April 20, 1926. 1,581,298

J. G. SCHOTTHOEFER

GREASE PUMP

Filed Dec. 15, 1923

FIG. 1.

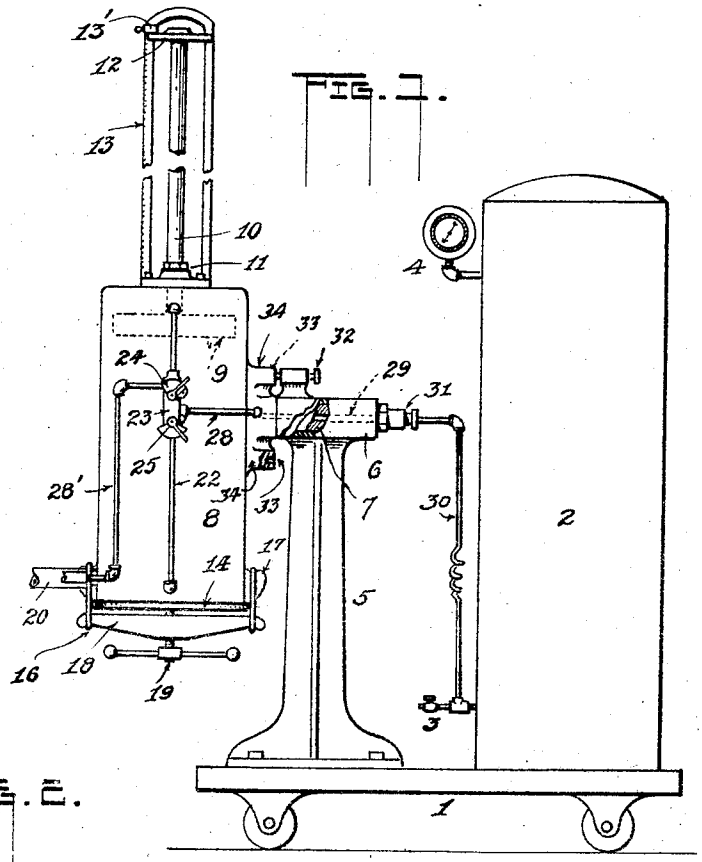
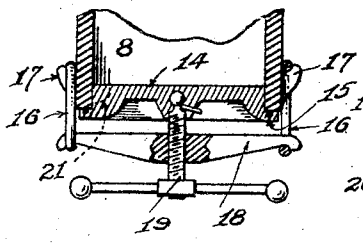


FIG. 2.



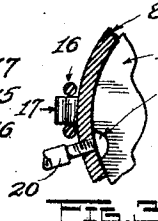
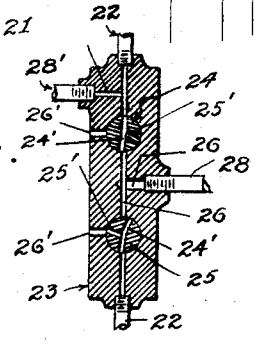


FIG. 3.

FIG. 4.



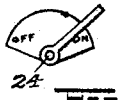
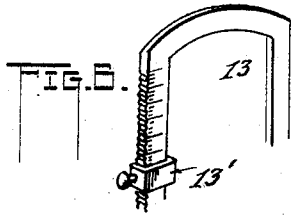


FIG. 5.

FIG. 6.



INVENTOR.
J. G. Schotthoefer,
BY L. M. Thurlow
ATTORNEY.

Patented Apr. 20, 1926. 1,581,298

UNITED STATES PATENT OFFICE.

JOSEPH G. SCHOTTHOEFER, OF PEORIA, ILLINOIS.

GREASE PUMP.

Application filed December 15, 1923. Serial No. 680,926.

To all whom it may concern:

Be it known that I, JOSEPH G. SCHOTTHOEFER, a citizen of the United States, residing at Peoria, in the county of Peoria and State of Illinois, have invented certain new and useful Improvements in Grease Pumps; and I do hereby declare that the following is a full, clear, and exact description of the invention, which will enable others skilled in the art to which it appertains to make and use the same.

This invention relates to an apparatus for handling lubricants, such as transmission greases, for example, by means of air pressure.

The invention relates more particularly to an apparatus, preferably portable, which comprises a grease container and a receiver for air under pressure, the air to be released upon a piston in said container for forcing the grease from a discharge nozzle for use.

An object of the invention is to provide a grease container having a piston for discharging the grease under pressure of air thereon, combining therewith means for controlling the air applied to the piston whereby any given amount of the grease may be discharged according to the will of the operator.

