

C. S. McINTYRE.
PUMP.

APPLICATION FILED FEB. 10, 1920.

1,335,251.

Patented Mar. 30, 1920.

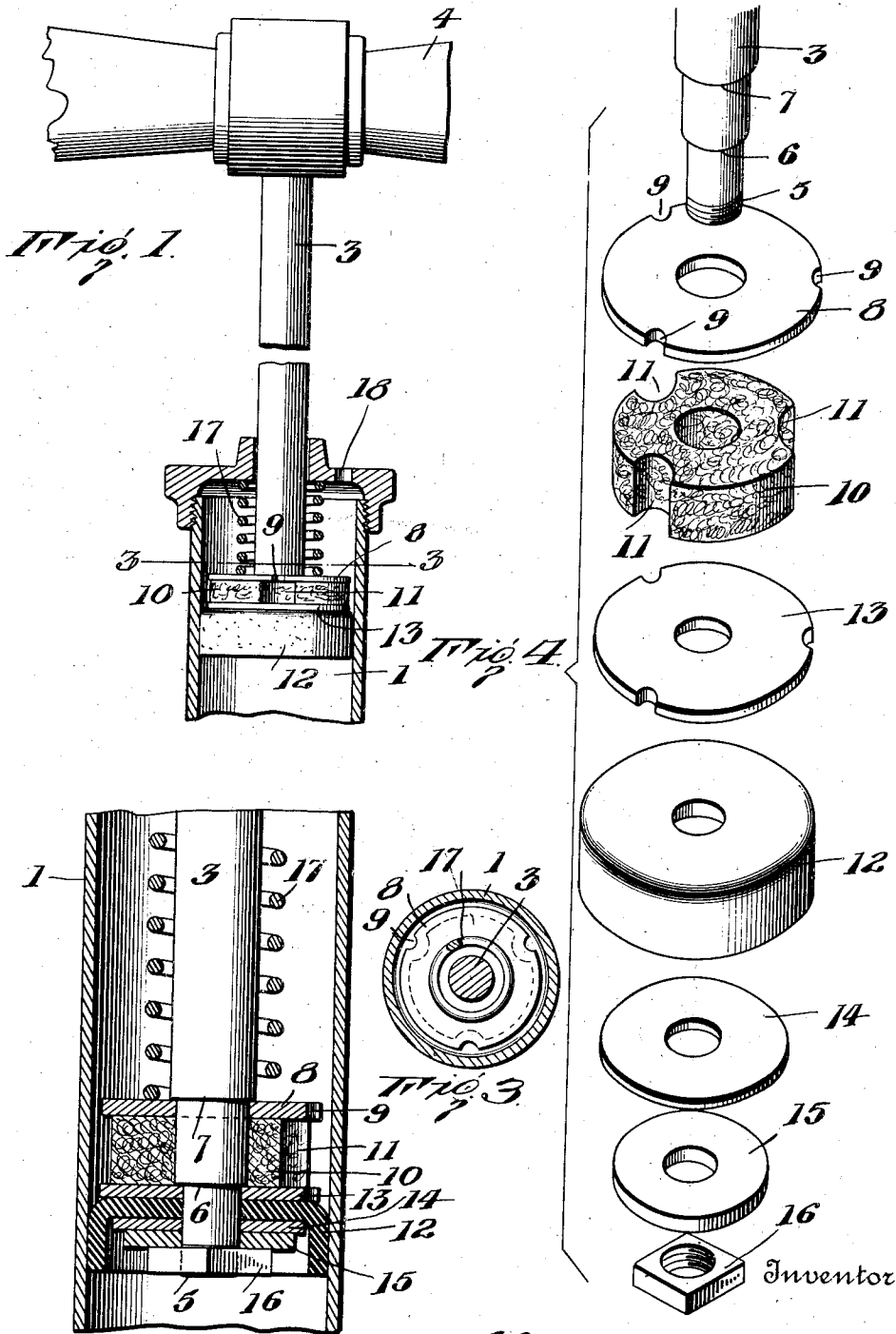


Fig. 2.

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UNITED STATES PATENT OFFICE.

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1,335,251.

Specification of Letters Patent. Patented Mar. 30, 1920.

Application filed February 10, 1920. Serial No. 357,564.

To all whom it may concern:

Be it known that I, CHARLES S. MCINTYRE, a citizen of the United States, residing at Monroe, in the county of Monroe and State of Michigan, have invented certain new and useful Improvements in Pumps, of which the following is a specification.

This invention relates to pumps, and more particularly to hand air and gas pumps, and it comprises a pump having a cylinder, a piston, a piston rod and handle therefor, lubricating means for the piston advantageously consisting of a compressible lubricant absorbing material, means for maintaining said material in proximity to the piston, and means, advantageously surrounding the piston rod, arranged for compressing said absorbent material at the end of the stroke of the piston, preferably the suction stroke, whereby lubricant carried by said absorbent material is expressed therefrom and delivered to the piston; all as more fully hereinafter set forth and as claimed.

