

May 3, 1938.

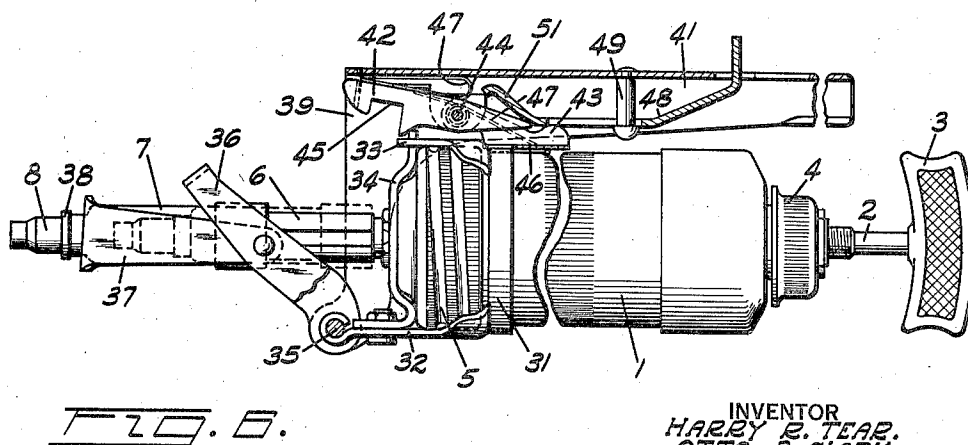
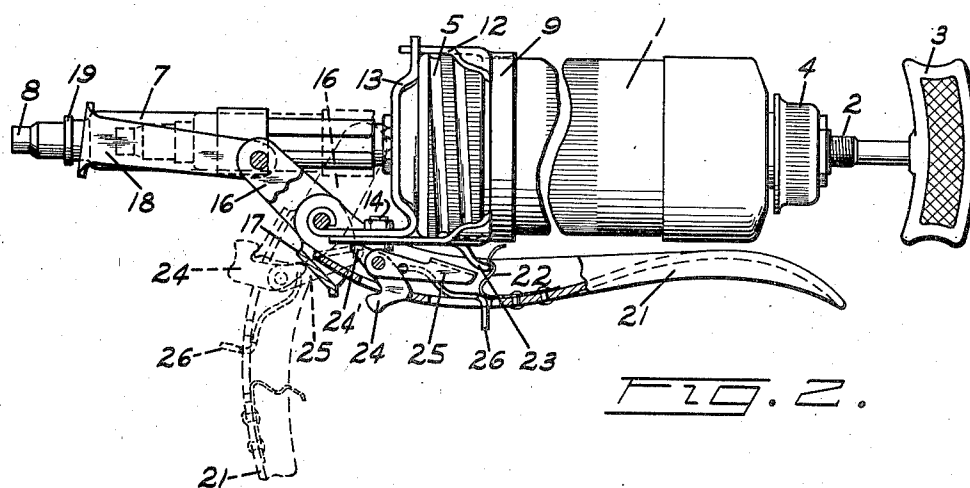
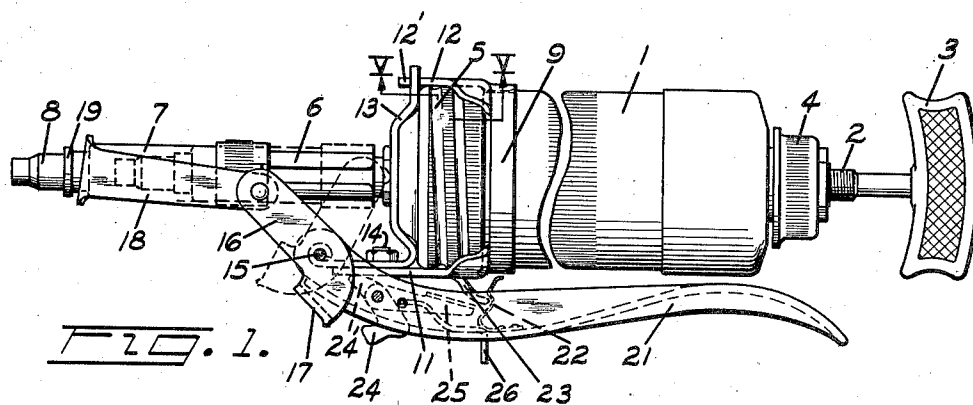
H. R. TEAR ET AL

