July 12, 1938. O. B. CLARK 2,123,712

LUBRICATING DEVICE

Filed April 29, 1935 2 Sheets-Sheet 1

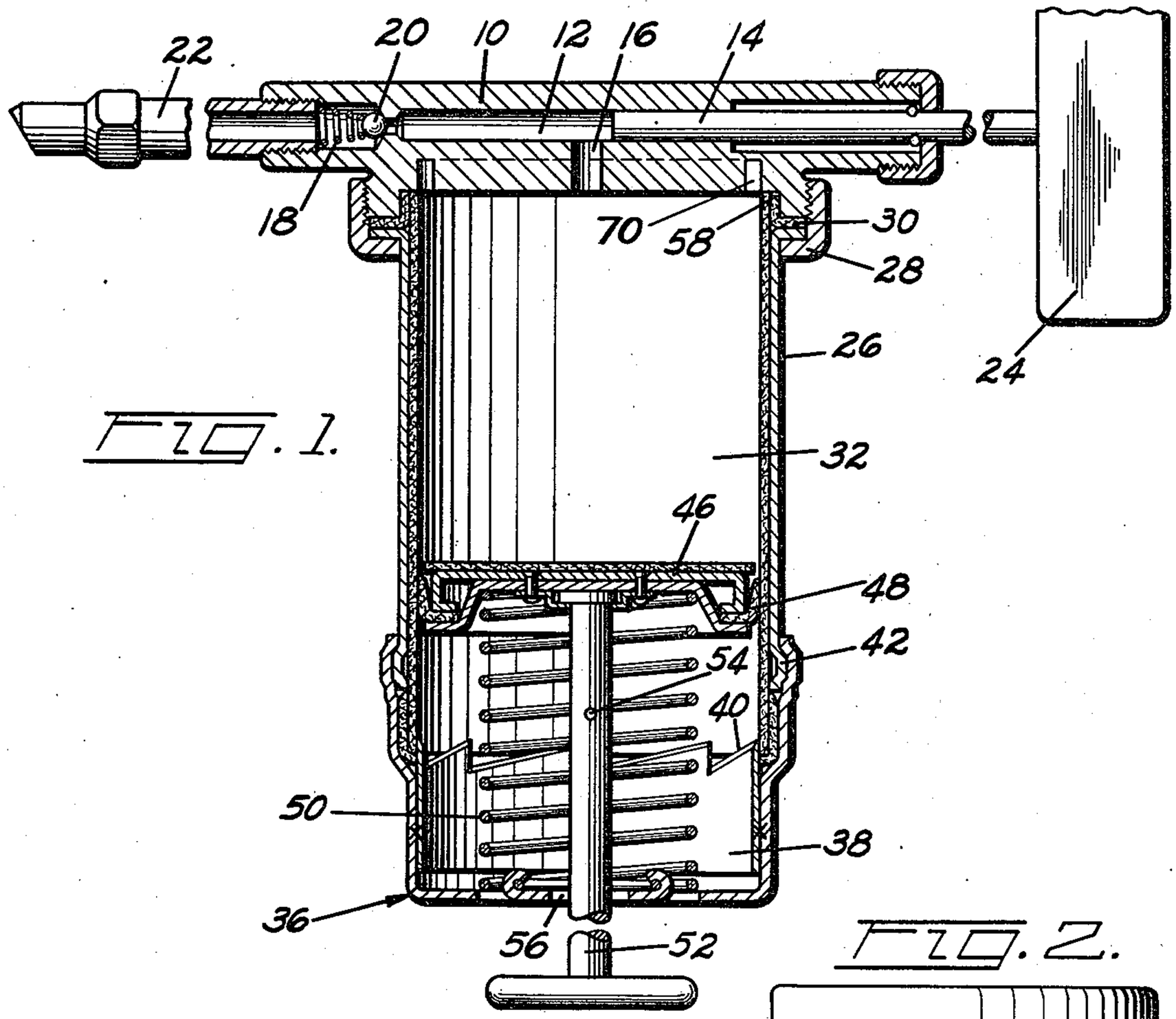


FIG. 1.

