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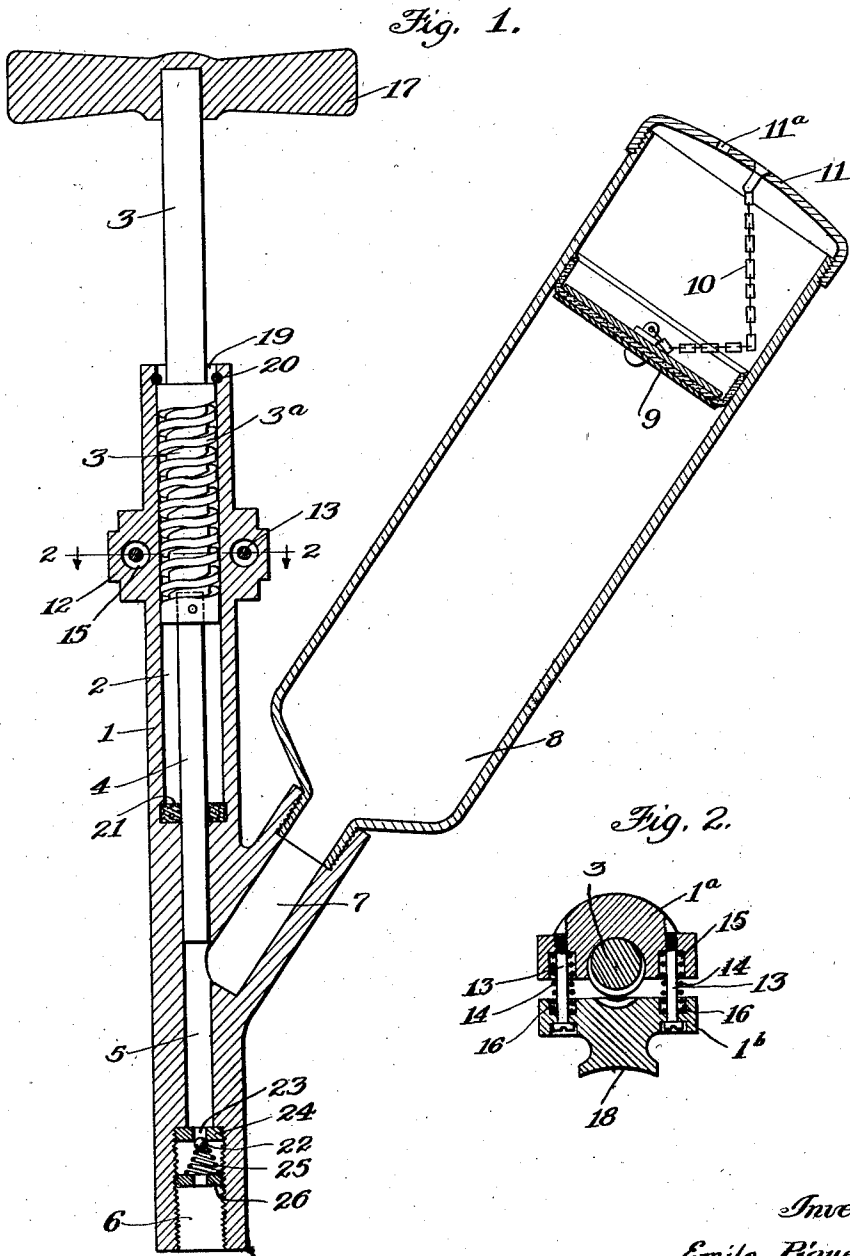
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DOUBLE ACTION LUBRICANT COMPRESSOR

