

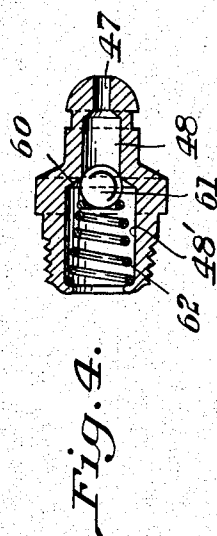
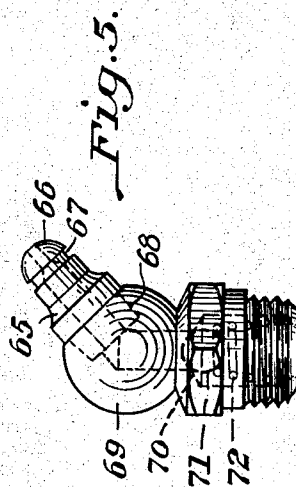
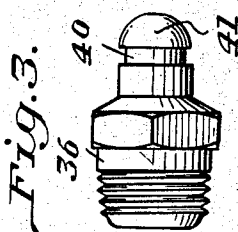
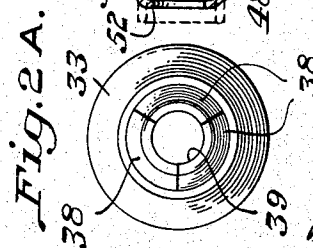
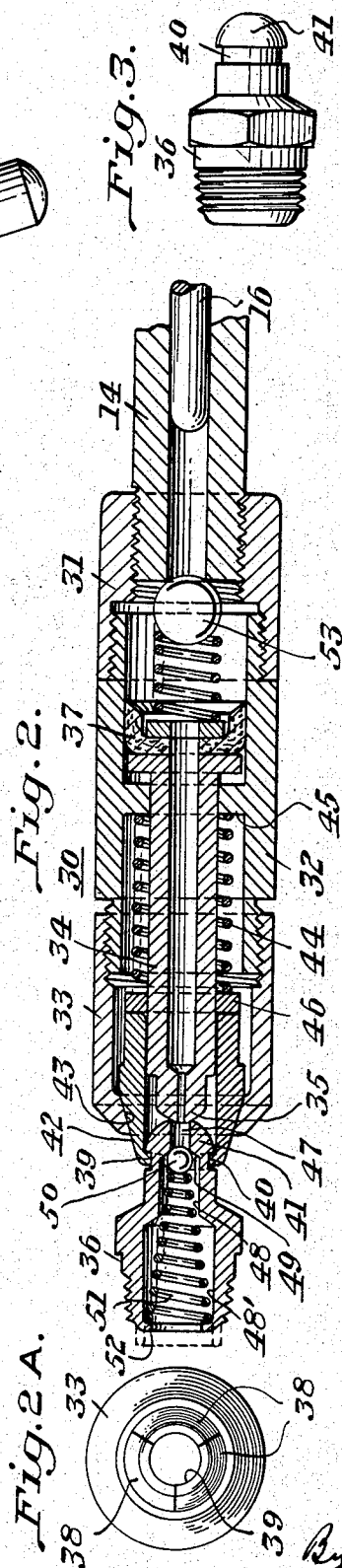
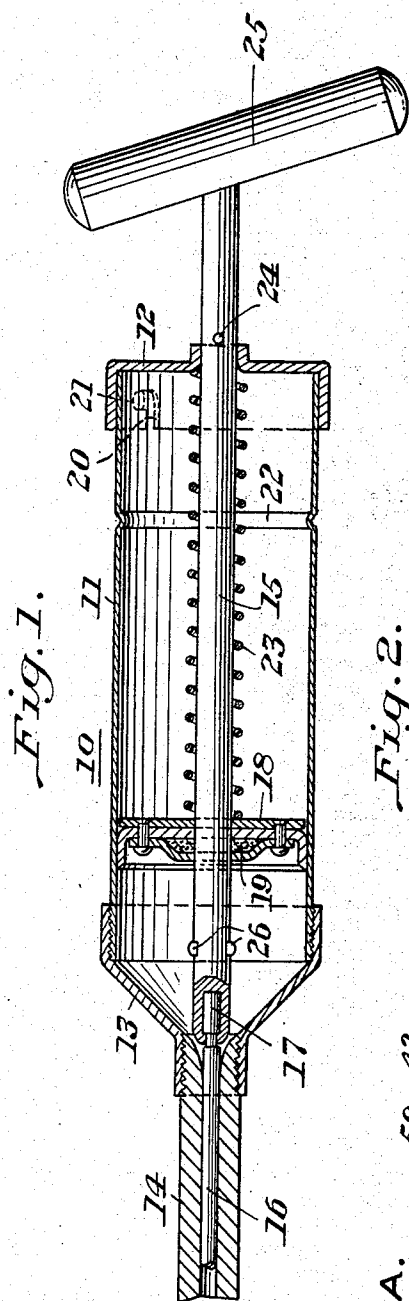
June 8, 1937.