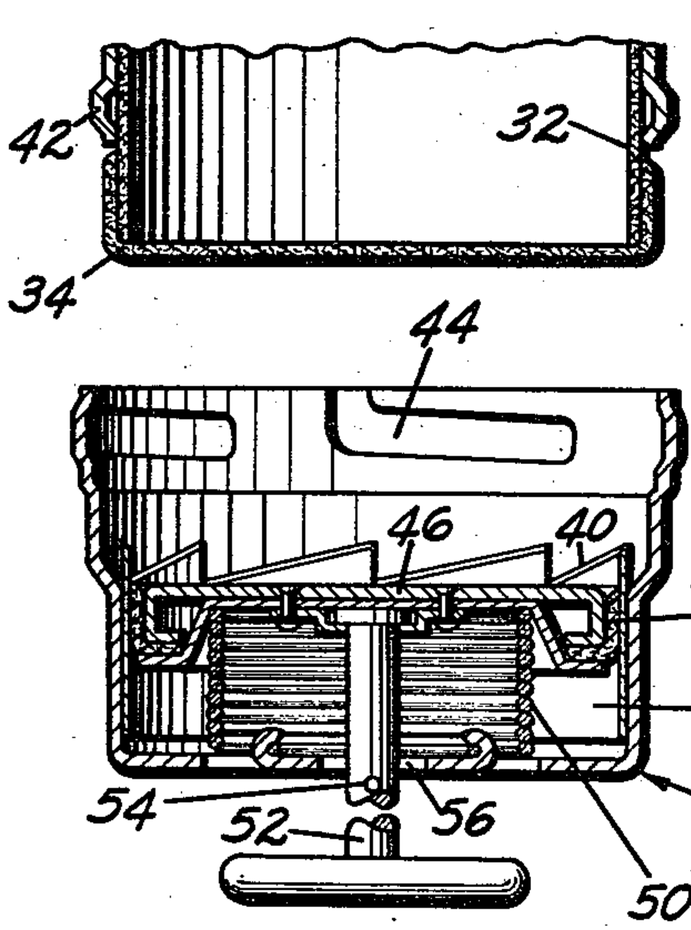
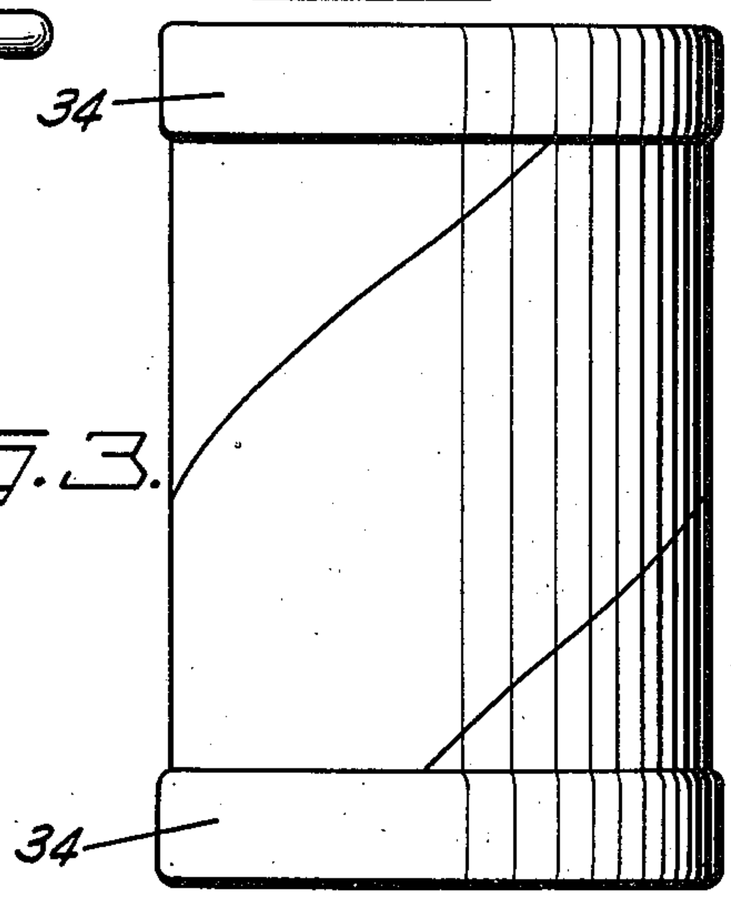


FIG. 3.

FIG. 2.