2,116,005

LUBRICATING DEVICE

Filed Jan. 16, 1936

4 Sheets-Sheet 1



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2,116,005

LUBRICATING DEVICE

Filed Jan. 16, 1936

4 Sheets-Sheet 2

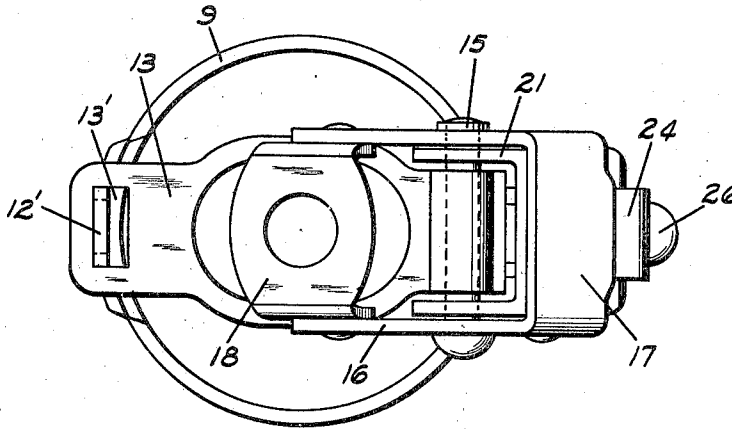


FIG. 3.

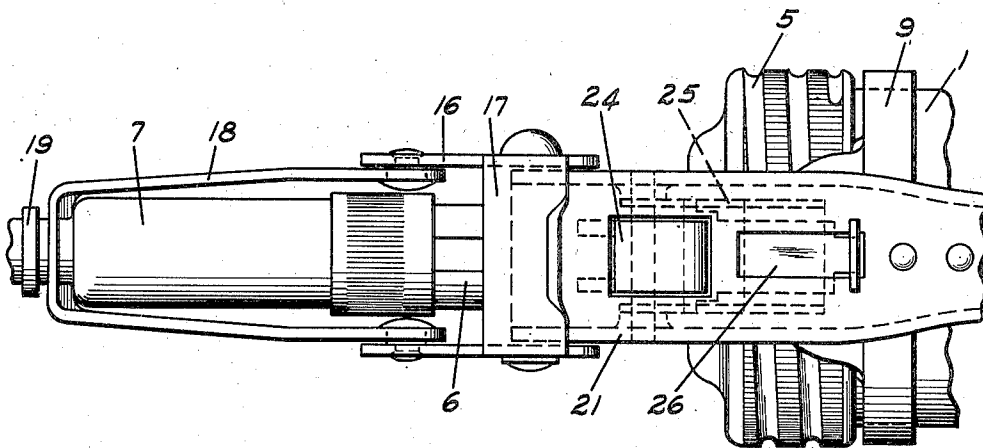


FIG. 4.

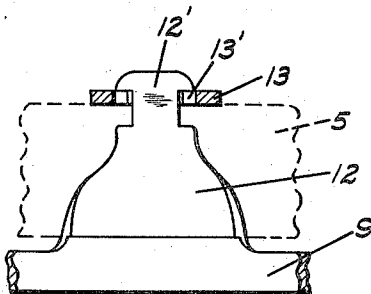


FIG. 5.

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4 Sheets-Sheet 3

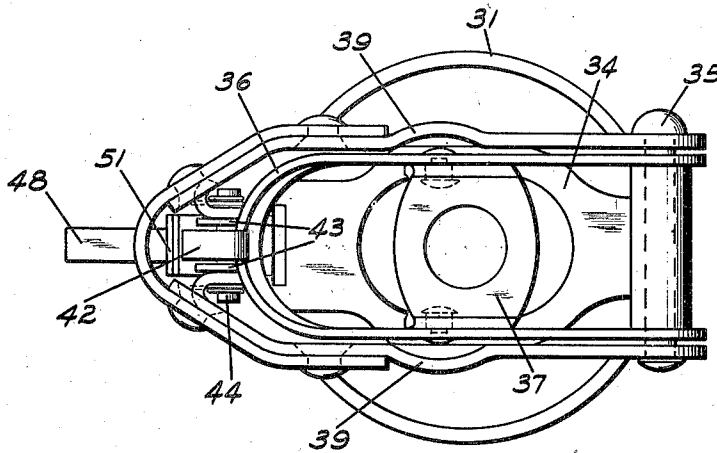


FIG. 7.

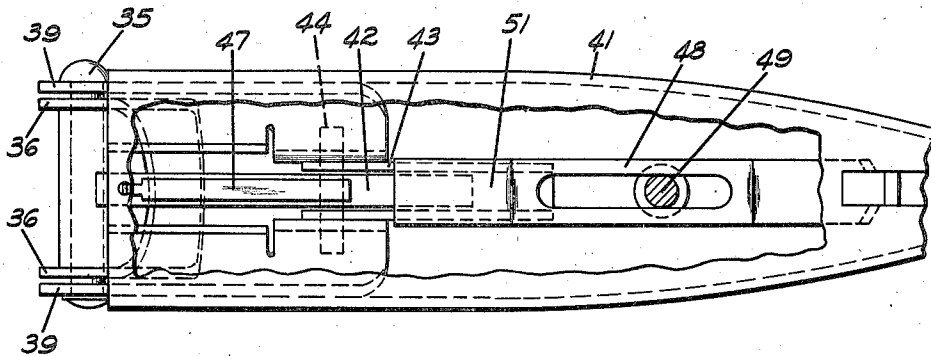


FIG. 8.