G. S. ROGERS
LUBRICATING DEVICE

2,083,035

Filed Nov. 14, 1934

2 Sheets-Sheet 1



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2 Sheets-Sheet 2

Fig. 6.

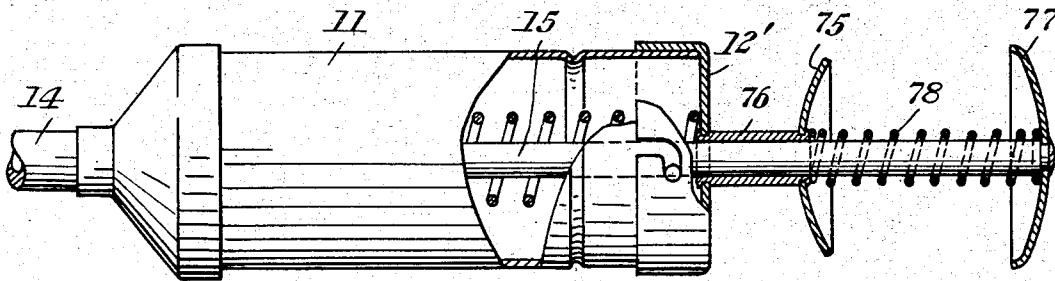


Fig. 7.

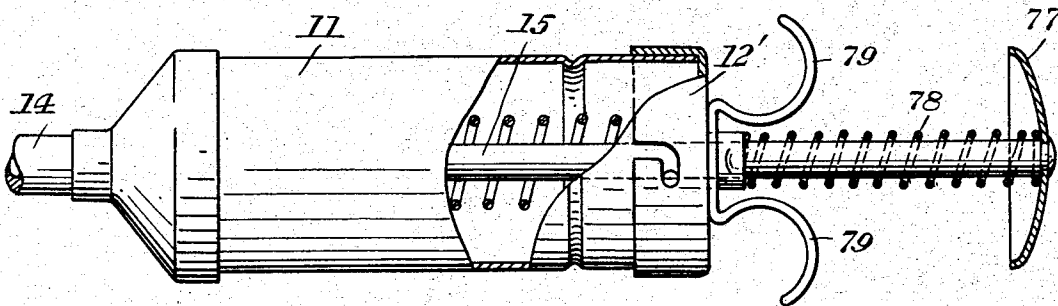


Fig. 8.

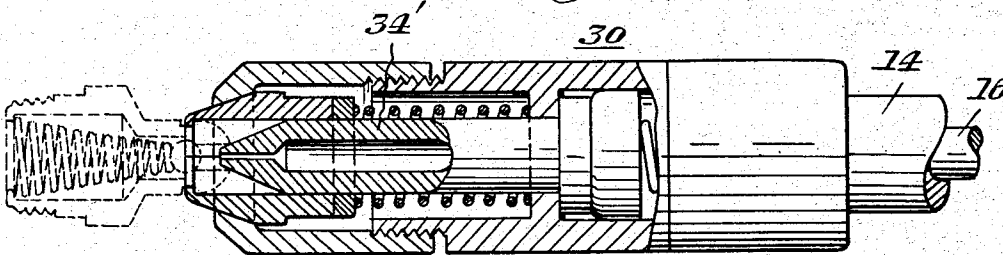
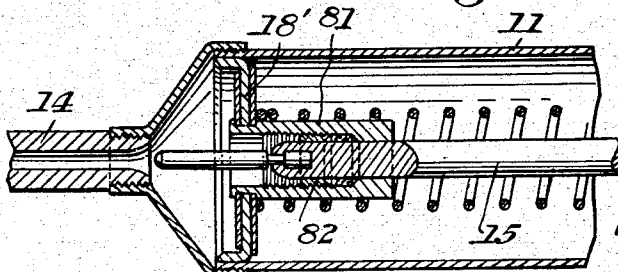


Fig. 9.