Pumps of the type of which my invention relates are subject to one disadvantage which it has been a desideratum in the art to overcome. Usually the piston in the types of pump mentioned consists of cupped leather or other similar material arranged to snugly fit the cylinder wall and arranged to expand thereagainst on the pressure stroke. Leather and similar materials ordinarily used for such pistons tend to become dry, and, particularly after periods of non-use, become hard and lose their flexibility. In some instances, the leather or similar material cracks. The result is that the pump loses its efficiency, since, as stated, its effectiveness depends upon the flexibility of the material constituting the piston.

In the art to which this invention relates attempts have been made to overcome the noted disadvantages but these attempts have usually resulted in expensive lubricating devices and in complicated parts.

An object of my invention is to overcome the disadvantages mentioned and to produce a simple and inexpensive pump of the class described and one having a minimum number of parts.

In the accompanying drawings showing one form of a specific embodiment of my invention,

Figure 1 is a segmental vertical section,

showing the handle, cylinder and top, with the piston at the end of the suction stroke;

Fig. 2 is a similar view showing the piston at the end of its compression stroke;

Fig. 3 is a top plan view of the piston taken on line 3—3 of Fig. 1; and

Fig. 4 is a disassembled perspective of the piston and the lower end of the piston rod.

In the drawings, element 1 indicates the cylinder and 2 the top cylinder head which may be screwed or otherwise attached to the cylinder. The piston rod 3 has a handle 4 attached thereto in the ordinary way and at its lower end is threaded as at 5 and shouldered as at 6 and 7, for the reception and retention of the several parts constituting the piston. The steel guide washer 8 is advantageously provided with recesses 9 and such washer fits on the lower end of the piston rod against the shoulder 7. The cupped-leather oiling device 10 is preferably made of thick felt or other oil-absorbing, compressible material. This is placed in position on the lower end of the piston rod with its upper face against the lower face of the steel guide washer 8 with its recesses 11 registering with the recesses 9 of such guide washer. This is for the purpose of permitting the air or gas to pass on the suction stroke. The cupped leather combined piston and valve 12 is seated on the piston rod directly under the oiling device, steel washer 13 with peripheral recesses being interposed and abutting against the shoulder 6. This steel washer serves to spread and direct the oil to the periphery of the cupped-piston where the oil is most needed. The length of the piston rod from shoulder 6 to shoulder 7 is so calculated in accordance with the thickness of the cup 12, washer 13, oiling device 10 and guide washer 8 as to permit full expansion of the oiling device 10 without any loose play. Inside the cupped leather plunger a steel washer 14 is placed. This serves the purpose of retaining the shape of the upper face of the cupped piston-valve. Under the steel washer 14, leather or fiber lock washer 15 is used and all the parts just mentioned are securely held in position by means of the nut 16 threaded to the extremity 5 of the piston rod and abutting against the shoulder 6.

Surrounding the piston rod is coiled 110

spring 17 adapted to be compressed on the up stroke of the piston between the piston head 2 and the guide washer 8. In addition to serving as a cushion between the cap 5 and the piston the pressure exerted by this spring on the washer 8 squeezes the oiling device 10 between itself and the cupped piston 12 with the result that the oil is expressed from the absorbent material and 10 flows over the walls of the piston, being guided to the walls by the steel washer 14. Excess oil is immediately reabsorbed by the absorbing material of the lubricating device 15 when the pressure of the spring is released. Before the pump is assembled the lubricating device is saturated with oil and such device, being of felt or other absorbent material, retains this oil for a considerable period of time. In actual and ordinary use it has been found unnecessary to 20 renew the lubricant within eight to twelve months. However in event it is desirable to supply oil to the absorbing material, it may readily be done through a hole indicated at 18 in the top of the piston head or 25 cap. The lower piston base 19 may be secured in place in any ordinary way and may be provided with the usual valve (not shown) and discharge connections for the 30 hose.

What I claim is:

1. An air or gas pump comprising a cylinder, a piston, a piston rod and reciprocating

means therefor; and lubricating means for the piston located in proximity thereto, 35 such lubricating means comprising compressible lubricant absorbing material carrying lubricant, and means on said piston rod for compressing said absorbent material at the end of the suction stroke of said piston. 40

2. An air or gas pump comprising a cylinder, a piston, a piston rod and reciprocating means therefor, and lubricating means for the piston located in proximity thereto, such lubricating means comprising compressible 45 lubricant absorbing material carrying lubricant, and a coil spring surrounding the piston rod and adapted to be compressed upon the suction stroke of the piston against the top of the pump and said absorbent material to express lubricant therefrom. 50

3. An air or gas pump comprising a cylinder, a piston rod and a piston, said piston comprising a cupped piston valve, means for retaining it in place on said rod, a lubricating device in proximity to the top thereof, a spring surrounding the said rod and adapted to be compressed between the top of the cylinder and said oiling device, whereby at the end of the stroke oil in said 60 device will be expressed therefrom and flow on to the cupped piston-valves.

In testimony whereof, I affix my signature.

CHARLES S. McINTYRE.