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GREASE GUN

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FIG. I.

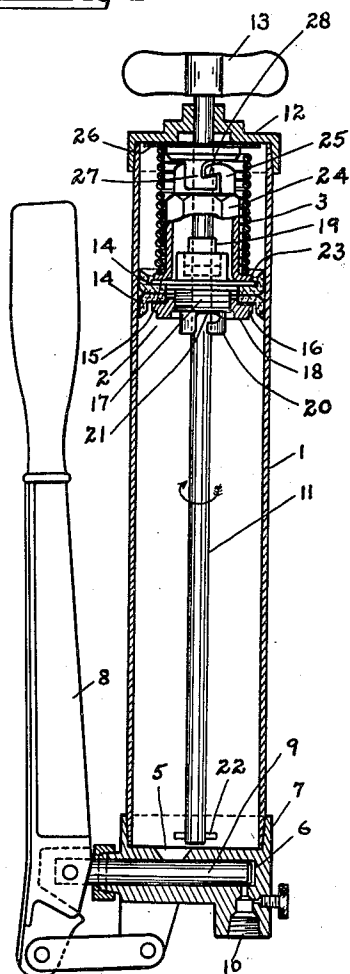
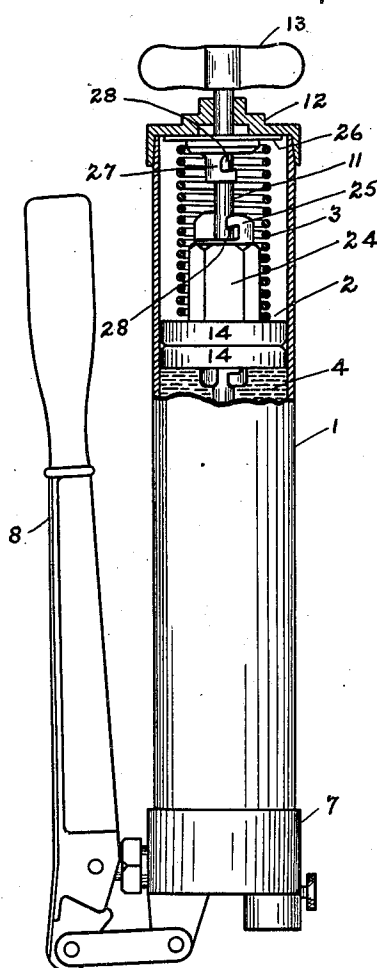


FIG. II.



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GREASE GUN

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2 Claims. (Cl. 221-47.3)

My invention relates to manually operated grease guns, to those devices, that is to say, which are used in feeding grease into bearings and other mechanical parts to be lubricated.

Essentially, such a device consists in a relatively large cylinder or barrel containing a charge of heavy lubricant. The barrel includes a plunger, backed by a spring, for forcing lubricant through an orifice into a relatively small cylinder arranged in a head at one end of the barrel. A plunger is reciprocable in said small cylinder, in response to the manipulation of a hand-lever, and lubricant is thereby forced at high pressure through an outlet from said small cylinder and into a feed line leading to the parts to be lubricated. In charging the gun, the head of the barrel is removed, and the open end of the barrel is introduced to a supply of lubricant. By means of a manually reciprocable rod, equipped with a handle externally of the barrel, the plunger is moved from the open end of the barrel inward and caused to suck in a charge of lubricant from the supply. To facilitate such manual reciprocation of the plunger, the spring which normally urges the plunger toward the discharge end of the barrel is compressed and locked in compressed position at the closed end of the barrel. Thus, the force of the spring, which normally opposes the movement of the plunger away from the charging end of the barrel, is neutralized during the charging operation. When the gun has been filled, the head is re-assembled upon the open end of the barrel, the spring is released against the plunger, and the plunger rod is disengaged from the plunger and moved into the body of lubricant in the barrel.

A device operable in the above-described manner is known in the art as a grease gun of the disappearing handle type.

More particularly, my invention consists in improvements and refinements in a disappearing handle gun, by virtue of which the spring may be more readily locked in compressed position, and by virtue of which the plunger and plunger rod may be readily engaged and disengaged in the barrel.

In the accompanying drawing Fig. I is a view in axial section of a grease gun embodying the invention, and showing the plunger spring locked in compressed position; and Fig. II is a view of the gun, partly in side elevation and partly in axial section, illustrating the spring in released position.

Referring to the drawing, the reference numeral 1 is applied to the usual barrel of the gun, 2

to the plunger which is by spring 3 urged against the charge 4 of lubricant in the barrel, 5 to the passage through which the spring-backed plunger feeds lubricant into the relatively small cylinder 6 embodied in head 7 secured in threaded union with the barrel, and 8 to the hand-lever, by means of which the plunger 9 in cylinder 6 is reciprocated, to force lubricant under high pressure through outlet 10 and into a feed line or a lubricant fitting, not shown, connected in known way to the parts to be lubricated. And the reference numeral 11 is applied to the usual plunger rod which extends with sliding fit through the closed end 12 of the barrel and is equipped with a handle 13.

The two leather cups 14, 14 (comprising in known way the lubricant-feeding plunger of the gun) are secured in face-to-face assembly between two flanges or shoulders 15 and 16. The flange 15 is formed on a threaded sleeve 17 through which the plunger rod 11 extends, and the flange 16 is formed on a nut 18 screwed tightly upon such threaded sleeve. The plunger assembly is adapted to slide upon the plunger rod, or the plunger rod is adapted to slide within the plunger assembly, and a packing-gland 19 is arranged in the upper end of sleeve 17, to prevent leakage of lubricant between the plunger and plunger rod. The means for temporarily uniting the plunger rod and the plunger during the above-mentioned charging operation consist, advantageously, in a bayonet joint. Specifically, a tubular boss 20 extends integrally downward from and in axial alignment with the threaded sleeve 17, and is provided with two opposite bayonet slots 21 (only one slot appears in Fig. I), and a cross-pin 22 is secured in the inner end of the plunger rod.