Another object is to provide an apparatus of this character that may be readily portable to the place or places for use.

In addition to such objects, the invention relates to certain details of construction and arrangement of parts by which an apparatus of the nature described may be most efficiently and easily handled.

To the end that the invention may be thoroughly understood I have provided the accompanying drawing wherein;

Figure 1 is a side elevation of an apparatus constructed according to my invention.

Figure 2 is a vertical section of part of a grease container showing a closure therefor.

Figure 3 is a horizontal section of part of the grease container.

Figure 4 is a longitudinal section of an air-control valve.

Figure 5 is an elevation of a valve handle and indicator-plate, and

Figure 6 shows a portion of a guide-member in perspective.

The apparatus herein to be described may be used as a separate and complete unit for forcing grease into mechanisms where a low pressure is sufficient for the work but it is more particularly adapted for use with a type of high pressure grease pump or gun forming the subject of a separate copending patent application filed on the same date as the present one.

In said drawing, the character 1 designates a wheeled platform having secured thereon an air receiver or tank 2 supplied with air under pressure from any source through a valved nipple 3, for example, threaded into the wall of said receiver or tank, the latter having any usual pressure gauge 4.

Mounted on the platform 1, also, is a standard or support 5 provided with a head 6 bored to receive a turned stud 7 projecting from one side of a cylinder 8 containing the grease. The said cylinder is bored to receive a piston 9 of any approved form or arrangement that will have a leak-tight working fit, the character 10 denoting a piston-rod affixed to said piston and extending through the upper closed end of the cylinder. A packing nut 11 preserves a tight joint for the piston-rod and the free end of the latter is furnished with a suitable cross-head 12 guided in suitable manner such as within a yoke 13 secured in rigid manner on the cylinder.

The opposite or lower end of the cylinder receives a closure comprising a head 14 preferably let into it and provided with a packing-ring 15 to abut against the cylinder-end. Suspended by links 16 hung from hooks 17 on the sides of the cylinder is a cross-head 18 which carries a thread-bar 19 swiveled at its end in the head 14 and by means of which the latter may be secured upon the cylinder-end air tight.

Threaded into the lower end of the cylinder is a pipe 20 for carrying away the grease to be discharged, the head 14 preferably having a recess 21 in its periphery within the cylinder into which the said pipe 20 may open, the outlet being thus out of the path of travel of the piston.

At 23 is a valve-casing having a passage 26 extending through it while a pipe section 22 connects the passage at opposite ends of the casing with opposite ends of

the bore of said cylinder. A valve 24 and a valve 25 are carried by the casing in the line of the passage 26, said casing also having a passage 26′ leading from the position of each valve to the outer air. In each valve are communicating passages 24′ and 25′ whose purpose will be made known later.

A pipe 28 connects said passage 26 between the valves with a bore 29 extending along and within the described stud 7. A pipe 30 is connected to the nipple 3 of the receiver 2 and extends into and is enclosed and held by any usual and well known packing nut at 31 extending from said stud. The opening of the pipe is thus held in an air-tight swivel connection with the passage or bore 29. A pipe 28′ may connect with the described passage 26 of the valve-casing 23 for leading air away from the apparatus for uses other than that to be described herein.

As may be observed, it is the desire to swing the grease container or cylinder 8 upon the standard 5 and this is in order that it may be turned end for end. That this may be done, and in order that said cylinder may be maintained in an upright position when so swung, there is provided a suitable pin 32 preferably spring held, though not so shown, which engages a socket 33 in each of two extensions 34, for example, of the cylinder. The structure is such, of course, that the point of support of the cylinder 8 is sufficiently high to permit the latter and its yoke 13 to swing free of the surface upon which the platform 1 rests, the head 6 of the support 5 having sufficient length to permit the parts to clear the platform and the base of the said support.

In use, the cylinder is inverted from the position shown so that the head 14 may be removed. Said cylinder is then filled with grease, the piston 9, of course, being then nearest the closed end at such times, no air at this time being permitted to enter the cylinder.

When the latter is returned to its normal position for convenient use shown in the drawing the air which is under pressure in the pipe 28 and passage 26, may be permitted to enter the cylinder upon the top of the piston 9, Figure 1, by turning the valve 24 to a position where the passage 24′ thereof will open the air line from the said pipe 28 to and through the pipe 22 upon the top of the piston. The valve 25, however, is turned to close the said passage 26 to prevent air passing to the lower end of the cylinder.

