

1,254,024.

Patented Jan. 22, 1918.

Fig. 1.

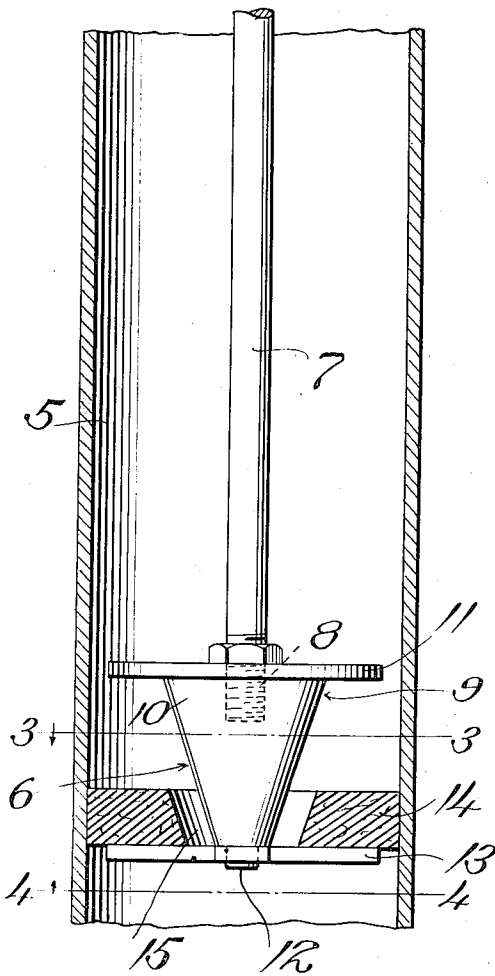


Fig. 2.

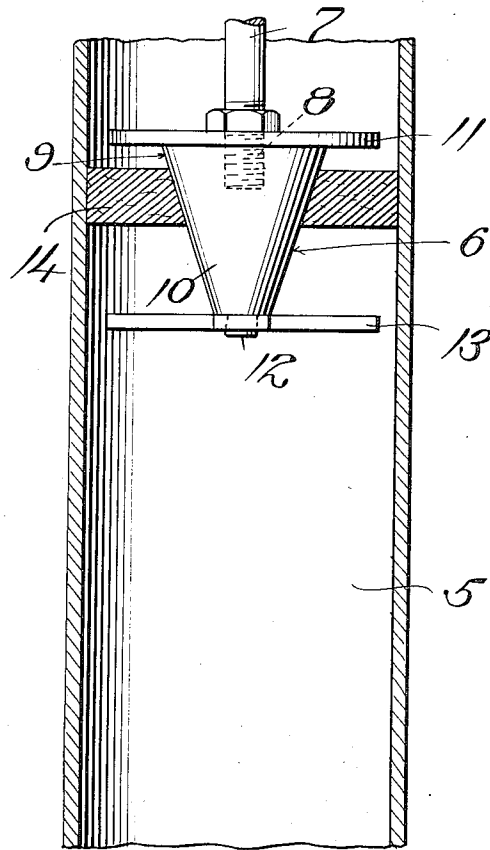
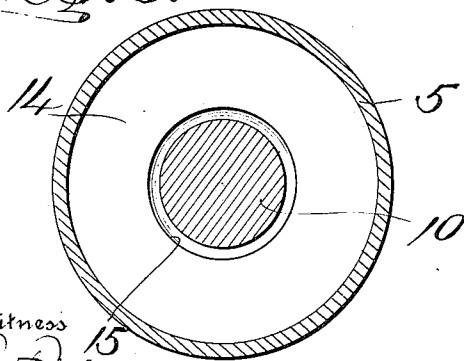
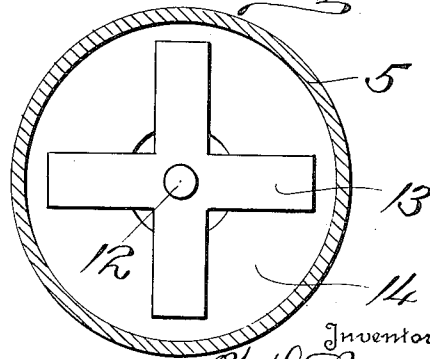


Fig. 3.



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Fig. 4.



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UNITED STATES PATENT OFFICE.

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VALVED PISTON.

