

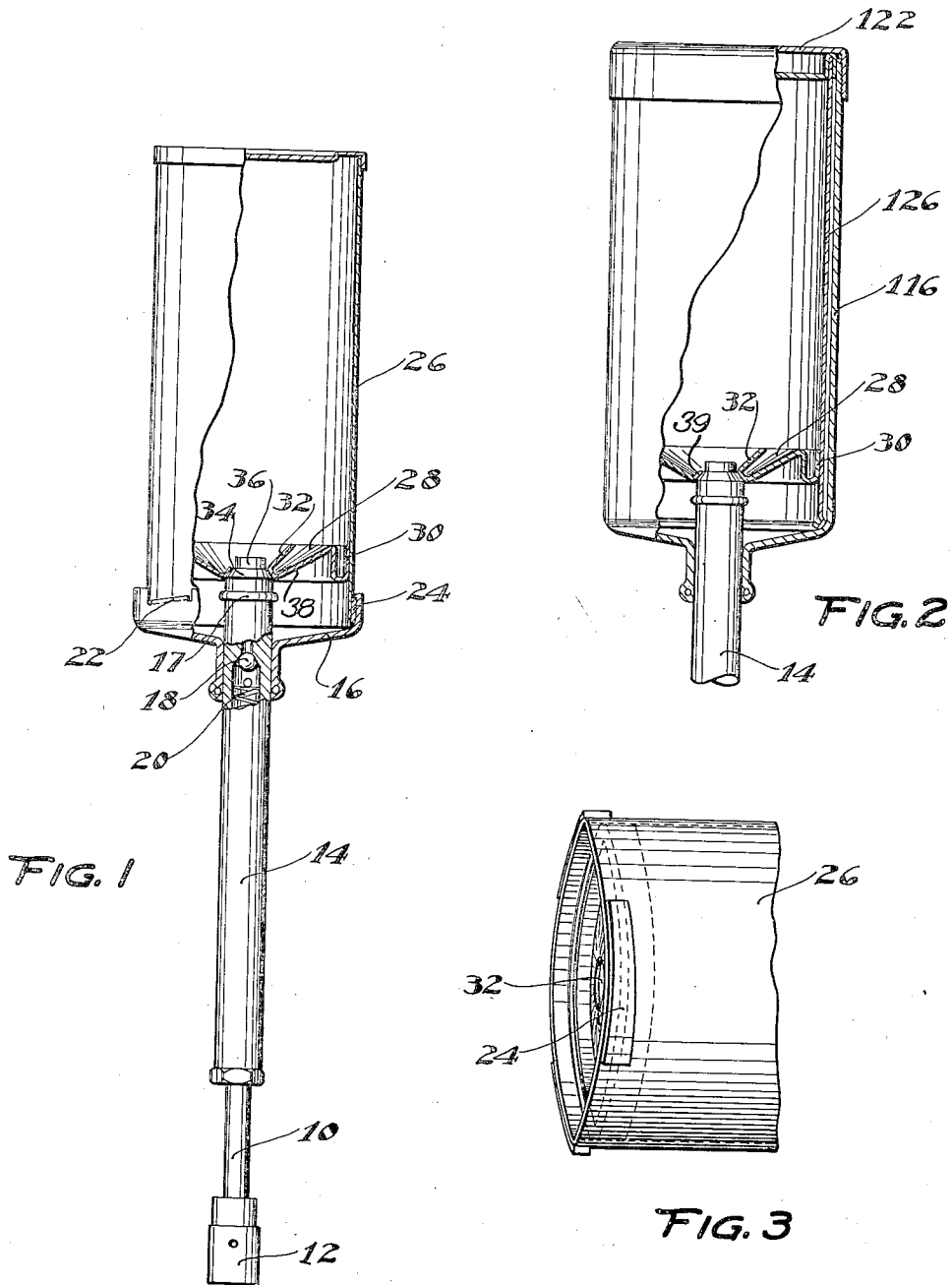
April 17, 1934.