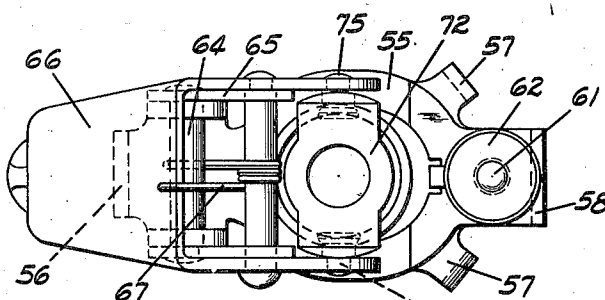


FIG. 12.

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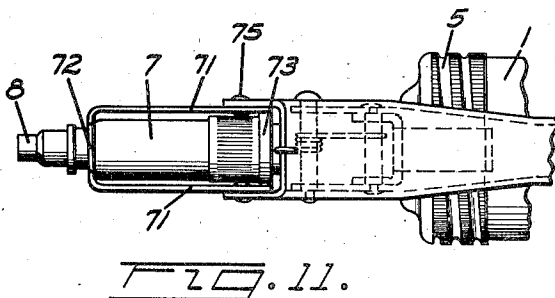
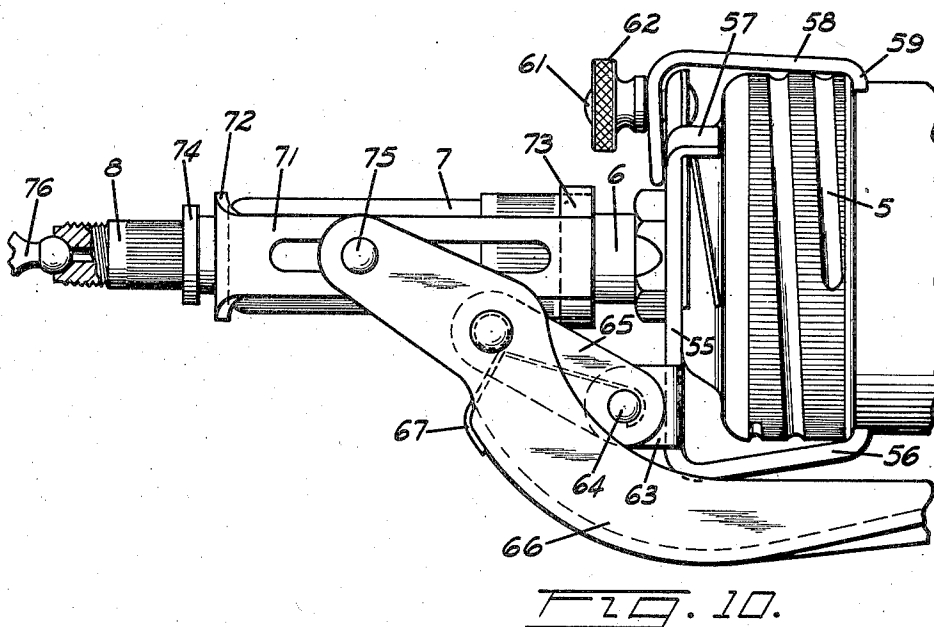
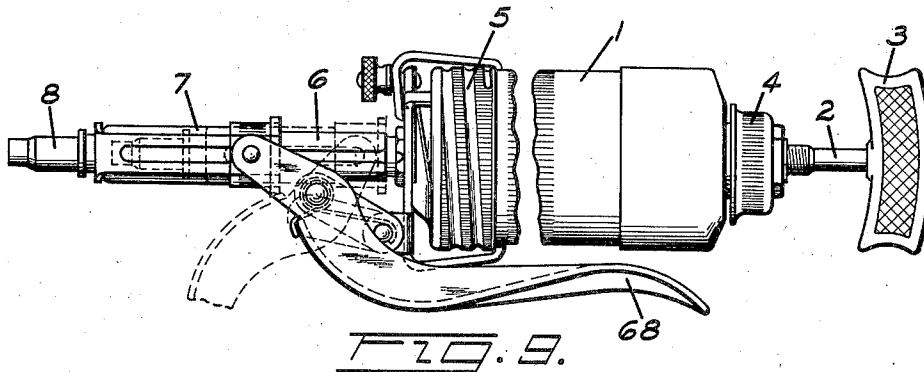
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LUBRICATING DEVICE

Filed Jan. 16, 1936

4 Sheets-Sheet 4



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UNITED STATES PATENT OFFICE

2,116,005

LUBRICATING DEVICE

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ware

Application January 16, 1936, Serial No. 59,330

18 Claims. (Cl. 221—47.4)

This invention relates to lubricating devices and more particularly to lever attachments for portable hand guns for dispensing lubricant under high pressure.

