Nov. 9, 1937. J. A. WATSON 2,098,408

LUBRICATING DEVICE

Filed June 11, 1934 2 Sheets-Sheet 1

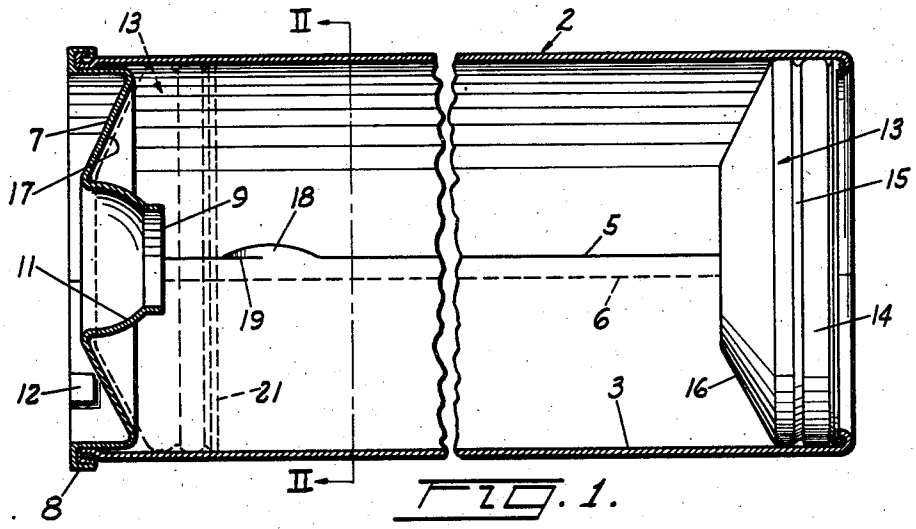


FIG. 1.

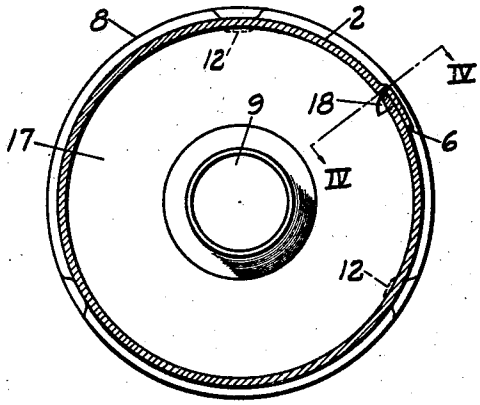


FIG. 2.

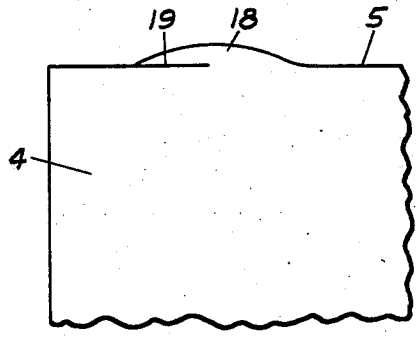


FIG. 3.

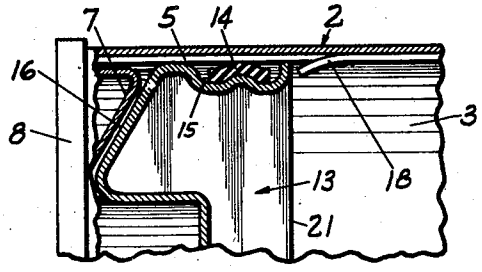


FIG. 4.

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LUBRICATING DEVICE

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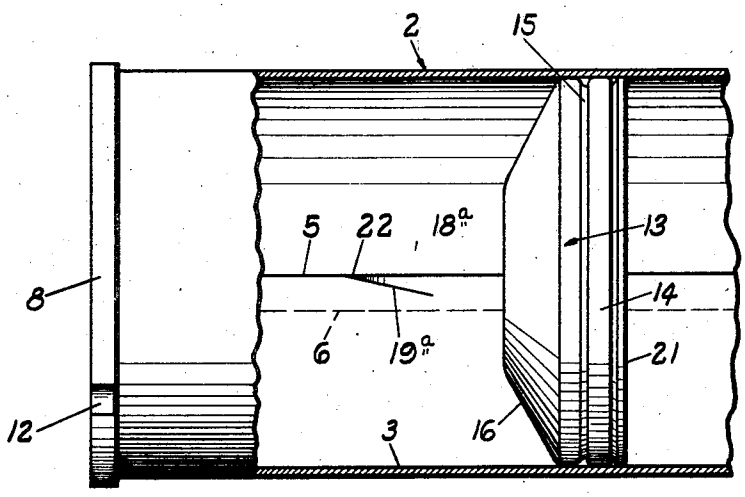


FIG. 5.