M. W. McCONKEY
DISPENSING APPARATUS

1,955,339

Filed Jan. 19, 1931

2 Sheets-Sheet 1



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2 Sheets-Sheet 2

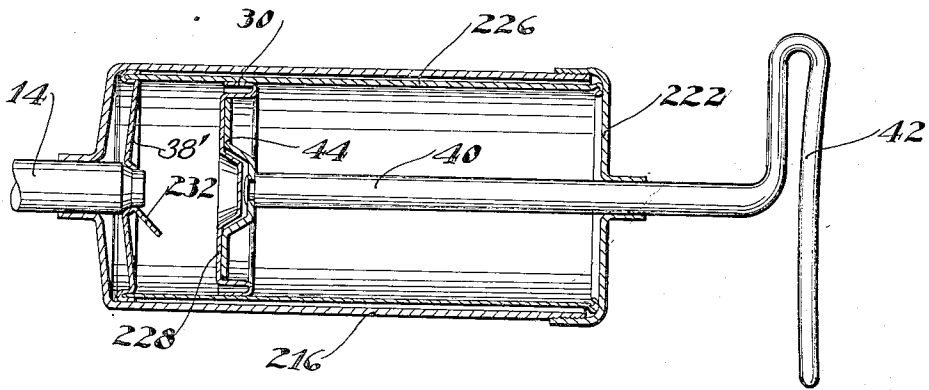


FIG. 4

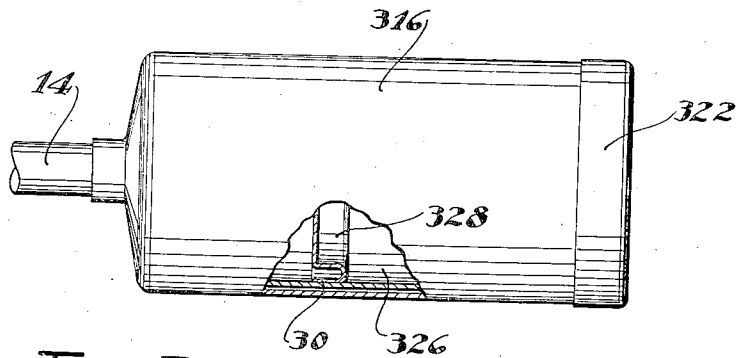


FIG. 5

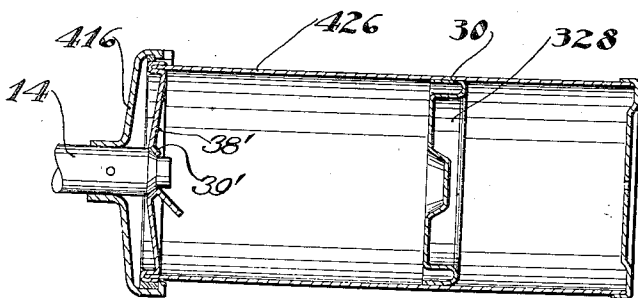


FIG. 6

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DISPENSING APPARATUS

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25 Claims. (Cl. 221—47.4)

This invention relates to grease guns and similar devices for dispensing lubricant and the like, and is illustrated as embodied in several "guns" for lubricating automobile chasses.

5 An object of the invention is to provide an assembly in which the grease, or other matter to be dispensed, is supplied in a container or cartridge which forms a part of the dispensing apparatus, so that empty containers may be thrown
10 away and new ones inserted without actual handling of the lubricant. This not only facilitates handling the lubricant, but also permits the sale of tested and approved lubricant in sealed and substantially air-tight trade-marked packages instead of in bulk.

15 The container or cartridge is therefore arranged to form a part of the "gun" in use, being provided with a piston or other means for ejecting the lubricant and with a seat adjacent the outlet which is held in sealing engagement with the pump
20 mechanism. Preferably the outlet is provided by a weakened section within this seat, which can readily be punched out by a nail or by a screwdriver, and which is preferably prevented from
25 accidentally blocking the outlet by a projection which holds it out of the way.

