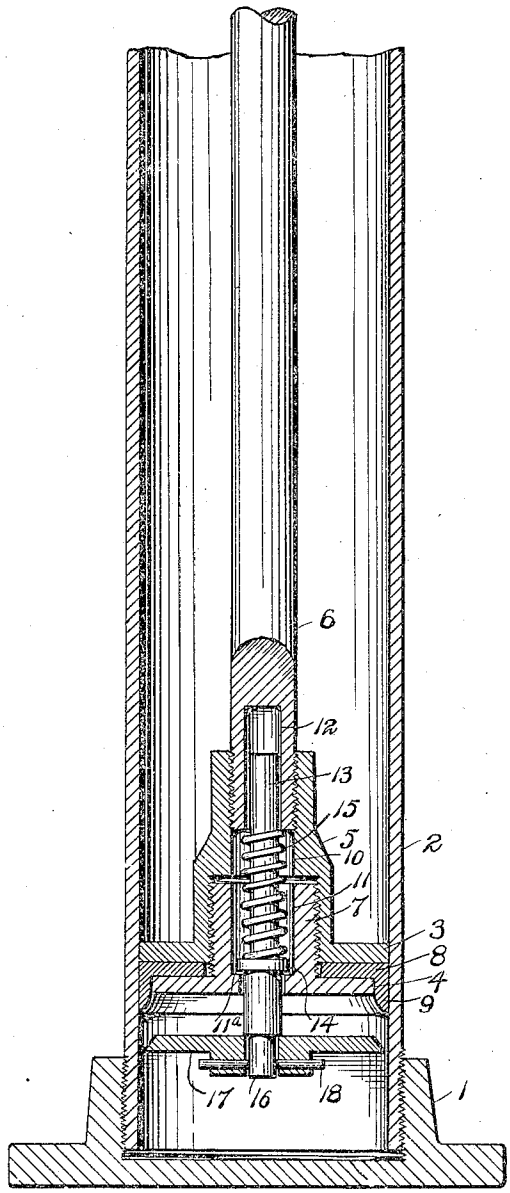
C. J. HINSHAW AND H. B. CASTOR.

PUMP.

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1,346,652. Patented July 13, 1920.



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UNITED STATES PATENT OFFICE.

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PUMP.

1,346,652. Specification of Letters Patent. Patented July 13, 1920.

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To all whom it may concern:

Be it known that we, CLAUD J. HINSHAW and HARRY B. CASTOR, citizens of the United States, residing at Lapel, in the county of Madison and State of Indiana, have invented certain new and useful Improvements in Pumps, of which the following is a specification.

The present invention relates to pumps, and more particularly air pumps for inflating tires and the like, though not necessarily limited to that particular type.

The primary object is to provide means for maintaining the packing gasket or leather properly expanded, so that leakage due to the distortion of the same is eliminated, said means being simple, compact, and at all times effective.

An embodiment of the invention is illustrated in the accompanying drawing, which is a longitudinal sectional view through a portion of a well known type of pump, with the expander or spreader in place.

In the drawings, the base is designated by the reference numeral 1, and carries the usual cylinder, a portion of which is illustrated at 2. Within the cylinder is located the plunger or piston, consisting of an upper clamping disk 3 and a lower clamping disk 4. The upper disk 3 is provided with an upwardly extending tubular boss 5, into which is threaded the actuating rod 6. The lower portion of the boss 5 is counterbored and internally threaded to receive the threaded extension 7 of the lower clamping plate 4. Between the said clamping plates 3 and 4 is located the usual packing gasket or cup 8 having a downwardly extending flange 9 that operates against the inner face of the cylinder and has the usual tapered lower margin.

The boss 5 and extension 7 are furthermore provided with alined internal axial sockets 10 and 11, the lower end of the piston rod 6 constituting the upper end of the socket 10 and the lower end of the lower socket being formed by an internal shoulder 11^a. The lower end of the rod 6 is also bored, as illustrated at 12.

Slidably mounted in the sockets 10 and 11 and the bore 12 is a stem 13 that projects through the lower disk 4, and has an internal flange 14 that is adapted to rest on the shoulder 12. A coiled spring 15, surrounding the stem and interposed between the flange 14 and the lower end of the rod 6, serves to hold the stem 13 in its lowermost position. The lower projecting end of said stem 13 is reduced in diameter, as illustrated at 16, and mounted on the reduced portion is a spreader disk 17 preferably held in place by a pin 18. The edge of the spreader disk 17 is beveled to correspond substantially to the taper of the packing cup 9.

With this structure, it will be evident that when the piston rod is reciprocated the packing leather or cup 9 will operate in the usual manner to permit the passage of air on the upstroke and insure its compression on the downstroke. Whenever the piston is forced to the downward limit of its movement the spreader disk 17 will be stopped by the base 1, and the continued movement of the piston will cause the beveled edge of said disk to operate against the tapered end of the cup and expand or spread the same, thus insuring its proper shape and eliminating the danger of its becoming inwardly curled, and thus losing its effectiveness.

From the foregoing, it is thought that the construction, operation and many advantages of the herein described invention will be apparent to those skilled in the art, without further description, and it will be understood that various changes in the size, shape, proportion and minor details of construction, may be resorted to without departing from the spirit or sacrificing any of the advantages of the invention.

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

1. A pump comprising a cylinder member and a piston therein having an expansible packing element, and an expanding device for the packing element movably mounted on the piston and adapted to engage the cylinder at the end of the piston stroke and be thereby caused to engage the packing element.

2. A pump comprising a cylinder member and a piston therein having an expansible packing element, an expanding device for the packing element having a stem slidably mounted in the piston and movable into engagement with the packing element, and a spring for yieldingly holding the expanding device in projecting relation to the packing element and in a position to strike the end

of the cylinder member and thereby be caused to engage and expand the packing element.

3. A pump comprising a cylinder member and a piston therein having an expansible packing element, an expanding device for the packing element movably mounted on the piston, and a spring housed in the piston for normally holding the expanding device disengaged from the packing element, and in projecting relation to the piston to cause it to engage the end of the cylinder member, and thereby operate to expand the packing element.

4. A pump comprising a cylinder member and a piston therein having an expansible packing element, an actuating device for the piston located outside the cylinder, an expanding device for the packing element having a stem slidably mounted in the piston and movable into engagement with the packing element, said stem terminating short of the actuating device, and a spring housed in the piston and operating against the stem.

5. A pump comprising a cylinder member and a piston therein having an internal chamber, said piston having an expansible packing cup, a disk for expanding the cup having a stem slidable in the piston, and a spring in the chamber and housed by the piston and operating on the stem to yieldingly hold the disk out of coaction with the cup.

6. A pump comprising a cylinder member and a piston therein, said piston comprising clamping plates having interlocking bosses, said bosses having an internal chamber, and a packing cup clamped between the disks and having an offset flange, a spreader disk that is movable into coaction with the flange, a stem carried by the disk and slidable in the chamber, and a coiled spring around the stem within the chamber and held in place by operating on the stem to hold the disk normally out of coaction with the flange.

In testimony whereof we affix our signatures in the presence of two witnesses.

CLAUD J. HINSHAW.
HARRY B. CASTOR.

Witnesses:
EARL A. TULL,
HENRY W. PARNELL.