F. B. KILLIAN.

GREASE GUN.

APPLICATION FILED JAN. 22, 1918.

1,391,325. Patented Sept. 20, 1921.

Fig. 1.

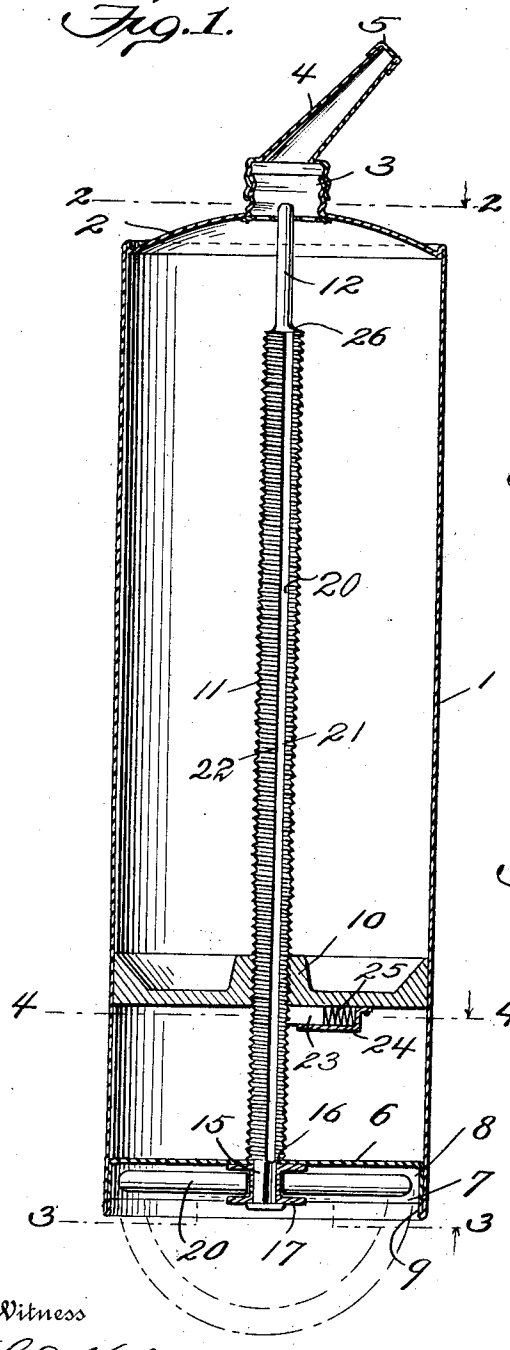


Fig. 2.

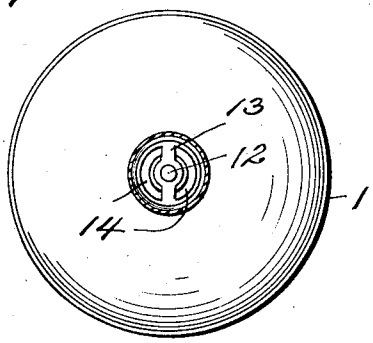


Fig. 3.

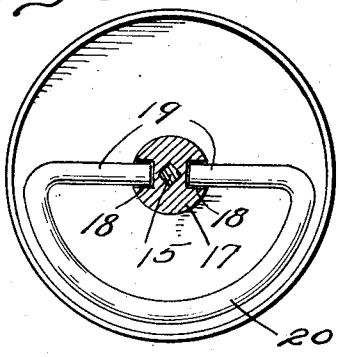
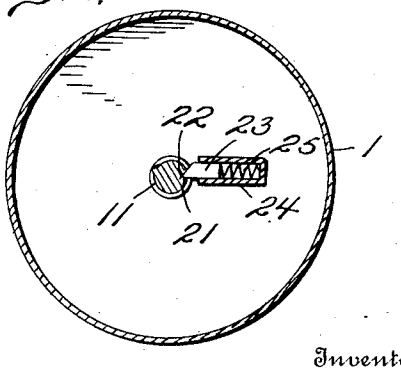


Fig. 4.



Witness

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GREASE-GUN.

1,391,325. Specification of Letters Patent. Patented Sept. 20, 1921.

