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CARTRIDGE GREASE GUN ASSEMBLY

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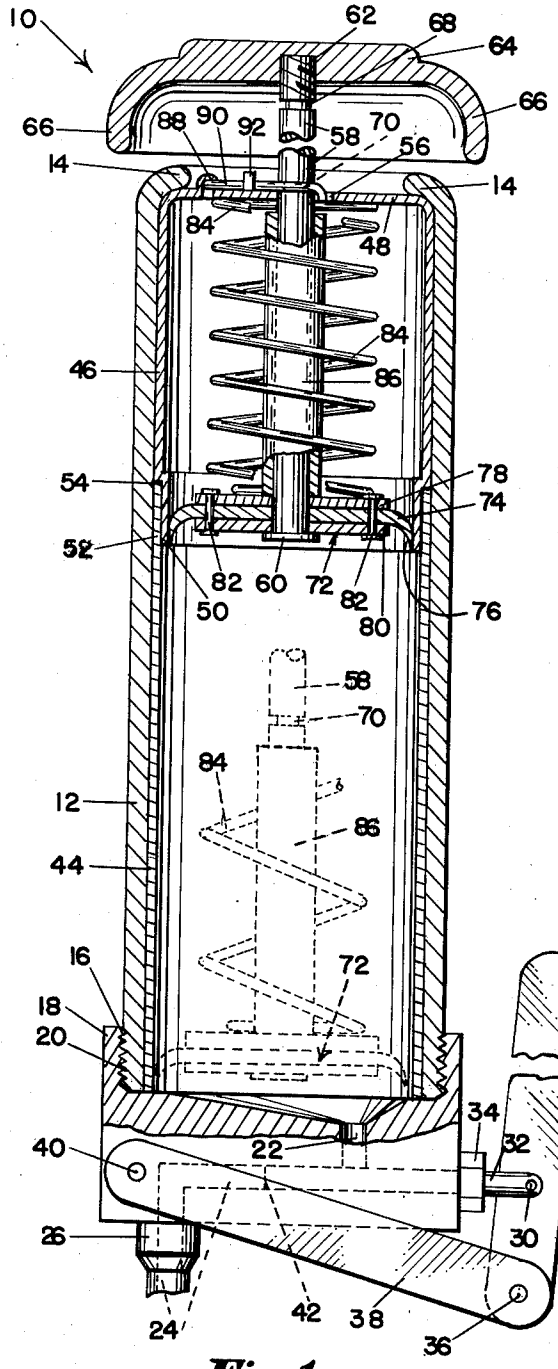


Fig. 1

Fig. 2.

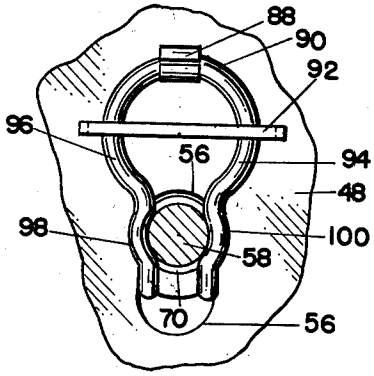


Fig. 3.

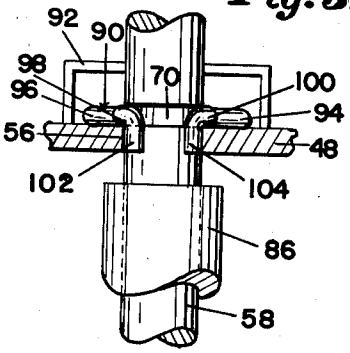


Fig. 4.

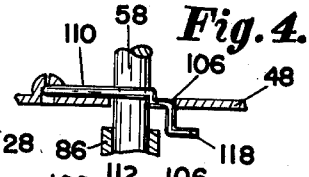
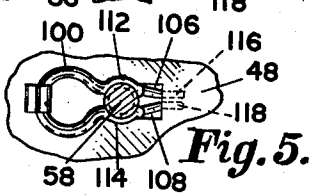


Fig. 5.



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CARTRIDGE GREASE GUN ASSEMBLY

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9 Claims. (Cl. 222—256)

The instant invention relates to lubricating devices and more particularly to grease guns.

The general object of the invention is to provide a mechanism for dispensing grease from cartridges which are preferably of elongated hollow cylindrical construction adapted to be filled with flaccid grease prior to a placing of the cartridges into the gun of the instant construction.

