G. AND C. BURD.

PUMP.

APPLICATION FILED OCT. 25, 1920.

1,416,445. Patented May 16, 1922.

FIG. 1.

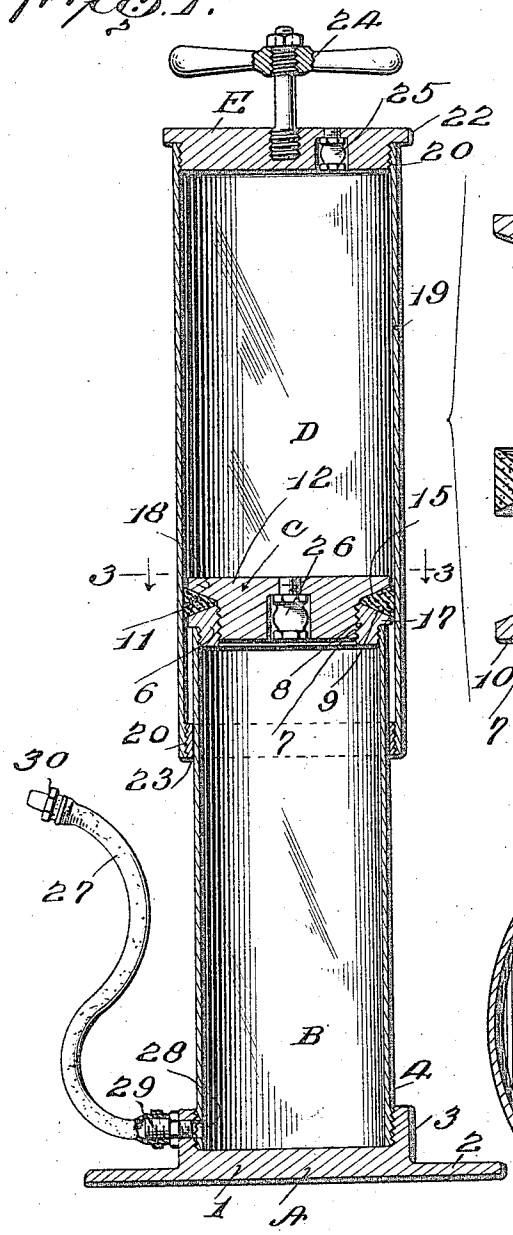
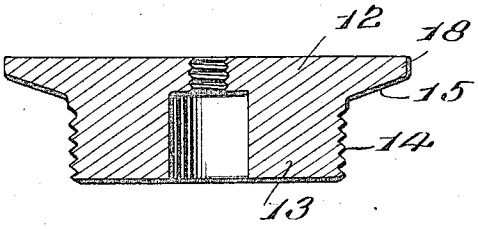
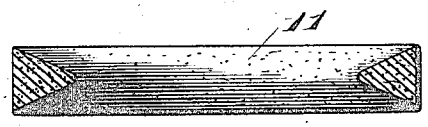


FIG. 2.





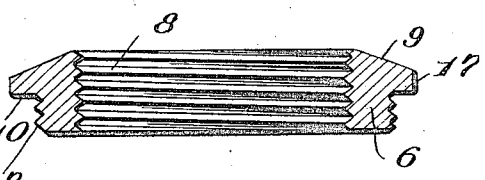
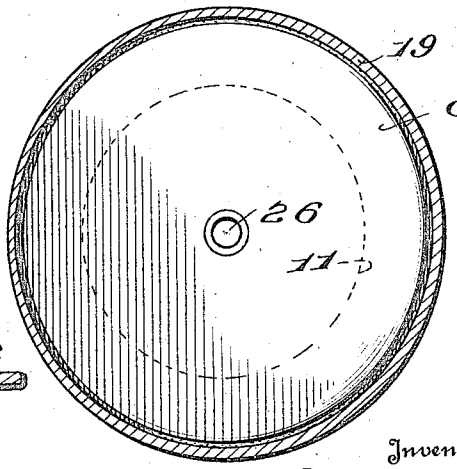


FIG. 3.



