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1,964,865

LUBRICATION DEVICE

Filed Feb. 15, 1932

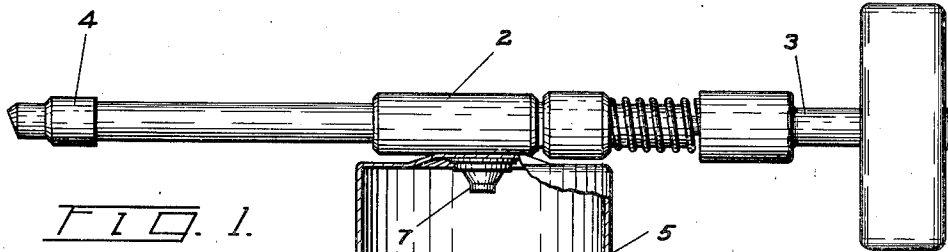


FIG. 1.

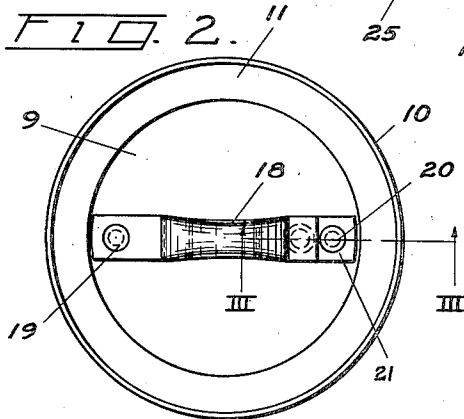


FIG. 2.

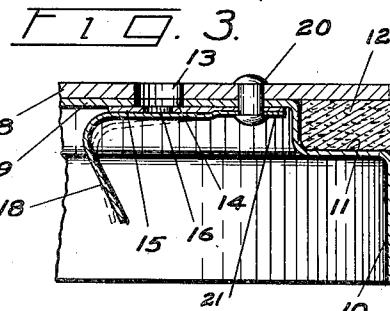


FIG. 3.

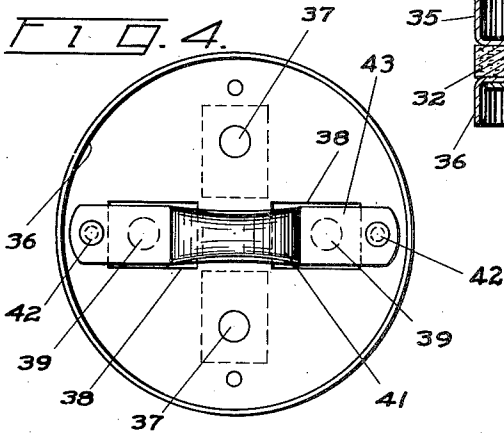


FIG. 4.

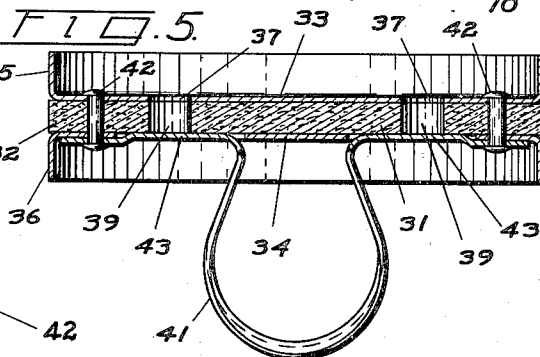


FIG. 5.

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UNITED STATES PATENT OFFICE

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LUBRICATION DEVICE

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13 Claims. (Cl. 221—47.4)

This invention relates to improvements in lubrication devices and particularly to pistons or followers, for lubricant containers and cartridges.

An object of the invention is to provide an improved piston or follower, wherein a hand grip is provided for rearwardly withdrawing the piston or follower, from the container, or cartridge within which it is disposed and for simultaneously opening a vent through the piston head to equalize pressure on the opposite sides thereof.

Hereafter, wherever the term piston is used, whether in the description or claims except where the context otherwise requires, it is to be understood as meaning a follower as well.

Another object is to provide a piston wherein air ahead of the piston is passed therethrough when the piston is manually forced into the container or cartridge to engage with the contents.

Other objects and advantages and uses of the invention will be or should become apparent after reading the following specification and claims and after consideration of the accompanying drawing forming a part of this application, in which:

Fig. 1 is a part sectional elevation illustrating an application of my improved piston;

Fig. 2 is a rear plan view of the piston illustrated in Fig. 1;

Fig. 3 is an enlarged sectional view along the line III—III of Fig. 2;

Fig. 4 is a sectional view of a modified form of the piston; and

Fig. 5 is a rear elevation of the piston illustrated in Fig. 4.

In general my improved piston is intended for use in any type of container, cartridge or cylinder for lubricants or similar fluids where access to the rear of the piston is available through the rear end thereof for the purpose of withdrawing the piston to replenish the contents.