Another object of the invention is to provide a device for said purpose, the parts of which are so constructed that an empty cartridge may be readily ejected from the device as well as an introduction of a cartridge having grease therein into the new device facilitated.

A further object of the invention is to provide a construction which permits an employment of a cartridge having a comparatively thin wall whereby a minimum of material is employed in said wall and the cost of production of cartridges is proportionately lessened.

A still further object of the invention is to provide a construction which automatically causes grease to exude outwardly thereof for application to an object to be lubricated, either with or without an employment of a manually actuated means for enhancing the pressure applied to the grease by the mechanism of the new device.

Other and further objects and advantages of the invention will be understood from the following detailed description thereof.

In the drawings:

Figure 1 is a longitudinal section of a preferred embodiment of the grease gun of the instant invention, certain portions thereof being broken away.

Figure 2 is a top plan view, on an enlarged scale, of a latch mechanism employed, the view being turned at an angle of 90 degrees with respect to Figure 1 and showing a push-pull rod employed in transverse section.

Figure 3 is a side view of the parts shown in Figure 2, certain portions thereof being broken away and others in section.

Figure 4 is a side view of a modified form of the latch mechanism employed and shown in Figure 1.

Figure 5 is a top plan view of the said modification shown in Figure 4.

While one embodiment of the invention is illustrated in the above referred to drawings, it is to be understood that they are merely for the purpose of illustration and that various changes in construction may be resorted to in the course of manufacture in order that the invention may be utilized to the best advantage according to circumstances which may arise, without in any manner departing from the spirit and intention of the device, which is to be limited only in accordance with the appended claims. And while there is stated the primary field of utility of the invention, it remains obvious that it may be employed in any other capacity wherein it may be found applicable.

In the accompanying drawings, and in the following specification, the same reference characters are used to

designate the same parts and elements throughout, and in which the numeral 10 refers to the invention in its entirety and 12 indicates an elongated hollow housing which is preferably cylindrical.

The housing is provided with open ends, one of the ends thereof being provided with an inwardly disposed annular flange 14. The exterior wall of the housing is provided with a screw thread 16. A cover-cap 18 for one end of the cylinder is employed which is cup shaped in cross section, having a thread 20 which is complemental to the thread 16 for attaching the cap 18 to the housing.

The cover-cap 18 is provided with an outlet bore 22, the latter being in communication with a passageway 24 disposed at a right angle to said bore. The passageway 24 extends through a bushing 26 which is depicted partially broken away in Figure 1, and it will be understood that a flexible hose (not shown) may be attached to the bushing, in communication with said passageway, by any suitable means, for conducting grease under pressure to an object to be lubricated.

For lubricating certain objects the pressure applied to the grease by a later described means may be augmented by means of a manually actuated lever 28. The latter is pivotally connected as at 30 to a plunger 32 which extends into the passageway 24 through a packing gland 34. One end of the hand lever 28 is pivotally connected as at 36 to a link 38. An end of the link is pivotally connected as at 40 to the cover-cap 18, and it will be understood that by causing the end 42 of the plunger 32 to reciprocate across the mouth of the bore 22 that grease under pressure which exudes outwardly of said bore and into the passageway 24 will thereby become forced outwardly of the passageway under a greater pressure than is applied to said grease by a later described spring and pressure-head employed.

The new device further includes an elongated cartridge 44 which is of a lesser length than the housing 12. The cartridge is preferably cylindrical in contour and preferably formed of paper. The paper is rolled upon itself to provide the cartridge with a comparatively thin wall comprised of laminations of said rolled paper. The laminations preferably are caused to adhere to each other by the employment of a suitable adhesive. Since the wall of the cartridge employs a comparatively small amount of paper, it is correspondingly of a lesser production cost, and the latter described mechanism is designed for cooperation therewith.

As best shown in Figure 1, during use one end of the cartridge abuts the cover-cap and the other end thereof abuts a later described ledge. Prior to the introduction of the cartridge into the housing 12, the cartridge is filled with flaccid grease for distribution through the bore 22. When filled with grease, and assuming that it is desired to store the cartridge prior to use, the ends of the cartridge are provided with covers (not shown) for preventing the grease from coming in contact with debris. The covers are removed and discarded prior to a cartridge filled with grease being positioned in the housing 12, as later described. The cartridge 44 is of approximately the same outside diameter as the inside diameter of the housing 12, and during use the cartridge 44 engages the inner annular wall of the housing 12 and at times when said housing and said cartridge are of cylindrical contour.

