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E. WITMAN

AIR PUMP

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Fig. 1.

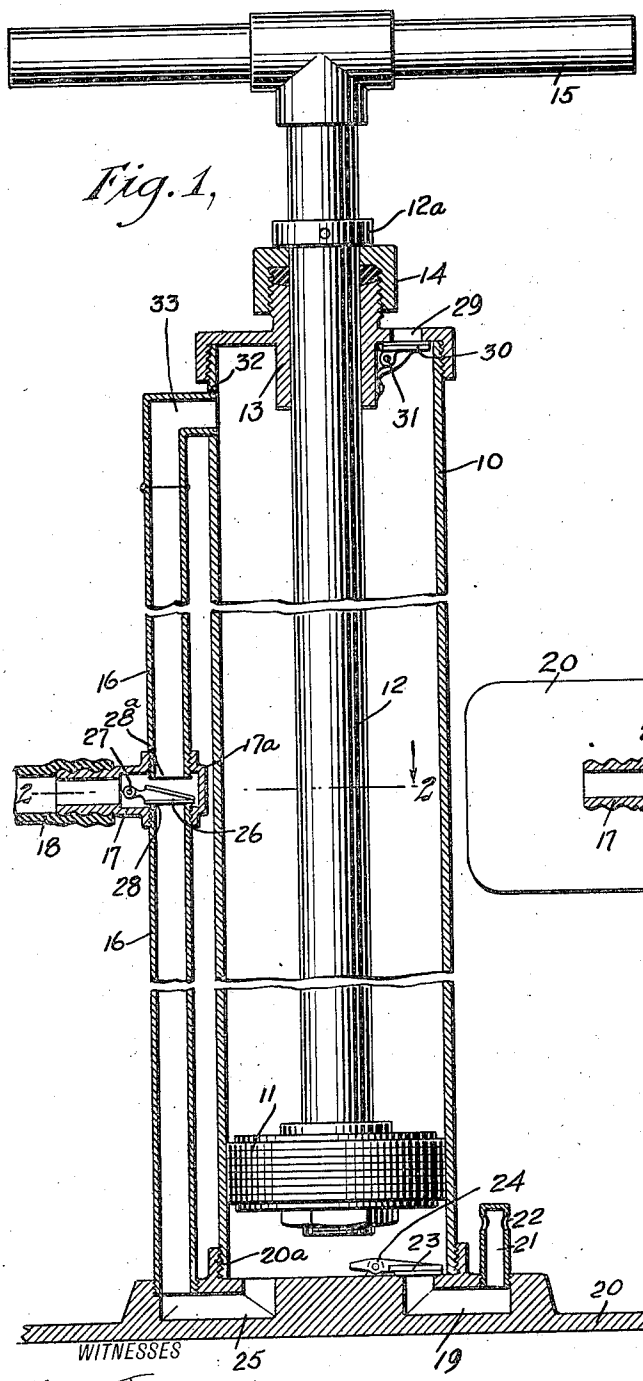
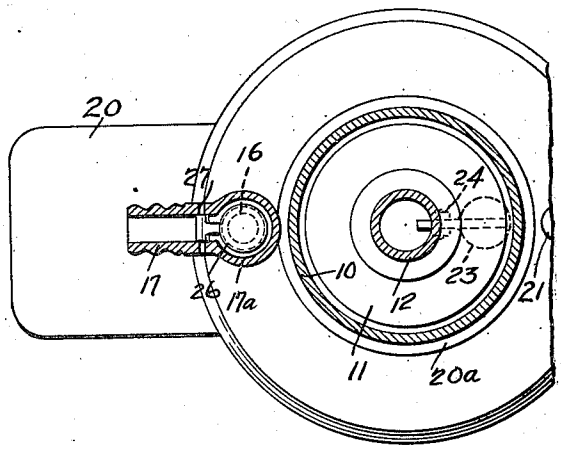


Fig. 2.



WITNESSES

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UNITED STATES PATENT OFFICE.

EPHRAIM WITMAN, OF SINKING SPRING, PENNSYLVANIA.

AIR PUMP.

Application filed September 16, 1921. Serial No. 501,013.

To all whom it may concern:

Be it known that I, EPHRAIM WITMAN, a citizen of the United States, and a resident of Sinking Spring, in the county of Berks and State of Pennsylvania, have invented a new and Improved Air Pump, of which the following is a description.

My invention relates to air pumps and while the invention is capable of wider usefulness, it is more particularly intended for embodiment in a tire pump.

