

J. F. CRAVEN.

RECEPTACLE FOR CONTAINING AND DISCHARGING PASTY AND SEMISOLID SUBSTANCES.
APPLICATION FILED NOV. 11, 1911.

1,087,572.

Patented Feb. 17, 1914.

2 SHEETS—SHEET 1.

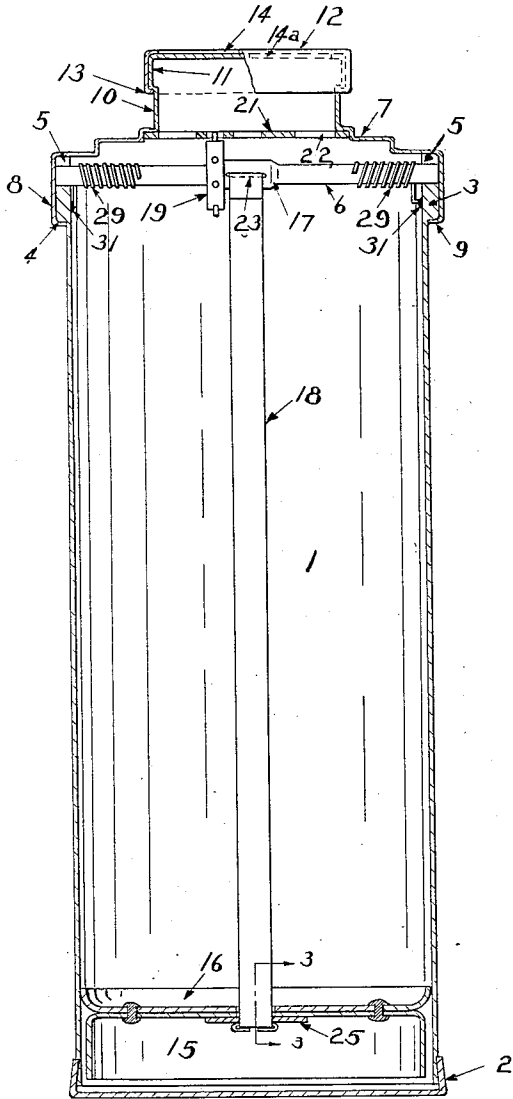


Fig. 1.

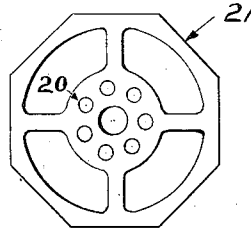


Fig. 2.

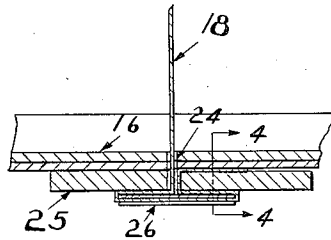


Fig. 3.

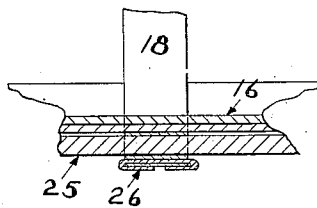


Fig. 4.