The spring 3 bears at its lower end upon an out-turned lip 23 on a cup member 24; the cup-member is arranged in inverted position, as shown, with its lip 23 bearing under spring pressure against the top of plunger 2, and the upwardly directed bottom of the cup carries a hook element 25. The helical spring 3 bears at its upper end against a flange 26, and integrated with such flange is a hook portion 27 adapted to cooperate with the hook portion 25 in a manner presently to be described. Fig. II shows the parts in normal positions of service, with the plunger 2 urged by spring pressure against the confined body 4 of lubricant. When connections have been established between outlet 10 and the parts to be lubricated, the hand-lever 8 is swung counterclockwise; the inner end of plunger 9 is thus

moved to the left (Fig. I) of the passage 5, and lubricant flows under the pressure of spring 3 into cylinder 6. Then the hand-lever is pressed inward, toward the barrel 1, and the inwardly moving plunger 9, upon closing the passage 5, forces the lubricant in cylinder 6 under exceedingly high pressure through the outlet 10 and into the parts to be lubricated. Repeated oscillation of the hand-lever is thus effective to inject lubricant in desired quantity and under high pressure into the parts to be lubricated.

When the barrel 1 is emptied of grease, the plunger 2 lies in such position that the edge of cylindrical boss 20 abuts upon the cross-pin 22 projecting from opposite sides of the plunger rod 11. Preparatory to charging the gun, the plunger rod is, by means of handle 13, slowly turned until the cross-pin 22 enters and locks in the bayonet grooves 21 of the boss 20. Thus, the plunger 2 is secured to the inner end of the plunger rod. Next, the plunger rod is forcefully drawn outward of the barrel, carrying the plunger 2 upward, and compressing the spring 3. In such way the hook portion 25 on the cup member 24 is moved to the top of the barrel 1. Then the plunger rod 11, while the spring is held in compression, is slowly rotated, in the direction of the arrow in Fig. I. By virtue of the engagement of pin 22 with the slots 21, the plunger 2 turns as one with the rod 11, and, due to the frictional engagement of the cup's rim 23 with the plunger, the cup member 24 rotates in unison with the united plunger 2 and rod 11. During such common rotation of the united parts, the hook portion 25 is by "feel" latched within the hook portion 27. Thus, the two members 26 and 24, normally movable relatively to one another axially of the plunger rod, are interengaged in such manner that they cannot move apart, and the spring 3 is held compressed between them. The hook-elements 25 and 27 on the members 24 and 26, respectively, comprise a rotary lock, a lock in which the locking members are engaged and disengaged by relative rotation. It will be noted that the engaging faces 28 of the two hook-elements 25 and 27 are inclined to the line of thrust of the spring (that is, the thrust tending to separate the members 24 and 26) in such manner that the thrust of the spring aids rather than hinders the temporary union of the two hook portions.

When the spring has been thus locked in compressed condition, the plunger and plunger rod may be readily shifted, resisted only by the friction of the rod 11 with head 12 and of plunger 2 with the side wall of the barrel 1. The plunger rod is moved inward, shifting the plunger to the lower end of the barrel; the head 7 is unscrewed and removed, and the uncovered end of the barrel is nosed into a supply body of lubricant; next, the plunger is drawn upward, sucking into the barrel a charge of lubricant from the supply body; and then the head 7 is reassembled on the barrel. After the head 7 is secured in such assembly,

tension and rotative stress are applied to the plunger rod, in such manner that the hook portion 25 is disengaged from hook portion 27. Thereupon, upon relieving the manually applied tension on the plunger rod, the spring 3 moves the plunger 2 downward, against the body (4) of lubricant in the barrel, as indicated in Fig. II. The next operation consists in turning the plunger rod and thrusting it downward or inward, so that the pin 22 is disengaged from the bayonet slots 21. When such disengagement has been effected, the inward movement of the plunger rod is continued (the plunger rod sliding within the piston 2 which lies substantially stationary against the body 4 of lubricant), until the handle 13 lies in the position indicated. Thus, the grease gun is fully charged and ready for service in the manner already described.

I claim as my invention:

1. In a grease gun of the disappearing handle type including a barrel adapted to receive a charge of lubricant, a plunger rod reciprocable in said barrel, a plunger adapted to slide on said rod in said barrel, a relatively small cylinder, a passage from said barrel to said cylinder, a spring cooperating with said plunger in feeding lubricant from said barrel, through said passage, and into said cylinder, an outlet from said cylinder, and means for ejecting lubricant under high pressure through said outlet, the combination of a bayonet joint for uniting said plunger rod with said plunger, two members relatively movable on the axis of said barrel, said spring being compressed between said members, said members severally including latch elements adapted to be interengaged for locking said members together with said spring compressed between, whereby, during the loading of the gun, said united plunger and plunger rod may be shifted in opposite directions without spring resistance.

2. In a grease gun of the disappearing handle type including a barrel, a plunger rod, a plunger adapted to slide on said rod within said barrel, a compression spring normally effective on said plunger, means for temporarily uniting said plunger with said rod for common linear movement and rotation in opposite directions, means including two members arranged on opposite ends of said spring and movable relatively to one another axially of said plunger rod for compressing the spring, a rotary lock within said barrel for uniting said members when said spring is compressed, said rotary lock comprising a locking element on each of said members, one of said members being adapted to be engaged by said plunger and being rotatable in alternate directions with the plunger, when said plunger rod is united with the plunger, for alternately locking and unlocking said elements, said plunger rod being movable axially of the united spring-compressing members.

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