It is desirable in the type of assembly above described that some means be provided for bleeding out air ahead of the piston as it is initially moved in against the contents so that air will not be entrapped within the space ahead of the piston to ultimately find its way into the pressure cylinder of the feeder or gun with which the assembly may be associated. It is also desirable that the lubricant or fluid shall not pass through the bleed opening when pressure is applied upon the piston from the rear and that during the withdrawal movement of the piston that air be bled in the opposite direction to relieve the relatively lower pressure created by rearward movement of the piston.

All these features and others are provided for

in the embodiments of the invention herein set forth:

In Fig. 1, I have illustrated a lubricant feeder gun of the hand type comprising a lubricant pressure producing pump 2 operated by a manually actuated push rod 3, a discharge nozzle 4, and a lubricant casing 5 within which a piston 6 constructed in accordance with my invention is slidably disposed. A lubricant conducting stud 7 serves to interconnect the pump 2 and interior of the casing 5.

The piston 6 comprises a rigid metal disc 8 forming the head thereof to which a relatively light skirted sheet metal member 9 is fixed, the skirt portion 10 extending rearwardly and parallel with the axis of the head. The member 9 has an annular shoulder 11 formed at the outer portion of its forward wall, between which, and the adjacent face of the plate 8, an annular cork packing ring 12 is securely held. The ring 12 has a relatively broad side wall which fits closely against the inner wall of the casing 5. Aligned openings 13 and 14 are provided through the head plate 8 and the member 9 respectively, and a flap of felt 15 having an aperture 16 of less diameter than the openings 13 and 14 is disposed against the adjacent mouth of the opening 14 with the axis of the opening 16 aligned with that of the openings 13 and 14.

A resilient hand grip 18 formed of clock spring stock is secured to the rear face of the piston at its opposite ends by rivets 19 and 20 which also serve to hold the head plate 8 and member 9 together. The flap 15 lies under one end 21 of the grip 18 and is secured in place by the rivet 20. The end 21 of the grip 18 is so formed as to entirely cover the flap 15 and close the aperture 16 therethrough under yielding spring pressure as shown in detail in Fig. 3.

In the assembly shown in Fig. 1, I have included a cap 23 for the casing 5, which may be secured thereto by a bayonet lock as indicated at 24. A compression spring 25 is disposed between the piston 6 and the cap 23 so as to subject the lubricant in the casing to a positive pressure. The spring may be secured to the cap as shown at 26 so that it will not be misplaced when the cap is removed.

In loading the gun of Fig. 1 the cap 23 with the attached spring 25 is removed and the piston 6 withdrawn by pulling rearwardly upon the hand grip 18. During this process a relatively lower pressure is built up ahead of the piston as it moves rearwardly which tends to resist piston movement to such an extent that the resilient hand

grip is drawn away from the flap 15 as shown in dotted lines in Fig. 3, thus breaking the seal normally maintained by the flap and cooperating portion of the member 8 and the end 21 of the hand grip, so as to vent air through the openings 13, 14 and 16, to equalize the pressures on opposite sides of the piston and permit the unretarded withdrawal of the piston.

Lubricant may then be placed in the casing 5, with care not to entrap pockets of air, and the piston pressed manually in by manual pressure applied at any point on its rear face except the hand grip 18. In so doing air is permitted to escape through the piston, by virtue of the flap 15 and associate structure acting as a check valve, until the head of the piston is brought into direct contact with the lubricant. Thereafter the piston may act as a follower piston urged forward by atmospheric pressure upon withdrawal of lubricant by gun action through the outlet 7 or if the cap 23 with its spring is secured in place, as a pressure piston to place the lubricant under light pressure and urge it into the pump cylinder 2 when the inlet opening thereof is free.

In the latter instance it will be noted that the spring 25 bears against the end 21 of the resilient grip member 18 to effectively increase the normal seating of the flap and associate parts so that lubricant can not be forced through the piston as in the case of air when the piston was initially moved inwardly against the lubricant without pressure upon the hand grip 18.

In Figs. 4 and 5 I have shown a modified form of the piston differing from the piston shown in Figure 1 in that, instead of using an annular cork packing ring, I employ a cork disc 31 the edges 32 of which may contact to form a seal with the side walls of the casing, or cylinder within which it is used. A pair of structurally identical skirted members 33 and 34 are disposed one on each face of the cork packing disc 31 with their skirted portion 35 and 36 respectively extending outwardly. With reference to Figure 5 each of the members 33 and 34 has a pair of round openings 37 therethrough at 180° from one another and a pair of relatively large rectangular openings 38 therethrough disposed at 180° from each other. When assembled upon the packing disc 31 the members 33 and 34 are arranged so that the opening 37 of one registers with the opening 38 of the other as shown in Figure 5. The disc 31 has a pair of passages 39 therethrough which are aligned with the openings 37 of the member 33 and with the rectangular openings 38 of the member 34.