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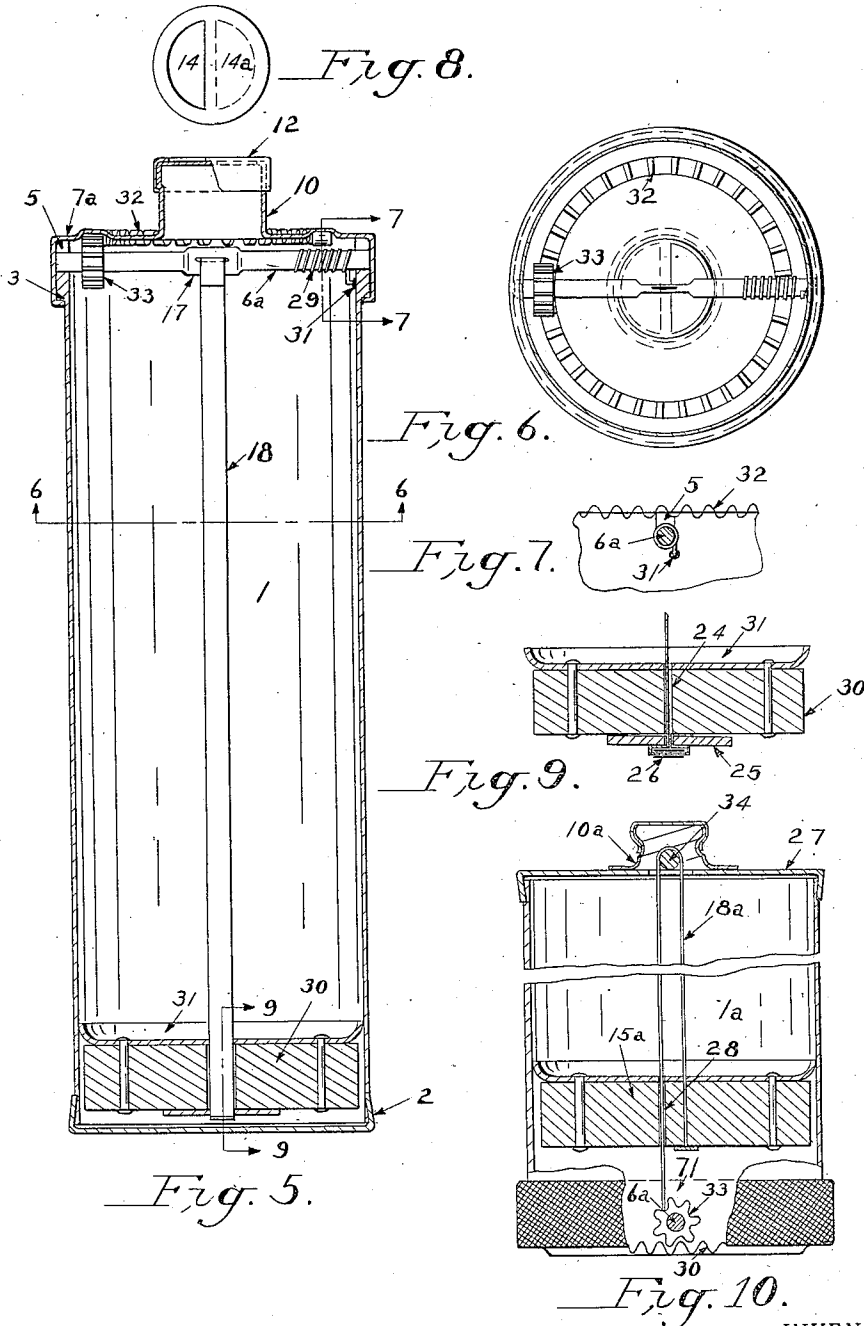
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WITNESSES:

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UNITED STATES PATENT OFFICE.

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RECEPTACLE FOR CONTAINING AND DISCHARGING PASTY AND SEMISOLID SUBSTANCES.

1,087,572.

Specification of Letters Patent.

Patented Feb. 17, 1914.

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To all whom it may concern:

Be it known that I, JAMES F. CRAVEN, a resident of Pittsburgh, in the county of Allegheny and State of Pennsylvania, have invented a new and useful Improvement in Receptacles for Containing and Discharging Pasty and Semisolid Substances, of which the following is a specification.

This invention relates to receptacles for containing, storing, transporting and discharging semi-solid and pasty substances.

The device is intended more particularly for putting up lubricants in the form of greases and discharging the same into grease cups or chambers for the purpose of enabling grease to be supplied to bearings without liability of dirt or grit entering the bearings with the grease, and also to prevent smearing or soiling the hands of the workman or the machinery. The invention, however, is not limited to this particular use, but is adapted for putting up in a substantially sealed condition any semi-solid or pasty substance, such as soap, cosmetics, etc., for delivering the same from the container in any desired quantity or quantities.

The invention comprises a construction and arrangement of parts hereinafter described and claimed.

In the accompanying drawings Figure 1 is a vertical section through one form of my device; Fig. 2 is a detail view of a gear member employed in the same; Fig. 3 is a detail view of the flexible band connection on the line 3—3, Fig. 1; Fig. 4 is an end view of the same; Fig. 5 is a sectional view corresponding to Fig. 1 of a modified form of the device; Fig. 6 is a sectional view of the same on the line 6—6, looking in the direction of the arrows; Fig. 7 is a detail view of the winding shaft and gear on the line 7—7, Fig. 5; Fig. 8 is a detail view of the end closure cap; Fig. 9 is a detail cross-sectional view of the piston illustrated in Fig. 5 and its connection to the flexible band on the line 9—9, Fig. 5; and Fig. 10 is a cross-sectional view, corresponding to Fig. 1, of another modification.

