

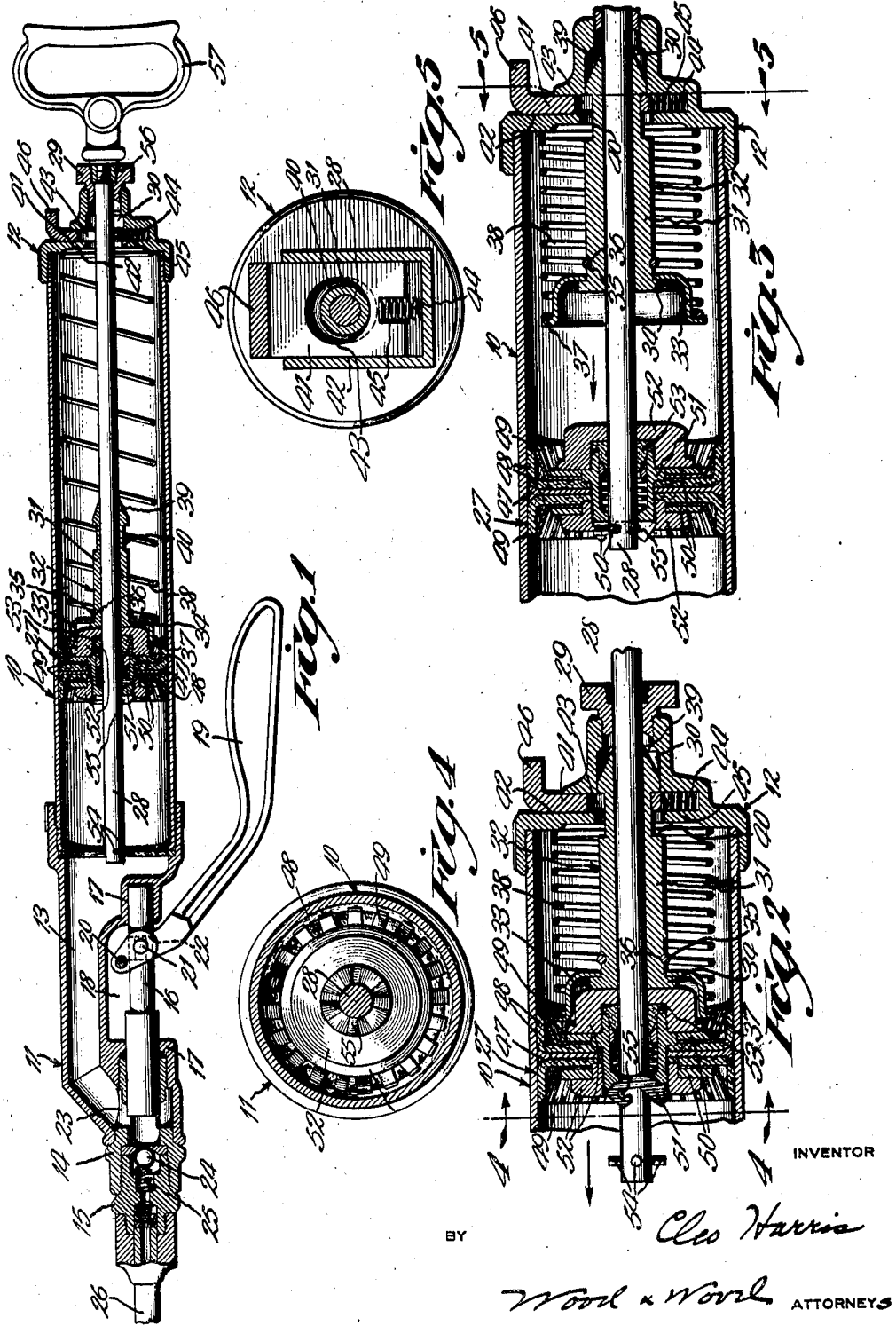
July 3, 1934.

C. HARRIS

1,965,547

GREASE GUN

Filed Sept. 13, 1933



UNITED STATES PATENT OFFICE

1,965,547

GREASE GUN

Cleo Harris, Cincinnati, Ohio, assignor to The Cincinnati Ball Crank Company, Cincinnati, Ohio, a corporation of Ohio

Application September 13, 1933, Serial No. 689,295

2 Claims. (Cl. 221—47.3)

This invention relates to lubricating devices of the character known to the trade as hand-operated pressure grease guns, which guns are used for servicing lubricating fittings and the like. These small portable hand-operated grease supply guns generally include a barrel or cylinder which contains the supply of grease and a discharge nozzle and grease ejecting mechanism at the forward or muzzle end of the barrel to which the grease is moved by means contained in the barrel.

The conventional grease feeding means used is in the form of a piston which is spring-urged forwardly for normally constantly urging or packing the grease forwardly into the environment of the pressure ejecting means at the muzzle end. This piston is also used for loading the barrel or cylinder of the gun.