The general object of the invention is to provide a pump that will efficiently function as a double-acting pump to effect discharge of air with each forward and return stroke of the piston.

A more specific object of the invention is to provide an embodiment of the invention respecting practical considerations with respect to strength and simplicity as well as looking to convenience in assemblage or repair.

The nature of the invention and its distinctive features and advantages will clearly appear as the description proceeds.

Reference is to be had to the accompanying drawings forming a part of this specification, it being understood that the drawings are merely illustrative of one example of the invention.

Figure 1 is a vertical section of an air pump embodying my invention;

Figure 2 is a cross section on the line 2—2, Figure 1;

In carrying out my invention in accordance with the illustrated example a cylinder 10 is provided in which a piston 11 operates, the plunger 12 of the piston extending through the stuffing box 13 in the rear cylinder head 10^a, the numeral 14 indicating the gland of the stuffing box. The plunger 12 is formed with a cross handle 15 or equivalent grasping means. The forward stroke of the piston may be limited by any suitable device, there being shown for the purpose a collar 12^a thereon adapted to be arrested by the gland 14.

The discharge of the pump is advantageously provided by a separate tube 16 at the exterior of the cylinder 10, said tube having a nipple 17 thereon for the attachment of a hose, a fragment of which is shown at 18.

An L-shaped air-inlet port 19 is formed in the foot base 20 of the pump to which base the flanged lower end of the cylinder 10 is secured as by screwing into an upstanding neck or annular flange 20^a. At the exterior of the cylinder the port 19 may have a guard cap 21 having lateral inlet holes 22. The inner upturned end of the L-port 19 is provided with an inwardly opening valve 23 pivoted to the base 20 as at 24. An L-shaped discharge port 25 is formed in the base 20 and like the inlet valve 19 communicates at its inner end with the cylinder 10 in front of the piston. The outer end of the port 25 communicates with the lower end of the discharge pipe 16. The discharge pipe 16 is formed in two separated sections joined by a suitable coupling 17^a or the like with which the nipple 17 advantageously is integral. Between the ends of the sections of the discharge pipe 16 a valve 26 is disposed, said valve being pivoted at one end as at 27 within the nipple 17 in the illustrated example.

The upper and lower sides of the valve 26 are in convergent planes and they are adapted to seat respectively on seats 28, 28^a, formed by the opposed ends of the sections of the discharge pipe 16.

A second air inlet port 29 is formed in the cylinder at the back of the piston and preferably in the rear head 10^a thereof, said port being controlled by an inwardly opening valve 30 pivoted at one end as at 31 to a fixed part of the cylinder 10. Communication between the cylinder 10 at the back of the piston and the rear end of the discharge pipe 16 may, as shown, be established by its lateral branch 33 tapped into the side of the cylinder near the rear head 10^a as at 32.

In the operation of the pump a forward stroke of the piston 11 will insure the closing of the valve 23, said valve having a tendency to close by gravity and the air will be forced through discharge port 25 and into the forward end of the discharge pipe 16, the pressure causing the valve 26 to move against the upper valve seat 28^a so that the air passes to and through the nipple 17 to the hose 18. The forward movement of the piston 11 will have drawn air in through the rear inlet port 29, and upon the return stroke of the piston 11 the valve 30 will be closed, thereby causing the air at the back of the piston to be forced out through the branch passage 33 into the rear end of discharge pipe 16, the valve 26 at this time closing against the forward valve seat 28 so

that the air passes at the rear side of valve 26, into the nipple 17 to the hose 18.

I would state in conclusion that while the illustrated example constitutes a practical embodiment of my invention, I do not limit myself strictly to the exact details herein illustrated, since, manifestly the same can be considerably varied without departure from the spirit of the invention as defined in the appended claim.

Having thus described my invention, I claim:—

In an air pump of the class described, a cylinder, a base and a cap for said cylinder, a piston in said cylinder, an air intake opening in the cap and in the base, a hinged check valve for each of said openings disposed interiorly of said cylinder, said base having a passageway communicating the inner chamber of the cylinder with the outside, said cylinder being formed with an opening adjacent its top end, a tube extending to said passageway, a second tube exetending to said opening, a fitting having a nipple adapted to receive a rubber hose connecting said two tubes together adjacent the transverse and medial plane of the cylinder, and a hinged valve in said fitting adapted to alternately move in the front of said tube in response to the movement of the piston.

EPHRAIM WITMAN.