The new device further includes a sleeve 46, one end of which is closed by means of a transversely disposed wall 48, the other end thereof being open.

The terminal end portion of the sleeve is provided with a skirt 50 which preferably is formed integral with the sleeve. The external diameter of the skirt 50 is less than the internal diameter of the housing 12 for provid-

ing a space indicated at 52 therebetween, said skirt portion being offset with respect to the main body portion of the sleeve, whereby a ledge 54 is provided adjacent the junction of said skirt and sleeve.

An end portion of the cartridge 44 is received in the space 52. A terminal end of the cartridge is abutted against the ledge 54 during use, and since the end portion of the cartridge is snugly received in the space 52, said end portion becomes stiffened thereby for purposes later described.

The end wall 48 of the sleeve 46 engages the inwardly disposed flange 14 of the housing 12, said flange preventing said sleeve from sliding outwardly of the housing.

The end wall 48 is provided with a medially disposed aperture or opening 56 which, as best shown in Figure 2, is oval in plan, and as shown in Figure 5, said opening may be of a later described contour in plan.

A push-pull rod 58 is provided which, in use, is disposed through the opening 56 and into the housing 12. One end of the push-pull rod 58 is outwardly flared, peened, or splayed to provide a stop 60, the other end thereof being provided with a screw thread 62 for attaching a handle 64 to the rod.

The handle 64 is cup shaped in cross section having an annular flange portion 66, which at times is disposed over and about the housing 12, as later described.

The push-pull rod 58 is provided with two spaced notches. The notch 68 of the rod which is adjacent to the handle 64 is of a lesser transverse width than the notch 70, for purposes later described. It will be understood that the said notches are spaced apart an adequate distance, and that for convenience of illustration the rod 58 is depicted with a broken away portion in Figure 1.

The device further includes a pressure-head 72 which is freely slideable on the push-pull rod 58, being prevented from disengagement with said rod by the stop 60 of the rod.

The pressure-head or piston 72 includes a washer 74 formed of any suitable substance such as leather or the like, the perimeter 76 thereof being of a greater diameter than the oppositely disposed like discs 78 and 80, between which the washer 74 is disposed. The discs and washer are secured togeher by suitable means such as a plurality of rivets 82.

An expansible spring 84 is provided, the ends of which respectively engage the pressure-head 72 and the end wall 48 of the sleeve 46 for urging the pressure-head toward the outlet bore 22 of the cover-cap 18. The convolutions of the spring 84 are disposed around the push-pull rod 58.

A means is preferably employed for limiting a sliding movement of the pressure-head 72 on the rod 58. The said means as specifically shown in Figure 1 is a tubular abutment member 86 disposed around the rod 58. The ends of the member 86 respectively engage the pressure-head 72 and the end wall 48 of the sleeve 46 at times. The member 86 is a refinement of the mechanism and is preferably employed in the event that a later described latch mechanism be slightly inaccurately formed. The said abutment 86 cooperates with said latch mechanism and also prevents the perimeter 76 of the washer 74 from sliding unduly toward the end wall 48 of the sleeve 46 and outwardly of the skirt 50 of said sleeve in the said direction.

With the pressure-head 72 slidably mounted on the rod 58 the handle 64 may be pressed inwardly with the stop 60 passing through grease in a cartridge 44 and with the pressure-head bearing against the inner end surface of the grease. The rod 58 also passes through the grease permitting the handle 64 to be latched in a position close to the inner end of the housing when the grease gun is not in use.

Subsequent to the manufacture of the sleeve 46, by means of dies or the like, and at the time the aperture 56 is formed through the end wall 48 of the sleeve, said

end wall is incised and punched to provide a protruding portion 88 which provides a pivotal attachment of a latch 90 to the wall 48 of the skirt. The latch 90 is formed of resilient wire, the main body portion of said latch being disposed under the protuberance 88, whereby the free ends of the latch are swingable away from the wall 48.

Means are provided for limiting a swinging movement of the latch 90 away from the end wall 48. As best shown in Figures 1, 2, and 3, the said means includes a detent-bar 92, which is disposed across the oppositely disposed finger portions 94 and 96 of the latch 90. The bar is spaced from the end wall 48 sufficient for later described purposes. The end portions of said bar are disposed at a right angle with respect to the main body portion of the bar, and said ends are secured to the end wall 48 by any suitable means.

