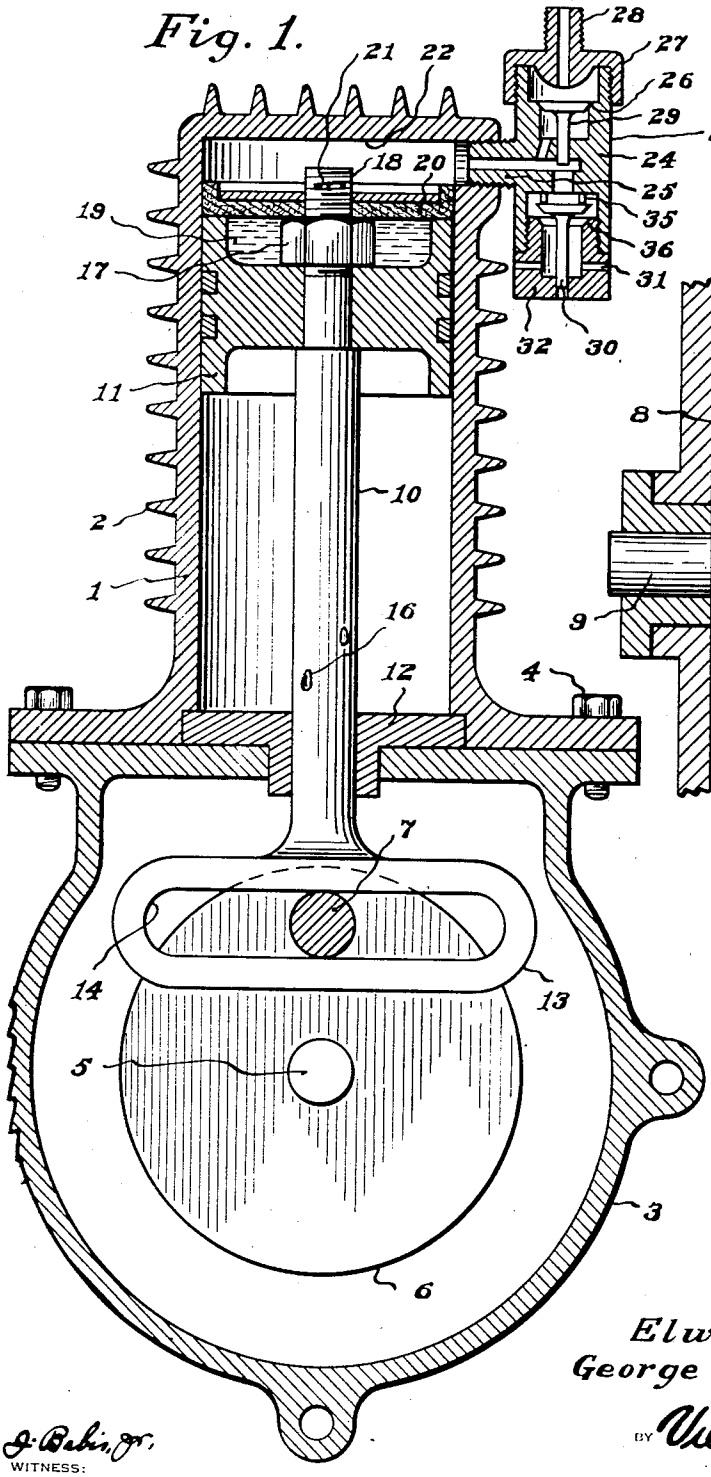
April 10, 1928. 1,665,965

E. O. KOENIG ET AL

AIR PUMP

Filed Dec. 12, 1923

Fig. 1.



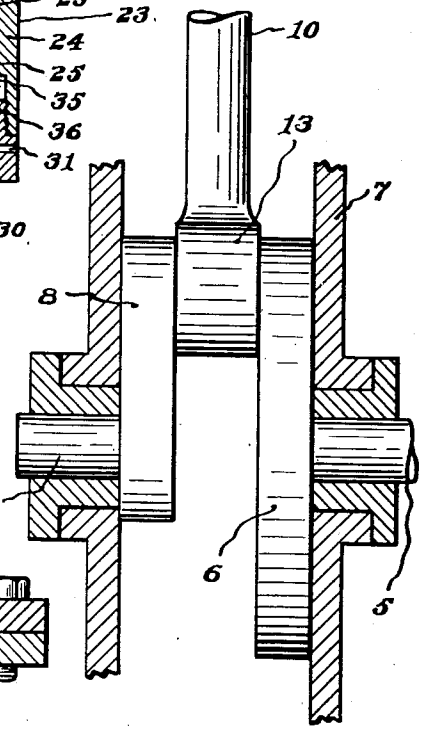


Fig. 2.

Elwin O. Koenig
George W. Brautigam
INVENTORS

BY Victor J. Evans
ATTORNEY

J. Bibb, Jr.
WITNESS:

Patented Apr. 10, 1928. 1,665,965

UNITED STATES PATENT OFFICE.

ELWIN O. KOENIG AND GEORGE W. BRAUTIGAM, OF PHILADELPHIA, PENNSYLVANIA.

AIR PUMP.

Application filed December 12, 1923. Serial No. 680,199.

This invention relates to an air pump, and an object of the invention is to provide an air pump or compressor which is comparatively simple in construction, and is adapted for connection with the prime mover or engine of a motor vehicle to permit the compressing of air for the purpose of filling tires or other analogous uses.

