Oct. 17, 1950 C. C. S. LE CLAIR 2,526,374

GREASE GUN WITH COAXIAL FOLLOWER AND IMPELLER

Filed Oct. 8, 1947 2 Sheets-Sheet 1

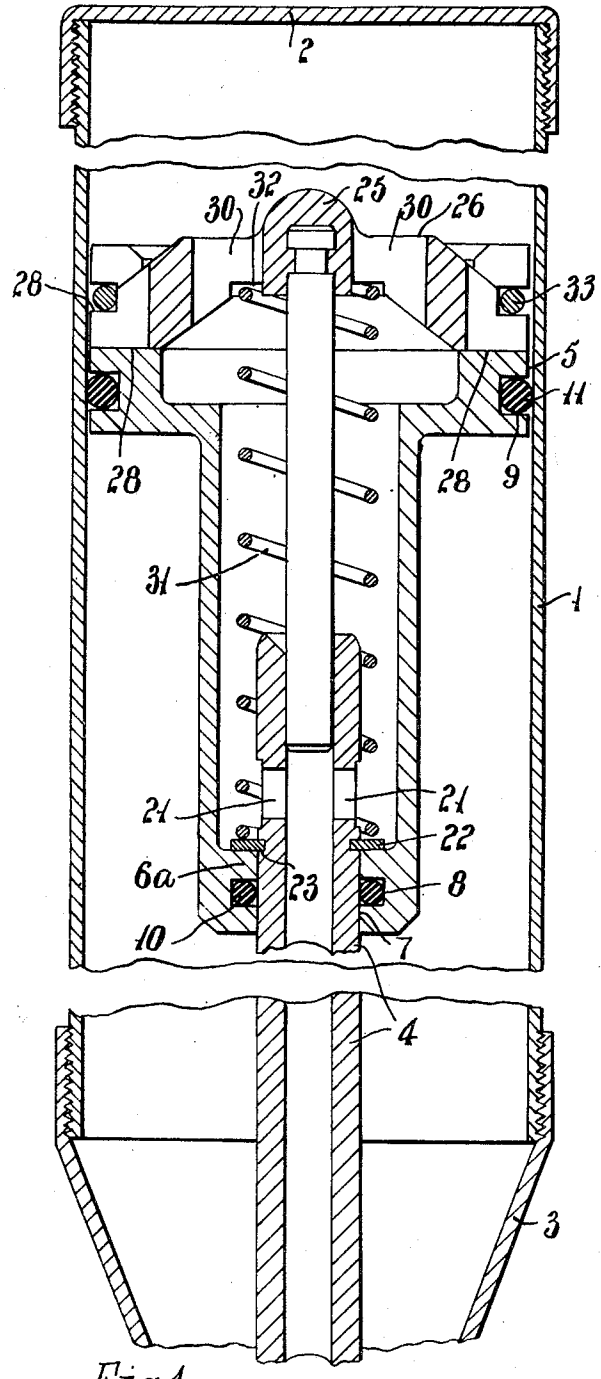


Fig. 1.

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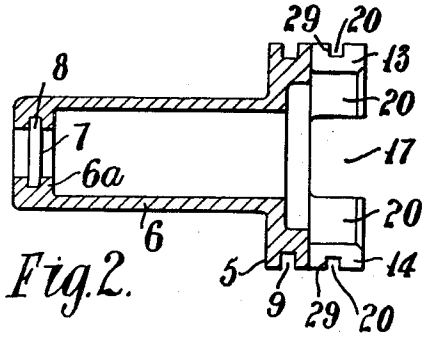


Fig. 2.

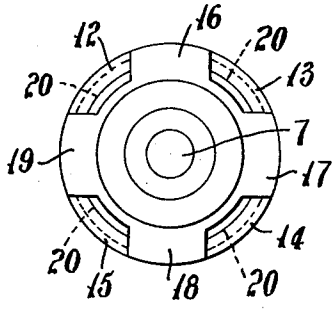


Fig. 4.