5 Lubricant dispensers have been proposed including a rigid barrel or container which may serve as a reservoir for bulk lubricant but which preferably forms a housing for an interchangeable factory filled supply cartridge. A high pressure pump is secured to one end of the barrel and includes relatively telescoping parts, one of which is attached to the barrel and has an inlet stud for sealing engagement with the cartridge outlet and the other of which carries a discharge nozzle formed for sealing engagement with a lubricant receiving fitting. In use, lubricant may be forced from the cartridge into the pump by a suitable feed screw, the nozzle may be engaged with a fitting and thrust exerted on the barrel or feed screw toward the fitting to telescope the pump parts and discharge lubricant from the pump into the fitting.

With a dispenser of the type described above, it is possible for an operator to obtain lubricant pressures high enough for most purposes by applying a manual thrust to the barrel or the feed screw. Occasionally, however, conditions arise where some higher pressure is required as when a so-called "frozen" bearing is encountered and it is an object of the present invention to provide a lubricant dispenser with which such higher pressures can readily be obtained.

Another object of the invention is to provide a lubricant dispenser including a push type pump and a lever in which the pump may be operated by thrusting it against a fitting without affecting the lever or the lever may be utilized to operate the pump.

Another object is to provide a lever mechanism attachable to and detachable from a dispenser to operate the dispenser pump. The lever mechanism could, if desired, be formed as a permanent part of the dispenser instead of being a separate mechanism.

Other objects, the advantages and novel features of the invention will be apparent from the following detail description when read in connection with the accompanying drawings, in which:

Fig. 1 is a side view of a hand operated grease gun embodying the invention;

Fig. 2 is a view similar to Fig. 1 with parts in section and illustrating two operating positions;

Fig. 3 is an end of the attachment of Figs. 1 and 2;

Fig. 4 is a bottom view of the attachment of Figs. 1 and 2;

Fig. 5 is a partial section on the line V—V of Fig. 1;

Fig. 6 is a side view with parts in section of a modified form of the invention;

Fig. 7 is an end view of the attachment of Fig. 6;

Fig. 8 is a partial top view of the attachment of Fig. 6 with parts cut away and in section;

Fig. 9 is a side view of still another modified form of the invention;

Fig. 10 is an enlarged partial view similar to Fig. 9 with parts in section;

Fig. 11 is a partial bottom view of Figs. 9 and 10; and

Fig. 12 is an end view of the attachment of Figs. 9 to 11.

Figs. 1 and 2 illustrate a grease gun including a rigid barrel 1 which may serve as a reservoir for bulk lubricant but which preferably forms a housing for receiving a factory filled container or cartridge, one end of which is closed by a movable piston or follower. A feed screw 2 having a handle 3 extends through one end of the barrel and may be connected thereto by a quick release device 4 which can be moved into engagement with the feed screw 2 whereby the feed screw will be threaded into the barrel upon rotation thereof or which can be released from the feed screw to permit free axial movement thereof as is more fully disclosed in my copending application Serial Number 753,663. The opposite end of the barrel is closed by a cap 5 screw-threaded thereon, the cap 5 supporting a pump which includes a part 6 secured to the cap 5 and a part 7 telescoping over the part 6. The part 7 carries a nozzle 8 at its outer end, the nozzle being formed either as a plain contact type nozzle adapted to sealingly engage a fitting upon being placed thereagainst or of the clamp coupling type which is adapted to securely clamp on a fitting.

The grease gun as so far described may be operated by turning the feed screw 2 to force lubricant from the barrel 1 or from a cartridge contained therein into the pump. The nozzle 8 may be placed against a fitting and thrust exerted on the handle 3 or on the barrel 1 to telescope the pump parts 6 and 7 thereby to discharge lubricant from the pump into the fitting under a relatively high pressure.

The pressure developed by manually thrusting on the handle 3 toward a fitting is sufficient for most lubricating operations, but occasionally

a pressure is desired which is higher than that capable of being developed readily by merely thrusting on the handle 3, such, for example, as to force lubricant into a clogged up or so-called frozen bearing. In order to develop such higher pressures there is provided, according to the present invention, a lever attachment which may be secured to the grease gun described in order to enable an operator to develop pressures greatly in excess of those which can be produced readily by thrusting the gun toward a fitting. As shown, the lever attachment comprises a collar 9 fitting the barrel 1 and adapted to be held thereon by engagement with the cap 5. The collar is provided with two projecting lugs or ears 11 and 12, to one of which a plate 13 is secured as by means of a bolt 14. The plate 13 has an opening therein through which the pump part 6 extends and may be connected to the other lug or ear as by means of an enlarged head 12' interlocking with a keyhole 13' in the plate 13, and serves to hold the collar 9 tightly against the cap 5.