A resilient hand grip 41 similar in function to the hand grip 18 is secured at opposite ends to the assembly by rivets 42 which also act to hold the disc 31 and members 33 and 34 to one another. The hand grip 42 bears, at its ends, directly upon the outer face of the member 34 and is formed with flat intermediate portions 43 which lie within the openings 38 and bear directly upon the adjacent face of the cork packing disc 31 to yieldingly close the mouths of the passages 37. The central portion of the hand grip 42 is formed to provide a loop with which the finger or a hook may engage for the purpose of withdrawing the piston from its cylinder or casing.

In use, the piston of Figures 4 and 5 operates precisely as described in connection with that form shown in Figures 1 to 3, and may be used, therefore, as either a follower or pressure piston. It is to be understood that the above described

embodiments of the invention are for the purpose of illustration only, and various changes may be made therein without departing from the spirit and scope of the invention.

I claim:

1. As an article of manufacture, a piston having a head, a check valve located in the head of the piston, a part of said valve including a resilient hand grip secured at opposite ends to the rear face of said piston head.

2. As an article of manufacture, a piston comprising a member having an integral piston skirt, a head plate, packing disposed between said skirted member and said head plate, said piston having an opening therethrough, an apertured flap disposed over the mouth of said opening at the rear face of said piston and a resilient hand grip secured to said piston and arranged normally to cover the aperture in said flap and yieldingly to press the flap tightly against the rear face of said piston.

3. As an article of manufacture, a piston having a flat rigid head plate, a relatively thin walled member abutting the rear surface of said plate and formed with a rearwardly extending skirt, a packing ring disposed between the plate and said member for engaging laterally with the side walls of a container or cylinder within which the piston may be used, a check valve disposed in the head of the piston and a resilient member extending rearwardly of the piston forming a part of said check valve.

4. As an article of manufacture, a piston comprising, a disc of packing material having its edges adapted to engage with the side walls of the cylinder with which the piston is to be used, said disc having a passage extending transversely therethrough and a hand grip of resilient material secured to the disc on its rearward side and formed with a portion thereof contacting the rear surface of said disc about the mouth of said passage yieldingly to close said passage.

5. As an article of manufacture, a piston comprising a disc of packing material the edges of which are free to engage with the side walls of the cylinder within which the piston may be used, a pair of skirted members mounted one on either side of said disc with their skirt portions extending outwardly, said disc and skirted members having aligned openings therethrough and a resilient hand grip secured to the piston, a portion of which lies normally over the mouth of the adjacent of said openings yieldingly to close the passage formed by the openings.

6. As an article of manufacture, a piston comprising a disc of packing material, a metal member having a rearwardly extending skirt secured to the rear face of said disc and having a portion of its disc contacting wall cut away to expose the disc, said disc having a passage therethrough, the mouth of which lies within the cut away portion of said metal member and a hand grip secured to the rear face of said piston with a part thereof extending through said cut away portion of said metal member and contacting yieldingly with the surface of said disc to close the passage therethrough.

7. As an article of manufacture, a piston having a head, said head having a passage therethrough and a hand grip of spring steel having an intermediate portion adapted for manual engagement therewith and secured at its opposite ends to the rear face of said head and having a portion arranged to overlie and yieldingly to close the mouth of said passage.

8. As an article of manufacture, a piston having a head, a check valve located in the head of said piston, a part of which includes a hand grip of flat spring steel secured adjacent its ends and having an intermediate portion formed in a loop.

9. As an article of manufacture, a piston comprising a pair of members, at least one of which has an integral piston skirt, piston packing means secured between said members, said piston having a passage therethrough for establishing communication between its opposite sides, and a hand grip an integral portion of which is resilient and closes one end of said passage.

10. As an article of manufacture, a piston including a disc of packing material about its perimeter, said disc having a passage therethrough for establishing communication between opposite sides of the piston, and a resilient flat metal member contacting the surface of said packing disc about the rear mouth of said passage to form a yielding closure therefor, and a handle on said resilient means.

11. As an article of manufacture, the piston comprising a member having a rearwardly extending skirt, piston packing associated with

said member, said member having a passage therethrough establishing communication between opposite sides of the piston and a resilient hand grip secured at its opposite ends to the rear face of said piston and having a part thereof held yieldingly over the mouth of said passage.

12. As an article of manufacture, a piston comprising a disc of packing material having its edges adapted to engage with the side walls of the cylinder within which said piston is to be used, said disc having a passage extending transversely therethrough and a hand grip of resilient material secured to the disc at its rearward side and having a portion thereof contacting the rear surface of said disc about the mouth of said passage yieldingly to close the passage.

13. As an article of manufacture, a piston comprising a body having a passage extending transversely therethrough and a hand grip of resilient material secured at opposite ends to the rear face of said body, a portion of the hand grip being so disposed as yieldingly to close the mouth of said passage.

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