As best shown in Figure 2 the latch 90 includes oppositely disposed portions 98 and 100 which are slightly arcuate in plan for engagement with the walls of the notch 70 of the rod 58 at times and with the walls of the notch 68 of said rod at other times.

As best shown in Figure 3, the portions 98 and 100 of the latch 90 are provided with terminal end portions or grippers 102 and 104, respectively. The said grippers are disposed at a right angle with respect to the main body portion of the latch 90 and are of a length approximately equal to the thickness of the end wall 48 of the sleeve 46. The said grippers respectively engage the wall of the opening 56 at times.

The engagement of the grippers with the wall of the opening 50 prevents a spreading apart of the oppositely disposed finger portions 94 and 96 of the latch 90, and couples the sleeve 46 to the rod 58 through the latch as shown in Figures 1, 2, and 3.

In order to uncouple said parts the operator grasps the handle 64 and moves the rod 58, in a direction away from the cover-cap 18, a slight distance sufficient to move the terminal ends or grippers 102 and 104 out of engagement with the wall of the elongated aperture 56, this being permitted since the length of the abutment member 86 is sufficiently short, as shown in Figure 1, to permit the same. The operator then moves the rod transversely of the housing 12, this being permitted since the aperture 56, as shown in Figure 2, is elongated enough to permit the same. The said transverse movement causes the ends of the portions 102 and 104 of the latch 90 to be disposed upon the outer surface of the end wall 48 of the sleeve 46. The operator, by then causing the rod to be moved toward the cover-cap 18 thereby causes the oppositely disposed portions 98 and 100 of the latch 90 to spread apart and the latch to become released from the walls of the notch 70. At this time the rod may be moved inwardly of the housing until the portions 98 and 100 of the latch engage the walls of the notch 68 for purposes later described.

The tranverse width of the notch 68 is comparatively minute with respect to the notch 70. Since the fingers of the latch are of a lesser diameter than the width of the notch 68, the said fingers merely engage the edges of the walls of said notch in a manner whereby the latch 90 may be released from the notch 68 by causing the rod 58 to be pushed or pulled slightly by the hand of the operator applied to the handle 64 and without the necessity of causing a transverse movement of the rod. At this time the fingers of the latch remain spread apart, and the ends of the fingers cannot enter the aperture 56.

Operation

Assuming that the cartridge 44 is not in the housing 12, and that an operator desires to place a cartridge in said housing having grease therein, the operator causes the sleeve 46 to be coupled to the push-pull rod by means of the latch 90 and an employment of the notch 70 of said rod, whereby the pressure-head 72 is disposed with

respect to the sleeve **46** in their relative positions shown in Figure 1, whereupon the operator, by pushing upon the handle **64**, after removing the cover-cap **18**, causes the skirt **50** to be moved outwardly of the housing **12**, the sleeve remaining in the housing. At this time the pressure-head **72** is disposed against the end of the adjacent grease within the cartridge and the spring **84** expanded.

The operator then moves the cartridge inwardly of the housing **12**, causing the sleeve **46** to slide in the housing until the sleeve is abutted against the flange **14** of the housing. During said sliding movement of the sleeve a corresponding movement is applied to the rod and its handle **64** and at this time the cartridge becomes abutted against the ledge **54**, and the spring **84** contracted for applying pressure to the grease, the flexible perimeter portion **76** of the washer **74** being disposed toward the grease, preventing the latter from moving past said washer.

The cover-cap **18** is now replaced on the end of the housing **12**. At this time the operator manipulates the rod **58** for uncoupling it from the sleeve and in the manner heretofore described.

The operator then presses on the handle **64** causing the rod to move inwardly of the housing until the stop **60** on the end of the rod is closely adjacent to the bore **22** of the cover-cap **18**, said movement being continued until the latch **90** engages with the walls of the notch **68** of the rod, whereby the rod and its handle are maintained stationary, at this time, with respect to the housing **12**, for the purpose of providing a more compact tool of lesser length, together with permitting the pressure-head **72** to slide on the rod toward the bore **22** for applying grease under pressure to an article to be lubricated through said bore. For the lubrication of certain articles the pressure applied to the grease by means of the spring **84** may be enhanced by manipulation of the lever **28**, as heretofore described.

At the time the pressure-head reaches its dotted line position shown in Figure 1, the cartridge being substantially emptied of grease, the operator then ejects the cartridge from the housing **12** in a manner now to be described.

