J. C. YOUNGBLOOD.

AIR PUMP.

APPLICATION FILED AUG. 5, 1920.

1,388,784. Patented Aug. 23, 1921.

Fig. I.

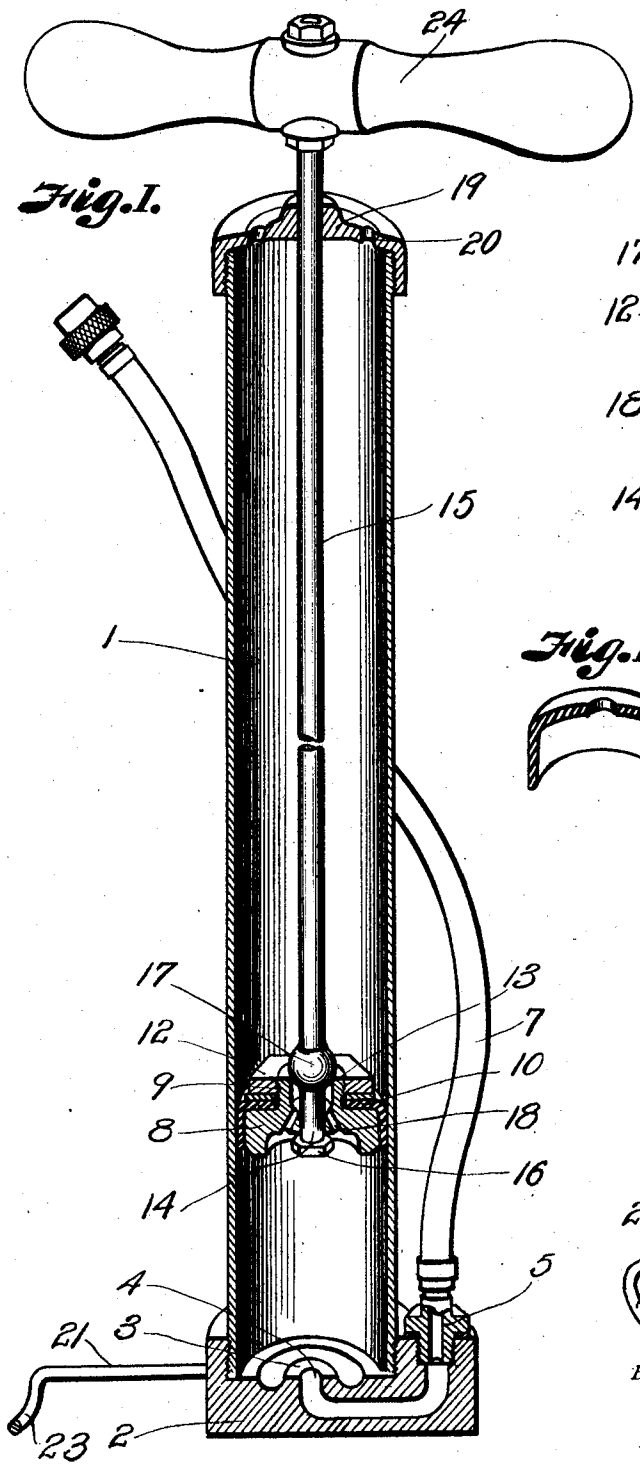


Fig. II.

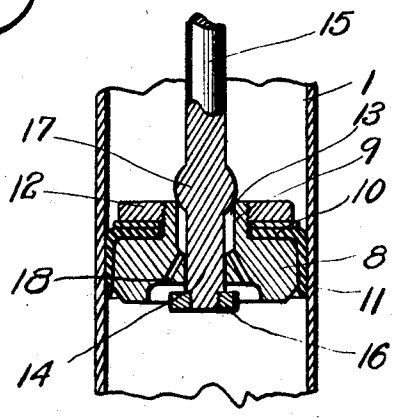
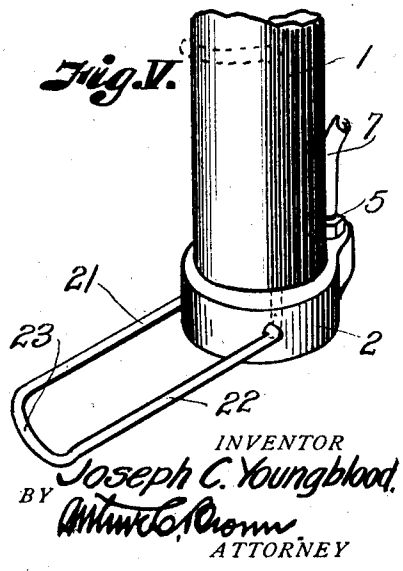


Fig. III.

Fig. IV.



Fig. V.



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AIR-PUMP.

1,388,784. Specification of Letters Patent. Patented Aug. 23, 1921.

Application filed August 5, 1920. Serial No. 401,300.