A portion of the plate 13 extends axially outward of the lug 11 and is turned over at its outer end to provide a support for a pivot pin 15. A lever in the form of a U-shaped member having arms 16 and a cross-member 17 is pivoted intermediate its ends on the pin 15 and has the ends of the arms 16 pivotally connected to the ends of a yoke 18 which is mounted on the pump member 7. The yoke 18 may be held in place on the pump member by means of a collar 19 which prevents the yoke from sliding over the end of the pump member. A second lever 21 is pivoted at one end on the pin 15 and is formed at its opposite end with a handle portion lying in one position closely adjacent and substantially parallel to the barrel 1.

The lever 21 is adapted to engage the cross piece 17 when it is swung about its pivot in a direction away from the barrel and toward the pump, to swing the lever 16 about its pivot and draw the yoke 18 and the pump part 7 toward the barrel. The lever 21 preferably carries a spring detent 22 engageable with a fixed member 23 on the collar 9 yieldingly to hold the lever 21 in the position shown in full lines in Figs. 1 and 2. A latch 24 is preferably pivoted on the lever 21 in a position to engage the cross member 17 and may, if desired, be urged into engaging position by a suitable spring, not shown, thereby to lock the levers 16 and 21 together rigidly. The latch 24 has a cam portion 24' adapted to engage the lug 11 to move the latch into its disengaged position when the lever 21 is moved toward its full line position of Figs. 1 and 2.

One of the advantages of utilizing interchangeable lubricant cartridges with a dispensing device of this character is that cartridges containing different grades of lubricant may readily be substituted for one another to provide the correct grade of lubricant for each part of a machine being serviced. It is desirable during an interchange of cartridges for this purpose to retain as little as possible of the old lubricant in the pump when the cartridges are changed in order to minimize intermingling of the lubricants and to enable the new lubricant to be dispensed on at least the second pump operation after the change has been made. Accordingly, the invention includes means for locking the pump parts in their discharge position in which the minimum quantity of lubricant is contained in the pump so that while in this position cartridges may be

interchanged without requiring an extensive flushing operation to remove the old lubricant and without producing any appreciable intermingling of lubricants.

As shown, such means is constituted by a latch 25 pivoted on the lever 21 and controlled by a finger 26 having a thumb piece projecting through a slot in the lever. The latch 25 normally occupies the full line position shown in Fig. 2 but when it is desired to lock the pump parts in their discharge position, the finger 26 may be operated to swing the latch 25 into its dotted line position shown in Fig. 2 in which the end thereof engages the bolt 14 and holds the pump parts in their discharge position.

If it is desired to operate the grease gun of Figs. 1 and 2 as a push type gun, the lever 21 may be moved to a position shown in Fig. 1, the latch 24 being released by engagement of the cam portion 24' with the lug 11 during this movement, after which the gun may be operated without affecting the lever 21. During operation of the pump by thrusting it against a fitting the yoke 18 will move with the pump parts 7 causing the lever 16 to swing about its pivot but since there is at this time no connection between the levers 16 and 21, the latter will not be affected. In order to utilize the lever to produce higher pressures than those possible merely by thrusting the gun against a fitting, the lever 21 may be swung about its pivot into engagement with the cross-member 17, the latch 24 being moved into latching position with the cross member 17 by the spring thereon. In this position the lever 16 and 21 are rigidly connected and movement of the lever 21 in a clockwise direction about its pivot will cause the lever 16 to move similarly, thereby drawing the yoke 18 and pump parts 7 toward the barrel 1 and producing a discharge of lubricant from the pump. It will be noted that a considerable mechanical advantage is obtained between the handle of lever 21 and the yoke 18, the amount of leverage obtained being variable to substantially any desired value by properly proportioning the lengths of levers 16 and 21.

If it is desired to change a cartridge in the barrel 1, the lever 21 may first be moved into the dotted line position of Fig. 2 and the finger 26 operated to swing the end of latch 25 into engagement with the screw 14. The barrel 1 may then be removed from the cap 5 and a new cartridge substituted, the pump parts being held in their discharge position during this operation by the latch 25.

It will be noted that thrust exerted on the lever 21 to operate the pump during a discharge stroke is in the general direction of the nozzle 8 and acts both to hold the nozzle on a fitting and to urge the barrel 1 toward the fitting and nozzle to apply an additional operating force on the pump. This arrangement is particularly advantageous where a plain push type nozzle is employed which is held on a fitting by being thrust thereagainst, since the same force which operates the pump serves also to hold the nozzle on the fitting and insures that the nozzle will be held on the fitting during discharge of lubricant.

