Mar. 27, 1923. 1,449,534

R. MORGAN

PUMP

Filed Jan. 30, 1922

Fig. 1.

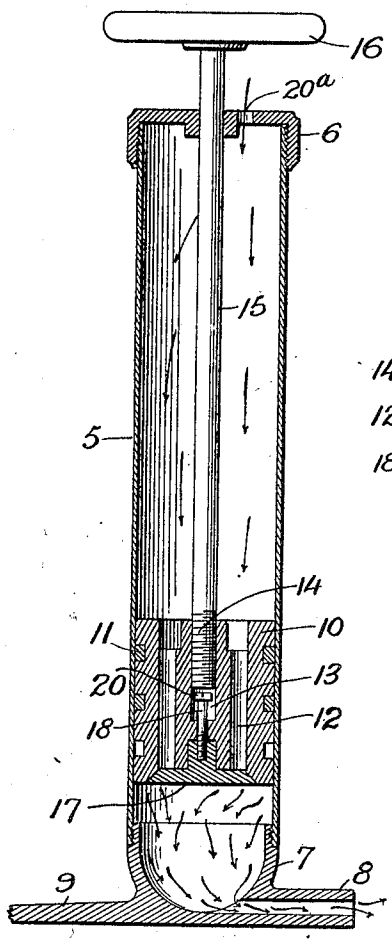


Fig. 2.

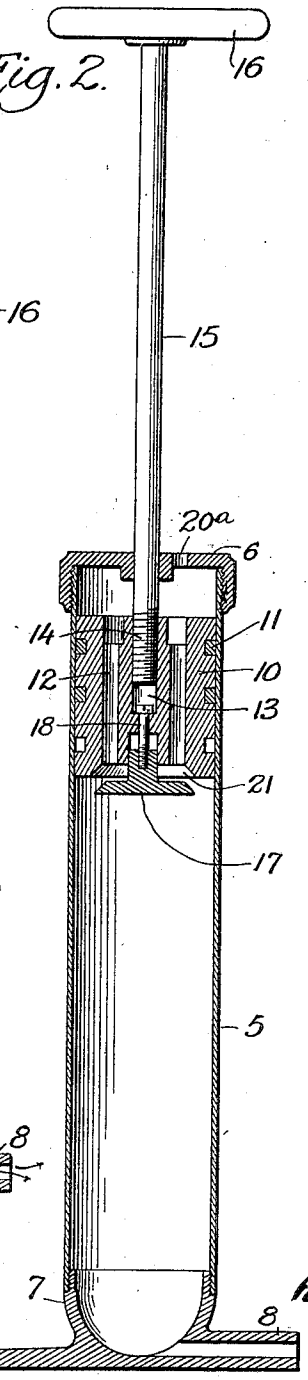


Fig. 3.

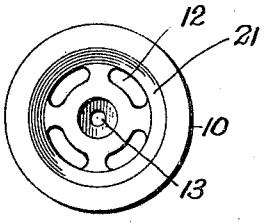
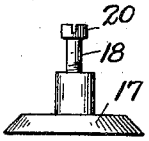


Fig. 4.



Inventor
Robert Morgan
by
Attorney

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UNITED STATES PATENT OFFICE.

ROBERT MORGAN, OF NEW YORK, N. Y., ASSIGNOR TO MORGAN PUMP & MOTOR CORPORATION, OF NEW YORK, N. Y., A CORPORATION OF NEW YORK.

PUMP.

Application filed January 30, 1922. Serial No. 532,697.

To all whom it may concern:

Be it known that I, ROBERT MORGAN, a citizen of the United States, residing at New York, in the county of New York and State of New York, have invented certain new and useful Improvements in Pumps, of which the following is a specification.

The present invention relates to pumps, and consists in the combinations and arrangements of elements hereinafter described and particularly set forth in the accompanying claim.