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LUBRICATING DEVICE

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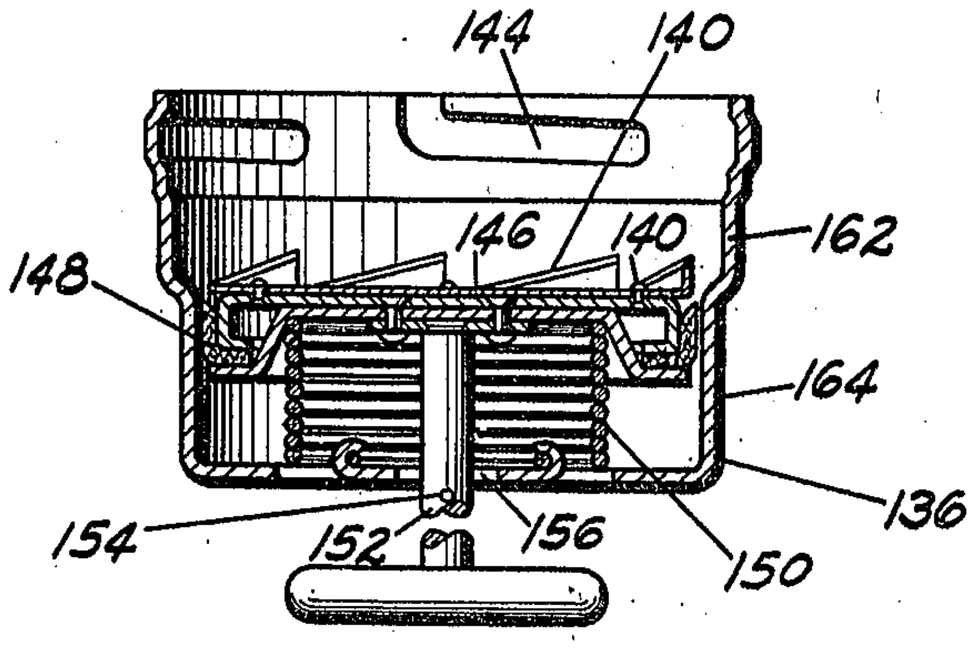

FIG. 4.

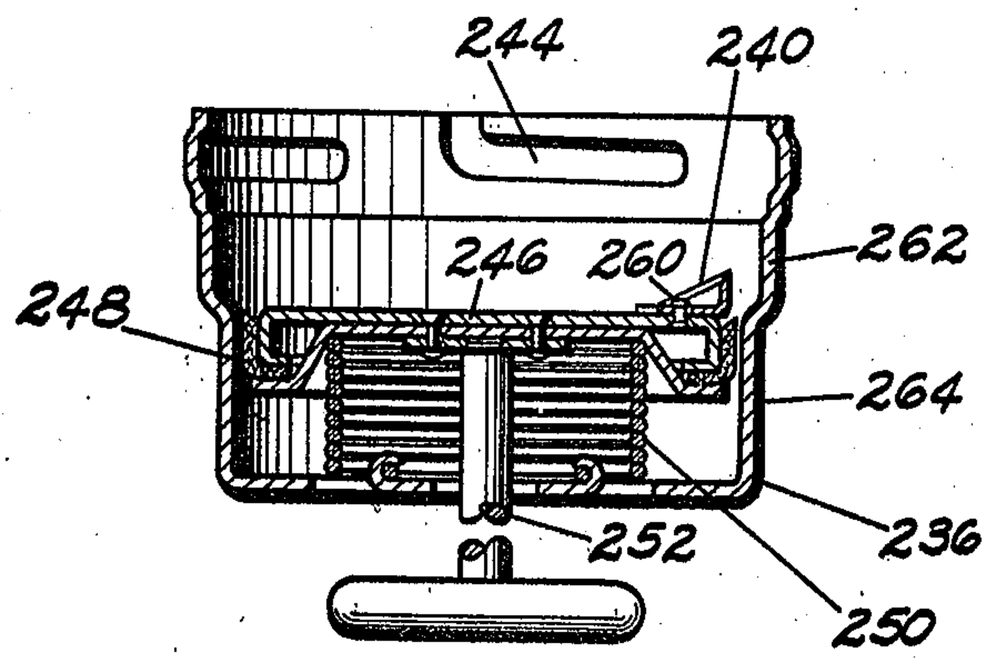

FIG. 5.