The collar 9 is preferably freely rotatable on the barrel 1 and the yoke 18 is rotatable on the pump part 7 so that the entire lever attachment may be rotated freely around the grease gun to any desired position. If it is desired to lock the attachment against rotation this might be accomplished by providing the plate 13 with a non-circular hole to fit a non-circular projection on

the front of the cap 5 or a suitable set screw might be provided in the collar 9 or both.

Figs. 6 to 8 illustrate a modified form of lever attachment which is adapted to be used on a grease gun identical with that shown in Figs. 1 and 2 and for the purpose of brevity of description, the grease gun parts in Figs. 3 to 5 have been given the same reference numbers as corresponding grease gun parts in Figs. 1 and 2. The lever attachment of Figs. 3 to 5 includes responding grease gun parts in Figs. 1 and 2, which is provided with projecting lugs 32 and 33 and has a plate 34 secured thereto and adapted to engage the front of the cap 5. The lug 32 carries a pivot pin 35 on which the free ends of a U-shaped lever 36 are pivoted. The lever 36 is pivotally connected intermediate its ends to a yoke 37 which engages the pump parts 7 and which is held thereon by means of a collar 38. A second lever 39 having a right angle extension 41 is pivoted at one end on the pin 35 so that the extension 41 will lie closely adjacent to the barrel 1. The lever 39 carries a pair of latches 42 and 43, the latch 42 being pivoted intermediate its ends on a pin 44 and being formed at one end with a notched portion 45 adapted to engage the lever 36. The opposite end of the latch 42 is formed with a taper to be engaged by an operating member as will be described later. The latch 43 is pivoted on the pin 44 at one end and includes a relatively flat portion 46 which is adapted to be moved into engagement with the end of the cap 5 or of the collar 31. As shown, the collar 31 is cut away adjacent the latch 43 so that the portion 46 thereof may move into the cut away portion of the collar to engage the end of the cap 5. Suitable springs 47 are preferably provided for urging the latch 42 into position to engage the lever 36 and for urging the latch 43 away from the cap 5.

In order to control operation of the latches a finger 48 is slidably mounted on a pin 49 on the extension 41 and has a thumb piece projecting through a slot in the extension 41 by which the finger 48 may be moved. The forward end of the finger 48 is bent upwardly as shown at 51 to form a cam surface engageable with the tapered end of the latch 42 and with the free end of the latch 43.

In the position shown in Fig. 6, the extension 41 is held closely adjacent to the barrel 1 by engagement of the latch 43 with the cap 5 and the gun may be operated by placing the nozzle 8 against a fitting and exerting a thrust on the handle 3. It will be noted that during this operation the lever 36 swings freely about its pivot but that the lever 39 and its extension 41 will not be affected. To utilize the lever 41, the finger 48 is moved rearwardly out of engagement with both of the latches 42 and 43. The springs 47 will then urge the latch 43 out of engagement with the cap 5 and will urge the latch 42 into position for engagement with the lever 36. Pivotal movement of the lever 41 away from the barrel 1 will move the latch 42 into locking engagement with the lever 36 to lock levers 36 and 41 together. Thereafter pivotal movement of the lever 41 will cause a corresponding pivotal movement of the lever 36, thereby moving the pump parts 7 toward the barrel 1 and discharging lubricant from the pump.

If it is desired to lock the pump parts in their discharge position during interchange of lubricant cartridges, the finger 48 may be moved to an intermediate position in which it engages the

latch 43 but is disengaged from the latch 42. In this position the latch 42 will engage the lever 36,—locking levers 36 and 41 together, and the latch 43 will engage the cap 5 to hold the lever 36 and the pump parts in the discharge position.

It will be noted that, to effect a discharge stroke of the pump, the lever extension 41 will be moved toward the barrel 1. An operator may grasp the lever 41 in one hand and the barrel 1 in the other hand and perform this operation very easily in the same manner as using a pair of scissors or shears.

Figs. 9 to 12 show a further modification of the lever attachment adapted to be used on a grease gun of the same type as that illustrated in Figs. 1 to 8 and for the purpose of brevity of description the same reference numbers have been used on the gun parts as in the preceding figures. The lever attachment of Figs. 9 to 12 comprises a plate 55 having an opening therein to surround the pump parts 6 and 7 and formed with an extension 56 adapted to hook behind the cap 5. A pair of lugs 57 extend inwardly from the plate 55 to seat on the head of the cap 5 to hold the plate 55 in a position substantially parallel to the cap 5.

In order to hold the plate 55 on the cap 5, an angular member 58 having a hook portion 59 adapted to engage the rear edge of the cap 5 is secured to the plate 55 by means of a bolt 61 extending through the plate and the angular member and carrying a nut 62. It will be noted that the nut 62 engages one leg of the angular member 58 intermediate its ends so that when the nut is tightened it tends both to pull the plate toward the cap 5 and to urge the members 56 and 58 together to grip the cap 5 firmly between them.