The receptacle or container may be of any desired size or shape, and may be built up or constructed in any desired manner. As shown in the drawings, the receptacle is

formed as a substantially cylindrical tube 1 which may be constructed of glass or porcelain, or if preferred, of some thin and less expensive material as paste or paper board, or of sheet metal, and is shown as formed of paste or paper board. One end of this receptacle is permanently closed by the head 2, which is shown as composed of sheet metal crimped onto the end of the paper tube. The other end of the receptacle is provided with an enlargement or flange 3 which preferably may be constructed by pasting, gluing, or otherwise securing a strip of paste or paper board to the exterior surface of the receptacle and which provides an annular shoulder 4 extending around the circumference of the receptacle. In the end of the receptacle and extending through the enlargement 3 thereof are provided a pair of oppositely disposed recesses or notches 5, Fig. 5, for the reception of a winding rod or shaft 6, referred to hereinafter.

Attached to the enlarged end of the receptacle is an end closure 7, which in the form shown is formed of thin sheet metal and is provided with downwardly extending annular rim 8 having at its lower edge an inturned shoulder or flange 9 seated or taking under the shoulder 4 on the circumference of the receptacle 1. The end closure 7, in the form shown in Fig. 1, is provided at its central portion with an outstanding or projecting mouth or spout 10 having an annular shoulder or enlargement 11 formed or pressed in the metal of the end thereof. Mounted upon the end of the mouth 10 is a cap or cover 12, preferably stamped or pressed of thin sheet metal and having an inturned flange or shoulder 13 pressed or turned under the shoulder or enlargement 11 of the mouth of the end closure. As shown in the drawings, the spout 10 and the cover or cap 12 are provided with openings or orifices 14, 14^a which are segmental in shape and extend over only a portion of the entire surface thereof and are adapted, upon rotation of the cap or cover upon the spout 10, to be brought into registration with each other to form a discharge opening and permit the passage of the contents of the receptacle therethrough. Rotation of the cap or cover upon the spout or mouth through

about 180° will bring the opening or orifice 14 on the cap 12 and the opening 14^a on the spout 10 out of registration and result in closure of the receptacle. The intermediate
5 positions provide for varying the size of the discharge opening.

On the interior of the receptacle 1 is provided a movable piston or follower 15 having riveted or otherwise attached to its upper
10 face a cup 16 made of paper or leather, or other suitable means for causing close seating between the piston and the interior surface of the receptacle. As shown in Fig. 1, the piston or follower 15 is of cup
15 shape and is constructed preferably of heavy paper and having its flange or rim of some length longitudinally of the receptacle in a manner to provide a solid and firm bearing between the sides of the receptacle
20 and the piston in a direction longitudinally thereof. It will be understood however, that the piston is constructed of slightly less diameter than the tube or casing and is not intended to bear thereagainst during normal
25 operation, its main function being to prevent wobbling and to hold the cup leather in proper position. At the other end of the receptacle is provided a winding shaft or member 6 which, as stated, is seated
30 in the oppositely disposed notches 5 in the end of the receptacle 1. This shaft or member 6, in the form shown, is provided with a flattened or enlarged portion 17 at its middle, which is provided with a slot for the
35 reception of flexible connector 18, which as illustrated, consists of a flat strip or band of flexible sheet metal but may be formed as a wire or cord or of other flexible material. The shaft or winding member 6 is
40 provided with a toothed wheel or gear 19 fixed thereon, which may be pressed, cast, or stamped into shape and the teeth of which project into or mesh with a series of holes or apertures 20 in the body of a plate or gear
45 member 21. As illustrated in Fig. 2 the gear member 21 consists of a plate, preferably octagonal in shape, but which may be hexagonal, pentagonal, square or of any symmetrical shape having a plurality of
50 sides, which is made of sheet metal and is seated or pressed into position in an enlargement 22 of corresponding shape in the end closure 7.

