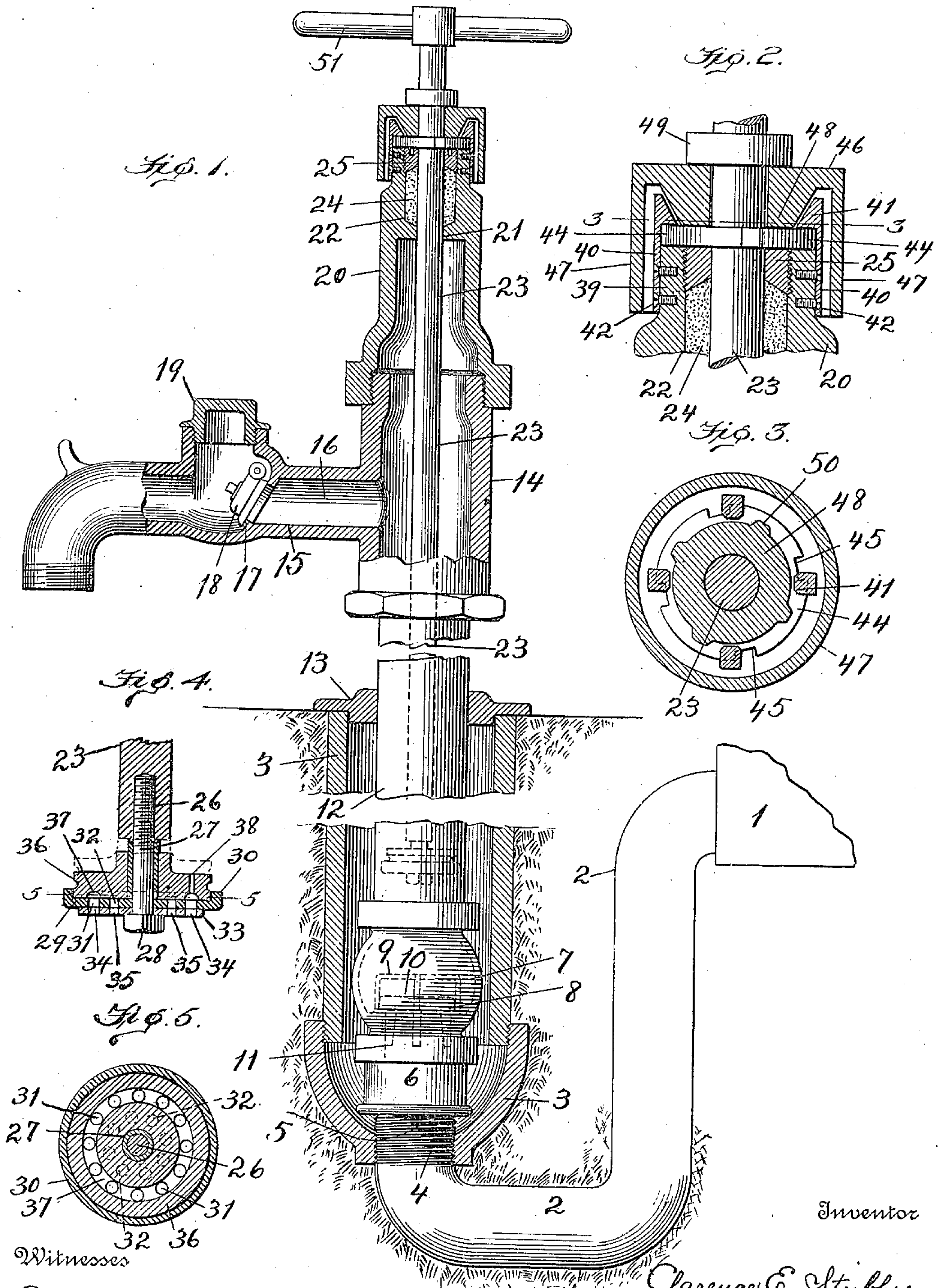


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PUMP.

APPLICATION FILED NOV. 5, 1909.

964,332.

Patented July 12, 1910.



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PUMP.

964,332.

Specification of Letters Patent.

