

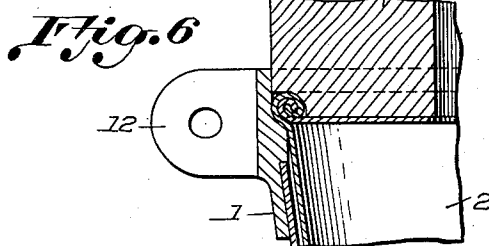
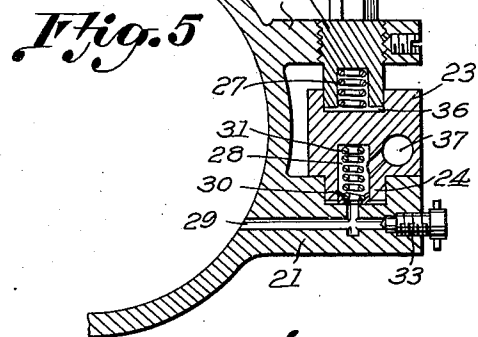
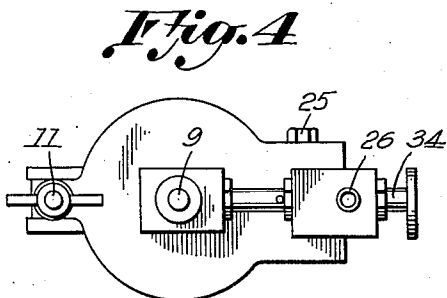
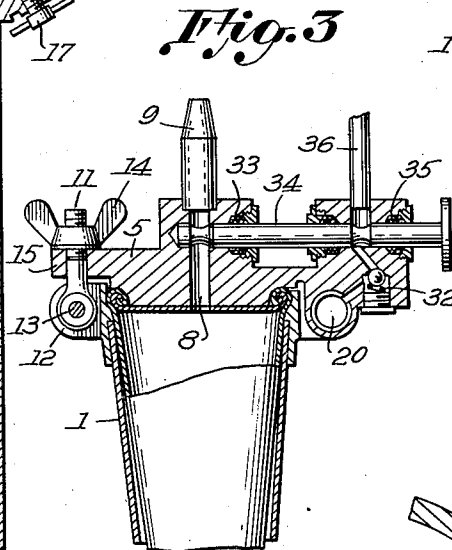
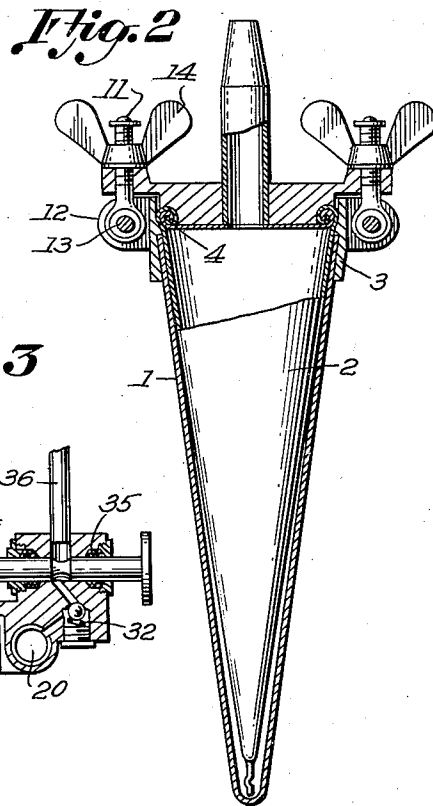
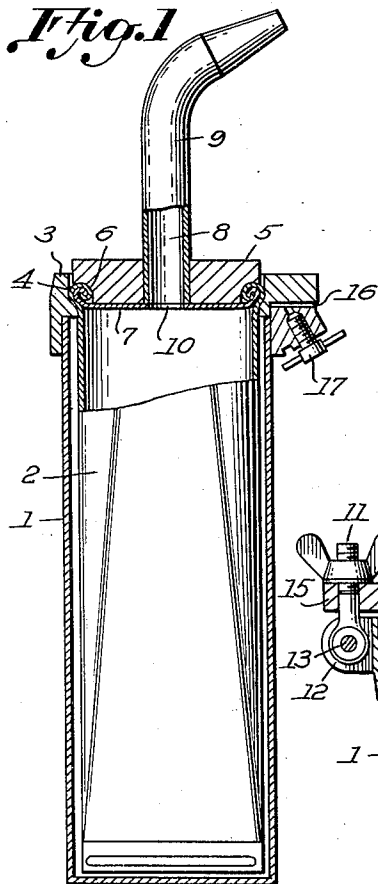
Aug. 16, 1938.

