Dec. 4, 1923. 1,476,227

C. H. SCOTT

LUBRICANT PUMP

Original Filed March 26, 1920

Fig. 1.

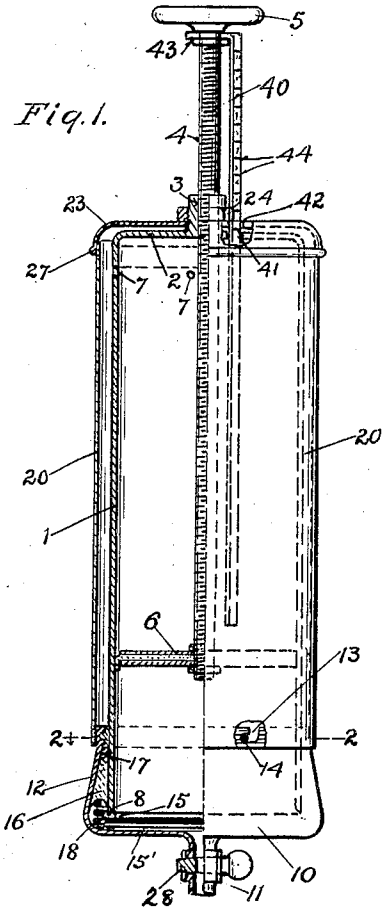


Fig. 4.

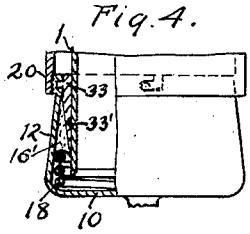


Fig. 5.

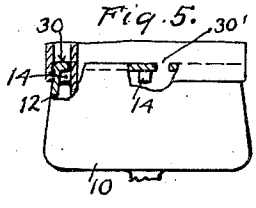


Fig. 6.

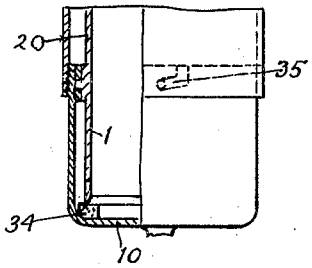


Fig. 3.

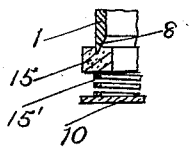
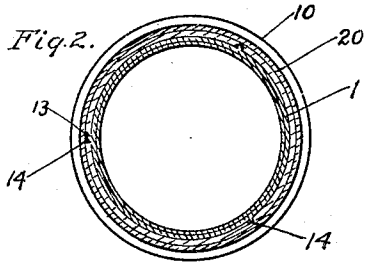


Fig. 2.



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UNITED STATES PATENT OFFICE.

CHARLES H. SCOTT, OF SOUTH PASADENA, CALIFORNIA.

LUBRICANT PUMP.

Application filed March 26, 1920, Serial No. 368,921. Renewed May 19, 1923.

To all whom it may concern:

Be it known that I, CHARLES H. SCOTT, a citizen of the United States, residing at South Pasadena, in the county of Los Angeles and State of California, have invented a new and useful Lubricant Pump, of which the following is a specification.

This invention relates to a lubricant pump, and especially to a grease pump or grease gun, and the main object of the invention is to facilitate the filling of the pump with grease, or lubricant.

A further object of the invention is to enable the grease pump to be filled with a lubricant without trapping air in the pump. Grease pumps at present in use are filled by removing the head of the pump, together with the plunger, and forcing grease into the body of the pump with a suitable implement. In this operation it is difficult, if not impossible, to avoid trapping of more or less air in the lower part of the pump body back of the grease, the air so entrapped in the pump barrel interfering with the pump and with effective operation of the plunger in ejecting the grease after filling. My invention provides for escape of the air from the pump barrel so as to avoid such trapping of air in the barrel.

Another object of the invention is to facilitate the filling of the pump barrel by so constructing the parts that the barrel can be used as a scoop by the barrel being forced into the body of grease until it is filled with lubricant and then withdrawn in filled condition. In this connection, my invention provides for normally protecting or sheathing the pump barrel externally for convenience and cleanliness in handling and for exclusion of dirt and grit from the body of lubricant.

