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LUBRICANT COMPRESSOR

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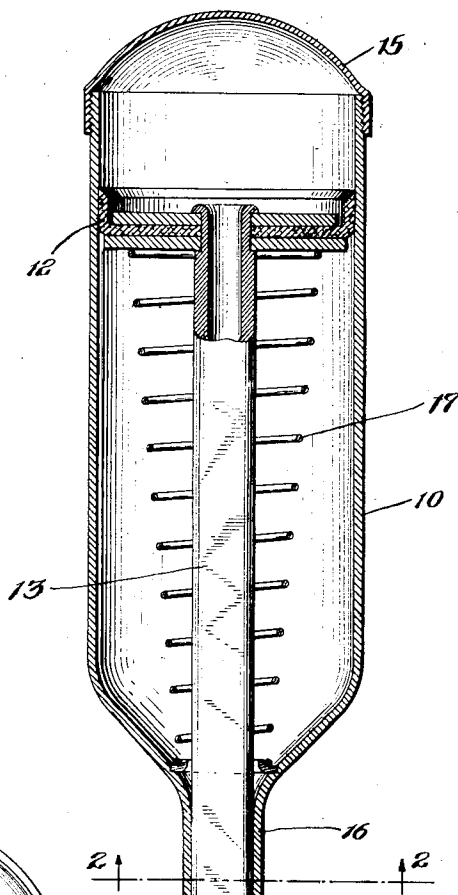
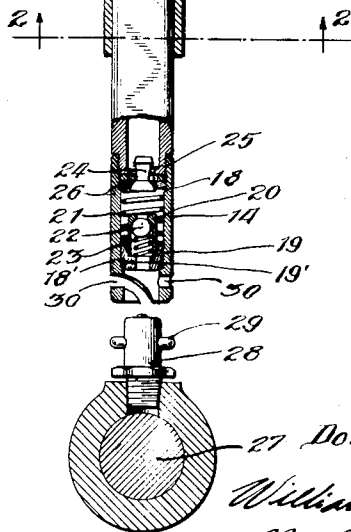
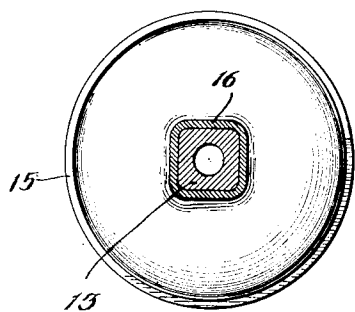


Fig. 1.

Fig. 2.



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LUBRICANT COMPRESSOR.

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My invention relates to lubricant compressors, and more particularly to compressors used with pressure lubricating systems wherein the several bearings to be lubricated are provided with lubricant receiving nipples, while the compressor is adapted to be detachably connected to successive nipples.

The objects of my invention are:

First, the provision of a manually operated compressor which, without need of adjusting the compressor, will deliver lubricant either under high pressure by a rotary movement, or under low pressure by a pushing movement.

Second, the provision of a manually operated compressor comprising a high pressure pump actuated by a rotary motion by the user and fed by an attendant pushing movement.

Third, the provision of a low pressure compressor and a high pressure compressor incorporated in a unit wherein a nipple engaged thereby constitutes a fixed actuating member, manual rotation relative to the nipple actuating one of the compressors, and manual pushing actuating the other compressor.

Other objects of my invention are to be found in the following description of a specific embodiment thereof, as illustrated in the accompanying drawings, wherein

Figure 1 is a longitudinal section of my compressor, and

Figure 2 is a transverse section thereof taken on the line 2—2 of Figure 1.

My compressor comprises in general a cylindrical barrel 10, within which is reciprocally mounted a piston 12, the latter being secured to the inner end of a rigid conduit 13 which carries at its outer end a force pump 14. The open end of the barrel 10 is closed by a dome-shaped cap 15 whereby the barrel may conveniently be grasped by the user. The opposite end of the barrel is provided with a neck 16 of reduced size and of square cross-section, as shown in Figure 2. Within this neck 16 the rigid conduit 13, also of square cross-section, is slidably mounted. A light coil spring 17 is preferably interposed between the neck 16 and the piston 12 to urge the piston toward the cap 15 for urging lubricant in the barrel through the conduit 13 and to the pump 14.