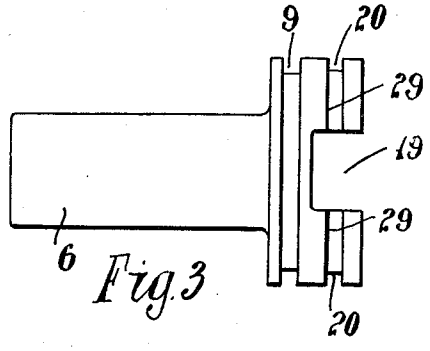


Fig. 3

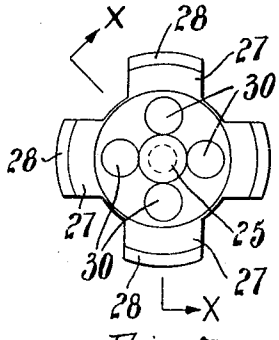


Fig. 5.

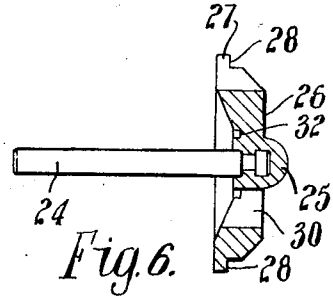


Fig. 6.

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2,526,374

GREASE GUN WITH COAXIAL FOLLOWER AND IMPELLER

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In Great Britain November 13, 1946

5 Claims. (Cl. 222—259)

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This invention relates in general to grease gun with coaxial follower and impeller.

In particular, the present invention relates to grease guns or compressors (hereinafter called "grease guns") of the type described with reference to Figure 3 of the specification of United Kingdom Patent No. 241,564.

The object of the present invention is to improve the construction of the grease gun which is described in the aforesaid specification.

For use in a grease gun of the type referred to, the present invention comprises a combined low pressure and high pressure piston assembly, which comprises a piston part, which may be die-cast and which is adapted to slide in the low pressure cylinder or barrel of the grease gun, an integral sleeve part which is constructed to form a guide for the high pressure cylinder, a separate cap member, which may also be die-cast, a high pressure piston or plunger, the rear end of which is attached to the cap member as by die-casting, cooperating means for locating the cap member in position on the piston part, and separate readily-attachable and detachable means for detachably attaching the piston part and the cap member.

The assembly may also include the high pressure cylinder. The front end of the sleeve member may be flanged to provide a guide for the high pressure cylinder, the rear end part of which is always enclosed in the sleeve member. One or more grease inlet ports is, or are, formed in the rear end part and is, or are, so disposed therein that the port or ports communicate with the interior of the sleeve member, the opening and closing of the port, or ports, being controlled by the high pressure piston or plunger.

In one construction, the supply of grease to the interior of the sleeve member from the grease-containing space in the low pressure cylinder or barrel is made through a port, or ports, formed in the cap member. In the same construction, spring means constantly urge the high pressure cylinder forwardly away from the cap member, and means are provided for limiting the forward movement of the high pressure cylinder so that, in contradistinction to the prior gun, the high pressure piston or plunger never vacates the bore of the high pressure cylinder.

Also in the same construction the cooperating means for locating the cap member in position on the piston part comprise a number of gaps or recesses formed in the piston part between a number of castellations thereon, and a number of lugs on the cap member which are fitted in

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the gaps or recesses, and the said readily attachable and detachable means for detachably attaching the piston part and the cap member consists of a retaining C-ring or the equivalent which is fitted between abutments on the piston part and opposing abutments on the cap member.

The cup leather sealing member of the low pressure piston of the prior grease gun previously referred to is replaced by a flexible annular packing or sealing ring which is fitted in an annular groove in the piston part, and a similar flexible packing or sealing ring is used in the flanged front end of the sleeve member for preventing leakage of grease out of the sleeve member along the high pressure cylinder.

One constructional form of the present invention, applied to a manually operated grease gun of the type referred to, is also shown on the accompanying drawings, whereon:

Figure 1 is a longitudinal section of the assembly of the low pressure piston, the high pressure piston or plunger and the high pressure cylinder;

Figure 2 is a longitudinal section of the piston part and sleeve member of the low pressure piston;

Figure 3 is an outside elevation of the piston part and sleeve member of the low pressure piston;

Figure 4 is an end view of the piston part and sleeve member of the low pressure piston;

Figure 5 is an end view of the cap member of the low pressure piston; and

Figure 6 is a section on the line X—X in Figure 5.