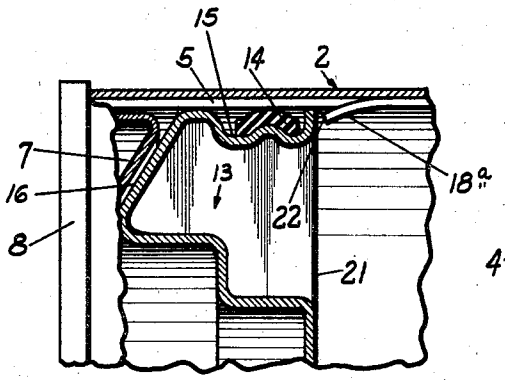


FIG. 7.

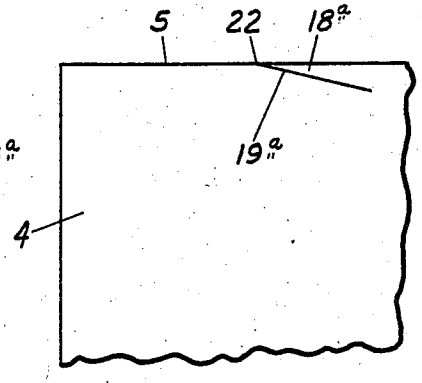


FIG. 6.

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UNITED STATES PATENT OFFICE

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LUBRICATING DEVICE

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Application June 11, 1934, Serial No. 730,005

9 Claims. (Cl. 221—47.3)

This invention relates to improvements in lubricating devices and more particularly to non-refillable cartridges for lubricating guns, dispensers, and the like.

Of the numerous advantages attributable to the distribution and sale of lubricants in interchangeable cartridges for use in lubricant guns, dispensers and similar apparatus, the assurance to the purchaser and user that he is receiving a particular brand of clean lubricant of a particular quality, type and character is of primary importance. This advantage, however, may be lost if the cartridge is capable of being refilled by unscrupulous parties subsequent to the discharge and use of the original contents thereof.

An object of the invention therefore is to provide simple and inexpensive means for preventing the refilling of the cartridge subsequent to the discharge of the original contents therefrom.

Another object is to provide a cartridge of the character described wherein the non-refillable function of the cartridge is an inherent characteristic of the cartridge wall construction.

A further object is to provide a cartridge, including a follower or pressure piston having a packing, wherein attempts to refill the cartridge may result in mutilating or destroying the piston packing or in jamming the piston or follower so that it cannot be moved backward.

Other objects, the advantages, and the uses of the invention will be or should become apparent after reading the following description and claims and after consideration of the drawings forming a part hereof and in which:

Fig. 1 is a sectional view through an interchangeable lubricant cartridge constructed in accordance with the invention;

Fig. 2 is a sectional view along the line II—II of Fig. 1;

Fig. 3 is a fragmentary plan view of the sheet metal blank of which the cartridge wall is formed;

Fig. 4 is a sectional view along the line IV—IV of Fig. 2 but illustrating the piston at the end of its travel in the cartridge;

Fig. 5 is a fragmentary view, partially in section, illustrating another form of the improved cartridge;

Fig. 6 is a fragmentary view of the sheet metal blank of the side wall of the cartridge of Fig. 5; and

Fig. 7 is a view similar to Fig. 4 of the cartridge of Fig. 5.

In general, my invention contemplates the formation of a hollow cylindrical cartridge of sheet metal having a lap seam extending longitudinally thereof, the edge of the sheet that overlaps on the inside of the cylindrical body being formed to provide an integral tongue projecting inwardly of the cartridge. This tongue is so formed that the cartridge piston is permitted to pass when urged toward the outlet end of the cartridge but engages with the piston after the latter has passed to prevent the return movement or withdrawal of the piston from the said outlet end of the cartridge, thereby preventing the introduction of lubricant into the cartridge.