30 Various minor but important features of novelty relate to the interlocking structure of the gun and cartridge, to the piston construction, to the arrangement of the pump mechanism, and to other novel combinations of parts and desirable particular constructions which will be apparent from the following description of the illustrative
35 embodiments of the invention shown in the accompanying drawings, in which:

Figure 1 is an elevation, partly broken away in central section, of a first form of the device;

Figure 2 is a similar figure showing the upper part of a second form;

40 Figure 3 is a perspective of one end of the cartridge of Figure 1;

Figure 4 is a central section through the reservoir end of a third form;

45 Figure 5 is a side elevation, partly broken away, of a fourth form; and

Figure 6 is a central section through part of a fifth form.

50 The "gun" of Figure 1 is in two major parts: (1) the cap with the pump means, and (2) the container or cartridge. The pump means, which may be of any form desired, includes a plunger 10, having at its end a suitable discharge nozzle shown diagrammatically at 12 and adapted to be detachably engaged or interlocked with a suitable
55 fitting or "nipple" on the chassis frame bearing

as shown for one example in Morris Patent No. 1,756,657, and which plunger slides in a cylinder or barrel 14 which is slidably arranged centrally of a cap 16, a snap ring 17 being provided to prevent its unintentional removal. Lubricant forced
60 into the upper end or intake of the cylinder 14 is prevented from passing out again, when the pressure is relieved, by means such as a check valve shown as a ball 18 held by the back pressure of the lubricant (or by a valve spring if desired).
65 The plunger 10 is shown urged outwardly of the cylinder by means such as a spring 20.

The cap 16 is formed with means, shown as a bayonet joint 22 arranged peripherally thereof, for interlocking with wedge lugs 24 or the like
70 arranged peripherally of the end of a container or cartridge 26 of tin or other suitable material containing lubricant, so that the container forms the body of the "gun". It may be explained here that the terms "lubricant" and "grease" are used
75 in a descriptive and not a restrictive sense as convenient generic designations, including any material adapted to be dispensed as described herein, and the term "gun" is used broadly as the usual colloquial designation of any apparatus used for this type of dispensing.
80

The term "plastic (s)" has been chosen for use in some of the claims as it appears most nearly to define those of that large class of materials which while not liquids, have plasticity and will
85 flow or deform without excessive pressure or stress and which may be dispensed, as may various greases, from cartridges of the character herein disclosed. "Plasticity is that property of a material by which, as the shearing stress is lowered,
90 the material resists change of shape relatively more than in the case of a fluid: thus for a plastic material the ratio of flow to force is not constant." Proceedings of the A. S. T. M. Report of Committee E-1, on Methods of Testing,
95 page 901, vol. 30, 1930.

The cartridge 26, adapted to be interlocked as described with the cap 16, is provided with a novel piston or the like 28 which forms one end thereof during handling and shipment and which
100 serves to eject the lubricant during use. This piston, which may be stamped from sheet metal, is formed with a skirt 30 yieldingly engaging the wall of the container, and has a central portion 32 which is weakened about three-fourths of the
105 way around so that it can be punched inwardly by a nail, a screwdriver, or the like, and will fold over on an integral hinge, as shown in Figure 1. It will be noted that the piston or follower 28 is dished outwardly as shown at 38 in Figs. 1 110

and 2 and similarly one end of the cartridge or container shown in Figs. 4 and 6 is likewise outwardly dished as indicated at 38'. This dishing or forming is done to give added strength to the piston or follower and to the end of the container, respectively, and, to furnish (together with inturned circumferential flanges 39 and 39') a boss or the like providing a sealing seat for the tapered shoulder 34 of the adaptor end of the cylinder 14.

The main portion or head of the fixed end and the corresponding portion of the piston or follower (in some forms illustrated, only one or the other of these parts) may be inset as well as dished. Insetting serves somewhat to strengthen the end but primarily is to permit the cartridge to be stood on end and to provide protection against damage for the boss containing the outlet and outlet sealing surface.