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To all whom it may concern:

Be it known that I, FRANK B. KILLIAN, a citizen of the United States, residing at New Dorp, Staten Island, in the county of Richmond and State of New York, have invented new and useful Improvements in Grease-Guns, of which the following is a specification.

My present invention relates to improvements in grease guns, and more especially to those of the type which serve as a container for the shipment of grease or other semi-solid or pasty substances and also as means for dispensing such substances by the user.

The primary objects of the invention are to provide an improved article of this character the body or shell of which can be made inexpensively from relatively thin material which, should it become indented during shipment or handling, will be restored to proper form by the piston or plunger during the ejecting movement of the plunger; to provide such an article with a screw to exert ample force to discharge its contents, the screw being non-shiftable axially whereby the overall length of the article when filled may be no greater than the length of the body or shell thereof, and the outlet of the container will be located at the end thereof opposite to the end from which the screw is operated, thus reducing the shipping length of the article to a minimum and facilitating the operation of introducing grease into the transmission or differential case of an automobile or other grease receptacle; to provide an article of this character which is non-refillable either in part or in whole; and to provide an improved operating handle for the screw together with novel means for attaching it to the screw and for housing it within a recess at the respective end of the body.

To these and other ends, the invention consists in certain improvements, and combinations and arrangements of parts, all as will be hereinafter more fully described, the novel features being pointed out particularly in the claims at the end of the specification.

In the accompanying drawing:

Figure 1 represents a central longitudinal section of a grease gun constructed in accordance with the present invention.

Fig. 2 represents a transverse section on the line 2—2 of Fig. 1.

Fig. 3 represents a section on the line 3—3 of Fig. 1; and

Fig. 4 represents a section on the line 4—4 of Fig. 1.

Similar parts are designated by the same reference characters in the several views.

The present invention provides a novel and relatively inexpensive device which is adapted to serve as a container for the shipment of grease or other semi-solid or pasty substances and also as a means for ejecting or dispensing such substances in any desired quantities as may be desired by the user. It is especially adapted for the shipment and dispensing of greases for use in automobiles, it enabling grease to be ejected conveniently and with facility directly from the container into the transmission or differential case of an automobile. The preferred embodiment of the invention is shown in the accompanying drawing and will be hereinafter described in detail. It is to be understood, however, that the invention is not restricted to the precise construction shown, as equivalent constructions are contemplated and will be included within the scope of the claims.

In the present instance the device comprises a body or shell 1 which can be made inexpensively from thin sheet metal, although metal or materials of greater thickness may be employed. The body or shell may also be of any desired size and it may be of round, oblong, or square cross-section, although it is preferable to make the body or shell of cylindrical form. One end of the body or shell is closed by a head 2, this head being preferably formed centrally with a nipple 3 which serves as an outlet through which the contents of the body or shell are discharged. Means is provided for the attachment of a spout 4 whereby the operation of directing the contents may be facilitated. Preferably, and as shown, the nipple 3, which may be of sheet metal, has a thread formed thereon and the spout has a correspondingly threaded part to detachably fit the threaded nipple. The discharge end of the spout may be provided with a removable cap 5. The opposite end of the body or shell is closed by a head 6 which is preferably made of sheet metal, this head being countersunk in the respective end of the body or shell to provide a recess 7 in which the operating handle, to

be hereinafter described, is housed. Preferably, and as shown, the head 6 is formed with an outwardly directed peripheral flange 8 which fits into the respective end of the body or shell 1, and the adjacent edge of the body or shell is inturned, as at 9, to lock the head 6 from outward movement relatively to the body or shell. A piston or plunger 10 is fitted closely within the body or shell, it corresponding in shape to the cross-section of the body or shell. Where, as in the present instance, the body or shell is cylindrical in form, the piston or plunger is circular. The piston or plunger is composed of cast iron or other relatively strong material, in consequence of which it will smooth out any indentations that may be produced in the wall of the body or shell 1, due to shipment or handling of the device, during the movement of the piston or plunger incident to the ejection of the grease or other contents. This ejecting movement of the piston or plunger is effected, preferably, by a screw 11 which is threaded centrally in the piston or plunger and is non-shiftable axially with respect to the body 1. Furthermore, both ends of the screw are supported centrally by the body of the device. As shown, the end of the screw adjacent to the discharge nipple 3 is formed with a reduced extension 12 which is journaled in a web 13, the latter bridging the discharge opening in the nipple 3, leaving openings 14 at opposite sides thereof for the unobstructed flow of the grease or material to the outlet. The opposite end of the screw is formed with a reduced portion 15 which is journaled centrally in the head 6, the screw adjacent to this reduced portion forming a shoulder 16 which is adapted to abut against the inner side of the head 6 and thereby transmit the end thrust from the screw, incident to the ejecting movement of the piston 10, to the head 6. This reduced portion 15 of the screw is also preferably angular in cross-section and has a collar 17 fixed thereto. This collar has openings 18 arranged diametrically at opposite sides of its periphery, and these openings receive the oppositely extending alined ends 19 of a handle 20, the latter being substantially semi-circular in form and of a size to fit into the recess 7 when the handle is in folded position. The handle occupies such a position when the article or package is in condition for shipment but is swung into the position shown by the dotted lines in Fig. 1 when the screw is to be operated to discharge grease or other material.