As shown in Fig. 1 the end of the flexible
55 connector or band 18 is fastened to the shaft 6 by being passed through the slot or aperture 23 therein and being wound slightly about the body of the shaft itself. Upon winding of the shaft during operation of
60 the device, this band or winding strap is wound up farther upon the shaft and retained thereby. At its other end the flexible connector or band is fastened or connected to the piston 15 in the manner shown
65 in Figs. 3 and 4. It is usual in construc-

tions of this character to fasten such connectors or bands to the piston by forming a hole through the central portion of the band and passing a pin or rivet which is fixed to the piston through this hole. Such construction is objectionable in that it weakens
70 the body of the band where the hole is punched and for a given strength of band requires a wider band and consequently a greater amount of metal throughout its entire length. To obviate the necessity of
75 either piercing the band and thus impairing its strength, or the additional expense required in providing a wider band, I connect the band and piston in the manner now to
80 be stated.

As shown a loop or band of the connector 18 is passed through a slot or aperture 14 in the body of the piston itself and through a retaining member 25 which, in the form
85 shown, may be an ordinary washer of thin material, as iron or steel. The end of the loop or bend in the connector 18 is then somewhat flattened or bent laterally upon itself and through the opening therein is
90 passed a binder or clip 26 which may be formed of a short strip of the same material as the band or flexible connector 18. The free end of the flexible connector is then passed upwardly or returned through the
95 washer or retaining member 25 and is bent laterally into position between the washer or retaining member 25 and the piston 15, as shown in Fig. 3. I prefer to attach the flexible connector to the piston before in-
100 serting the latter into the body of the receptacle. By forming the connection in the manner stated and then inserting the piston 15 into the receptacle and pressing it against the bottom thereof, the loop in the end of
105 the flexible connector is flattened out and grips tightly the binder or clip 26, while at the same time the free ends of the binder or clip are bent beneath the enlarged loop in the end of the flexible connector. The parts
110 are thus flattened and all lie closely against the bottom of the piston 15.

In Figs. 5 to 9 I have illustrated a modified form of the device which differs from that shown in Fig. 1 in some details. In
115 this form of the device the piston or plunger 30 is illustrated as being constructed of a solid block of wood and to which the cup leather 31 is attached by means of rivets or bolts passing entirely through both the cup
120 leather 31 and the piston 30. The piston 30, similarly to the piston 15, will be of slightly less diameter than the tube or casing and the cup leather 31 forms a tight joint around the walls of the casing. This
125 form of the invention differs from that shown in Fig. 1 in another respect, viz., in the gear driving connection. As shown in this form, the end closure 7^a is provided with gear teeth 32 which are crimped,
130

pressed or stamped in the body of the metal of the end closure itself and project upwardly and downwardly therefrom but which may be so formed as to project either wholly upwardly or wholly downwardly, if desired. Meshing with the teeth thus formed on the internal surface of the end closure is a wheel or pinion 33 having gear teeth upon its circumference and which is fixedly attached to the winding shaft 6^a in the same manner as the gear 19 of the preferred form. In all other respects, this form of the invention is the same as that illustrated in Fig. 1.

In Fig. 10 is shown a modified form of the device in which the winding shaft or member 6^a and piston 15^a are disposed at the same end of the device. In this form an additional shaft or rod 34 is provided at the opposite end of the receptacle. This shaft, as shown is formed of a straight piece of heavy or stiff wire, supported on the head 27 of the receptacle and within a spout or mouth 10^a of the same construction as the spout 10, Fig. 1, and around which passes the flexible connector or band 18^a. In this form of the device, the end closure 71 and its connection to the winding shaft 6^a are illustrated as of the same construction as in the form shown in Fig. 7, except for the omission of the mouth or spout 10. The head 27 in the form shown in Fig. 10, is crimped or otherwise fastened to the body of the receptacle 1^a, an additional slot 28 being formed in the piston to allow the flexible member to pass through the same. Although I have illustrated the form shown in Fig. 10 as having the same gear driving connections as that of Fig. 5 it is obvious that I may also use in connection with the device of Fig. 10 the gear members 19, 21 shown in Fig. 1 and I prefer to so construct the parts illustrated in this arrangement.