The accompanying drawings illustrate an embodiment of my invention, and referring thereto:

Fig. 1 is a partly sectional side elevation of the pump;

Fig. 2 is a section on line 2—2 in Fig. 1;

Fig. 3 is a detailed section of a spring washer device for retaining the parts in position;

Figs. 4 to 6 are detailed sections of modifications, partly in elevation.

The pump constituting my invention comprises a barrel or cylinder 1 open at one end and closed at the other end, indicated at 2, except for a screw thread central opening 3 through which works a screw threaded plunger rod 4 carrying at one end an operating handle 5 and at the other end a piston or plunger 6. Barrel or cylinder 1 is provided near its inner end with one or more openings 7 serving as air vents, said openings being spaced sufficiently from the head 2 to enable the plunger 6 to move beyond these openings, as indicated in dotted lines, so as to expose the openings at the interior of the barrel. The barrel or cylinder 1 is preferably formed with a bevelled edge 8 at its inner end to facilitate entrance of the barrel in the body of lubricant.

Means are provided for closing the outer end of the barrel rapidly and conveniently without requiring more than a small part of a single turn of the closure part as distinguished from the several turns required with the ordinary screw threaded head, said means comprising a cylinder head 10 provided with an outlet pipe or duct 11 for the grease and with a tapering or converging conical wall portion 12 having a plurality of bayonet joint notches or slots 13 in its end portion adapted to engage pins or lugs 14 secured on the barrel or cylinder 1. A washer 15 of leather, or other suitable material, is arranged within the head 10 and is pressed by a spring 15′ so as to engage the outer end of the cylinder or barrel 1 and thereby prevent the detachable cylinder head 10 from being accidentally displaced. Packing means is provided between the wall 12 of said cylinder head and the cylinder or barrel 1, said packing means consisting of a ring 16 of suitable yielding material, such as leather, felt, or the like, held against a shoulder 17 in wall 12 by coil spring 18, said packing ring being cylindrical on its inner face, and conical, or convergent on its outer face, so as to fit the respective members 1 and 12 and provide a tight joint. At its inner end this packing ring is preferably concave so as to enable the pressure of the fluid or semi-fluid lubricant to expand the rearwardly extending parts at either side of this concavity into tight contact with the wall portions. This construction, together with the taper or wedge shape of the packing ring, causes the packing ring to automatically seal the joint and to check any tendency of the lubricant to exude past the packing ring, the sealing or closing action increasing as the pressure increases. The outlet pipe

11 is of any suitable length and may be provided, if desired, with the usual flexible portion for convenience in delivering the grease to the desired point. A cylindrical sheath 20 is mounted or formed on the detachable head 10, for example, by screwing on the rim portion of said head, and is adapted to surround and enclose the body of the barrel or cylinder 1, said cylindrical sheath fitting within a cap 23 which is mounted on the head 2, for example, by means of a fastening nut 24, and is adapted to fit over the free end of the cylindrical sheath 20 so as to make a tight joint. This cap 23 is preferably provided with a beaded or rounded rim 27 to facilitate entrance of the cylindrical sheath 20 within the cap.

The device is used as follows:

To fill the device the head member 10 is removed from the barrel 1 by turning the head member slightly so as to release pins 14 from the bayonet slots 13 and the said head 10, together with the sheath 20 attached thereto, is then withdrawn bodily from the barrel or cylinder 1 leaving said barrel or cylinder 1 open at its upper end. The plunger screw 4 is operated by handle 5 so as to draw the piston 6 inwardly past the opening 7 so as to expose said opening and thereby provide a vent for air. The barrel or cylinder 1 is then plunged or pushed into the body of grease or lubricant in the manner of a scoop and the lubricant in thereby forced into the cavity within said barrel or cylinder 1 to completely fill the same, the air above the grease escaping through the vent opening 7 so that trapping of air above the grease is avoided. The head 10 is then replaced on the barrel or cylinder 1, the cylindrical sheath 20 then surrounding said barrel or cylinder so that the surface of the latter, which is necessarily coated with grease or lubricant from the scooping action, is protected from contact with external objects, serving the double purpose of facilitating handling of the device without soiling the hands and also keeping the external surface of the barrel free from grit or other material which would seriously injure the effectiveness of the lubricant on admixture therewith when the barrel is inserted into the body of lubricant. To eject the grease or lubricant the piston 6 is operated by means of the hand wheel, or handle 5 in obvious manner to cause the grease to be pressed out through the outlet 11 in the head 10. In this operation the self-sealing packing prevents exudation of the grease at the joint between the members 10 and 1.