Patented July 12, 1910.

Application filed November 5, 1909. Serial No. 526,320.

To all whom it may concern:

Be it known that I, CLARENCE E. STUBBS, a citizen of the United States, residing at Baltimore, in the State of Maryland, have
5 invented certain new and useful Improvements in Pumps, of which the following is a specification.

This invention relates to improvements in pumps and has reference to a pump particularly adapted for handling gasoline
10 which, because of its extreme volatile nature must be handled with the greatest care.

The object of the present invention is to provide an improved keyless self-locking
15 device to lock the piston in an inoperative position at the end of the pumping operation and thus prevent the unauthorized operation of the latter. With this and other objects in view, the invention is illustrated in
20 the accompanying drawing in which,—

Figure 1 shows the improved pump, part section and partly in side elevation and also illustrates an improved jacket or casing for inclosing the same at a point between the
25 discharge and the storage tank. Fig. 2, is an enlarged vertical sectional detail of the locking mechanism at the upper end of the pump. Fig. 3, is a horizontal cross-section through the same,—the section being taken
30 on the line 3—3 of Fig. 2. Fig. 4, is an enlarged vertical section through the piston of the pump, and Fig. 5, is a horizontal sectional view of the same,—this section being taken on the line 5—5 of Fig. 4.

35 One of the desirable and preferred features of a gasoline storage system is to have the storage receptacle, designated in the drawing by the numeral, 1, buried under ground and provided with a pipe, 2, which
40 extends from the lower portion of the tank and enters the lower end of a jacket or casing, 3, with which it makes a tight joint by screw threads, 4. This jacket or casing extends vertically into the ground and is of a
45 cylindrical form so that the pump cylinder may pass down centrally therein.

A coupling member, 6, engages the up-
turned threaded end, 5, of the pipe, 2, and said member has a valve chamber, 7, formed
50 therein with a seat, 8, at its lower end which is directly over the pipe-end, 5. A suitable cage or guide-frame, 9, is provided around and over the seat, 8, and a valve, 10, has position in said frame and is provided
55 on its bottom side with a plurality of legs or lugs, 11, which enter the valve port and

guide the valve as it moves vertically within the frame.

The lower end of the pump cylinder, 12, enters the chambered upper end of the coupling, 6, and then extends in a vertical direction up through the center of the jacket and passes through a plate, 13, which fits over the upper end of the jacket whereby to
60 serve both as a cover for the jacket and also as a centering support for the cylinder.

A nozzle section, 14, is carried at the upper end of the cylinder and has an integrally-formed nozzle, 15, which projects laterally from one side thereof. This nozzle
70 has a horizontal passage, 16, with a port or valve seat, 17, at one end thereof and a valve, 18, is pivotally sustained in the nozzle so as to normally rest upon said valve seat and thus prevent the escape of vapor from the
75 pump cylinder. A screw cap, 19, is provided on the upper side of the nozzle upon the removal of which access may be gained to the valve on the inside.

The upper end of the nozzle section, 14,
80 is provided with external screw-threads to receive the lower screw-threaded end of a head, 20, which latter has a central bore, 21, near its upper end and a central vertical recess, 22, above the bore.
85

A rod, 23, extends vertically through the cylinder, 12; nozzle section, 14, and head, 20, and said rod also extends through the bore, 21, of the head then through the recess, 22, and projects at the upper end of the pump.
90 In order to effect a tight joint at the upper end of the head I provide a suitable packing, 24, in the recess, 22, which is compressed about the rod by means of a suitable gland, 25, that screws down into the upper end of
95 said recess.

The lower end of the rod, 23, carries a central vertical pin or bolt, 26, around which a sleeve, 27, is placed and at the lower end of the sleeve, and between the latter and the
100 head, 28, of the bolt, I provide a cup, 29, having in the present instance, an up-turned circumferential flange, 30, whereby to form a slight recess or seat at the upper side of the cup. This cup is preferably formed of
105 a flexible or pliable material such as leather, so that it may hug the vertical wall of the cylinder like a piston.