It is desirable that devices of this character should be non-refillable. The present invention provides means whereby refilling of the body or shell either in part or in whole will be effectively prevented. This is accomplished in the present instance by providing the screw 11 with a groove 20 which extends, preferably, throughout the length thereof, this groove having a substantially radial or abrupt wall 21 and an inclined or beveled wall 22, and by providing the piston or plunger with a pawl 23, the inner end of which is shaped to fit into the groove 20, the pawl being carried by and guided on the piston by a housing 24 and is pressed into engagement with the screw by a spring 25. In the construction shown, the screw 11 is a left-handed one and, therefore, rotation of the screw in a clockwise direction will cause the plunger 10 to advance toward the outlet end of the body or shell and thereby eject the grease. The piston 10 during ejecting operation of the screw does not rotate because of the friction between its periphery and the wall of the shell and the friction between the forward face of the piston and the body of grease upon which it presses. During rotation of the screw in a direction to advance the piston and eject the contents, the pawl 23 rides idly over the screw and the beveled wall 22 of the groove therein. Should the screw be rotated in a reverse or anti-clockwise direction in an attempt to refill the shell, the pawl 23 will engage the radial or abrupt wall 21 of the groove, whereupon further rotation of the screw in such direction will cause the piston to rotate with it and, in consequence, the piston will not be retracted. By this arrangement, refilling of the shell while the piston is at any point in the length of the screw will be prevented. Means is also provided for rendering the piston wholly inoperative with respect to the screw when the piston has been advanced to the limit of its ejecting movement. This is accomplished by providing the reduced unthreaded portion 12 at the end of the screw adjacent to the discharge end of the shell, the piston as it approaches the limit of its ejecting movement passing off the threaded portion of the screw, and the pawl 23 upon dropping below the shoulder 26 formed between the threaded portion of the screw and the unthreaded reduced portion 12 thereof locking the piston from reëngagement with the screw. By mounting the screw at opposite ends of the shell and providing a rigid piston or plunger to fit closely in the shell, it is possible to make the shell of very thin tin, sheet metal or other material for the reason that while the shell may become indented, incident to shipping or handling the package, such indentations will be smoothed out by the rigid plunger during its advancing movement, the plunger being firmly supported and maintained in right angular relation to the axis of the shell by the screw which is supported and steadied at both

ends. The present invention also enables the discharge opening to be located at the end of the shell opposite to the end from which the screw is operated, thus greatly facilitating the operation of introducing grease into the gear cases or other grease receptacles of automobiles. By providing a foldable handle which is housed within a recess at one end of the shell, the length of the article or package is reduced to a minimum, which is advantageous in shipping, and the non-refillable feature prevents substitution of the contents.

What is claimed is:

1. A combined shipping package and grease gun comprising a shell, a plunger of sufficient rigidity to smooth out such indentations as may form in the shell and movably fitted therein, and means supported at opposite ends of the shell and operative to maintain the plunger centered transversely in a fixed plane transverse to the axis of the shell with sufficient rigidity to cause the plunger to smooth out such indentations and to move the plunger longitudinally therein.