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UNITED STATES PATENT OFFICE.

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PUMP.

1,416,445. Specification of Letters Patent. Patented May 16, 1922.

Application filed October 25, 1920. Serial No. 419,461.

To all whom it may concern:

Be it known that we, GEORGE BURD and CHARLES BURD, citizens of the United States, residing at Detroit, in the county of Wayne and State of Michigan, have invented certain new and useful Improvements in Pumps, of which the following is a specification, reference being had therein to the accompanying drawing.

This invention relates to improvements in pumps, and contemplates more especially an improved multi-barrel air-compressor pump for inflating pneumatic tires.

The primary object of this invention is to provide a cylinder head which carries the piston packing in such a manner that the packing can be easily and readily tightened in its contact with the piston wall.

A further object of the invention resides in the production of a simple, durable and efficient pump which can be easily assembled and disassembled.

Another object of the invention is the production of a pump in which the air is progressively compressed and finally discharged into the article desired to be inflated or filled with air.

Other and further objects of the invention will appear in the following specification and the accompanying drawings, in which—

Figure 1 is a view in longitudinal central section through our improved pump.

Fig. 2 is a view of the cylinder head and packing in longitudinal central section, the co-operating parts in extended relation.

Fig. 3 is a view in transverse section taken on the line 3—3 of Fig. 1, looking in the direction indicated by arrows.

In the accompanying drawings illustrating an embodiment of our invention, A is the pump supporting base, B the pump cylinder, C the cylinder head, D the piston and E the piston head.

The base A comprises the thickened portion 1, the outwardly extending foot receiving members 2, and an upwardly extending circular flange 3, which is screw-threaded as at 4, on its inner side.

The pump cylinder B is a circular open ended cylinder, 4 designating its walls, the lower end of which is screw-threaded as at 5, and mounted in the flange 3 of the base, making that end of the cylinder air-tight.

A cylinder head C closes the upper end of the cylinder B, and is composed of a ring 6 and a head member 12. The ring has internal and external screw-threads 7 and 8, while the upper edge 9 of the ring slants downwardly and outwardly, terminating in a shoulder 10. The head member 12, consists of the shank portion 13, screw-threaded as at 14 and terminating in an upwardly and outwardly extending shoulder 15.

To assemble the head, the shank 13 is screwed into the ring 6, the shoulder 15 of the member 12 and the upper edge 9 of the ring 6, forming a V-shaped opening in which a packing ring 11 is carried. This ring may be made of any suitable packing material and the ring is made to be of an approximate V-shape in cross section.

It will be seen, Fig. 1, that the ring 6 and the head member 12 are of slightly greater diameter than the cylinder B. The upper end of the cylinder is provided with screw-threads 17 into which the ring 6, carrying the head-member 12 is screwed. When in place, the shoulder 8 of the cylinder-head C will abut the end of the cylinder B, while the outer edges 17 and 18 of the head will extend slightly beyond the walls of the cylinder.

The piston D of the pump is an open-ended cylinder of a slightly greater diameter than the cylinder B, and adapted to slide thereon. This piston B comprises the wall 19, the ends of which are screw-threaded as at 20 and 21. The upper end of the piston is closed by a piston-head E screwed therein, the shoulders 22 thereof abutting the end of the walls 19.

A ring 23 is carried by the inner side of the lower end of the wall 19 of the piston D and when the piston D is reciprocated by means of the handle 24, screw-threadably mounted in the piston head E, this ring engages the extending shoulder 10 of the ring 6 of the cylinder head and prevents the piston from being pulled off of the cylinder.

The piston E of the pump carries a valve 25 which is of a structure that will permit of the passage of air into the piston D only when the piston is on its upward stroke.