The word "inset" as used herein with reference to the construction of the fixed end and follower of the cartridge, is intended to mean set within a recess, or, set back, or, not fully projecting. For example, the fixed head or end 38' of the cartridge shown in Figs. 4 and 6 is so constructed and arranged that when it is secured to the cartridge body, no part within the rim or end seam projects outwardly beyond the plane of such rim or end seam, and the central part of the piston or follower is similarly arranged. However, it is intended that the word "inset" shall also have the significance of set back in part, as, for example, a construction in which substantially all parts of the head within the rim except, perhaps, the peak or boss about the outlet orifice, lie below the plane of the rim and the peak or boss projects beyond such plane. It is preferable, of course, to have the head sunk below the plane of the rim or just flush therewith because the cartridge may then be stood on end.

The term "dished" is intended to have a significance with reference to the general shape of the end (fixed end or follower) which in the specific embodiments of the invention illustrated is substantially convex even though the head is "inset". Both "insetting" the end and "dishing" the end serve various functions including strengthening the cartridge construction, as will be understood.

The outlet formed by folding inwardly the part 32 has a surrounding conical seat which seals against a conical portion 34 on the end of the cylinder 14, there being a central projection 36 which prevents the part 32 from accidentally closing the outlet.

It will be seen that pressure on the container or cartridge 26 will operate the piston 28 to force grease or other material under relatively low pressure into the cylinder 14, whence it can be ejected under high pressure by manipulation of the plunger 10. The fitting 12 may have a check valve, if desired, co-operating with valve 18 to give a purely pumping action which is not dependent on the consistency of the grease.

In the arrangement of Figure 2, the cap is extended to form a complete housing 116 having a cover 122 threaded or otherwise mounted thereon and wedging the cartridge 126 downwardly to clamp it firmly in place. In this case the cartridge may if desired be made of cardboard or the like instead of metal, since it is externally supported by the housing 116. The housing may be formed with openings, for example, to expose the label on the cartridge 126, and may also if desired be corrugated or ribbed or otherwise

formed to increase its strength. This is possible because there is no leakage, there being a tight seal between the piston or follower 28 and the end of cylinder 14.

In Figure 4, the outlet of cartridge 226 is formed in its base, by punching out a flap 232, and the cover 222 of housing 216 is formed to guide an operating plunger or the like 40 having a handle 42 and a head 44 which operatively engages the piston 228.

In Figure 5, the action of the pump 14 sucks the lubricant from the cartridge 326 clamped in housing 316 by cap 322, interference by sucking of air being prevented by the use of a follower in the form of a free piston 328. This arrangement is more for the lighter lubricants.

In Figure 6, the pump plunger is carried by a cap 416 interlocking with the cartridge 426 as in Figure 1, but acting to suck out the lubricant as in Figure 5 and similarly provided with a floating follower piston 328.

While several illustrative embodiments have been described in detail, it is not my intension to limit the scope of the invention to those particular embodiments, or otherwise than by the terms of the appended claims.

I claim:

1. A cartridge for plastic and liquid materials comprising, a cylindrical container having a fixed closure at one end, said closure being so secured to said container as to provide a cylindrical flange projecting beyond the mean plane of the closure, said closure having an outwardly projecting circular boss concentric with said cylinder and spaced toward the axis of the cylinder from said flange, the part of the wall of the closure lying on the cylinder axis side of the boss defining an outlet orifice from the container and providing a sealing surface, said flange having spaced lugs thereon.

2. In a dispensing device for plastic and liquid materials, a replaceable cartridge for said materials comprising, a cylindrical body having one end closed, an outlet orifice defined by an acute conical wall in the closed end of said body for co-operation with a conductor stud through pressure to form a liquid tight seal therebetween, said cartridge being formed with lugs thereon for engaging with a feeder apparatus including said conductor stud whereby mechanically to interlock said cartridge and feeder apparatus with the outlet and said stud in sealing engagement.

3. A cartridge for plastic and liquid materials comprising, a cylindrical body having one end closed, a piston slidably mounted in said cylinder and serving as a closure for its opposite end, a material outlet orifice through said piston, and a plurality of outwardly extending and spaced lugs embossed on the side walls of said body for mechanically interlocking the piston end of the cartridge to a material feeder apparatus.

4. An original package container of the character described for plastic and liquid materials comprising, a body of substantially cylindrical form, a fixed end on said body, said body and end being so secured together as to provide a flange, a plurality of lugs on said flange, and a piston or follower in the opposite end of said body and forming a closure for said other end.