The invention has for its purpose to provide a pump of the single-acting type adapted especially for inflating pneumatic tires, and has for its purpose to provide such a pump wherein the piston carries a valve adapted to be unseated on one stroke of the piston for taking in a charge of air and to be seated on the reverse operation of the piston for compressing said air taken in on the previous stroke and forcing the same into the tire to be inflated.

A further purpose of the invention consists in constructing the pump of the minimum number of parts which will operate with the greatest ease and maximum efficiency, and wherein the piston and its co-acting valve will provide a free passage for the air and an air-tight joint on their respective intake and pumping strokes.

The invention further contemplates the construction of a pump of this type wherein the parts may be assembled or disassembled by a simple and easily performed operation, and wherein the form of said parts is such that the pumps may be manufactured in large quantities and at relatively small cost.

The construction of pump as disclosed herein constitutes an improvement over the type of pump disclosed in a co-pending application, in which I am joint inventor, bearing Serial Number 523,186, filed Nov. 2, 1921, and is characterized in that the piston rod is fixedly mounted to the piston and wherein the piston valve is separately mounted on the piston and automatically operates to open and close the piston air passages on the respective strokes of the piston.

The invention is shown by way of illustration in the accompanying drawing, wherein:

Figure 1 is a longitudinal sectional view of the pump, showing the relation of pump and valve at the end of the compression stroke thereof;

Fig. 2 is a similar view, showing the relation of parts at the end of the return or air-intake stroke;

Fig. 3 is a detail view in end elevation of the piston, and

Fig. 4 is a similar view of the piston valve.

Referring to the construction in further detail and wherein like reference characters designate corresponding parts in the different figures shown, the pump comprises a barrel or casing portion 5 having a screw closure cap 6 at its upper end, and a cap 7, screw connected at the lower end, as shown. Said cap 7 is constructed with a nozzle portion 8 for attachment to the usual rubber hose, and a foot portion 9 is provided as for pumps of this character.

The piston 10 operates within the barrel portion 5 with a substantially close fit and for which purpose packing rings 11 are provided, as shown. Said piston is designed with a plurality of air passageways 12 passing entirely through (see Figure 3), and with a central aperture 13, into which is screwed the threaded end portion 14 of the piston rod 15. The usual operating handle 16 for the piston rod is provided.

A valve 17 having a stem 18 screw-threaded thereon is mounted to have limited sliding movement on the piston 10 in the manner shown, and functions to seat and unseat with respect to the valve openings 12 during the compression and intake strokes of the piston, respectively, and in which compressions said piston and valve assume the respective positions shown in Figs. 1 and 2. The head 20 of the valve stem working within the aperture 13 determines the extent of movement of the valve 17 with respect to its seat 21, as will be understood. Inasmuch as said valve 17 is screw-threaded on the stem 18, any adjustment for varying the extent of valve opening may be made.

An aperture 20^a is provided in the closure cap 6 for admitting air into the piston chamber in the manner indicated by the arrows and which occurs on the compression stroke of the pump. It will be understood, of course, that pressure on the handle 16 during the down or compression stroke will close the valve 17 on its seat 21 and make a perfectly air-tight fit.

It is obvious that those skilled in the art may vary the details of construction and arrangement of parts without departing from the spirit of my invention, and, therefore, I do not wish to be limited to such features except as may be required by the claim.

Having thus described my invention, what is claimed as new is:

In an air pump for inflating tires, the combination of a cylinder providing an air intake and an air compression chamber, an apertured cap closing the air intake end of the cylinder, a piston reciprocable in the cylinder having central apertures in the upper and lower portions thereof, said piston having air passages therethrough and provided with a valve seat at its lower end, a piston rod passing through said cylinder cap connecting with the piston at the upper central aperture thereof, and leaving a free space thereat, a valve having a portion fitting within the lower aperture of the piston, and an adjustable stem on the valve mounted on the portion of the piston between said apertures, said stem provided with a head portion having limited movement within the free space of the upper aperture of the piston, said valve operable to close and open the air passages of the piston on the respective compression and return strokes thereof, substantially as set forth.

In testimony whereof I affix my signature.

ROBERT MORGAN.