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2,083,035

LUBRICATING DEVICE

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Application November 14, 1934, Serial No. 752,951

7 Claims. (Cl. 285—169)

My invention relates to lubricating devices and, particularly, to the combination of a dispensing gun, a fitting or grease cup adapted to receive lubricant from the gun, and an adapter on the gun for engaging the fitting and making a fluid-tight joint therewith.

The object of the invention is to provide a lubricating device which can be manufactured at a relatively small cost and which, at the same time, will be capable of dispensing under relatively high pressure. A further object of the invention is to provide means for readily connecting and disconnecting the adapter on the gun to the fitting to be supplied with lubricant, and locking the joint mechanically during the dispensing operation. Another object of the invention is to provide a dispensing gun which can easily be filled with lubricant, an adapter designed to make locking engagement with the fitting, and a fitting provided with a suitable closure and means for preventing the closure from being forced out of the fitting by the pressure of the lubricant supplied thereto.

For a complete understanding of the invention, reference is made to the accompanying drawings illustrating a present preferred embodiment of the invention with certain modifications thereof. In the drawings:

Figure 1 is a longitudinal section of a dispensing gun;

Figure 2 is a longitudinal section of the adapter with which the gun is provided, and a fitting in engagement with the adapter;

Figure 2A is an end elevation of the adapter with the fitting removed therefrom;

Figure 3 is an elevation of the fitting;

Figure 4 is a sectional view similar to Figure 2 showing a modified form of fitting;

Figure 5 is a view showing a so-called "drive-on" fitting;

Figure 6 is a side elevation partly in section showing a modified form of dispensing device;

Figure 7 is a similar view showing a further modification;

Figure 8 is a view similar to Figure 2 showing a further modification; and

Figure 9 is a partial view similar to Figure 1 showing a modification of a portion of the apparatus.

Referring now in detail to the drawings and, for the present, to Figure 1, the gun indicated generally at 10 comprises a cylinder 11 and a quick detachable base 12 at one end thereof and a conical head 13 threaded on the other end. A tube 14 is threaded into the head 13.

A rod 15 extends through the base 12. A plunger or ram 16 swiveled to the inner end of the rod 15 at 17 reciprocates in the tube 14. A piston 18 is slidable on the rod 15 and is provided with packing 19 forming a tight joint therewith.

The base 12 has a quick detachable connection with the cylinder 11, such as a bayonet joint 20. Projections 21 may conveniently be pressed out of the cylinder wall to cooperate with the slots in the base 12. A stop ring 22 is pressed internally of the cylinder wall to provide retraction of the piston 18 therebeyond. A spring 23 normally urges the piston toward the conical head 13.

The gun is filled by removing the conical head 13 and the base 12 from the cylinder 11. A stop pin 24 limits the rearward movement of the head 12 on the rod 15 to prevent injury to the user's hand when gripping the handle 25. The threaded end of the cylinder 11 is inserted in a supply of lubricant and the piston 18 is then retracted by pulling back on the handle 25. Lugs 26 pressed out of the rod engage the piston and move it rearwardly on retraction of the rod 15. Lubricant enters the cylinder on rearward movement of the piston therein and, when the cylinder is full, the conical head 13 is replaced. The base 12 is then attached to the cylinder, the spring 23 being compressed by this operation, and placing the charge of lubricant in the cylinder under pressure. The rod 15 may then be thrust forward until the plunger 16 enters the tube 14, as shown. Manual reciprocation of the rod 15 will now cause lubricant to be discharged from the tube 14. As the rod 15 is withdrawn, the plunger 16 leaves the tube 14, whereupon lubricant is forced into the tube under the pressure exerted by the spring 23 on the piston 18. When the rod 15 is then thrust forward, any desired pressure may be applied manually to the lubricant within the tube 14 to cause it to be discharged into any desired receptacle.