The pump 14 is contained in a sleeve 18

threaded onto the lower end of the conduit 13 to form a rigid continuation of the latter. Slidably mounted within the bore of the sleeve 18 is a cup leather 19 and a sealing washer 19' constituting a small piston normally urged against the shoulder 18' of the sleeve by a coil spring 21 within the sleeve. The cup leather 19 carries a cup-shaped displacing member 20, the bottom of which is normally closed by a ball check valve 22 under the yielding force of a light spring 23. The cup leather piston 19, it will thus be seen, carries a posterior or discharge check valve. An anterior or feed check valve is provided by a valve 24 yieldingly urged by a spring 25 against a seat 26 afforded by a washer clamped between the end of the conduit 13 and a shoulder on the sleeve 18.

Each of the several bearings 27 to be lubricated is provided with a lubricant receiving nipple 28 comprising a cylindrical portion provided with a cross pin 29. The sleeve 18 is provided with a pair of cam slots 30 extending spirally from the end of the sleeve. To engage the compressor with one of the nipples, the lower end of the sleeve 18 is placed about the cylindrical portion of the sleeve and the cross pin 29 permitted to enter the slots 30. The user then rotates or twists the barrel which, through its squared neck 16, imparts a similar movement to the conduit 13 and the sleeve 18, pulling the compressor toward the nipple, with the result that the end of the nipple engages the cup leather 19, sliding it inwardly and toward the end of the conduit. Lubricant within the sleeve 18 is thus forced past the yielding check valve 22 and into the nipple 28.

When the cross pin 29 has reached the ends of the slot 30, the user rotates the barrel 10 in the opposite direction to return the cross pins to the outer end of the slots. The consequent recession of the nipple 28 permits the spring 21 to return the cup leather piston 19. Because of the user's continued pressure on the barrel 10 tending to move it toward the nipple, lubricant within the barrel is forced through the conduit 13 and past the check valve 24 into the sleeve 18 to again fill the bore of the force pump 14.

Were it not for the pressure on the lubricant which feeds the pump 14, the recession of the piston might cause the partial vacuum created within the sleeve 18 to be relieved by

air passing the cup leather 19. It is also apparent that the feeding of the force pump with lubricant under low pressure greatly increases the speed at which the compressor may be operated. This permits the user to actuate the pump by rapid twisting motions which are attended by a natural forward push against the end of the barrel.

I have found that a twist compressor of this type will easily develop a pressure of two thousand pounds per square inch. It is obvious, however, that because of the high pressure the volume delivered per unit of time is correspondingly small. In instances where a comparatively large amount of lubricant is to be delivered and there is no necessity for a high pressure, such for example as wheel hubs and gear housings, the operator need only impart a pushing motion to the compressor. To effect this, the cross pin of the nipple is engaged in the cam slots of the sleeve 18 sufficiently to establish a seal between the end of the nipple and the leather washer 19'. The operator then presses the end of the barrel longitudinally toward the nipple, with the result that the piston 12, being rigidly connected to the nipple, displaces the lubricant through the conduit 13 and past the check valves 22 and 24 into the nipple. Similarly, where bearings are provided with grease cups carrying nipples or are provided with other lubricant chambers, the operator by a pushing movement may first quickly fill the grease cup or receptacle with lubricant under low pressure until it is filled, after which the operator may twist the gun to build up a high pressure and force lubricant through the bearing.

While I have shown but this specific embodiment of my invention, it is to be understood that many changes may be made therein without departing from the scope or spirit of my invention.

I claim:—

1. A lubricant compressor for detachably engaging successive lubricant receiving members, said compressor comprising lubricant compressing means for delivering lubricant under high pressure to said members, said high pressure means comprising relatively rotatable parts, lubricant compressing means for feeding lubricant under low pressure to said members, said low pressure means comprising telescoping parts, and a manually engageable portion, manual rotation of which actuates said high pressure compressing means and manual longitudinal movement of which actuates said low pressure compressing means.