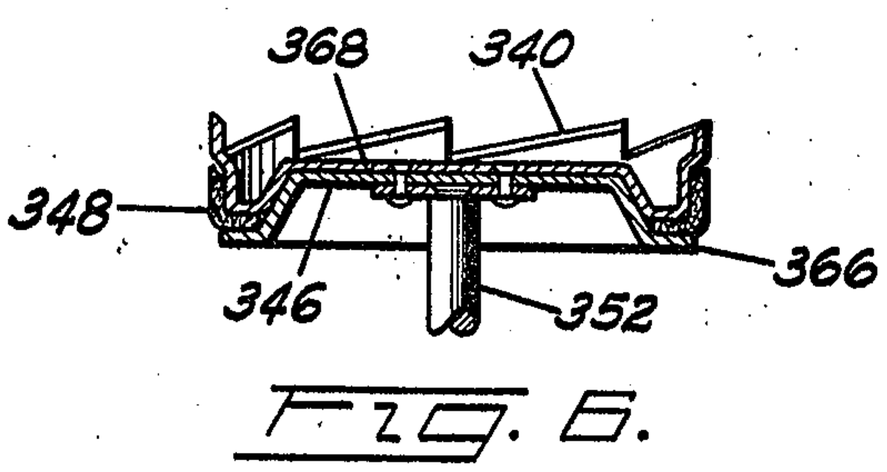

FIG. 6.

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LUBRICATING DEVICE

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Application April 29, 1935, Serial No. 18,727

10 Claims. (Cl. 221—47.3)

This invention relates to lubricating devices and more particularly to lubricant dispensers for dispensing lubricant under pressure.

One of the objects of the invention is to provide a lubricant dispenser which is supplied with lubricant by a replaceable cartridge.

Another object is to provide a lubricant dispenser in which the end portion of a cartridge is severed by its assembly in the gun and may be forced through the cartridge to displace the contents therefrom.

Still another object is to provide a lubricant dispenser for use with a cartridge in which entry of a piston into the cartridge is facilitated.

According to one arrangement, these and other objects are attained by providing a lubricant dispenser including a cylindrical shell to receive a cartridge and a cap for the shell including an annular knife to cut the top out of the cartridge. A piston is provided which may slide into the knife and, after the knife has entered the cartridge, readily slide out of the knife and into the cartridge to displace its contents.

Other and further objections, advantages and novel features of the invention will be apparent from the following detailed description when taken in connection with the accompanying drawings. It is to be understood, however, that the drawings are for the purpose of illustration only and are not to be taken as a definition of the scope of the invention, reference being had for this purpose to the appended claims.

In the drawings wherein like reference numerals indicate like parts throughout the several views,

Fig. 1 is a central sectional view with parts in elevation of a lubricant dispenser embodying the invention;

Fig. 2 is an elevation of a cartridge to be used with the dispenser of Fig. 1;

Fig. 3 is a partial view of the dispenser of Fig. 1 with the cap removed;

Fig. 4 is a sectional view of a modified cap construction;

Fig. 5 is a view similar to Fig. 4 showing another modification; and

Fig. 6 is a sectional view of a modified piston construction.

The lubricant dispenser illustrated in the drawings is constituted by a grease pump comprising a body member 10 having a cylindrical bore 12 therein in which a piston 14 reciprocates to displace lubricant therefrom under high pressure. The cylinder 12 has an inlet bore 16 and an outlet 18 provided with a suitable check valve 20. A nozzle 22 of any desired type is connected to the outlet 18 for servicing a suitable lubricant receiving fitting (not shown). As illustrated, the dispenser is of the hand operated type, a handle 24 being provided on the plunger 14 for manual operation thereof although, if desired, the plunger 14 might be operated by any suitable power mechanism.

A cylindrical shell 26 is secured to the casting 10 by means of a gland nut 28, a washer 30 of leather or other suitable material being provided between the shell 26 and body 10 to form a tight seal. The shell 26 is designed to receive a lubricant cartidge 32 shown as formed of paper or other fibrous material which is inserted into the outer open end of the shell and which when in position is in communication with the pump inlet 16. As shown in Fig. 2, the cartridge is provided with removable end closures 34, the inner of which is preferably removed before insertion in the shell. When assembled in the shell the outer end of the cartridge projects therefrom a substantial distance to facilitate grasping by an operator to remove the cartridge after its contents have been discharged.