The operator, by pulling on the handle **64**, causes the rod to be released from the notch **68** and said rod moved outwardly of the housing until the latch **90** engages in the notch **70** and the rod and sleeve **46** coupled together, as heretofore described. The operator, subsequent to removal of the cover-cap **18**, then moves the rod toward the then open end of the cylinder **12**, whereby the ledge **54** causes the cartridge to be ejected by pressing on the handle **64** for moving the sleeve towards the then open end of the housing or cylinder **12**.

With respect to the modified form of the latch shown in Figures 4 and 5, the said modification includes a provision of an elongated opening **106** disposed through the end wall **48** of the sleeve **46**, through which the push-pull rod **58** is disposed during use. The opening **106** is semi-circular in contour in plan at one of its ends. The other end of the opening is rectangular, as indicated at **108**, being provided with parallel side walls.

The latch member **110** of the modification is pivotally attached to the end wall of the sleeve in the same manner as the latch member **90** shown in Figure 2. The latch member **110** is the same as the latch member **90** in all respects with the exception that the terminal ends of the fingers **112** and **114** thereof extend through the aperture **106** and away from the wall **48** a distance approximately equal to the length of the swinging movement required of the latch **110** away from the wall **48**.

The said fingers are provided with extensions **116** and **118**, respectively. As best shown by full lines in Figure 4 and broken lines in Figure 5, the said extensions are disposed under and normally spaced from the wall **48**. During use, the said extensions engage the wall **48** for

limiting a swinging movement of the latch **110**. It will be seen that the latch **110** may be employed in lieu of the latch **90** and for the same purposes above described with respect to the latch **90**.

From the foregoing specification, it will become apparent that the invention disclosed will adequately accomplish the functions for which it has been designed and in an economical manner, and that its simplicity, accuracy, and ease of operation are such as to provide a relatively inexpensive device, considering what it will accomplish, and that it will find an important place in the art to which it appertains when once placed on the market.

It is thought that persons skilled in the art to which the invention relates will be able to obtain a clear understanding of the invention after considering the description in connection with the drawings. Therefore, a more lengthy description is regarded as unnecessary.

Changes in shape, size and rearrangement of details and parts such as come within the purview of the invention claimed may be resorted to in actual practice, if desired.

I claim:

1. In a grease gun, the combination which comprises an elongated hollow cylinder having normally open ends; a cover-cap provided with an outlet bore for one of said ends; a sleeve slideably disposed in said cylinder, said sleeve being of approximately the same diameter as the inside diameter of said cylinder, said sleeve being provided on one of its ends with a skirt of lesser outside diameter than the inside diameter of said cylinder for providing a space between the inner wall of said cylinder and the outer wall of said skirt for a reception in said space of an end portion of a grease cartridge, the other end of said cartridge being adapted to be abutted against said cover-cap; a wall disposed across that end of said sleeve which is opposite to the skirted end thereof, said wall being provided with an aperture disposed therethrough; a push-pull rod disposed through said aperture, the exterior end of said rod being provided with a handle, its other end terminating in a detent; a pressure-head slideably disposed on said rod between said detent and the end wall of said sleeve; an expansible spring disposed between said end wall of the sleeve and said pressure-head for applying pressure to said head and urging grease under pressure through said outlet bore; a passageway in said cover-cap in communication with said bore; a plunger in said passageway; manually actuatable means carried by said cover connected to said plunger for enhancing the pressure applied to grease received in the passageway through said bore during a greasing operation; and means for coupling said rod to said sleeve during an ejection of an empty grease cartridge from said cylinder.

2. In a grease gun as described in claim 1 which further includes a means for limiting a sliding movement of said pressure-head on said rod toward the end wall of said sleeve for cooperation with said coupling means.

3. In a grease gun: an elongated hollow housing having an inwardly disposed annular flange in one end; a sleeve slideably disposed therein, said sleeve having a closed end provided with an aperture, the closed end of the sleeve being positioned to engage the annular flange of the housing whereby movement of the sleeve through the housing is prevented; a push-pull rod provided with a notch, said rod being disposed through said aperture; and means for coupling said rod and sleeve together, said means comprising a latch pivotally mounted on said closed end, said latch being provided with oppositely disposed resilient finger portions adapted to engage in said notch; and detent means for limiting a swinging movement of said latch.

4. A device as described in claim 3 in which the detent means includes a bar disposed across said fingers, said bar being spaced from and secured to the closed end of said sleeve between said rod and the pivotal point of said latch.