A convenient form of lubricant receptacle is shown in Figure 2, together with an adapter by which the gun of Figure 1 may readily be connected to and disconnected from the receptacle. The adapter, indicated generally at 30, may be connected directly to the tube 14 of Figure 1, or to a flexible conduit in communication therewith. The adapter comprises a coupling sleeve 31 which is threaded to receive the threaded end of the tube 14, or a threaded connection on a conduit attached to the tube 14, a barrel 32 threaded into the sleeve 31, and a sleeve 33 threaded into the barrel 32. The barrel 32 is provided with a tube

34 which is slidable therein and has a blunt contact point 35 for engagement with a fitting indicated generally at 36. The inner end of the tube 34 is provided with a cup washer 37 whereby the pressure applied on the lubricant delivered to the adapter causes the point 35 tightly to engage the fitting 36. A plurality of chucking members 38 are mounted in the end of the sleeve 33 and have inturned lips 39 adapted to enter a peripheral groove 40 formed adjacent the end of the fitting 36 back of a hemispherical head 41. The chucking members have tapering surfaces 42 which cooperate with the tapering inner wall 43 of the sleeve 33 adjacent its outer end. The members 38 are normally urged into engagement with the tapering wall 43 by a spring 44 resting on an abutment 45 formed in the bore in the barrel 32, and engaging a backing washer 46 engaging the inner ends of the chucking members 38.

The fitting 36 is adapted to be threaded into a tap hole and has an axial bore 47 which is enlarged at 48 to form a seat 49 for a closure 50. The bore is further enlarged at 48'. The closure 50 is normally maintained on its seat by a spring 51. The spring rests on an inturned lip 52 adjacent the inner end of the fitting. Initially, this lip extends outwardly, as shown in dotted lines. After the closure 50 and the spring 51 have been positioned in the bore, however, the lip 52 is turned inwardly and constitutes means positively preventing the closure and its spring from being forced through the bore by the pressure on the lubricant supplied thereto.

The adapter 30 may be connected to the fitting 36 simply by pressing the adapter over the end of the fitting. While the internal diameter of the lip 39 is normally less than the maximum diameter of the head 41, the chucking members 38 spread slightly when pressed inwardly of the sleeve 33 against the pressure of the spring 44. This permits the chucking members to snap over the head 41 so that the lips 39 enter the groove 40. If pressure is now applied to the lubricant in the adapter, by pressing forward the handle of a gun such as that of Figure 1 to which the adapter is connected, the tube 34 is driven into tight engagement with the head 41 of the fitting 36, because the pressure is exerted on the annular surface of the cup washer 37. A ball check valve 53 prevents reversal of the flow of lubricant through the adapter. As the point 35 of the tube 34 engages the head 41 of the fitting 36, the pressure on the lubricant causes a reaction tending to move the barrel 32 and sleeve 33 away from the fitting. This movement of the sleeve 33, by reason of the engagement of its tapered inner wall 43 with the tapering outer surfaces 42 of the chucking members 38, causes the latter to contract and grip the fitting tightly. The pressure on the lubricant, of course, displaces the ball closure 50 so that the lubricant fills the enlargement 48' of the bore through the fitting. When the fitting has been filled, releasing the pressure on the lubricant being dispensed, it will permit retraction of the tube 34 and remove the reactive force on the barrel 32 and the sleeve 33. This gives the chucking members 38 sufficient free movement to expand so they pass over the head 41 of the fitting 36. The operation of connecting the adapter to the fitting and of disconnecting it therefrom, is obviously very simple and can be performed very quickly. At the same time, the connection, when once made, is firmly established against accidental displacement and the greater the pressure on the lubricant, the

tighter the chucking members will hold the fitting.

A modified form of fitting is shown in Figure 4. This fitting differs from that of Figures 2 and 3 in that a closure seat 60 is formed between the enlargements 48 and 48' of the bore 47. A closure 61 is held against the seat by a spring 62 which is supported in the fitting in the same manner as the spring 51 of Figure 3.

Figure 5 illustrates a so-called "drive-on" fitting 65 having a head 66 and an undercut groove 67 similar to corresponding parts of the fittings shown in Figures 3 and 4. The fitting 65 is adapted to be forced into an opening 68 in a receptacle 69 having a closure seat 70, a closure 71, and a spring 72 arranged as shown in Figure 5. The fitting 65 thus constitutes a terminal for the receptacle 69, by which it may be supplied with fluid from a gun having thereon the adapter of Figure 2.