The conventional structure includes a removable forward end or muzzle so that the barrel can have its forward end plunged into the supply of grease and the grease drawn into the gun by retracting the piston against the action of the spring. The retraction of the piston has been accomplished by means of a rod extended from the piston and through the rear end or closure cap of the gun, this rod having a handle or grip for operation thereof. Also, as shown in applicant's patent application Serial No. 644,844 filed November 29, 1932, a latch has been provided at the rear of the gun, cooperating with the piston for holding the same drawn back against the spring with the spring compressed while the gun is reassembled and the piston rod shoved forwardly and fixed in position of use.

The present invention occurs because of the difficulty encountered in loading the gun and in operating and controlling the piston during the loading of the gun because of the constant influence of the spring on the piston. Therefore, it is the object of this invention to provide a mechanism associated with the piston or follower plate in a grease supply cylinder or reservoir, which enables the operator to latch the spring in compressed position, thereby taking its influence off the piston and permitting the piston to be operated independently of the spring, this apparatus incorporating conveniently manipulated release means for permitting normal action of the spring. With the influence of the spring taken off the piston, it is quite possible to reciprocate the piston easily and freely when grease is being sucked into the reservoir during loading. Moreover, the grease forcing pressure can be taken off the grease when the gun is not in use.

It is a further object of this invention to provide in combination with the spring a controlling

apparatus which permits the operator to selectively attach the piston rod to the piston or follower plate for reciprocation or retraction thereof or to disconnect the piston rod from the piston as for permitting the replacement of the piston rod in its normal position when the gun is in service condition.

Other objects and further advantages will be more fully set forth in a description of the accompanying drawing, in which:

Figure 1 is a longitudinal sectional view of the gun generally illustrating the interior thereof.

Figure 2 is a fragmentary enlarged view of the rear end of the gun and of the follower plate, piston rod and spring latching means, showing the spring in latched position with the piston fully drawn back and the piston rod disconnected for return to its normal operating position.

Figure 3 is a view taken similar to Figure 2 but showing the piston moved away independently of and without the influence of the spring.

Figure 4 is a sectional view taken on line 4—4, Figure 2.

Figure 5 is a sectional view taken on line 5—5, Figure 3, further detailing the catch means for the spring latching mechanism.

The gun to which the present improvement is applied for purposes of illustration and adaptation includes a barrel or cylinder for grease, a high pressure unit or forward head screwed onto the forward end of the barrel including a nozzle and high pressure means, and a rear closure cap. It will be apparent that the improved controlling mechanism for the piston or follower plate actuating spring can be applied to any grease gun incorporating a supply barrel in which the grease is fed forwardly by means of a piston or follower plate. However, as a typical environment for the present improvements, the form of grease gun described and claimed in my copending application Serial No. 657,563, filed February 20, 1933 is disclosed.

Referring specifically to the drawing, the supply barrel or cylinder is indicated at 10, the forward head or high pressure unit at 11, and the rear closure cap at 12. The forward head or high pressure unit comprises a casing element 13 screwed onto the forward end of the barrel and having its casing portion communicating directly with the interior of the barrel. A high pressure cylinder 14 is screwed into the forward end of this casing having its axis slightly offset from the axis of the gun barrel. A discharge outlet or nozzle 15 is screwed into the high pressure cylinder. A high pressure piston 16 is mounted for

reciprocation in said cylinder and is extended across between the bearing portions 17, 17, of the casing element, the intermediate portion of the piston being exteriorly disposed across a depressed portion 18 of the casing.

A hand-operated lever 19 is pivoted on a cross pin 20 fixed in the depressed portion of the casing and includes a floating connection to the piston through the medium of diametrically aligned pins 21 extending from the piston and loosely entering an annular groove 22 in the piston. The lever has a grip portion extended laterally and rearwardly of the gun barrel whereby it can be conveniently grasped for reciprocating the piston.

The grease enters the high pressure cylinder 14 through radial openings 23, these openings permitting flow of grease into the bore of the cylinder when the piston is retracted. A valve 24 is included in the nozzle, being normally seated by means of a spring 25, this valve opening to the discharge strokes of the piston and closing to the cylinder filling or retractive strokes thereof.

A discharge tube 26 is connected to the nozzle 15. This tube may be of the rigid or lance type or of flexible rubber hose construction.

The follower plate or piston 27 is mounted in the cylinder for reciprocation therein and the piston rod 28 is supported through the piston or follower plate and in a bushing 29 in the closure plate or cap 12. The closure cap includes a bore 30 which is considerably larger than the diameter of the piston rod and which affords sufficient clearance for receiving the hub or sleeve 31 of the spring latching or retaining element 32 for catch or latch purposes. The spring retainer or latch 32, for purposes of construction, is fabricated of two major parts. The sleeve element 31 of considerable length is slidably mounted on the piston rod and a flanged disc or cup-shaped element 33 is engaged on the forward end of the sleeve lying against a head 34 formed on the sleeve and maintained in position thereon by means of a split ring 35 engaged in an annular groove 36 in the periphery of the sleeve.

The cup-shaped element includes an outwardly turned flange 37 and the coil spring 38 under compression is disposed between this flange and the inner face of the rear closure cap. The abutment between the spring-urged retainer element occurs between the headed forward end 34 thereof and the rear face of the follower plate or more specifically the hub thereof.