As in the prior construction, the hand-operated grease gun illustrated here comprises a grease reservoir barrel or cylinder 1, the rear end of which is closed by a screw-on cap 2. The opposite or front end of the cylinder is closed by a conical mouthpiece 3, which is shaped and apertured centrally so as to provide a guide for the slidable high pressure cylinder 4 which will be described hereinafter.

The grease reservoir barrel or cylinder 1 encloses a hollow low pressure piston member which is pressure die-cast (in zinc alloy, for example) and comprises a piston part 5 which is slidable in the barrel or cylinder and a sleeve part 6 of reduced diameter which is integral therewith. At its end remote from the piston part the sleeve part is flanged inwardly at 6a so as to provide an axial bore 7 in which the high pressure cylinder 4 is slidable. The flange 6a of the sleeve part and the piston part 5 are formed respec-

tively with annular grooves 8 and 9 for the reception of sealing members 10 and 11, as described hereinafter. The annular groove 9 in the piston part, which faces outwardly is die-cast, but the annular groove 8 in the flange 6a, which faces inwardly, is machined, this being the only part of the piston member which is machined.

The piston part 5 is also formed with four equidistantly-spaced castellations 12, 13, 14 and 15 separated by four gaps 16, 17, 18 and 19. Each of the castellations is formed with a circumferential groove 20 and all four grooves are in alignment with each other.

The hollow high pressure cylinder 4 is formed with transverse grease inlet ports 21, which, when the cylinder is in its working position, are disposed within the sleeve part 6 at the back of the flanged end 6a of the latter. Close to, and at the rear of, the ports the high pressure cylinder is provided with a shoulder which, in a preferred form, consists of a collar 22 fixed in an annular groove 23 in the cylinder. It has been found convenient to make the collar originally in frustro-conical form, then to force it on to the cylinder and finally to flatten it into the said groove.

The rear end of the grease-ejecting, or high pressure plunger 24, which is constructed to slide in the bore of the high pressure cylinder 4, is die cast into a boss 25 provided centrally in a die-cast cap member 26 formed with four equidistantly-spaced lugs 27 which are of such a width that they will fit within the gaps 16, 17, 18 and 19 between the four castellations 12, 13, 14 and 15 in the piston part of the low pressure piston member 5. The back faces 28 of these four lugs upon the cap member constitute four rectangular shoulders which, when the lugs on the cap member are fitted in the gaps and are in contact with the bottoms thereof, are flush with the front faces 29 of the grooves 20 in the castellations.

Around the boss 25 of the cap member in which the end of the plunger 24 is die-cast, the cap member is formed with a number of ports 30 through which the grease can make its way from the space between the low pressure piston and the rear cap on the grease gun barrel or cylinder into the interior of the sleeve part 6 of the piston.

As is well known in the art, the outlet end of the high pressure cylinder 4 is fitted with a non-return discharge valve and with a nozzle, which is adapted to form grease-tight engagement with nipples or other lubricant-receiving devices.

The parts described above are assembled as follows:

A circular section or O sealing ring 11, which is made of rubber or synthetic rubber, is inserted into the annular groove 9 in the piston part 5 of the low pressure piston and a similar ring 10 is inserted into the groove 8 formed in the flanged end 6a of the sleeve part 6 of the piston member, the depth of both these grooves being slightly less than the thickness of their respective rings.

The piston member is then slid on to the high pressure cylinder 4, until the rear face of the flanged end 6a of the sleeve part 6 engages against the collar 22 fitted in the groove 23 in the high pressure cylinder.

A coil spring 31 is then fitted in the piston member so that its front end rests upon the collar 22. The plunger 24, with the cap member 26 attached to it, is inserted into the piston member until its forward end is engaged in the bore of the high pressure cylinder 4, the rear end of the

coil spring fitting into a recess 32 formed in the front face of the cap member around the central boss 25 thereof. The lugs 28 on the cap member are fitted in the gaps 16, 17, 18 and 19 between the castellations 12, 13, 14 and 15 on the piston part 5 of the piston member. The cap is then pressed inwardly against the pressure of the coil spring 31 until the lugs 28 abut against the bottoms of the gaps between the castellations. A retaining C-ring 33 (of steel wire, for example) is then sprung into the annular grooves 20 in the castellations of the piston part and at the back of the shoulders 28 on the cap member 26, thus holding the cap member firmly in position upon the piston member.