Two series of perforations or ports, 31, and, 32, respectively are provided in the cup
110 and in the present instance these ports are arranged in a circle and the series, 32, being

located concentrically with respect to and in the space inclosed by the series, 31.

A reinforce plate or disk, 33, is provided at the lower side of the flexible cup to prevent the latter from springing or curling downwardly and this disk is also provided with a series of holes or ports, 34, that register with the ports, 31, and another series of ports, 35, which are directly below and register with the ports, 32, of the cup.

It is to be understood that the cup and disk are held by being clamped between the bolt head and the sleeve and therefore have a rigid position with respect to the lower end of the rod, 23.

A disk valve, 36, is loosely carried on the sleeve, 27, between the cup and the lower end of the rod so that it may have a vertical movement on the sleeve. This valve is provided in its lower face or bottom surface with a circular groove, 37, whose position is such as to register with the outer series of ports, 31, in the cup while between said ports and the center said bottom surface of the valve is flat so as to seat down over and cover the inner series of ports, 32, in the said cup. A small passage, 38, extends vertically through the disk valve from the upper side and opens into the circular groove or channel, 37, for a purpose presently to be described.

By reference to Figs. 4 and 5 it will be seen that the disk valve has vertical movement on the sleeve, 27, between the cup and the lower end of the rod and that when in its lowermost position will be in the recess at the upper side of the cup, 29. When thus seated, the valve will cover all the ports, 31, and, 32, but the small vertical passage, 38, which communicates with the groove or channel, 37, will permit oil at the upper side of the valve to slowly drain back to the under side of the valved piston by passing through and discharging at the bottom side of the drain valve piston through port, 34, until the level of the oil in the pump cylinder has reached the level of the oil in the storage tank.

The head, 20, at the upper end of the pump cylinder is provided with a reduced upper end, 39, and said end carries one or more yielding latch fingers, 40, each having an inwardly-projecting hook, 41, at its upper end which projects over the upper end of the head. These fingers are attached to the vertical side of the head by means of suitable screws, 42, and their hook ends are capable of springing outwardly when pressed in that direction but upon being released will immediately spring back to their normal positions.

The rod, 23, carries a disk plate, 44, which normally has position so that its lower horizontal surface may seat or rest upon the upper end of the head and between the latter

and the hooks, 41, which overhang it and by this means the latch fingers will hold the disk down and consequently prevent the rod from being drawn upwardly through the cylinder. The disk plate, 44, has one or more peripheral notches, 45, that extend vertically therein from the upper to the lower surface,—the number of the notches being determined by the number of vertical latch fingers. In the present instance four latch fingers and consequently four notches are employed but it is obvious that one or more fingers would be sufficient to engage the upper side of the disk plate to prevent the latter and the rod, 23, from being raised.

It will thus be seen that when the pump parts are at their normal position and at rest, the latch fingers will engage and hold the disk plate down and thus prevent vertical movement of the rod, 23, and before the rod can be raised as in the act of pumping, the disk plate must be released from the latch fingers. To effect this I have provided means whereby the fingers may be spread or sprung outwardly and by reference to Figs. 2 and 3 it will be seen that in the present instance this means consists of a cap, 46, having a depending annular flange, 47, which incloses the upper reduced end of the cylinder and which has a central frusto-conical portion, 48, at its under side which rests upon the upper side of the disk plate, 44, and which has a central vertical passage through which latter the rod, 23, extends. A collar, 49, is provided on the rod at the upper side of the cap so as to prevent longitudinal movement of the latter on the rod but as the cap and rod are loosely connected the cap may be turned or revolved on the rod between the disk-plate and collars while the depending flange, 47, of the cap covers the latch-fingers. The inclined surface of the central conical portion of the cap is provided with one or more ribs or projections, 50, as shown in Fig. 3, which project therefrom and these ribs extend outwardly a sufficient distance to be brought into contact with the hooks, 41, of the latch-fingers by rotating the cap. It will thus be seen that when the cap is rotated these ribs will contact with the inner edges of the hooks and will force the latter outwardly. If then, the disk is held stationary and the rod, 23, turned, the disk-plate, 44, which is rigid on the rod will also turn and the notches 45, in the disk-plate can be made to register with the hooks of the spring-fingers, at which point the rotation will be stopped.