The plate 55 is formed with a pair of integral ears 63 supporting a pivot pin 64. A pair of links 65 are pivoted at one end on the pin 64 and at their opposite ends are pivotally connected to a lever 66, a suitable coil spring 67 preferably being provided to urge the lever 66 into the full line position shown in Figs. 9 and 10. One end 68 of the lever 66 is formed with a hand grip portion to be engaged by the hand of an operator and the opposite end is bifurcated to straddle the pump part 7.

In order to connect the lever 66 to the pump, a yoke having slotted side arms 71 and an end cross member 72 is provided. The member 72 has an opening therein to receive the nozzle 8 and the free ends of the side arms 71 are secured to a ring 73 which is adapted to receive the pump member 7. The yoke is placed on the pump member 7 as indicated in Figs. 9 to 11 with the cross member 72 engaging the end of the pump member 7 and the ring 73 surrounding the member 7 to prevent tilting of the yoke thereon, a collar 74 preferably being provided on the nozzle 8 to hold the yoke in place. The lever 66 is connected to the yoke by means of pins or the like 75 carried by the bifurcated ends of the lever and slidable in the slots in the yoke arms 71.

The spring 67 normally serves to hold the lever 66 in a position parallel and closely adjacent to the barrel 1, the pump being operable in this position by thrusting the nozzle 8 against a fitting such as that indicated at 76 in Fig. 10 and exerting force on the barrel 1 or handle 3 to telescope the pump parts 6 and 7. During such telescoping movement the pins 75 will slide freely in the slots in arms 71 so that the lever will not be affected. To utilize the lever for operating the

pump an operator may grasp the lever end 68 and urge it in a direction away from the barrel 1 and generally toward the nozzle and fitting. This movement causes the opposite end of the lever to move toward the barrel 1, thereby moving the pins 75 to the ends of the slots in arms 71 and thereafter moving the yoke and pump part 7 toward the barrel to cause a pump discharge. It will be noted that thrust exerted on the lever 66 to cause a pump discharge is in the direction of the nozzle and the fitting and tends to hold the nozzle on the fitting and in this respect the attachment of Figs. 9 to 12 is similar to that of Figs. 1 to 5.

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

We claim:

1. A lubricating device comprising, means forming a high pressure pump, a discharge nozzle for said pump, said pump being operable by applying a thrust on said discharge nozzle, a lever pivoted adjacent said pump, and a connection between said pump and said lever so constructed and arranged that the pump may be operated without affecting the lever or the lever may be operated to apply an additional operating force to the pump.

2. A lubricating device comprising a barrel, means forming a high pressure pump including axially movable parts, one of which is secured to the barrel, a discharge nozzle connected to the other of said parts, said pump being operable by applying a thrust on said discharge nozzle, a lever pivoted on the barrel, and a releasable latch connection between the pump and lever, whereby the pump and lever may be connected or disconnected at will.

3. A lubricating device comprising, a barrel, a pump secured to said barrel, said pump including relatively telescoping parts one of which is rigidly secured to the barrel, a discharge nozzle secured to the other of said pump parts, a lever pivotally carried by said barrel, a yoke engaging said other pump part, and a lost motion connection between said yoke and said lever whereby the pump may be operated without moving the lever but movement of the lever will operate the pump.

4. A lubricating device comprising, a barrel, a pump connected to said barrel, said pump including relatively telescoping parts, a discharge nozzle connected to one of said parts, a yoke rotatably connected to said one pump part, a supporting member rotatably carried by said barrel, and a lever pivoted on said supporting member and connected to said yoke to operate the pump.

5. A lubricating device comprising a barrel, a pump secured to said barrel in alinement therewith, said pump including relatively telescoping parts the outermost one of which is movable toward and away from the barrel to operate the pump, a discharge nozzle carried by said part, and a lever pivotally carried by said barrel and connected to said part and having one end thereof extending laterally from the device and movable toward said part to move the end part toward the barrel.

6. A lubricating device comprising, a barrel, a pump secured to said barrel in alinement therewith, said pump including relatively telescoping parts the outermost one of which is movable to-

ward and away from the barrel to operate the pump, a yoke rotatably mounted on said end part, a supporting member rotatably mounted on the barrel, and a lever pivoted on said supporting member and connected to the yoke and having one end extending laterally from the device and movable about its pivot to move said end part.

7. A lubricating device comprising, a barrel, a pump secured to said barrel in alinement therewith, said pump including relatively telescoping parts the outermost one of which is movable toward and away from the barrel to operate the pump, a lever connected to said end part, and a second lever having means for connecting it to the first named lever to operate the pump.