5. An original package for plastic and liquid materials comprising, a body of substantially cylindrical form, a fixed closure for and rigidly secured to one end of said body, a flange on said fixed closure end of said body, and a plurality of spaced interlocking devices on said flange for

interlocking engagement with complementary devices formed on a material dispenser.

6. An original package for plastic and liquid materials comprising, a substantially cylindrical body, a fixed closure rigidly secured to one end of said body, said closure having a central substantially circular depression, the wall surrounding and defining the depression providing a sealing seat, a removable closure in said depression, and a plurality of spaced interlocking lugs formed on said body about said fixed closure end.

7. A cartridge for plastic and liquid materials comprising, a cylindrical container having a closure at one end, said closure being so secured to said container as to provide a cylindrical flange projecting beyond the juncture of the closure and the container side wall and extending in the same direction as the container side wall, said closure having a substantially central depression formed therein, the bottom of said depression being adapted to provide an outlet, the wall of the closure defining the depression providing a sealing surface for engagement by a cooperative surface of a dispensing device, and a plurality of spaced lugs formed on said flange.

8. A cartridge for plastic and liquid materials comprising, a cylindrical body having a fixed closure in one end, a piston slidably mounted in said cylinder and providing a closure for its opposite end, a material outlet orifice through said piston, and a plurality of spaced lugs on said body at said piston end for mechanically interlocking the piston end of the cartridge to a material feeder apparatus.

9. A container for plastic and liquid materials, said container being provided in one end with a movable ejector piston or follower and having a portion in one end adapted to be readily displaced to form an outlet, a sealing seat surrounding said displaceable portion, and integral and peripherally arranged and spaced means on said container for interlocking the container to a pump device.

10. A container for plastic and liquid materials, said container being provided with a movable ejector piston or follower forming a closure for one end, said piston having a portion adapted to be readily displaced to provide an outlet and having a sealing seat of substantial width surrounding the outlet, and a plurality of peripherally arranged and spaced means on said container for detachably interlocking the container with and to a pump device having cooperative interlocking means.

11. A container for plastic and liquid materials, said container being provided in one end with a movable ejector piston and having in one end a weakened portion adapted to be readily displaced to form an outlet and having a sealing seat surrounding said portion, said container having integral and peripherally-arranged and spaced means for interlocking with a pump device for attaching said device to the container.

12. A closure for an end of a plastic and liquid containing package comprising, a member of sheet material having an outwardly extending substantially circular boss surrounding an opening therethrough, the marginal edges of the material about the opening extending inwardly of the package, the outer surface of the material about said edges forming a sealing surface.

13. A closure for an end of a package adapted to contain materials such as plastics and liquids comprising, a member having an opening therethrough and an outwardly projecting substantial-

ly circular boss about said opening, the surface of the member being directed and extending inwardly of the package from the peak of the boss to the opening, the outer surface of the member about said opening and between said boss and the edge of the member at the opening forming a sealing surface.

14. A closure for an end of a package adapted to contain lubricants and the like comprising, a member of sheet material having an opening therethrough and an inwardly directed flange formed integrally with the material and surrounding said opening, the base of the flange being spaced a substantial distance from the marginal edge of the material about said opening and the material between said base and marginal edge being convergently sloped inwardly of the package, the outer surface of the material about said opening and between said boss and the edge of the material at the opening forming a sealing surface.

15. An original container for lubricants and the like comprising, a cylinder formed with a closed end, a follower in said cylinder positioned adjacent to and forming a closure for the opposite end, said follower being formed with a concentric opening, and bayonet lugs formed on one end of the cylinder for securing the same to a dispensing device.

16. A dispensing device for materials of a liquid and semi-liquid nature comprising, a container adapted to contain such material and adapted to be sold and handled as an article of commerce, said container having an ejector piston or follower in and serving as a closure of one end thereof, said piston having an outlet opening with a sealing seat surrounding the opening, and pump means to be detachably secured to said container, said pump means having a part providing an intake opening with a sealing seat thereabout, said seat being engageable with said seat in said piston, and means slidably embracing said pump means and detachably secured to the container to hold the pump means and the container in assembled relation during use.