E. PIQUEREZ

2,126,973

APPARATUS FOR EMPTYING FLEXIBLE WALLED PACKAGES OF VISCOUS MATERIALS

Filed Nov. 7, 1935



Inventor:

EMILE PIQUEREZ

By *Sommers & Young*
Attorneys.

UNITED STATES PATENT OFFICE

2,126,973

APPARATUS FOR EMPTYING FLEXIBLE
WALLED PACKAGES OF VISCOUS MATERIALS

Emile Piquerez, Saint Cloud, France

Application November 7, 1935, Serial No. 48,758
In France November 14, 1934.

11 Claims. (Cl. 221-74)

This invention has as its object an improved apparatus for emptying completely containers having flexible extensible or inextensible walls, containing viscous liquids or pasty materials, such as oils or greases. In order to empty such containers, the walls are generally crushed and made to approach each other, so as to expel the products in the containers. In this manner, for example, tubes of tin or lead are emptied, the use of which is universal.

The improved apparatus according to the present invention is applicable to all containers of this type, whatever the nature of the materials of which they are constituted and whatever the volume.

The operation of the apparatus according to the invention consists in introducing the container to be emptied into a tight enclosure having a spout open to the exterior, in putting the discharge hole of the container in tight communication with the said spout and in introducing a fluid under pressure into the interior of the enclosure, between the internal wall of the latter and the external wall of the container, so as to crush the latter and to expel from it the product contained in it, which passes out through the spout.

The invention provides apparatus for the purpose set forth comprising essentially a rigid receptacle, of such dimensions that it can hold the filled container, a tight movable cover closing the receptacle, a hole in a wall of the receptacle or its cover, preferably provided with an external spout, means for forcing the discharge hole of the container against the hole in the receptacle, and means for leading a fluid under pressure into the interior of the receptacle.

In a constructional form of the invention, which, at the moment, seems preferable, the discharge spout is carried by the cover, whilst the hole in the container is carried by the part of the wall of the latter which must bear against the cover, when the latter is in position.

The entry of the fluid under pressure may be carried out by means of a union carried by the cover and communicating with the interior of the receptacle.

The tight-joint between the receptacle and its cover can be obtained by locking between its parts, a bulging part or a folded part formed on the wall of the container, so as to keep the latter in position.

The inlet of fluid under pressure and the discharge of the material, are advantageously con-

trolled by interrupting members operable simultaneously.

The cover can be hingedly-mounted on the receptacle, locking means being provided opposite to the said hinge.

In the latter case, it is convenient to cause the inlet of the fluid under pressure to take place through a union carried by the cover and communicating with the interior of the receptacle through a turnable tight-joint formed in the articulation of the hinge.

On the accompanying drawing is shown, by way of example only, apparatus constructed in accordance with this invention.

Fig. 1 is a sectional elevation of one apparatus;

Fig. 2 is a sectional elevation on a plane perpendicular to that of Fig. 1;

Fig. 3 shows a modified construction of a detail of the invention;

Fig. 4 is a plan view corresponding to Fig. 3;

Fig. 5 is a sectional view, to a larger scale, of a part of Fig. 3; and

Fig. 6 is an enlarged fragmentary sectional view of a corner portion of a container and its receptacle.

The apparatus shown on the drawing comprises a metallic receptacle 1 having the external shape of the container 2 which it has to enclose. In the present example, the container is shown as having a circular end and a lateral wall having the shape of the surface known in geometry as a "Wallis corner."

The circular edge of the receptacle is reinforced by a small collar 3, which is fixed by any suitable means and has internally a groove 4 adapted to receive part of an upwardly and outwardly bulging part of compressible material formed around the circular end of the container by rolling the material of the side walls of the container and the peripheral portion of the end upwardly and inwardly.