The sleeve 31 of the spring retainer includes a tapered rear end 39 tapering to a feather edge and a wide annular groove 40 just beyond the tapered end.

A catch plate 41 is mounted in the closure cap within a slot 42 thereof transverse to the axis of the gun and piston rod. This catch plate includes an aperture 43 of slightly greater diameter than the outside diameter of the spring retainer hub or sleeve and adapted to be traversed thereby. One end of the slot containing the plate is closed and a small coil spring 44 under compression is placed between the bottom of the slot and the bottom of a notch 45 in the lower edge of the plate for normally urging the plate outwardly in the slot.

Since the aperture in the plate is traversed by the piston rod as well as the hub or sleeve of the spring retainer, undue outward displacement of the catch plate is impossible since the plate when not engaged by the spring retainer, will be urged against one side of the piston rod. However, as the piston rod is drawn rearwardly carrying the

piston therewith, the piston engaging the spring retainer, the spring will be compressed and the sleeve or hub of the retainer will enter the aperture of the plate, the tapered end forcing the plate downwardly into its slot, the catch plate riding up over the tapered end and dropping into the annular groove under the influence of its spring 44. When this occurs the spring retainer is latched in retracted position with the spring compressed and it is then possible to move the piston rod and piston at will without working against the spring.

The catch plate includes a flanged end 46 exteriorly disposed for purposes of manipulation for releasing the catch, this release occurring when the circular aperture of the plate is aligned with the axis of the piston rod through lateral movement.

The piston or follower plate is fabricated as follows: A washer 47 centrally disposed has oppositely extended cup gaskets 48 lying against its respective faces. A spring plate 49 is engaged against each gasket including spring flanges, holding the gaskets tightly against the cylinder bore. Washers 50 lie against the respective spring plates. This assembly is maintained by means of a central sleeve or core 51 having screw-threads on its respective ends and nuts 52 screwed on the central sleeve and drawn together tightly for clamping the aforesaid elements together, these nuts forming the hub of the piston. Suitable packing 53 is incorporated surrounding the piston rod for preventing leakage of grease past the piston by way of the piston rod peripheral surface.

The piston rod is detachably connected to the piston. To this end radially projected diametrically aligned pins 54 are provided in the extreme inner end of the piston rod. These pins cooperate with bayonet slots 55 in the forward end of the connecting sleeve of the piston or generally described in the piston. In this case four pins are disclosed cooperating with four bayonet slots, it being apparent that the number of pins and slots used is arbitrary.

Now, as shown in Figures 2 and 3, it is possible, by drawing the piston spring latch or retainer rearwardly by retraction of the piston rod, to latch the spring in compressed position and then to shove the piston forwardly entirely free of the influence of the spring, the piston being carried with the rod when the bayonet slots and pins are in registry. Thus it is possible to move the piston back and forth by means of the piston rod during the loading operation without the restraint of the spring.

After the gun has been loaded the operator can by rotating the piston rod, disconnect the piston rod from the piston and move the piston rod through the piston and latch retaining element to its normal position. At this normal position the piston rod is fixed in relation to the gun by screwing the shouldered rear end 56 thereof adjacent the brace or butt 57 thereof into a screw-threaded bore of the bushing 29. At this position the brace or butt is then in place for use. The operator places his shoulder against the butt and the gun is thereby firmly held against the fitting in cases when a rigid discharge tube is used engaging the butt type fitting.

When the gun is to be used, the catch plate is tripped and the spring is then effective against the piston for normal operation.

Having described my invention, I claim:

1. A grease gun, comprising, a grease reservoir
 cylinder having a discharge nozzle at one end
 and a closure cap fixed on the other end, a piston
 in said cylinder, a piston rod, a pin and bayonet
 5 slot connection for detachably fixing said rod to
 said piston, a spring retaining sleeve slidably
 disposed on said rod, a coil spring under com-
 pression between said spring retaining sleeve and
 10 said closure cap urging said spring retaining
 sleeve toward and against the piston, and a latch
 contained in the rear closure cap cooperating
 with said spring retaining sleeve for latching the
 15 spring retaining sleeve in retracted spring com-
 pressing position whereby said piston can be
 moved entirely independently thereof.

barrel providing a grease container and having
 a nozzle at one end for the grease discharge, a
 piston disposed in said barrel, spring means for
 pressing said piston against the grease in said
 barrel, releasable means for rendering said spring
 80 ineffective without preventing free reciprocating
 movement of said piston, and a rod within said
 barrel having one end accessible exteriorly of
 the barrel for rod manipulation and the other
 85 end connecting with said piston for positively
 reciprocating the piston and readily separable
 therefrom, for allowing the rod to be pushed
 forward to normalize the same while the piston
 is in a retreat position under spring tension
 90 against the supply of grease in said barrel.

2. A grease dispensing device comprising, a

CLEO HARRIS.

20	95
25	100
30	105
35	110
40	115
45	120
50	125
55	130
60	135
65	140
70	145
75	150