The end of the shell is closed by an end member comprising a cap 36 having secured therein an annular knife 38 which is provided with sloping teeth 40. The end member is preferably secured to the shell by a bayonet joint formed by projecting lugs 42 on the shell which co-operate with suitable depressed slots 44 in the cap. By this means the cap is securely fastened to the shell by combined axial and turning movements. It will be noted that the slots 44 slope axially of the cap so that turning movement draws it onto the shell, friction of the parts being sufficient to prevent it from turning off.

In assembling the cap on the shell, the teeth 40 will penetrate the outer end of the cartridge adjacent its periphery and will cut out a circular disc therefrom substantially equal in diameter to the inside of the cartridge. This cutting action is facilitated by the combined axial and rotary movement of the cap. It will be noted that the annular knife 38 is spaced from the inner wall of cap 36 to provide an annular chamber which is adapted to receive the end of the cartridge and hold it securely in place.

A suitable piston 46 is provided in the cap, having an annular sealing washer 48 for sealing against the inner surface of the cartridge. Preferably a compression spring 50 is provided, urging the piston toward the pump and a suitable handle 52 may also be secured to the piston

and extend through the end of the cap for withdrawing the piston, if desired. The handle is preferably provided with a transverse pin **54**, cooperating with a slotted opening **56** in the end of the cap for retaining the piston in its outer position.

It will be noted trom Fig. 1 that when the cartridge is assembled in the shell **26**, it engages the washer **30** which provides a seal around the periphery of the cartridge end to prevent leakage of lubricant. Preferably the end of the washer is cut away, as indicated at **58**, whereby any lubricant which leaks around the end of the cartridge will get in behind the edge of the washer **30** and press it against the cartridge to insure sealing thereof.

In using the lubricant dispenser so far described, one end closure **34** of a cartridge is removed and it is inserted in the shell **26** as shown in Figs. 1 and 3, with its other end projecting therefrom. The cap **36** is then assembled on the end of the shell, the knife **38** severing the end of the cartridge during the assembling operation. During assembly the piston **46** has preferably been locked in its outer position, shown in Fig. 3, by pulling the pin **54** through slot **56** and turning the rod to prevent forward movement of the piston.

After the cap is assembled on the shell, rod **52** is again turned to permit the pin **54** to pass through the slot **56** and the spring **50** will then urge the piston forwardly to force grease from the cartridge through inlet **16** into the pump. Thereafter operation of the plunger **14** will dispense lubricant from the pump.

It will be noted that when the piston is in its withdrawn position it is within the knife **38** so that when the parts are assembled the piston can readily slide out of the knife **38** into the cartridge. The cut-out end of the cartridge, being substantially the same size as its inner diameter, serves as a piston facing to displace lubricant from the cartridge but any lubricant which leaks past this cut-out end is stopped by the washer **48** and prevented from passing the piston.

Figure 4 shows a modification of the invention, parts therein similar to the parts of Figures 1 to 3 being indicated by the same reference numerals plus **100**. In this modification the knife teeth **140** are secured to the piston **146** rather than to the cap **136** by suitable fastening means such as rivets **160**. The cap is also formed with a portion **162** whose internal diameter is substantially equal to the external diameter of the cartridge end closure and a portion **164** whose internal diameter is substantially the same as that of the inside of the cartridge, the two portions being separated by an off-set shoulder on which the end of the cartridge is adapted to seat.

In assembling the cap of Fig. 4 on a gun, the piston is withdrawn into the portion **164** as shown and after assembly the piston may be turned to cut out the end of the cartridge. When pin **154** is aligned with slot **156** the piston may move forward into the cartridge, reduced portion **164** of the cap guiding the piston smoothly into the end of the cartridge.

In the modification of Fig. 5 parts corresponding to like parts in Fig. 4 are indicated by the same reference numerals plus **100**. This modification is substantially the same as the modification of Fig. 4 except that a single knife tooth **240** is provided instead of an annular series and it is consequently necessary to rotate the piston through a complete revolution to cut out the end of the cartridge. Otherwise the modification of Fig. 5 is used in the same manner as that of Fig. 4.

Fig. 6 illustrates a modified piston construction to take the place of either of the pistons shown in Figs. 4 or 5, parts therein corresponding to like parts in Fig. 4 being indicated by the same reference numerals plus **200**. In this modification the piston **346** is made up of a stamping **366** to which the piston rod **352** is suitably secured and a stamping **368** overlying the stamping **366** and having its peripheral edge turned up and formed with knife teeth **340**. Stampings **366** and **368** are spaced at their peripheries to receive the packing **348** and the turned up flange on stamping **368** is preferably offset as shown so that the outer faces of teeth **340** lie substantially flush with the outer surface of the packing.