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Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, WILLIAM D. BRYAN, a citizen of the United States, residing at North Carrollton, in the county of Carroll, State of Mississippi, have invented certain new and useful Improvements in Valved Pistons; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

This invention relates to improvements in pumps and is directed more particularly to a valved piston for oil, air, water pumps and the like.

An object of the present invention resides in the provision of a pump piston in which the plunger or piston head is movable with respect to the plunger rod and is arranged in one direction of movement of said rod, to prevent communication between the ends of the pump cylinder, and in the other direction of movement thereof to permit communication between said cylinder ends.

A further purpose of the invention is to provide an improved construction of pump piston in which the plunger or piston head is expansible upon movement of the piston in one direction, to effectively prevent the escape of fluid past the piston.

The invention further purposes a pump piston in which the plunger head constitutes in addition a valve for controlling communication between the ends of the pump cylinder.

With the above and other objects of a similar nature in view, the invention consists in the construction, combination and arrangement of parts, set forth in and falling within the scope of the appended claims.

In the drawing:

Figure 1 is a vertical section through the pump cylinder with which my improved piston is associated.

Fig. 2 is a similar view illustrating the position of the several parts of the piston during its forcing stroke.

Fig. 3 is a transverse section taken on the line 3—3 of Fig. 1, and

Fig. 4 is a detail perspective view of the valved end of the piston received from the pump cylinder.

Referring now more particularly to the accompanying drawing, there is shown a pump cylinder 5 in which my improved

piston is mounted and designated generally at 6.

Specifically the piston 6 comprises a plunger rod 7 the upper end of which is adapted for connection of suitable mechanism (not shown) by which it may be reciprocated, while at its lower end there is threaded as at 8 or otherwise suitably fixed a carrier 9. The carrier 9 is arranged for reciprocation with the plunger rod within the pump cylinder 5 and includes an inverted cone 10 of metal construction the base of which is integrally provided with a flange 11 while its apex terminates in a threaded stem 12 on which is removably engaged a spider or retainer member 13. Mounted within the cylinder 5 is a piston or plunger head 14 formed of leather or other suitable expansible material and centrally apertured as at 15 to receive the cone 10. The plunger head 14 is adapted for movement with respect to the cone 10 and is limited positively in its movement in opposite directions by the flange 11 and retainer 13 respectively. Thus as the plunger rod 7 and carrier 9 are reciprocated, the latter has lost motion with respect to the plunger head and is adapted upon the downward stroke of the rod 7 to move within the aperture 15 of the plunger until the cone 10 is snugly seated or wedged therein. Thus by reason of the expansible qualities of the plunger head, the cone 10 will distend and compress the same between it and the wall of the cylinder thereby effectually closing the latter to prevent the escape of air past the plunger head. Upon the upward stroke of the plunger rod the cone 10 will move upward and unseat itself from the plunger head to permit the escape of air past the piston. In the present illustration of the piston the same is arranged for the pumping of air, but by simply reversing the carrier and constructing the portion 11 similarly to the spider 13 it may be employed with equal efficiency to pump water, oil or other liquid as is evident.

What I claim is:—

1. A valved piston for pump cylinders, including an expansible cylinder filling member, and a carrier for the filling member with respect to which it may have lost motion and adapted in its lost motion to expand the filling member for the purpose specified.

2. A valved piston for pump cylinders

including a plunger rod, a carrier fixed to the rod and including a cone, and a plunger head loosely mounted on and expansible by the cone in one direction of its movement to
 5 entirely fill the space between the cone and the cylinder walls.

3. In combination with a comparatively thick piston head of a material having the expansible characteristic of leather, an aperture through said piston head, and means
 10 for reciprocating said piston head comprising as a fixed part thereof a member arranged loosely to fit in said aperture during movement of the piston head in one direction and tightly to fit in said aperture during
 15 movement of the piston head in the opposite direction.

4. In combination with a piston head of a material having the expansible characteristic of leather, an aperture therethrough
 20 and means for operating said piston head comprising a member disposed in said aperture and having lost motion connection with

said piston head, said member conformed to wedge tightly within said aperture during
 25 movement with the piston head in one direction and loosely to fit in said aperture during movement of the piston head in the opposite direction.

5. In combination with a valved pump
 30 piston of expansible material having an aperture therein, means disposed in said aperture having lost motion connection with the piston, arranged loosely to fit in said
 35 aperture during movement of the piston in one direction, and tightly to wedge in said aperture and expand said piston during movement of the piston in the opposite direction.

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

WILLIAM D. BRYAN.

Witnesses:

E. C. NEILL,
 W. H. NEILL.