Figure 6 shows a dispensing gun capable of one-hand operation. The body of the gun is similar in construction to Figure 1, the only difference being that the base 12' has a gripping disc 75 secured thereto by means of a tube 76 through which the piston rod 15 slides. The end of the rod 15 is provided with a cooperating, gripping disc 77. A spring 78 between the discs tends to retract the piston rod 15 from the cylinder 11. This, of course, withdraws the plunger 16 from the tube 14. The operation of the device shown in Figure 6 obviously is effected by gripping the disc 75 with the fingers and pressing the disc 77 toward it with the palm of the hand. When a dispensing operation has been completed, the spring 78 retracts the piston rod 15 and the plunger 16. By this construction, a pressure of approximately 5000# per sq. in. may easily be applied to the lubricant to be dispensed, the operator using only one hand to manipulate the dispenser.

Figure 7 is a view similar to Figure 6 showing a gun provided with finger hooks 79 instead of the discs 75. The hooks 79 may constitute a single stamping and be attached to the base 12' in any convenient manner, for example, by a shouldered sleeve 80 adapted to have its inner end expanded over the edge of the hole in the base 12', in the same manner as shown for the tube 76 of Figure 6. The operation of the device of Figure 7, of course, is the same as that of Figure 6.

Figure 8 shows a coupler which is similar in all respects to that of Figure 2 except that the tube 34' thereof has a pointed end 35' which is adapted to enter the bore in a fitting when the coupler is connected thereto, in the manner indicated by dotted lines in Figure 8.

Figure 9 illustrates a slightly modified form of piston and packing for the piston rod. In Figure 9, the piston 18' is carried on a sleeve 81 which is bored to receive the piston rod 15. The sleeve 81 is also bored to receive packing and is internally threaded to admit a packing-compressing plug 82 to constitute a packing gland.

The advantage of the construction of Figure 9 is that it permits the piston 18' to travel to the end of the cylinder 11, thus permitting it to discharge practically all the material in the gun.

It will be apparent from the foregoing description that the invention provides a relatively inexpensive yet highly efficient lubricating system comprising a lubricant receptacle adapted to be screwed into the part or machinery to be lubricated, a dispensing gun, and an adapter by which the gun may be connected to the receptacle. The

invention is capable of delivering fluid under very high pressures, such as 10,000 lbs. per sq. in., and yet is so simple and easy to operate that it can be used satisfactorily by persons of very limited mechanical skill. Use of the device is further facilitated by the fact that one-hand operation thereof is possible.

Although I have illustrated and described herein but one preferred form of the invention, together with certain modifications thereof, it will be apparent that numerous changes in the construction disclosed herein may be made without departing from the spirit of the invention or the scope of the appended claims.

I claim:

1. An adapter for engaging a fitting end, comprising a cylindrical body with a bore therethrough, gripping jaws mounted adjacent one end of the body and movable radially thereof, a tube lying in said bore with the one end between said jaws and slidable axially thereof, an abutment extending inwardly from said body into said bore, a spring compressed between said abutment and said jaws, and means exerting radial pressure on the jaws on retraction of the body.
2. The apparatus defined by claim 1 characterized by said abutment and said jaws guiding the tube in its movement axially of said bore.
3. The apparatus defined by claim 1 characterized by a piston carried by said tube adjacent the end remote from the jaws, a ball check in the inlet end of the body, and a spring compressed between said piston and said ball check.

4. The apparatus defined by claim 1 characterized by said spring being disposed in said bore but externally of said tube.

5. The apparatus defined by claim 1 characterized by said abutment being an annular shoulder on which said tube is slidable.

6. A coupler for dispensers, adapted to engage a headed fitting and comprising a tubular body, a check-valve seat adjacent one end thereof, a plunger reciprocable therein, a washer making sealing engagement with the interior of the body, a check valve on said seat, a spring urging the washer into abutment with the plunger and said valve on its seat, gripping jaws movably carried between the plunger and the body, the contacting surfaces of the jaws and body being shaped to cause radial movement of the jaws on relative axial movement between the jaws and body, and a spring surrounding the plunger and effective normally so to position the jaws relative to the body that the jaws will be contracted.

7. A coupler for connecting dispensers to headed fittings, comprising a tubular nose piece contracted at one end, a plurality of gripping jaws disposed in said end for radial and axial movement, a plunger within said jaws, a spring on said plunger effective to urge the jaws toward said contracted end, a check-valve seat secured in the other end of said nose piece, a valve on said seat, a sealing washer abutting the end of said plunger remote from said contracted end, and a spring between said valve and washer.

GERALD S. ROGERS.