At its periphery, the cover 5 has a circular groove 6 adapted to receive part of the bulging part of the container end and a plane lower face 7, which bears on the bottom of the container. The cover 5 is also formed centrally with a hole 8 receiving a spout 9 which is opposite to a hole 10 formed in the bottom of the container.

The cover 5 is locked on the receptacle 1 by means of screws 11, the heads of which are enclosed between bosses 12 on the collar 3 and can pivot around axes 13, nuts 14 locking against lugs 15 on the cover. The locking of the said screws presses the bulging part of the end of the container 2 between the walls of grooves 4 and 6, thus

ensuring tightness of the joint between the receptacle 1 and the cover 5. At the same time, the container is held in position with its discharge hole opposite to the hole in the spout 9.

5 The small collar 3 is formed on its periphery, with a channel 16, communicating with the interior of the receptacle, and adapted to be connected to a source of fluid under pressure; for example, compressed air. A compression-release
10 needle valve 17 allows the interior of the receptacle to be connected to atmospheric pressure.

In order to use the apparatus, it suffices to introduce the container 2 into the receptacle 1, lodging the bulging part of the end in the groove, 15 4, whereafter, after having opened the hole 10, the cover is arranged in position and compressed air is introduced through the channel 16. The air flows between the walls of the receptacle and those of the container and tends to crush the
20 latter, commencing at the least rigid portion of its surface; that is, the part opposite to the bottom.

The material in the container flows through the hole 10 and the spout 9, the pressure created around the hole tending to force the end against
25 the cover and to form a tight-joint preventing the material spreading over the whole of the surface of the end.

The discharge of the material may be stopped at will by cutting off the inlet of air and opening
30 the pressure release needle valve 17.

It will be seen that with this apparatus the container is emptied starting from the part opposite to the rigid end and that as the air pressure acts over the whole surface, the discharge of the
35 material is stopped only when the lateral walls have come into contact with each other and bear on the rigid end; that is to say, when the discharge of the material is complete.

In the modified construction shown in Figs. 3, 40 4 and 5, the cover 5 is pivoted on a hinge 20 and is held in position at the other end of the diameter by means of a screw 11, the nut 14 of which bears on a lug 15 on the cover, as in the previously described construction.

45 As shown in Fig. 5, the hinge comprises two cheeks 21 and 22 provided on the ring 4, between which is engaged a tenon 23 extending from the cover. The latter can pivot around a bearing 24 which is engaged in a housing formed in the cheek
50 21 and around a member 25 screwed into the cheek 22, and which is engaged in a housing 26 of the tenon 23. A spring 27 arranged in the member 25 constantly forces the tenon 23 on the cheek 21.

55 The compressed air flows through a hole 36 in the cover, passes through the channel 37, which communicates through the housing 28 with a channel 29 formed in the cheek 21, and by this route, with the interior of the receptacle 1. A
60 cup leather 30 forced by a spring 31 on the face of the cheek 21 insures tightness for the passage of the air between the two members.

A stop valve 32, arranged in the path of the air, permits the filling of the receptacle 1, but is
65 opposed to any reverse flow. A needle valve 33 at the end of the channel 29 allows the receptacle 1 to be put into communication with the atmosphere.

70 Discharge of the material expelled from the container is made through a hole 8 and the spout 9.

An interrupting member is constituted by a cylindrical slide valve 34, which slides in a hole connecting the air inlet channel 36 and the discharge channel 8 for the material. In the posi-

tion shown in the drawing, said slide valve allows the inlet of air and the discharge of material. By pushing it to the left, it closes the two conduits simultaneously. Tight-joints 35 are arranged around the slide valve 34, in order to
5 avoid any loss of air or of the material under pressure.

The operation of the apparatus is the same as that previously described, with this difference that the existence of the hinge 20, by obviating the separation of the receptacle 1 from its cover 5, makes handling easier. The use of the interrupter 34 allows the apparatus to be left under pressure, whilst interrupting the flow of material.

