisting of a front saddle 46 and a rear saddle 47, the said saddles being rigidly connected together by tie rods 48. Encircling the tank 10 adjacent the front and rear thereof, are straps 49, which straps are fixedly secured to the respective saddles by rivets or the like 50 and the free ends of the straps terminate in ears 51 which are connected together by bolts 52.

Formed integral with the front saddle 46 are depending bearings 53, which support a transversely disposed shaft 54, the spindle ends of which carry wheels 55. By reference to Figure 3 of the drawings, it will be seen that the shafts are mounted on ball bearings, although roller or other types of anti-friction bearings may be resorted to.

The rear saddle 47 turnably supports a trailing castor 56, and the shaft for the castor is mounted in ball bearings to reduce friction and facilitate the easy rolling of the device.

Extending forwardly from the front saddle 46, is an arm 57 to which a bail handle 58 is pivotally connected, and by which handle, the fire extinguishing device may be pulled from one place to another as and when required by the efforts of a single individual.

The device operates in the following manner, assuming that the parts are in the set position shown in Figure 1 of the drawings. An operator turns the handle 27 to force the sealed end of the cartridge 19 against the pointed end of the piercing element 22, whereupon the pressure cartridge which may contain nitrogen or other fluid pressure becomes ruptured, thus releasing the contents of the cartridge into the chamber 17. The valve 31 is turned on, whereupon the presure of the fluid from the chamber 17 opens the check valve 28, permitting the fluid pressure to enter the top of the tank 10. As the pressure enters the space above the chemical solution 14, a head of pressure is provided sufficient to force or expel the solution 14 from the tank 10. The operator opens the valve 42, whereupon the contents of the tank 10 passes through the tube 41 and out through the hose 43 and nozzle 44.

After an operation of the fire extinguisher, the solution 14 may be replaced through the filling opening 13 and the used cartridge 19 removed from the chamber 17 and a new one substituted therefor.

While I have shown and described what I deem to be the most practical embodiment of my invention, I wish it to be understood that such changes as come within the scope of the appended claims may be resorted to if desired.

Having thus described the invention, what I claim as new and desire to secure by Letters Patent of the United States, is:—

1. In a portable wheel type fire extinguisher, a horizontally disposed tank adapted to be mounted on a wheel chassis, a pressure cartridge compartment disposed beyond one end of said tank and having an opening in the top thereof for the insertion of a puncturable pressure cartridge thereinto, a discharge outlet at the other end of said tank, means within said cartridge compartment for slidably supporting a pressure cartridge in a vertical position, a piercing member extending upwardly from the bottom of said compartment, a communicating passage between the top of said tank and the top of said cartridge compartment, a screw plug threaded into the open top of said cartridge compartment, and manipulative means mounted in said screw plug and manually operable for slidably forcing a pressure cartridge into puncturing engagement with said piercing member whereby to release the pressure contents thereof for passage from said compartment to the top of said tank.

2. In a portable wheel type fire extinguisher, a horizontally disposed elongated tank adapted to contain a fire extinguishing liquid of the non-pressure type and having a discharge outlet, an end closure for one end of said tank having a fluid pressure cartridge compartment therein which opens through the top thereof, a passage establishing communication between the top of said compartment and the top of said tank, a check valve arranged within said passage and movable to an open position by pressure from said compartment, a removable screw plug closing the open top end of said compartment, a fixed piercing element at the bottom of said compartment, means for slidably supporting a pressure cartridge within said compartment in spaced relation to the walls thereof when inserted through the open top end thereof, and in contact with the piercing element, and manually operable means mounted in the screw plug for imparting sliding movement to a pressure cartridge to force the same against said piercing element to puncture the same to release the contents thereof into said compartment.

3. In a portable wheel type fire extinguisher, an elongated horizontally disposed fluid fire ex-

tinguisher tank open at one end, a closure member secured at the open end of said tank, said closure member having a fluid pressure compartment therein which opens through the top thereof, a communicating passage connecting said compartment and the top of said tank, a stationary cartridge piercing element extending inwardly from the bottom wall of said compartment, guide means within said compartment for slidably supporting a puncturable pressure cartridge in spaced relation to the walls of said compartment and with one of its ends in alinement with said piercing element, a screw plug closing the top of said compartment, means operable from the top exterior of said closure member for forcibly sliding a cartridge held by said guiding means in the direction toward said piercing element, said last named means comprising a stem threaded in said screw plug, a head on the inner end of said stem for bearing engagement with the top end of a pressure cartridge, and a manipulating handle on the outer end of said stem.

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