2. A grease gun comprising an elongated shell, a plunger of sufficient rigidity to smooth out indentations that may form in the shell and movable longitudinally therein, and a screw having its ends rigidly supported and centered at opposite ends of the shell, and having a thread engagement with the plunger, said screw being operative to maintain the plunger centered transversely and in a fixed plane transverse to the screw with sufficient rigidity to smooth out such indentations in the shell, and to advance the plunger longitudinally in the shell.

3. A grease gun comprising a tubular shell having a centrally located discharge opening at one end thereof, a piston of sufficient rigidity to smooth out such indentations as may form in the shell and movable longitudinally therein, a rigid screw operatively engaging the piston to maintain the latter in transversely centered position and in a fixed plane transverse to the screw, the latter being operative to advance the piston longitudinally in the shell, and means supporting and centering the end of the screw adjacent to said discharge opening with sufficient rigidity to cause the piston to smooth out such indentations in the shell, and providing a passage way for the flow of material from the shell to said discharge opening.

4. A grease gun comprising a tubular shell having a centrally located discharge opening at one end thereof, a piston of sufficient rigidity to smooth out such indentations as may form in the shell and movable axially in the shell, a rigid screw located axially within the shell and having a rigid threaded engagement with the piston, and means rotatably supporting and centering both ends of the screw with sufficient rigidity to cause the piston, while moving axially of the shell, to smooth out such indentations therein, one of said supporting means comprising a web bridging the discharge opening, and providing a passage way at a side thereof for the flow of material from the shell to said discharge opening.

5. A device of the character described comprising a tubular container, a piston movable freely longitudinally of the container to eject the contents thereof, an actuating screw having a thread engagement with the piston and operating, when rotated in one direction relatively to the piston, to advance said piston, said screw being mounted in fixed longitudinal position within the container, and a ratchet connection between the screw and piston for preventing retrograde movement of said piston when the direction of rotation of the screw is reversed.

6. A device of the character described comprising a tubular container, a piston movable freely longitudinally of the container to eject the contents thereof, a rotatable screw mounted in fixed longitudinal position within the container and having a thread engagement with said piston, the screw being operative when rotated in one direction relatively to the piston to advance the piston, and means for causing rotation of the piston in unison with the screw for preventing reverse longitudinal movement of the piston when the direction of rotation of the screw is reversed.

7. A container of the character described comprising a tubular receptable, an ejecting plunger freely movable longitudinally therein, an actuating screw immovable longitudinally relatively to the receptable and threaded in said plunger, said screw being rotatable in one direction relatively to the plunger to advance the latter, and a device between the screw and the threaded screw-engaging portion of the plunger for preventing rotation of the screw relatively to said screw-engaging portion of the plunger, thus preventing retrograde movement of the plunger when the screw is rotated in a reverse direction.

8. The combination with a tubular container having a discharge opening and a plunger freely movable in the container and shiftable axially therein to eject the contents thereof, of a screw having a threaded engagement with the plunger and operative, when rotated in one direction, to advance the plunger relatively to the container and screw, and means for causing the plunger to rotate idly with the screw when the screw is rotated in a reverse direction.

9. The combination with a tubular container and a plunger movable therein to eject its contents, of a screw non-shiftable axially relatively to the casing and having a thread-

ed engagement with the plunger, said screw being operative, when turned in one direction, to advance the plunger, and a ratchet for causing the plunger to rotate with the screw when the latter is rotated in a direction reverse to that first mentioned.

10. The combination with a tubular container and a plunger freely movable therein and shiftable axially relatively to the container to eject its contents, of a screw nonshiftable axially relatively to the container and having a threaded engagement with the plunger and also having a groove extending longitudinally thereof, and a ratchet pawl carried by the plunger and permitting rotation of the screw in one direction relatively to the plunger to advance the latter relatively to the container and engaging in said groove and causing rotation of the plunger in unison with the screw to prevent retrograde movement of the plunger relatively to the container when the screw is rotated in a reverse direction.

11. The combination with a container and a plunger movable therein to eject its contents, of a screw having a threaded engagement with the plunger, one end of the screw providing a shoulder, and a pawl operative to engage said shoulder and thus prevent retrograde motion of the plunger when the latter has reached the end of its ejecting stroke.

In testimony whereof I have hereunto set my hand in presence of a subscribing witness.

FRANK B. KILLIAN.

Witness:
CHAS. S. HYER.