In each of the forms shown in Figs. 4, 5, and 6 the piston rods are preferably rigidly secured to the pistons to facilitate turning the pistons to cut out the ends of associated cartridges. The body member of a grease pump for use with any of these pistons is preferably provided with an annular groove **70** as shown in Fig. 1 to receive the knife when the piston is in its innermost position. By this means clearance is provided for the knife to prevent damaging thereof through contact with the body portion and to permit the piston to move into contact with the body portion thereby discharging all of the grease in the cartridge.

While several modifications of the invention have been shown and described, it will be apparent that many changes might be made and it is not intended to be limited to any of the forms shown or otherwise than by the terms of the appended claims.

What is claimed is:

1. A lubricant dispenser comprising a pump, a cylindrical body secured to said pump and adapted to receive a lubricant cartridge therein, means providing communication between said pump and a cartridge in said cylindrical body, and an end member detachably secured to said cylindrical body and including means for severing one end of a lubricant cartridge disposed in said body.

2. A lubricant dispenser comprising a pump, a cylindrical body secured to said pump and adapted to receive a lubricant cartridge therein, means providing communication between said pump and a cartridge in said cylindrical body, an end member detachably secured to said cylindrical body and annular cutting means carried by said end member for cutting a circular disc from one end of a lubricant cartridge disposed in said body.

3. A lubricant dispenser comprising a pump, a cylindrical body secured to said pump and adapted to receive a lubricant cartridge therein, means providing communication between said pump and a cartridge in said cylindrical body, an end member detachably secured to said cylindrical body, an annular cutting member carried by said end member and of substantially the same diameter as said cartridge for cutting a circular disc from one end of a cartridge when disposed in said body, and means associated with said end member for forcing said disc through the cartridge to displace the lubricant therefrom.

4. A lubricant dispenser comprising a pump, a cylindrical body secured to said pump and adapted to receive a lubricant cartridge therein,

means providing communication between said pump and a cartridge in said cylindrical body, an end member detachably secured to said cylindrical body, an annular cutting member carried by said end member and of substantially the same diameter as said cartridge for cutting a circular disc from one end of a cartridge when disposed in said body, and a piston carried by said end member and adapted to be received within said annular cutting member, said piston being movable through the cartridge to displace lubricant therefrom.

5. In a lubricant dispenser having a cylindrical shell adapted to receive a lubricant cartridge, an end member for said shell comprising a cap, means detachably to secure the cap to the shell and for drawing the cap and shell together, and means carried by said cap and operable as the cap is secured to the shell to sever one end of a cartridge in the shell.

6. In a lubricant dispenser having a cylindrical shell adapted to receive a lubricant cartridge, an end member for said shell comprising a cap having means detachably to secure the cap to the shell, and an annular cutting member in said cap to cut a circular disc from one end of a cartridge adjacent its periphery as said cap is secured to the shell.

7. In a lubricant dispenser having a cylindrical shell adapted to receive a lubricant cartridge, an end member for said shell comprising a cap having means detachably to secure the cap to the shell, an annular knife of substantially the same diameter as said cartridge in said cap to cut a circular disc from one end of a cartridge as the cap is secured to the shell, and means associated with said cap for forcing said disc through the cartridge to displace lubricant therefrom.

8. In a lubricant dispenser, a cylindrical shell adapted to receive a lubricant cartridge, said shell being of less length than the cartridge whereby one end of the cartridge may extend a substantial distance out of the shell, and a cap for covering said end of the cartridge and adapted to be secured to the shell, the cap including an annular knife to cut out said end of the cartridge as the cap and shell are assembled adjacent its periphery.

9. In a lubricant dispenser, a cylindrical shell adapted to receive a lubricant cartridge, a cap for said shell, securing means formed on said cap and shell and operable by relative axial and turning movement of the cap with respect to the shell to draw and to secure the cap and the shell together, and cutting means carried by said cap and operated by said axial and turning movement to cut out the end of said cartridge.

10. A lubricating device comprising a discharge member having an inlet opening and means around said opening for sealingly engaging one end of a lubricant cartridge, an end member adapted to engage the opposite end of the cartridge, a piston slidably and rotatably carried by said end member, and a knife carried by the piston at one side thereof to cut out the end of the cartridge when the piston is rotated.

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