15 Other constructional forms can be realized. For example, the receptacle 1 could have any shape whatever and could be arranged to receive different types of containers of different shapes and dimensions.

20 The tight-joint between the receptacle and its cover could be formed by any suitable known material, independently of the fixing of the container. It will thus be sufficient, in order to maintain and force the latter against the cover, with a resilient member, a coil spring for instance, surrounding the cartridge and bearing on an internal rim of the wall of the receptacle 1.

25 The hole 8 may be arranged in another position than in the cover. It may, for instance, be arranged in a bottom of the receptacle, opposite to the cover, resilient members similar to those which have been described, being used for pressing the container against that part of the receptacle.

I claim:

35 1. A lubricant dispenser comprising a container having a collapsible lateral wall and a rigid end portion having a discharge opening, a casing provided with an opening of sufficient size to receive said container, with the rigid end of the container occupying said opening, a cover
40 pivoted on the casing to close said opening over the rigid end of the container, said cover being provided with a discharge opening, a compressed air connection opening into the casing, and means to simultaneously establish tight communication of the opening in the cover with that of the container, and tightness between the cover and the casing when said cover is closed.

50 2. In combination, a container for lubricant with rigid end provided with a discharge opening and lateral walls of collapsible material and a compressible bulging part around the circumference of the rigid end, a rigid casing for enclosing the container, a movable cover for said casing, said cover being provided with a central discharge opening, the upper part of the casing having a groove for supporting and centering the bulging part of the container in the casing, the circumference of the cover having
60 a groove for centering the latter on the container and pressing the said bulging part, means for locking the cover on the receptacle, the groove of the cover being arranged in such a manner that, on locking, the lower face of the cover is applied on the end of the container, and means for introducing a fluid under pressure into the casing between the wall of the latter and the container.

70 3. In combination, a container for lubricant with rigid end provided with a discharge opening and lateral walls of collapsible material and a compressible bulging part around the circumference of the rigid end, comprising a rigid casing for enclosing the container, a movable cov- 75

er for the casing, said cover being provided with a central discharge opening, the upper part of the casing having a groove for supporting and centering the bulging part of the container within the casing, the circumference of the cover having a groove for centering the latter on the container and pressing the said bulging part, means for locking the cover on the casing, the groove of the cover being arranged in such a manner that, at the time of locking, the lower face of the cover is applied against the rigid end of the container and an inlet conduit for compressed air at the upper part of the casing, said conduit opening out into the free space between the casing and the container.

4. In combination, a container for lubricant with rigid end provided with a discharge opening and lateral walls of collapsible material and a compressible bulging part around the circumference of the rigid end, comprising a rigid casing for enclosing the container, a movable cover for the casing, said cover being provided with a central discharge orifice, the upper part of the casing having a groove for supporting and centering the bulging part of the container in the casing, the circumference of the cover having a groove for centering the latter on the container and pressing the aforesaid bulging part, screws pivoted at one end on the casing and engaging in recesses in the cover and locking nuts mounted on these screws, the groove of the cover being arranged in such a manner that, at the time of locking, the lower face of the cover is applied on the bottom of the container, an inlet conduit for compressed air at the upper part of the casing, said conduit opening out into the free space between the casing and the container and a valve for making the conduit communicate with the atmosphere to release the pressure to stop the discharge.

5. Apparatus for emptying containers having rigid ends provided with a discharge opening and having lateral walls of flexible material, said apparatus comprising a rigid casing for enclosing the container, a movable cover for the casing, said cover being provided with a central discharge opening, a spring for applying the bottom of the container against the lower face of the cover, said spring being interposed between the container and a collar of the casing, an annular joint interposed between the cover and the casing, means for locking the cover on the casing and means for introducing a fluid under pressure in the casing between the wall of the latter and the container.

6. An apparatus for emptying containers with rigid ends provided with discharge openings and lateral walls of flexible material, said container being provided with a bulge at the rim formed by the flexible material at the circumference of the end, comprising a rigid casing for enclosing the container, a movable cover for the casing, said cover being provided with a central discharge opening, the upper part of the casing having a groove for supporting and centering the bulge on the cover in the casing, the circumference of the cover having a groove for centering the latter on the container and pressing the said bulge, an articulation on the casing for the cover, a pivotal screw and a nut for the locking of the said cover, the groove of the cover being arranged in such a manner that, at the time of locking, the lower face of the cover is applied against the bottom of the container, a fluid inlet union under pressure mounted on the

cover and turnable joint mounted in the articulation of the cover for making the union communicate with the interior of the casing.