Another object of this invention is to provide an air pump or compressor as specified, which includes a reciprocatory piston provided with a lubricant containing chamber in which the lubricant is confined by means of a leather or similar cup, the said cup engaging the inner wall of the cylinder to facilitate proper lubrication.

Another object of the invention is to provide an air pump or compressor as specified, which embodies a novel form of valve structure gravity operated and which is free from springs and controls the inlet or air into and exhaust of air from the cylinder of the pump or compressor.

Other objects of the invention will appear in the following detail description, and in the accompanying drawings wherein:

Figure 1—is a vertical section of the improved pump or compressor.

Figure 2—is a vertical section taken on the line 2—2 of Figure 1, and taken at right angles to Figure 1.

Referring more particularly to the drawings, the improved compressor includes a cylinder 1 which may be provided with air cooling or radiating ribs 2, if desired, or which may be preferably smooth, depending upon the desires of the person manufacturing the same, or upon the practical conditions to which the compressor is to be adapted.

A crank-case 3 is connected to the cylinder 1 in the usual manner, by bolts 4, and it has a drive-shaft 5 rotatably carried thereby, which drive-shaft is adapted for connection with any suitable prime mover. A disc 6 is mounted on the drive-shaft 5 within the crank-case 3 and it has a crank-pin 7 connected thereto eccentrically of the axis of the disc. The crank-pin 7 is also connected to an arm 8 which is rotatably supported by the stub shaft 9. The piston rod 10 which is connected to the piston 11 extends into the crank-case 3 through a suitable bearing structure 12, and it has a transversely extending substantially oval-shaped link 13, formed integrally on its lower end. The crank-pin 7 extends through the slot 14 in the link 13 for connecting the piston 11 to the disc 6 for reciprocating the piston upon rotation of the disc.

The crank-case 3 is adapted to be filled with any suitable type of hard lubricant, and the piston rod 10 is provided with gouged-out pockets 16, at spaced points therein, which are adapted to pick up limited quantities of lubricant, for the purpose of lubricating the bearing surfaces of the piston rod 10 and the bearing 12.

The piston 11 is confined on the piston rod 10 by means of a suitable nut 17 which is threaded upon the threaded end 18 of the piston rod, and its upper end is hollowed out to provide a lubricant containing pocket 19 in which a quantity of hard lubricant is placed. The nut 17 serves as an abutment for the central portion of the leather cup 20. In other words this nut prevents the central portion of the leather cup from sagging. The nut also serves as an abutment against which the leather cup may engage due to the provision of a disc washer. A leather cup 20 is mounted upon the upper end of the piston 11 with its flat face inwardly towards the piston, there being a disc washer 18ª within the leather cup to hold the leather cup against the nut and against the edge of the flange of the piston, said disc washer being held on the piston rod 10 by a cotter pin or the like 21. The perimeter of the cup 20 engages the inner wall of the cylinder 1.

An air pocket 22 is provided in the cylinder 1 above the upper limit of movement of the piston 11, and a valve structure 23 is detachably connected to this air pocket 22, to control the inlet of air into and exhaust of air from the cylinder.

The valve structure 23 includes a body 24 which has a nipple 25 thereon that threads into a suitable opening in the cylinder 1. The body 24 is provided with an air passageway 25, which has communication through a valve seated opening 26 with a hose coupling 27 which is threaded on one end of the body 25, and has a nipple 28 thereon by means of which a suitable air conducting hose may be connected to the air compressor or pump. The disc valve 29 is gravity seated, and closes on the downward movement of the piston 11 to prevent the escape of air from the cylinder during such downward movement. During the

downward movement of the piston 11 air is sucked or drawn into the cylinder through the intake of the valve structure 23, the disc valve 30 being gravity seated and acted upon by the suction caused by the downward movement of the piston 11 to unseat for permitting air to pass through the various inlet openings 31 in the removable cap 32 which is threaded on the body 24. The valve 30 is prevented from seating against the shoulders 33 in the body 24 and thus cutting off the inlet of air by suitable obstruction members 35. Immediately upon the commencement of the upward stroke of the piston 11 the pressure of compressing the air will force the inlet valve 30 upon its valve seat 36, and prevent the escape of air through the inlet openings 31 and it will force the valve 29 off of its valve seat 26 and permit the escape of the compressed air to the desired location.

While in the foregoing description the air pump or compressor has been described as applicable for use in connection with motor vehicles, it is to be understood, that it may be used for any practical or desired purpose, where air under pressure is desired.

It is, of course, to be understood that the invention may be constructed in various other manners and the parts associated in different relations, and therefore, we do not desire to be limited in any manner, except as set forth in the claim hereunto appended.

What we claim is:

In a device as set forth, a reciprocatory piston provided with a hollowed-out cup portion in its upper end with a hard lubricant contained in said cup portion, a piston rod having a reduced threaded end engaging through said piston, a nut threaded on the reduced end, a semi-flexible lubricant absorbing disc cup engaged with the peripheral edge of the piston and with the nut constituting a closure for the cup portion to permit gradual feeding of the lubricant from the cup, a disc washer within the disc cup to hold the lubricant absorbing disc cup against the nut and in contact with the edge of the piston, and a cotter pin to retain the disc washer in position.

In testimony whereof we affix our signatures.

ELWIN O. KOENIG.
GEORGE W. BRAUTIGAM.