To all whom it may concern:

Be it known that I, JOSEPH C. YOUNGBLOOD, a citizen of the United States, residing at Denver, in the county of Denver and State of Colorado, have invented certain new and useful Improvements in Air-Pumps; and I do 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, reference being had to the accompanying drawings, and to the letters and figures of reference marked thereon, which form a part of this specification.

This invention relates to air pumps and one of the objects thereof is to provide a simple, durable and efficient air pump with the minimum number of parts, the construction being adapted to be simplified so as to eliminate liability of leakage and to insure the proper functioning of the pump when in operation.

One of the important features of my invention is that I have provided a reciprocatory piston pump in which the valve is integral with or at least rigidly secured to the piston rod so that when the piston pump is moved in one direction by the piston rod, the valve will unseat and when it is moved in the opposite direction by the piston rod, the valve will seat.

A novel form of packing is also provided to prevent leakage and means is shown whereby the pump may be pedally held in place while the piston is being operated.

In the drawings—

Figure I is a vertical, longitudinal, sectional view of a pump constructed in accordance with my invention, the piston rod and valve being shown in elevation.

Fig. II is a sectional view through the piston, a part of the valve and piston rod being shown in section.

Fig. III is a sectional view through the piston leather before it is applied.

Fig. IV is a similar view after the piston leather is applied, and

Fig. V is a fragmentary, sectional view of the pump cylinder, showing the pedal-engaging member for holding the cylinder in place.

The invention is illustrated as consisting of a cylinder 1, at the lower end of which is a head 2 having a central boss or projection 3 therein, provided with a port 4 leading to an exhaust nipple 5, there being a hose or tube 7 adapted to be secured to a tire or other device to receive the air, the construction of the tube or hose 7 being common in the art.

The boss or projection 3 extends from the floor of the cylinder 1 a sufficient distance so as to reduce the liability of the lubricating oil passing through the port 4 when the air is forced from the pump.

The pump piston is shown as consisting of a head 8 having a threaded collar 9 over which may be fitted a piston leather 10, the flange 11 of which extends over the perimeter of the head 8 and said piston leather is secured to the head by a jam nut 12 on the threaded collar 9. The threaded collar is hollow to provide a valve seat 13, through which the stem 14 of the pump rod 15 projects. The stem 14 is provided with a nut 16, screwed to the end thereof so that there will be limited play of the stem 14 with respect to the piston 8 to permit the valve 17, illustrated as a ball, to be seated and unseated as the piston moves in opposite directions.

The head or piston 8 is provided with ports 18 communicating with the bore or seat 13, as will be clearly seen in Fig. II.

The piston 15 also extends through the cap or cover 19 on the upper end of the cylinder, there being air inlet ports 20 provided for the escape of air within the cylinder. The head 2 carries a bar or yoke-shaped, pedal-engaging member consisting of the bars 21 and 22 connected by the curved cross bar 23, the bars 21 and 22 being pivotally secured to the head so that normally the pedal-engaging member may be swung up parallel with the cylinder, but when it is desired to hold the pump during the pumping operation, the bars 21 and 22 and the cross bar 23 are swung horizontally in the position shown in Fig. V, so that the operator may place his foot thereon to hold the cylinder in place.

When the parts are properly assembled and it is desired to pump, the operator will press up on the handle 24, unseating the valve 17, the unseating movement being limited by the stop or nut 16. Therefore, air will pass from the upper portion of the cylinder through the valve seat and through the ports 18 into the port or chamber of the pump cylinder.

When the piston has reached the limit of its upward or intake stroke, the movement of the handle 24 will be reversed; that is,

the operator will press down upon the handle 24, the initial movement imparted to the rod 15 being effective in seating the valve 17 which is integral therewith, or at least rigidly secured thereto. When the valve 17 seats, the air in the lower portion of the cylinder below the piston 8 will begin to be compressed and as the piston moves downwardly, the air will be forced through port 4, out through the conduit or tube 7 into the tire or other receptacle adapted to receive the compressed air.

It will be noticed that the lower beveled edge of the piston will enter the groove in the bottom of the cylinder at the limit of the down stroke of the piston but the ball-valve-carrying piston rod will contact with the cylinder bottom in advance of the piston so that the valve will be unseated. Thus it will be seen that a stop is provided for the piston and stem without liability of injury to the piston or to the ball valve 17.

What I claim and desire to secure by Letters-Patent is:

A pump comprising a cylinder, a piston in the cylinder having an integral, upstanding, threaded collar, said collar comprising a valve seat, ports leading from the valve seat through the piston, a pump leather on the piston surrounding the collar, a nut threaded on the collar to hold the piston leather in place, a pump rod for limiting the reciprocatory movement with respect to the pump piston, and a valve on the pump rod.

In testimony whereof I affix my signature.

JOSEPH C. YOUNGBLOOD.