17. In combination, a plastic and liquid material feeder device having a cartridge connector stud, said stud having a cartridge engaging and sealing surface and a passage for material flow therethrough with an orifice in said sealing surface, a cartridge containing material and having an outlet orifice, said orifice being defined by a depression surrounded by a sealing surface cooperative with said sealing surface of the stud, and means including interlocking devices on the feeder and on the cartridge for mechanically interconnecting said cartridge and feeder with said orifices in register and said sealing surfaces in interengagement.

18. In combination, a feeder apparatus for dispensing liquid, plastic and similar materials, said apparatus having a cartridge connector stud, said stud being formed with a passage for flow of materials therethrough and a sealing surface about the orifice to said passage, a material filled cartridge for supplying material to said feeder apparatus, said cartridge having an inset head provided with a depression therein having a lubricant outlet opening in the bottom, said outlet opening being surrounded by a sealing surface cooperative with the sealing surface on said stud, and cam means operative upon relative rotational movement between said cartridge and said feeder apparatus for clamping said car-

tridge to said feeder apparatus and tightly inter-engaging said sealing surfaces.

19. A liquid and plastic material dispensing device comprising, a pump unit and a reservoir unit, said reservoir unit comprising, an original container of material, said container having a closed end and an open end, a follower in said open end and providing a closure therefor, said follower having an outlet opening therethrough and a sealing seat about said opening, and means on said open end of said container for detachable engagement with the pump unit; said pump unit comprising, a pump cylinder, a plunger in one end of said cylinder for displacing material from the cylinder, means slidably embracing said cylinder and having means cooperatively engageable with said engagement means on said container for securing said pump and reservoir units substantially rigidly together, and a pump inlet at the other end of said cylinder, said inlet being surrounded by a sealing seat cooperative with the sealing seat of said follower.

20. A liquid and plastic material dispensing device comprising, a gun unit and a reservoir unit; said gun unit comprising, a cap having a sleeve portion, a high pressure cylinder slidably mounted in said cap sleeve portion, a discharge nozzle associated with one end of said cylinder, means secured to said cap for interlocking and releasable engagement with the reservoir unit, and a sealing seat surrounding the other end of said cylinder; said reservoir unit comprising a body portion having a fixed end closure at one end, a piston or follower forming a closure for the opposite end of said body and being movable from end to end of the body, said movable closure having an aperture therethrough, the surface of the portion of the movable closure that defines said aperture providing a sealing seat cooperative with the sealing seat on said cylinder, and means on said body portion for interlocking engagement with the interlocking means on said cap.

21. In combination, a cartridge for lubricants and other liquid and plastic materials, said cartridge having an opening in one end, a closure for said opening, said closure being hinged to a portion of the margin of said end at said opening, said closure being adapted to swing inwardly of the cartridge away from the opening, and a pump for receiving the contents from said cartridge, said pump having means effecting a sealing connection with the margin of said end about said opening and having a portion of said means projecting inwardly of the cartridge beyond the axis of the hinge of said closure.

22. A container provided with a movable ejector piston having formed therein a weakened portion adapted to be readily displaced to form an outlet and having an outwardly flared portion of substantial area extending completely about said weakened portion to provide a sealing seat.

23. A container provided with a movable ejector piston forming a closure for one end, said piston having formed therein a weakened portion adapted to be readily displaced to form an outlet and having a sealing seat surrounding said portion, said container having peripherally-arranged and spaced means for interlocking the container with a pump device having cooperative interlocking means.

24. A "gun" for lubricants and the like, said "gun" having a barrel and an intake at one end of said barrel, said intake being surrounded by a conical seating part and a projecting part arranged centrally of the conical part.

25. As an article of manufacture, a cartridge connection adaptor comprising a body having a passageway therethrough, a tapered seat about said passageway at one end of said body for sealing engagement with a cartridge, and a concentric cylindrical projection on said end of said body extending beyond said seat.

MONTGOMERY W. McCONKEY.

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