A valve 26 is carried by the head member 12 of the cylinder head and is of a structure to permit the passage of air from the piston into the cylinder only on the downward stroke of the piston.

To provide a means of discharge of the

compressed air in the cylinder B, there is provided a discharge hose 27, preferably of a flexible construction, which communicates with an opening 28 therein. This hose and opening have an intermediate valve 29, which is of a construction to permit of a passage of air outwardly only.

In the operation of the pump, it will be readily seen that the air is drawn in to the piston D through the valve 25, and forced into the cylinder B through the valve 26 as the piston head E descends. As the forcing of air into the cylinder B continues the pressure in the cylinder will overcome the pressure in whatever article or vessel the end 30 of the discharge hose 28 may be attached and the air in the cylinder will flow through the valve 29 and inflate the article or vessel as described.

To maintain the efficiency of the pump, no air should escape past the packing ring 11 and be lost between the walls of the piston and cylinder into the atmosphere. As a continued use of the pump will wear the cylinder packing ring we have constructed the cylinder head with the V-shaped opening in its outer edge, as has before been described. When it is found that air is escaping past the packing, the piston head E is removed from the pump and the head member 12 of the cylinder head is then easily screwed downwardly into the ring 6. Due to the slanting adjacent edges of the head member 12 and the ring 6 and the corresponding V-shape of the packing 11, the packing is forced outwardly against the wall 19 of the piston. Upon replacing the piston head, the pump has the original air compressing efficiency.

Also it will be readily understood that we do not limit ourselves to a hand driven pump. Our structure can be easily adapted to a power driven pump by the use of any simple and well-known means, such as shown in our Patent No. 1,346,699, dated July 13th 1920.

Attention is further directed to the fact that all the parts of our pump are removable and that when it is desired to ship or store the pump away, it can be reduced to a very compact package. Also, a new packing ring is easily fitted in the cylinder head when the packing in use has been so often tightened as to be worn out.

Having thus described our invention, what we claim and desire to secure by Letters Patent is:

1. In a pump of the character described, a cylinder, a cylinder head therefor, comprising a ring and a head member, the head member adjustably carried by the ring, the adjacent edges of the ring and head member separated to form a V-shaped opening, a packing ring carried by the opening, and the packing ring adapted to be forced outwardly by the adjustment of the cylinder ring and head member.

2. A pump of the character described, comprising a base, an air receiving cylinder, a head therefor, comprising a ring and a head member, the head member screw threadably carried by the ring, the adjacent edges of the ring and head members separated to form a V-shaped opening, a packing ring carried in the opening, the packing ring adapted to be forced outwardly by the downward adjustment of the head member in the ring, a hollow piston, a piston head therefor, the piston adapted to reciprocate upon the cylinder, and means to reciprocate the piston.

3. In a pump of the character described, a cylinder, a cylinder head therefor, comprising a ring and a head member, the head member provided with a valve and adjustably carried within the ring, the adjacent edges of the ring and head member separated to form a V-shaped opening, a packing ring carried by the opening, and the packing ring adapted to be forced outwardly by the adjustment of the cylinder ring and head member.

4. In a pump of the character described, a cylinder, a cylinder head therefor, comprising a ring and a head member, the head member provided with a port, a valve in the cylinder head port, the cylinder head member adjustably carried within the ring, the adjacent edges of the ring and cylinder head member separated to form a V-shaped opening, a packing ring carried by the opening, and the packing ring adapted to be forced outwardly by the downward adjustment of the cylinder head member in the ring.

5. In a pump of the character described, a cylinder, a cylinder head therefor, comprising a ring and a head member, the head member and ring adjustable in respect to one another, the adjacent edges of the ring and head member separated to form an opening, a packing carried by the opening, and the packing adapted to be forced outwardly by the adjustment of the cylinder ring and the head member.

In testimony whereof we hereunto affix our signatures.

GEORGE BURD.
CHARLES BURD.