The cartridge 2 is illustrated as formed with a sheet metal side wall 3 formed from a substantially rectangular blank 4, as shown in Fig. 3, the edges 5 and 6 of which are overlapped to provide a seam extending the full length of the cartridge. The overlapping portions of the seam may be welded, sweated, soldered, or otherwise fixed to one another to provide a lubricant-tight joint.

The forward end of the cartridge may be closed as by an end closure 7 secured to the side wall 3 by a lock-seam 8 of conventional type. An outlet opening 9 may be provided centrally of the end closure 7, the walls 11 of which are preferably formed to provide sealing engagement with the cartridge connector stud (not shown) of a lubricant gun, dispenser, or other apparatus. In the cartridge illustrated, the wall 11 is shown as spherical in contour as for engagement with a spherical-head connector stud, although it will be apparent that the contour of the wall 11 is not of importance in connection with the improvements herein described and that any desired outlet construction may be employed, as desired. Bayonet lugs 12 may be formed in the seam 8 to provide quick attachment and detachment means for the mounting and unmounting of the cartridge to and from the lubricant gun or other apparatus with which the cartridge is to be used.

The rearward end of the cartridge may be closed with a cartridge piston 13 provided with a packing ring 14 encompassing the skirt 15 thereof. In the cartridge illustrated, the packing ring 14 is formed of a rubber ring sufficiently pliant to conform closely to the adjacent inner cylindrical wall surface of the cartridge thereby to provide a lubricant-tight piston seal. In order to permit of the discharge of all of the lubricant from within the cartridge through the outlet opening 9 the inner surface 16 of the head of the piston may be fashioned to conform to the inner surface 17 of the end closure 7.

The cartridge as thus far described represents

a typical commercial lubricant cartridge that might be refilled subsequent to the discharge of its contents in any one of several manners as, for instance, by simply placing an injector nozzle into the outlet opening 9 and urging lubricant under pressure into the cartridge, thus to cause the piston 13 to move from the dotted line position shown in Fig. 1 to the position shown in full lines at which time the cartridge will be completely refilled with lubricant. This possibility offers ample opportunity for irresponsible persons to fill a cartridge with spurious and improper and harmful materials to be sold for genuine lubricants, and other undesirable practices. However, with the addition of the invention, now to be described more particularly, nefarious practices such as those mentioned may be eliminated.

My invention contemplates a simple and highly effective means for preventing the piston 13 from moving rearwardly in the cartridge body 3 subsequent to its arrival at the dotted line position shown in Fig. 1, and may comprise an integral tongue 18 formed at the edge 5 of the sheet metal blank 4 prior to the rolling of the blank into the tubular form of body shown in Fig. 1. The tongue 18 may be separated from the adjacent edge 5 of the body by a slit 19 extending rearwardly from the forward end thereof for a sufficient distance to permit of the bending of the tongue 18 into the position shown in Fig. 2 when the rearward edge 21 of the piston skirt 15 is urged thereagainst as during the return movement of the piston under an attempt at refilling, or under mechanical thrust applied, as by the introduction of a rod through the outlet opening 9.

Once the piston 13 has assumed the position shown in Fig. 4 the piston is securely locked against return movement and hence the refilling of the cartridge is effectively prevented. Should the tongue 18 clear the rearward end 21 of the piston skirt it may engage with the piston packing ring 14, thereby to mutilate or otherwise destroy the packing ring as well as to jam the piston against further return movement.

The tongue 18, being an integral portion of the thin sheet metal body wall of the cartridge, is sufficiently resilient to yield readily during the forward movement of the piston to permit the piston and packing to pass thereover and its presence therefore, on the inner wall of the cartridge, will not in any way preclude normal forward movement of the piston as it approaches the end closure 7. The pliant material of the packing ring 14 will act to maintain a tight lubricant seal between the piston and inner cartridge wall as the packing passes over the tongue since the rubber of the packing ring is capable of conforming closely to the slight irregularity in piston wall structure provided by the tongue.

In Figs. 5 to 7, I have shown another form of the cartridge wherein a tongue 18*a*, coinciding in function with the tongue 18, is formed by providing an oblique and rearwardly extending slit 19*a* in the edge 5 of the cartridge wall blank 4. The inclination of the slit 19*a* is such as to provide a sharp point 22 which is adapted to engage with and tear, or otherwise mutilate, the pliant rubber packing ring 14 upon the rearward movement of the piston 13 from the position indicated in dotted lines in the cartridge of Fig. 1.