Filed April 15, 1925

2 Sheets-Sheet 1



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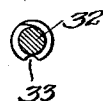
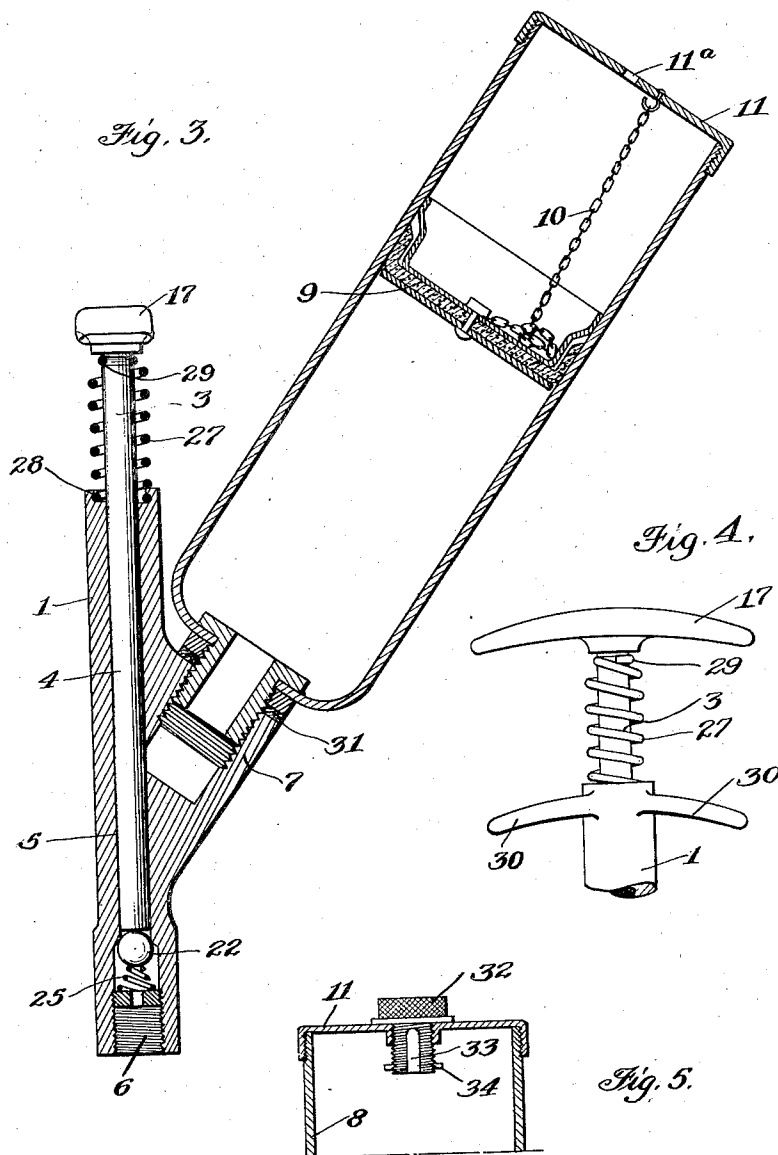


Fig. 6.

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UNITED STATES PATENT OFFICE

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DOUBLE-ACTION LUBRICANT COMPRESSOR

Application filed April 15, 1925, Serial No. 23,351, and in France June 18, 1924.

This invention relates to force fed lubrication and more specifically to an improved dispensing device for use in such lubrication.

Among the primary objects of the invention may be enumerated the delivery of lubricant at moderate pressure in relatively large quantities, or in smaller quantities at a much higher pressure, the change from one form of discharge to the other being made instantaneously by a simple manipulation of the device.

The embodiment disclosed is also adapted for delivering any liquid, viscous or plastic body such as grease, oil, petroleum jelly, gasoline, etc., kept in a removable and interchangeable reservoir substantially attached to the body of the device. Thus the combination permits use of the apparatus to inject different liquids at will by simply replacing the reservoir, which can be done in an instant.

Thus the invention includes, particularly, the structure of the compressor and its particular combination with a removable reservoir suitable for all lubricating and cleaning uses. It also involves the reservoir itself, particularly adapted for use with the compressor as a refill cartridge for feeding the same.

In the accompanying drawings:

Fig. 1 is a longitudinal section of a compressor adapted to discharge either at moderate or at very high pressure.

Fig. 2 is a cross section on line 2—2 of Fig. 1.

Fig. 3 is a longitudinal section of a simplified compressor discharging at moderate pressure only.

Fig. 4 is a fragmentary elevation of the pump body showing the operating plunger and its handle.

Fig. 5 is a fragmentary longitudinal section of the reservoir employed in connection with a liquid such as oil.

Fig. 6 is a transverse section of the reservoir plug.

In the embodiment of the invention selected for illustration in Figs. 1 and 2, the pump body 1 is provided with a bore 2 for receiving the operating rod 3 of piston 4, movable in compression cylinder 5 formed in

body 1 between bore 2 and the discharge passage 6.

An inlet passage 7 opens into cylinder 5, being suitably inclined to receive the removable lubricant reservoir 8 fastened to the tube 7 by a suitable tight fastening such as a threaded joint, a bayonet slot joint, etc. The reservoir is provided with a follower 9 suitably attached as by means of a small chain 10 to a cover 11, threaded or suitably attached on the reservoir 8, said cover being provided with an air vent 11^a.

Body 1 is provided with an enlargement 12, split into two pieces 1^a and 1^b. (See Fig. 2.)

The fixed portion 1^a, integral with body 1, carries two bolts 13, fastened as by a threaded connection and guiding the piece 1^b, which is normally held out of contact with rod 3 by springs 14 entering sockets 15 and 16 formed in sections 1^a and 1^b respectively, concentric with bolts 13.

The control rod 3 carries handle 17 at its free end and a threaded portion 3^a formed eccentric so as not to project from one side of the periphery of the rod, as shown in Fig. 2. Rod 3 can, therefore, slide freely in its cylindrical seat in body 1 when section 1^b is held by spring 14 in the position of Fig. 2. Section 1^b is threaded to fit the threads on rod 3, and has a projection 18 for operating the same. In its outermost position the upper thread of the threaded portion 3^a abuts a split ring 19 seated in groove 20 in the end of the bore 2. The other end of the threaded portion is limited by abutment with packing 21, and the bottom of cylinder 2, said packing being compressed into its seat to hold it in place.