When the cap has been turned so as to press the hooks outwardly but not sufficiently to disengage the hooks from the disk plate, 44, the rod will then be turned to revolve the disk plate and bring the notches of the said disk plate into register with said outwardly-pressed hooks where-

upon the pump rod is ready for elevation because it can then be raised by grasping the cross-bar, 51, and the notches in the disk plate will pass over the outwardly-pressed hooks at the upper end and thus the vertical strokes of the pump rod may be made. Obviously as the cap is carried on the rod the same will move therewith during the pumping operation and upon a completion of the pumping the rod will merely be released whereupon it will settle by gravity and disk plate, 44, will simply press the latch-fingers out momentarily while passing downwardly between them after which they will immediately spring back over the disk-plate and lock the same down automatically. It will thus be seen that there are two different motions to be made to unlock the pump rod,—one being a revolution or rotation of the cap to bring the ribs, 50, against and effect an outward movement of the spring fingers and the other a rotation of the pump rod independently of the cap to bring the notches, 45, into register with the hooks of said finger, thus bringing about a co-relation of the three elements, disk, cap and fingers that enables the rod to be moved.

It is desirable that in practice there be provided a series of radial lines on the cap and collar so that by means of the same the parts may be turned to free the rod, thus serving as a combination for those locking parts.

It is obvious that at each downward stroke of the rod the oil will pass through ports, 31, 32, 34, and, 35, of the cup at which time the valve, 36, will be up as shown in broken lines in Fig. 4 and from said ports the oil will pass to the upper side of the said valve then on an upward stroke the valve, 36, will seat on the cup and prevent the back-flow of the oil, except a little that can seep through passage, 38.

Having thus described my invention what I claim and desire to secure by Letters Patent is,—

1. The combination with a pump cylinder, of a valve adjacent one end thereof; a rod in said cylinder; a valved piston on said rod; a plurality of movable locking devices adjacent the upper end of the cylinder and coacting between the latter and the said rod to lock the rod against vertical movement,—said locking devices being movable independently of each other.

2. The combination with a pump cylinder, of a rod movable therein; a piston on the rod; a locking member on the rod; a locking member on the cylinder and means also on the rod for inclosing the locking members as the latter are brought into engagement.

3. The combination with a pump cylinder, of a rod movable therein; a piston on and moving with said rod; a circular disk-plate; yielding locking members for engaging said disk plate and rotatable means movable independently of both the disk-plate and locking members for operating the locking members to partially release them from engagement with the disk-plate.

4. The combination with a pump cylinder, of a rod movable therein; a piston on and movable with said rod; a disk-plate, yielding locking devices to engage the disk-plate and a member carried loosely on and rotatable independently of the rod,—said member having means whereby upon its rotation to press the yielding locking devices outwardly to partially disengage them from the disk-plate.

5. The combination with a cylinder, of a rod thereon; a piston at the lower end of said rod; a disk-plate on said rod near its upper end and having a circumferential notch said disk-plate and rod being rotatable together; a latch finger carried on the cylinder and having a hook-end which engages the circumference of said disk-plate, and a cap also carried on the rod and having a circumferential depending flange which encircles the upper end of the cylinder and a depending portion to engage the hook-end of the latch.

6. The combination with a pump cylinder, of a rod therein; a piston on the rod; a disk plate; movable locking devices to engage the disk plate and a hollow cap carried by and rotatable on the rod, said cap having means on its interior to operate the movable locking devices to move them with respect to the disk plate.

7. The combination with a pump cylinder, of a rod therein; a piston on the rod; a disk plate having circumferential notches; movable locking devices to engage the disk plate and to enter the notches in the disk plate and one of said two latter devices being rotatable with respect to the other whereby to change the relative positions of the notches and locking devices; a cap carried on the rod and rotatable thereon,—said cap having a flange to project below the locked devices and means at the inside of the cap to move the locking devices outwardly with respect to the disk plate.

In testimony whereof I affix my signature in presence of two witnesses.

CLARENCE E. STUBBS.

Witnesses:

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