While I have illustrated and described, herein, the novel features of my invention as embodied in interchangeable lubricant cartridges for use with lubricant guns and similar apparatus, it should be understood that the features of the invention relating to the locking of the piston against return movements subsequent to the discharge of the contents thereof and as set forth in the claims, may be incorporated in any type of container or cartridge, regardless of the contents, wherein a piston is employed and thrown away with the container when the contents of the latter are exhausted. Of course, the invention is applicable to other uses.

I claim:

1. A cartridge of the character described comprising a hollow imperforate cylindrical body, a piston slidably mounted in said body in sealing engagement with the side wall thereof completely around its circumference, and means secured to the body side wall and movable toward and away therefrom and engageable with said piston for locking the piston against rearward movement in the body subsequent to the advance of the piston inwardly of the body beyond said means.

2. A cartridge of the character described comprising, a hollow cylindrical body, a piston having a pliant packing ring, said piston being slidably mounted in said body and adapted to bear upon the contents thereof, and means carried by said body and engageably with said piston packing to mutilate the packing and to lock said piston against rearward movement in the body upon the advance of the piston inwardly of the body beyond a predetermined position.

3. A cartridge of the character described comprising, a cylindrical body formed of sheet metal and having an overlap seam extending longitudinally thereof, and an integral tongue formed at the edge of the overlapping portions of said seam on the inner side of said body, said tongue presenting a relatively sharp edge facing forwardly and located near the inner end of the cartridge.

4. A cartridge of the character described comprising, a cylindrical body formed of sheet metal and having an overlap seam extending longitudinally thereof, an integral tongue formed at the edge of the overlapping portions of said seam on the inner side of said body, said tongue presenting a relatively sharp edge facing forwardly and located near the inner end of the cartridge, and a piston slidably mounted in said cartridge and adapted to pass said tongue when urged to the inner limit of its travel whereby the tongue may engage with and preclude the return movement of said piston.

5. A cartridge of the character described comprising, a cylindrical body formed of sheet metal and having an overlap seam extending longitudinally thereof, one edge of the overlapping portions of said seam, on the inner side and adjacent to the inner end of said cartridge body, having an oblique rearwardly extending slit formed therein thereby to provide a forwardly-facing tongue having a sharp pointed end.

6. A cartridge of the character described comprising, a cylindrical body formed of sheet metal and having an overlap seam extending longitudinally thereof, one edge of the overlapping portions of said seam, on the inner side and adjacent to the inner end of said cartridge body, having an oblique rearwardly extending slit formed therein thereby to provide a forwardly facing tongue having a sharp pointed end, and a piston having a pliant packing ring slidably mounted in said cylindrical body, said packing ring being engageable with said tongue during rearward movement of the piston from a position adjacent to the inner end of the body thereby to mutiliate

said packing ring and to block further rearward movement of said piston.

7. A cartridge of the character described comprising, an imperforate cylindrical body having a relatively smooth inner side wall, a closure for one end of said body, a piston slidably mounted in said body and having sealing engagement with said body side wall, and means providing a relatively sharp projection on said body side wall, adjacent to said closure, and pointing forwardly toward said closure and adapted to engage with said piston upon rearward movement of said piston from a point adjacent to said closure thereby to prevent rearward movement of the piston in the body.

8. A lubricant cartridge comprising, a cylindrical body having a relatively smooth inner surface, one end of the body being formed with an outlet opening, a piston slidably mounted in the body and sealing around its periphery against the body side wall, and a tongue formed of relatively thin material and fixed at one end to the body wall with its other end free, the free end of the tongue extending toward the outlet opening, whereby the piston may pass over the tongue in the direction of the outlet opening but the tongue will engage the piston to prevent movement thereof in the opposite direction.

9. A lubricant cartridge comprising, a cylindrical body having a relatively smooth inner surface, one end of the body being formed with an outlet opening, a piston slidably mounted in the body and sealing around its periphery against the body side wall, and a tongue formed of relatively thin resilient material and fixed at one end to the body wall with its other end free, the free end of the tongue extending toward the outlet opening and being biased toward the axis of the body, whereby when the piston is moving in the direction of the outlet opening it will press the tongue against the body wall and pass thereover but the tongue will engage the piston to prevent movement thereof in the opposite direction.

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