I prefer to provide a cock or valve 28 in the outlet pipe 11 so as to prevent exudation of the grease when same is not desired. There is a tendency in grease pumps for the grease to continue to flow out for a limited time after operation of the plunger but by closing the valve 28 this can be prevented.

Other constructions of the quickly detachable joint between the casing 1 and the head may be provided, thus, as shown in Fig. 4, the casing 1 may be provided with an external ring 33 having an inclined or bevelled face 33′ oppositely inclined to the wall 12 of the head 10 and the packing washer 16′ in this case is provided with inclined faces on both the inside and outside thereof, giving a more effective packing action and facilitating the entrance of the casing into the head. The packing retaining spring 18 may, in this case, be made sufficiently strong to hold the parts in position without requiring the spring operated retainer, such as shown at 15 in Fig. 1.

As indicated in Fig. 5, I may use instead of a bayonet joint for the coupling of the casing to the head a flange 30 at the outer end or rim of the wall 12 of the head 10, and provided with notches, one of which is indicated at 30′, through which the coupling pin passes, said coupling pin engaging with the bottom of this notch.

As shown in Fig. 6, the construction may be modified by omitting the spring pressed packing and using instead a packing ring 34 of leather, or similar material, resting on the lower head 10 for the casing 1 and engaged by the lower end of the casing 1 to make a tight joint, the bayonet joint slot 35 being in this case preferably inclined, as shown, to give a wedging action so as to ensure a tight joint.

In connection with my improved lubricant pump, I prefer to use an indicating device giving visual indication of the amount of lubricant delivered from the pump at any operation. For this purpose a scale bar 40 may be provided extending through slots 41 and 42 in the upper end 2 of the casing 1 and in the cap 23, as shown in Fig. 1, and connected to the screw plunger 4 by a swivel connection 43, so as to cause the scale bar to be moved longitudinally through the head 2 and cap 23 in the operation of the plunger rod and piston; this scale bar 40 being provided with scale marks or graduations 44, which may be read with respect to any fixed indicating mark, for example, the top of cap 23 to indicate the advance of the piston 6 in forcing out the lubricant and thereby indicate the amount of lubricant delivered.

What I claim is:

1. A lubricant pump comprising a barrel closed at one end and having a piston working therein and provided with operating means extending through the closed end of the barrel, said barrel having one end open to enable the barrel to be used as a scoop for filling the same, a sheath mounted on and extending around the barrel, a head detachably mounted on the barrel to close the

same, having a wall portion extending around the open end of the barrel, and a packing ring extending between said wall portion of the head and said barrel, said packing ring being adapted for compression against said wall portion and said barrel, by the pressure of the lubricant.

2. A lubricant pump comprising a barrel having a closed head at one end, and having its other end open to enable the barrel to be used as a scoop for filling the same a piston working in said barrel and having operating means extending through the closed end of the barrel, a head detachably mounted on the open end of the barrel to close the same, and provided with an outlet and with a wall portion surrounding said barrel, a cylindrical sheath carried by said head and extending around said barrel to protect the same, and a tapering packing ring extending between the wall portion of said head and said barrel, and exposed at its larger end to pressure of the lubricant within said head to cause the joint between said parts to be reached by the pressure of the lubricant.

In testimony whereof I have hereunto subscribed my name this 17th day of March, 1920.

CHARLES H. SCOTT.