7. An apparatus for emptying containers with rigid ends provided with discharge openings and lateral walls of flexible material comprising, a rigid casing for enclosing the container, a movable cover for the casing, said cover being provided with a central discharge opening, means for putting the discharge opening in the container and the opening in the cover into tight communication, a conduit for compressed air in the cover, a second conduit extending from the discharge opening parallel to the preceding conduit, a slide valve for simultaneously opening or closing the two conduits, and means for making the air inlet conduit communicate with the casing.

8. An apparatus for emptying containers with rigid ends provided with discharge openings and lateral walls of flexible material, comprising a rigid casing for enclosing the container, a movable cover for the casing, said cover being provided with a central discharge opening, means for putting the discharge opening of the container and the opening in the cover into tight communication, an articulation for the cover on the casing, a pivoting screw and a nut for the locking of the said cover, an inlet union for fluid under pressure mounted on the cover and a turnable joint mounted in the articulation of the cover in order to make the union communicate with the interior of the casing.

9. An apparatus for emptying containers with rigid ends provided with discharge openings and lateral walls of flexible material, comprising a rigid casing for enclosing the container, a movable cover for the casing, said cover being provided with a central discharge opening, means for putting the discharge opening of the container and the opening in the cover into tight communication, an articulation for the cover on the casing, a pivoting screw and a nut for the locking of the said cover, a compressed air inlet conduit in the cover, a second conduit extending from the discharge opening parallel to the preceding conduit, a slide valve for opening or closing the two conduits simultaneously, a communication between the air inlet conduit and the casing, said communication including two conduits following the articulation of the cover in the latter and in the casing respectively, and a turnable joint between the two last mentioned conduits.

10. An apparatus for emptying containers with rigid ends provided with discharge openings and lateral walls of flexible material, said container being provided with a bulge at the rim formed by the flexible material on the circumference of the bottom, comprising a rigid casing for enclosing the container, a movable cover for the casing, said cover being provided with a central discharge opening, the upper part of the casing having a groove for supporting and centering the bulge on the container in the casing, the circumference of the cover having a groove for centering the latter on the container and pressing the said bulge, an articulation for the cover on the casing, a pivoting screw and a nut for the locking of the said cover, the groove of the cover being arranged in such a manner that, at the time of locking, the lower face of the cover is applied on the bottom of the container, a compressed air inlet conduit in the cover, a second conduit extending from the discharge opening parallel to the preceding conduit, a slide valve for opening or closing simultaneously the two conduits, a communication be-

tween the air inlet conduit and the casing, the communication including two conduits following the articulation of the cover, in the latter and in the casing respectively, and a turnable joint
5 between these two conduits.

11. An apparatus for emptying containers with rigid ends provided with discharge openings and lateral walls of flexible material, said container being provided with a bulge at the rim formed by
10 the flexible material on the circumference of the end, comprising a rigid casing for enclosing the container, a movable cover for the casing, said cover being provided with a central discharge opening, the upper part of the casing having a
15 groove for supporting and centering the bulge on the container in the casing, the circumference of the cover having a groove for centering the latter on the container and pressing the said

bulge, an articulation for the cover on the casing, a pivoting screw and a nut for the locking of the said cover, the groove of the cover being arranged in such a manner that, at the time of locking, the lower face of the cover is applied on the bottom
5 of the container, a compressed air inlet conduit in the cover, a second conduit extending from the discharge opening parallel to the preceding conduit, a slide valve for opening or closing the two conduits simultaneously, a communication be-
10 tween the air inlet conduit and the casing, the communication including two conduits following the articulation of the cover, in the latter and in the casing respectively, and a turnable joint be-
15 tween these two conduits, a conduit for making the casing communicate with the atmosphere and a valve for closing and opening the conduit at will.

EMILE PIQUEREZ.