2. A lubricant compressor comprising a barrel adapted to contain lubricant, coupling means for detachably engaging a lubricant receiving member, a force pump actuated by manual rotation of said barrel for delivering lubricant under high pressure to said mem-

ber, and means actuated by manual longitudinal pressure on said barrel for feeding lubricant under low pressure to said pump.

3. A lubricant compressor comprising a barrel adapted to contain lubricant, coupling means for detachably engaging a lubricant receiving member, a force pump actuated by manual rotation of said barrel for delivering lubricant under high pressure to said member, and means actuated by manual longitudinal pressure on said barrel for delivering lubricant under low pressure to said member.

4. A lubricant compressor comprising a barrel, a closure for the rear end thereof, a piston reciprocably mounted in said barrel, a rigid conduit engaging said piston, coupling means on the forward end of said conduit for detachably engaging successive lubricant receiving members, lubricant compressing means on said compressor, actuated by relative rotation of said barrel and one of said members thus engaged, for forcing lubricant under high pressure to such member, said conduit communicating between the interior of said barrel and said compressing means for feeding lubricant to the latter under low pressure when longitudinal pressure is exerted on said barrel.

5. A lubricant compressor comprising a large bore, a small bore, a piston slidably mounted in each of said bores, means including relatively rotatable parts for advancing the piston in the small bore, means including a part having a direct longitudinal movement for advancing the piston in the large bore, means for engaging a lubricant receiving member, rotary movement of said compressor relative to said member actuating the piston in said small bore to force lubricant therefrom to said member, and longitudinal movement of said compressor relative to said member actuating the piston in said large bore to feed lubricant to said small bore.

6. A lubricant compressor comprising a barrel, a closure for one end thereof, a piston slidably mounted in said barrel, a piston rod extending from said piston to the opposite end of said barrel, a high pressure compressing mechanism mounted on said rod, conduit means communicating between said compressing means and the interior of said barrel beyond said piston, means at the end of said rod for detachably engaging a lubricant receiving member, relative rotation of said rod and said member actuating said compressing means, and means to prevent relative reciprocation of said barrel and said rod.

7. The combination with a lubricant receiving member of means for supplying lubricant thereto under pressure, comprising a barrel, a closure for one end thereof, a piston slidably mounted in said barrel, a piston rod extending from said piston to the opposite end of said barrel, a bore in said rod, a

second piston slidable therein, co-acting means on said member and on said rod for actuating said second piston when said rod is rotated relatively to said fitting, means for causing said rod to rotate with said barrel, and conduit means communicating between said bore and the interior of said barrel beyond said piston.

8. The combination with a fitting of means for supplying lubricant thereto under pressure, comprising a barrel, a closure for one end thereof, a piston slidably mounted in said barrel, a piston rod extending from said piston to the opposite end of said barrel, a high pressure compressing mechanism mounted on said rod, conduit means communicating between said compressing means and the interior of said barrel beyond said piston, and manual engageable means for rotating said rod, said compressor comprising a bore in said rod, a second piston slidable therein, and co-acting means on said fitting and on said rod for actuating said second piston when said rod is rotated relatively to said fitting.

9. A lubricant compressor for detachably engaging a lubricant receiving member, comprising a barrel, a closure for one end thereof, a piston slidably mounted in said barrel, a stem extended outwardly from said piston through the opposite end of said barrel, lubricant displacing means on said stem for delivering lubricant to said member, means on said stem for co-acting with said member for actuating said displacement means by relative rotation of said stem and said member, said member acting as an abutment for said stem, and conduit means communicating between the interior of said barrel beyond said piston and said displacement means, longitudinal pressure on said barrel forcing lubricant in said interior to said displacement means.

10. A lubricant compressor comprising a barrel, a piston in said barrel, a hollow discharge conduit connected with said piston and communicating with said barrel, and a force pump carried entirely within the outer end of said discharge conduit.

11. A lubricant compressor comprising a rigid conduit, a low pressure barrel movably mounted on one end of said conduit, and a high pressure pump entirely within the other end of said conduit.

12. A lubricant compressor comprising a barrel and co-acting means for placing lubricant under low pressure when said barrel is moved rectilinearly, and under high pressure when said barrel is rotated.

In witness whereof, I hereunto subscribe my name this 15th day of February, 1924.

DOUGLAS F. FESLER.