5. A device as described in claim 3 in which the detent

means includes extensions provided on the fingers of the latch, said extensions being disposed through said aperture and normally spaced from said closed end and adapted to engage said end at the opposite side of the latter with respect to the pivotal mounting of said latch.

6. In a grease gun, the combination which comprises an elongated cylindrical housing having an inwardly extended annular flange in one end, a sleeve having a closed end and an inwardly offset skirt in the end opposite to the closed end, said skirt providing space for receiving an edge of a shell of a grease cartridge and the closed end of the sleeve being positioned to engage the annular flange of the housing, a cover-cap having a grease passage therethrough positioned on the end of the housing opposite to the end in which the annular flange is positioned, a manually actuated plunger extended into said grease passage for opening and closing said passage, a pressure-head positioned in said sleeve, a rod extended from the pressure-head through the closed end of the sleeve and adjacent end of the housing and having a handle on the end extended through the housing, a spring on said rod for urging the pressure head from said sleeve, and latching means on the closed end of the sleeve for retaining the handle, respectively, adjacent the inner end of the housing with the rod extended through grease in a grease cartridge in the housing and with the pressure-head urged by the spring against the inner end surface of the grease.

7. In a grease gun, the combination which comprises an elongated cylinder having an internal flange in one end and threads on the external surface at the opposite end, a sleeve having a closed end with an aperture in the center positioned in the cylinder, the closed end of the sleeve being nested against the flange of the cylinder and the opposite end of the sleeve having a skirt, the outside diameter of which is less than that of the sleeve, extended therefrom, a rod extended through the aperture in the closed end of the seleve and having a head on the inner end, a cup-shaped handle mounted on the outer end of the rod, said rod having spaced annular recesses therein, a latch mounted on the closed end of the sleeve and positioned to coact with the recesses for retaining the handle selectively, against the inner end of the cylinder, or in engagement with the sleeve for forcing the sleeve and a cartridge held therein from the cylinder, a piston mounted on the rod, a tubular member also mounted on the rod, a spring extended around the tubular member, said piston being positioned in the cylinder and the tubular member and spring being positioned between the piston and closed end of the sleeve, a cover-cap having a passage therethrough threaded on the threaded end of the cylinder, the passage of the cover-cap having a cylinder therein, and a manually actuated plunger positioned in the cylinder in the passage of the cover-cap for forcing material from the cylinder through said passage.

8. In a grease gun, the combination which comprises an elongated cylinder having an internal flange in one end and having threads on the opposite end, a sleeve having a closed end with an aperture therein and having a skirt, the diameter of which is less than that of the sleeve, extended from the opposite end, a rod extended through the aperture in the closed end of the sleeve and having a head on the end positioned in the cylinder, a piston on the rod, a tubular member also positioned on the rod, a spring extended around the tubular member, the piston being positioned in the cylinder and the tubular member and spring being positioned between the piston and closed end of the sleeve, a latch mounted on the closed end of the sleeve and positioned whereby resiliency therein urges arms thereof against sides of the rod, said rod having spaced annular recesses therein and said recesses being positioned to coact with the latch for retaining the rod, selectively, coupled with the sleeve, or extended through grease in the cylinder and with the handle substantially against the inner end of the cylinder in which the flange is positioned, a cover-cap threaded on the threaded end of the cylinder, said cover-cap having a cylinder therein and said cylinder having an inlet opening communicating with the interior of the elongated cylinder, a plunger positioned in the cylinder of the cover-cap, said cylinder of the cover-cap having an outlet connection, and a hand lever pivotally mounted in the cover-cap and connected to the plunger for actuating the plunger to pump material from the elongated cylinder through said outlet connection.

9. In a grease gun, the combination which comprises an elongated cylinder, a cover-cap having an outlet passage therethrough mounted on one end of the cylinder, a piston in the cylinder, a rod extended from the piston through the end of the cylinder opposite to the end on which the cover-cap is positioned, a cup shaped handle on the outer end of the rod, the inner surface of the handle being formed to receive the inner end of the cylinder wherein the cylinder nests in the handle with the rod in the cylinder protecting the inner end of the cylinder from dirt, resilient means in the cylinder for urging the piston toward the end of the cylinder upon which the cover-cap is positioned, said rod having spaced annular recesses therein, and latching means for, selectively, retaining the handle in position with the inner end of the cylinder nested in the handle, or with the rod extended from the inner end of the cylinder for ejecting a grease cartridge from the cylinder.

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