8. A lubricating device comprising, a barrel, a pump secured to said barrel in alinement therewith, said pump including relatively telescoping parts the outermost one of which is movable toward and away from the barrel to operate the pump, a lever pivoted on said barrel and connected to said end part, and a second lever pivoted on the barrel and having means for connecting it to the first named lever to operate the pump.

9. A lubricating device comprising, a rigid barrel, a pump secured to said barrel in alinement therewith, a lever pivoted on said barrel and connected to the pump to operate the same, a second lever pivoted on said barrel, and a latch on said second lever engageable with or disengageable from said first lever to operate the pump.

10. A lubricating device comprising, a rigid barrel, a pump secured to said barrel in alinement therewith, a lever pivoted on said barrel and connected to the pump to operate the same, a second lever pivoted on said barrel, and a pair of latches on said second lever, one of which is engageable with the first lever and the other of which is engageable with the barrel.

11. A lubricating device comprising, a rigid barrel, a pump secured to said barrel in alinement therewith, a lever pivoted on said barrel and connected to the pump to operate the same, a second lever pivoted on said barrel, a pair of latches on said second lever, one of which is engageable with the first lever and the other of which is engageable with the barrel, and operating means for said latches for selectively engaging either of said latches or for simultaneously engaging both of them.

12. A lubricating device comprising, a rigid barrel, a pump secured to said barrel in alinement therewith, a lever pivoted on said barrel, a yoke engaging a pump part and pivoted to said lever, a second lever pivoted on said barrel coaxially with said first named lever, a latch on said second lever engageable with said first lever, a second latch on said second lever engageable with said barrel, and operating means for said latches so constructed and arranged as to operate either of the latches selectively or to operate both of the latches simultaneously.

13. A lubricating device comprising, a rigid barrel, a pump secured to the barrel in alinement therewith, said pump including relatively telescoping parts, the end one of which is movable toward and away from the barrel to operate the pump, a yoke rotatably mounted on said end part, a supporting member rotatably mounted on said barrel, a lever pivoted on said supporting member and connected to said yoke, a second lever pivoted on said supporting member, and a latch on said second lever engageable with said first lever and disengageable therefrom at will.

14. A lubricating device comprising, a rigid

barrel, a pump secured to said barrel and including relatively telescoping parts, the outermost one of which is movable toward the barrel to produce a discharge stroke of the pump, a yoke engaging said outermost part, a lever pivotally supported by the barrel and connected to said yoke, a second lever pivotally supported on the barrel and engageable with the first lever to urge the pump toward its discharge position when the free end of the second lever is moved toward the pump, and a latch carried by the second lever for holding the pump in its discharge position.

15. A lubricating device comprising, a rigid barrel, a pump secured to said barrel and including relatively telescoping parts, the outermost one of which is movable toward the barrel to produce a discharge stroke of the pump, a yoke engaging said outermost part, a lever pivotally supported by the barrel and connected to said yoke, a second lever pivotally supported on the barrel and engageable with the first lever to urge the pump toward its discharge position when the free end of the second lever is moved toward the barrel, and a latch for holding the second lever in a position adjacent the barrel with the pump in its discharge position.

16. A lever attachment for a lubricant dispensing device including a barrel and a pump having relatively telescoping parts alined with the barrel comprising, a supporting member

adapted to be secured to said barrel, a yoke engageable with the outermost pump part, and lever means connecting said member and yoke and operable to move said yoke and outermost pump part relatively toward and away from the member and barrel, thereby to move said pump part and to operate the pump.

17. A lever attachment for a lubricant dispensing device including a barrel and a pump having relatively telescoping parts alined with the barrel comprising, a supporting member adapted to be secured to said barrel, a yoke engageable with the outermost pump part, a lever pivotally connected to said member and yoke, a second lever pivoted on said supporting member, and means for connecting said levers whereby operation of the second lever moves the first lever and operates the pump.

18. A lubricating device comprising, a rigid barrel, a pump secured to said barrel and including relatively telescoping parts, the one of which most remote from the barrel being movable toward the barrel to produce a discharge stroke of the pump, a yoke engaging said one part, a rigid lever having a pin and slot connection at one end with said yoke, and a link pivoted at one end to said barrel and at its opposite end to said lever.

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CERTIFICATE OF CORRECTION.

Patent No. 2,116,005.

May 3, 1938

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It is hereby certified that error appears in the printed specification of the above numbered patent requiring correction as follows: Page 3, first column, line 11, strike out "responding grease gun parts in" and insert instead the words a collar 31 similar to the collar 9 of; and that the said Letters Patent should be read with this correction therein that the same may conform to the record of the case in the Patent Office.

Signed and sealed this 28th day of June, A. D. 1938.

Henry Van Arsdale,
Acting Commissioner of Patents.

(Seal)