The pressure of air upon the piston will thus depress that member forcing the grease from the pipe 20 to the place for use. In order to readily and conveniently determine the amount to be discharged a leg of the yoke 13 is graduated as shown in Figure 6 so that, knowing the amount of discharge that will occur in the movement of the cross-head 12 from one mark to another, any predetermined quantity may be displaced by watching the progress of said cross-head.

Preferably there is provided a movable block 13′ on the yoke 13 serving as a starting point for the cross-head at any position on said yoke.

When the grease has all been discharged from the cylinder the valve 24 is so set that the passage 26 is closed to further entrance of air to the cylinder 8 but so set, however, that the air in the latter may be discharged through the escape passage 26′ of the casing as the piston is returned to its starting position in the action now to be described. By setting the valve 25 so that the air pressure may enter the bottom of the cylinder from the passage 26 the piston 9 is forced back to the other end, or its starting position, whereupon the head 14 may be removed for recharging the cylinder with grease after cutting off the air flow. After such refilling the positions of the valves are reversed to repeat the operation previously described for grease discharge. It is evident, of course, that a single valve mechanism may replace the two valves but the use of the latter is perhaps more simple.

The passages 24′ and 25′ of each of the valves are peculiarly disposed and though thus disposed they may be otherwise arranged. As shown, however, their relation to each other and to the passages 26 and 26′ is best shown in the valve 25 as positioned in the drawing. That is to say, the passage 26 leading from the pipe 22 may communicate with the passage 26′ but the passage 24′ due to its bent form is not in register with the passage 26 from which the air comes from pipe 28. Also, due to the bent form of said passage 24′, when that passage connects the passage 26 at each side of the valve the passage 25′ will be just out of register with the outlet 26′ so that air pressure cannot escape therethrough. The so called "bent" form of the passage 24′ as well as the angular position of the passage 25′ with respect to it is mere choice in obtaining the results desired but, as stated, other ways may be used looking to the same end. As to the valve 24 in the figure it is noted that although the passage 24′ does not exactly register with the passage 26, yet the air is free to travel through it.

The apparatus described provides a convenient and efficient mechanism for the purposes named, the capacity of the cylinder 8 being such as to supply large quantities of grease.

As previously stated, while the apparatus is particularly adapted for use with a high pressure grease pump, it is admirably fitted to any other use where greases or even other

commodities are to be handled conveniently and positively, with entire cleanliness, and with dispatch.

Various changes may be made in the construction of the apparatus as is clear and without departing from the spirit and intent of the invention.

I claim:

1. An apparatus of the class described including a container for a substance adapted to flow under pressure, the same having an outlet for such substance, and also having an open end, a closure for said open end, a support upon which the container is swiveled whereby it may swing end for end, a member in said container adapted to force the substance from said opening, a source of air pressure, pipe connections for conveying air to either end of the container, and means for separately directing air to either of said ends.

2. Apparatus of the character described including a container for a flowable substance to be dispensed, with an outlet, a member within the container adapted to be forced upon the substance to eject the same from said outlet, there being an inlet for the substance and a closure for the same, means for causing pressure to be imposed upon the member, and a mounting upon which the container is pivotally carried whereby to permit it to be inverted in position.

3. Apparatus of the character described including a container for a flowable substance to be dispensed, and having an outlet, a member within the container adapted to be forced upon the substance, a closure therefor, a mounting upon which the container is pivotally carried whereby to permit it to be inverted in position, the same including a duct extending centrally through it, a second duct connecting the first with opposite ends of the interior of the container, valve mechanism in control of said second duct, an air storage tank, and a pipe connected between the same and the duct in said mounting.

4. Apparatus of the character described including a container for a flowable substance to be dispensed, and having an outlet, a member within the container adapted to be forced upon the substance, a closure for the container, a mounting upon which the container is pivotally carried whereby to permit it to be inverted in position, the same including a duct extending centrally through it, a second duct connecting the first with opposite ends of the interior of the container, valve mechanism in control of the said second duct for directing air into either of said ends, an air storage tank, and a pipe connected to and between the same and the duct in said mounting.

5. The combination with a container for a flowable substance, a piston adapted to traverse the bore of the same, and a source of air pressure, of a pipe connected with the said air source, a valve-casing having a passage extending therethrough with which the said pipe is connected, a pipe connecting the passage with each end of the bore of the container, a valve in the passage at each side of the inlet of the first named pipe for cutting off the flow of air to the container and each having a passage therethrough to register with the said passage of said casing.

In testimony whereof I affix my signature.

JOSEPH G. SCHOTTHOEFER.