Valve means such as ball valve 22 pressed against opening 23 of diaphragm 24, threaded to the bottom of passage 6, by spring 25 bearing on another diaphragm 26 similarly threaded in place, prevents return flow into compression cylinder 5.

The operation is as follows:

Assume that the compressor is to be used to inject grease from reservoir 8 in considerable quantities at moderate pressure. A pull on handle 17 develops suction and draws the grease through conduit 7 to fill cylinder 5.

The subsequent down stroke of handle 17 and piston 4 compresses the lubricant in cylinder 5 to force it past ball valve 22 into delivery passage 6. The operation can be continued by reciprocation of piston like the piston of a syringe.

If, however, the lubricant must be discharged under high pressure, as will be the case whenever the resistance to the passage of lubricant into the parts to be lubricated is too great to permit operation of the piston by rectilinear displacement, the development of pressure by the screw thread is available. Thus a pressure of the thumb on boss 18 with the hand holding the body will draw section 1^b into engagement with the threads on the rod. Handle 17 is now rotated to lift the piston to produce the necessary suction to draw lubricant into cylinder 5. By rotating in the opposite direction the piston is forced down and the lubricant forced out through opening 23.

The very high discharge pressure thus obtained can overcome the high resistance of the lubricant, and when this resistance is once broken down, the ordinary method of reciprocating the piston may be employed, for further injection.

In the simplified embodiment of Figs. 3 and 4 the device is only required to discharge against moderate pressure. Movement of piston 4 is by means of handle 17 as before, while its return movement is produced by spring 27 encircling rod 3 and having its two end coils seated in annular grooves 28 and 29 formed in body 1 and rod 3 respectively. The fastening at both ends provides a resilient limit for the outward movement of the piston, and at the same time permits very easy assembly and separation of the parts. Two arms 30 are also provided at the upper end of the body 1 for convenience in manipulating handle 17. In this embodiment ball 22 bears on a seat formed directly in the body 1 at the end of cylinder 5.

For better mounting of reservoir 8 on the intake passage 7 of the pump body, there is illustrated a nipple joint with packing 31 co-operating with the threaded neck of passage 7. This construction also facilitates a tight closure of reservoir 8 when it is removed from the pump body and covered by a threaded cap.

The operation is as in the previous embodiment when discharging under moderate pressure. Due to the long stroke and small section of piston, the discharge pressure will still be relatively high.

It will be understood that either embodiment will be employed in connection with a plurality of reservoirs containing different materials, which reservoirs can be mounted in succession on the compressor as required to permit the use of the different materials, as above set forth. In using liquids such

as fluid oil, gasoline, etc., the follower 9 can be omitted as indicated in Fig. 5, in which case the opening in cover 11 is preferably closed by a threaded plug 32 provided with a longitudinal groove 33. The plug can be temporarily unscrewed to provide an air vent and the stop 34 prevents loss of same.

Without further elaboration the foregoing will so fully explain the gist of the invention, that others may, by applying current knowledge, readily adapt the same for use under various conditions of service. It will for instance be observed that the lubricant reservoirs could be simple tubes of foil or yieldable material with closed bodies and threaded necks for engaging the body. In this connection the follower can also be omitted and the tube will collapse under the suction of the pump. This and many other adaptations and modifications may readily be made by those skilled in the art without eliminating certain features which may properly be said to constitute the essential items of novelty involved, which items are intended to be defined and secured by the following claims.

What I claim is:

1. A lubricant compressor comprising a pump body, a plunger therein, means normally guiding said plunger in reciprocating movement, and additional means normally inoperative for guiding said plunger in helical movement, said additional means being positioned to be conveniently moved into operative position by one of the digits of the hand holding the body.

2. A lubricant compressor comprising a pump body, a plunger including a stem, eccentric threads carried by said stem, means for guiding the threaded part of said stem for straight reciprocating motion, and means for guiding the threaded part of said stem in helical movement, said means being positioned to be conveniently moved into operative position by one of the digits of the hand holding the body.

3. A lubricant compressor comprising a pump body having a discharge end, a check valve at said discharge end, an inlet for said pump lying at an angle to the body and slanting away from the discharge end, a lubricant reservoir co-axial with said inlet and detachably mounted thereon, said reservoir serving to maintain lubricant therein at substantially atmospheric pressure, a plunger reciprocable in the pump body, screw threads on said plunger, guide means permitting sliding movement of said plunger without rotation, threaded means movable into and out of engagement with the threads of said plunger, and resilient means tending to move said threaded means into disengaged position.

In witness whereof, I hereunto subscribe my name, this 23rd day of March, 1925.

EMILE PIQUEREZ. 130