The operation of the gun is substantially the same as that of the prior gun briefly described above, but it should be noted that in the present invention the plunger 24 is never completely withdrawn from the high pressure cylinder 4 at the end of its suction stroke in order to form an inlet port for the grease, as in the prior gun, but grease is drawn into the high pressure cylinder through the transverse ports 21 in the wall thereof.

I claim:

1. In a grease gun of the type described having a low pressure barrel and a high pressure cylinder, a combined low pressure and high pressure piston assembly comprising in combination, a piston part adapted to slide in the low pressure barrel of the grease gun, a hollow sleeve part integral with said piston part, means in said sleeve part forming a guide for the high pressure cylinder, the latter being slidable in said means, a separate cap member, a high pressure piston fixedly secured to said cap member, cooperating means on said piston part and said cap member for locating said cap member in its operative position on said piston part, and separate means operatively associated with said piston part and said cap member and readily attachable to and detachable from said piston part and said cap member for detachably securing said piston part and said cap member together.

2. In a grease gun of the type described having a low pressure barrel and a high pressure cylinder, a combined low pressure and high pressure piston assembly comprising in combination, a piston part adapted to slide in the low pressure barrel of the grease gun, a hollow sleeve part integral with said piston part, means in said sleeve part forming a guide for the high pressure cylinder, the latter being slidable in said means, a separate cap member, a high pressure piston fixedly secured to said cap member, said piston part having a plurality of castellations formed thereon with recesses therebetween, said cap member having a plurality of lugs adapted to be seated in said recesses to locate said cap member in its operative position on said piston part, and separate means operatively associated with said piston part and said cap member and readily attachable to and detachable from said piston part and said cap member for detachably securing said piston part and said cap member together.

3. In a grease gun of the type described having a low pressure barrel and a high pressure cylinder, a combined low pressure and high pressure piston assembly comprising in combination, a piston part adapted to slide in the low pressure barrel of the grease gun, a hollow sleeve part integral with said piston part, means in

said sleeve part forming a guide for the high pressure cylinder, the latter being slidable in said means, a separate cap member, a high pressure piston fixedly secured to said cap member, said piston part having a plurality of castellations formed thereon with recesses therebetween, said cap member having a plurality of lugs adapted to be seated in said recesses to locate said cap member in its operative position on said piston part, opposing abutments formed on said piston part and on said cap member, and means engageable with said opposing abutments for detachably securing said piston part and said cap member together.

4. In a grease gun of the type described having a low pressure barrel and a high pressure cylinder, a combined low pressure and high pressure piston assembly comprising in combination, a piston part adapted to slide in the low pressure barrel of the grease gun, a hollow sleeve part integral with said piston part, means in said sleeve part forming a guide for the high pressure cylinder, the latter being slidable in said means, a separate cap member, a high pressure piston fixedly secured to said cap member, said piston part having a plurality of castellations formed thereon with recesses therebetween, said cap member having a plurality of lugs adapted to be seated in said recesses to locate said cap member in its operative position on said piston part, opposing abutments formed on said piston part and on said cap member, and a retaining C-ring detachably engageable with said abutments for detachably securing said piston part and said cap member together.

5. In a grease gun of the type described having a low pressure barrel and a high pressure cylinder, a combined low pressure and high pressure piston assembly comprising in combination, a piston part adapted to slide in the low pressure barrel of the grease gun, a hollow sleeve part integral with said piston part, means in said sleeve part forming a guide for the high pressure cylinder, the latter being slidable in said means, a separate cap member, a high pressure piston fixedly secured to said cap member, said piston part having a plurality of castellations formed thereon with recesses therebetween, said cap member having a plurality of lugs adapted to be seated in said recesses to locate said cap member in its operative position on said piston part, aligned grooves formed in said castellations, an abutment shoulder on each of said lugs adapted to be aligned with said grooves when said cap member is in its operative position, and a retaining C-ring detachably positioned in said grooves for detachably securing said piston part and said cap member together.

CAMILLE CLARE SPRANKLING LE CLAIR.

REFERENCES CITED

The following references are of record in the file of this patent:

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Number	Name	Date
1,587,292	Fesler	June 1, 1926

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Number	Country	Date
241,564	Great Britain	Feb. 18, 1926