With the form of device shown in Figs. 1 and 5 the grease, soap or other pasty or semisolid substance is inserted into the receptacle through the end which is closed by the rotatable closure 7. The piston and the flexible connector 18 are first coupled together in the form shown in the drawings and the piston seated in the end 2 of the receptacle. The receptacle is then filled with grease or other pasty and semisolid substance as desired and the shaft or winding member 6 is passed through or into the coiled spring 29 and laid in place in the slots or recesses 5 in the end of the receptacle, the flexible connector 18 at the same time being passed through or otherwise attached to the shaft 6. The end closure is then placed in position over the upper end of the receptacle with the gear members engaged and its shoulder or flange 9 pressed or crimped around the other shoulder 4 on the enlargement 3 of the receptacle.

In the modified form shown in Fig. 10, the head 25 is first attached to one end of the receptacle. A flexible connector 18^a of proper length is then coupled at one end to the piston 15^a, and after being passed around the shaft 34, is fastened to the shaft 6^a. The piston is then inserted into the body of the receptacle and the end closure 71 fastened thereto in the manner stated. The receptacle is then filled with soap, grease or other pasty substance through the discharge opening at the other end of the receptacle. It will be obvious that other methods of assembling may be practised, the foregoing being merely illustrative of one thereof.

To prevent the winding shaft or member 6^a from being turned in the wrong direction, there is placed upon the same as illustrated in Figs. 1 and 5, a small coiled wire or helical spring 29 having one end thereof secured to the internal surface of the receptacle, as at 31, and the other end being free. This coil is made of spring wire so wound as to fit closely on the shaft or winding member. Consequently when the shaft or winding member is turned in the proper direction to move the piston or follower toward the discharge orifice, the coil is slightly opened up and offers no material resistance to the rotation of the winding member. When, however it is attempted to turn the key or shaft in the opposite direction, the coil immediately closes up and grips the key or shaft with such force as to prevent backward rotation unless some of the parts are broken. It is intended, however, that all of the parts of the device shall be of such strength that no break will occur under ordinary use of the same. Either a single spring may be used, as in Fig. 5, or more than one, as in Fig. 1.

It will be observed that with the present construction the operating parts of my improved receptacle or container are all disposed within the body of the tube or casing. When desired to discharge a quantity of grease from the same, the end cap or cover 12 will be rotated to bring the aperture or orifices 14, 14^a into registration with each other and the end closure 7 gripped with one hand by means of the knurled surface on the annular rim 8 thereof and the body of the receptacle 1 gripped with the other hand. Rotation of the body of the receptacle 1 upon the closure 7, or vice versa, will then cause the winding shaft 6 to be rotated through the medium of gear members 19 and 21 upon the interior surface of the end closure 7. Rotation of the winding shaft 6 will exert tension upon the flexible connector 18 and pull or draw the piston or follower 15 longitudinally along the casing or receptacle 1 and force its contents out of the discharge openings 14, 14^a in any desired quantities.

In the modified form shown in Fig. 10, 130

the only feature of operation which is different from that in Figs. 1 and 5 is that the discharge orifice is at the other end of the receptacle. In this form of the invention when it is desired to discharge the grease therefrom, the spout 10^a will be opened and the receptacle 1^a gripped with one hand. Rotation of the closure 71 by gripping the knurled annular portion thereof will thereupon rotate winding shaft and wind the flexible connector thereon. The piston or follower 15^a will, therefore, be drawn longitudinally of the receptacle and the flexible connector 18^a will run over the supporting shaft 34 as a sheave. The grease or other contents of the receptacle will be discharged through the discharge opening 10^a in the manner above stated.

What I claim is:

1. A device of the character described, comprising a paper tube having an enlargement in its end providing a shoulder, an end closure having a portion engaged with said shoulder, a shaft extending across said tube and having its ends rotatably mounted in said enlargement, a piston or follower movable in said tube, and connections between said shaft and piston or follower and between said end closure and shaft, whereby upon rotation of said end closure said piston is moved in said tube to discharge the contents therefrom.

2. A device of the character described, comprising a paper tube having an enlargement in its end providing a shoulder, an end closure having a portion engaged with said shoulder, a shaft extending across said tube and having its ends rotatably mounted in said enlargement, a piston or follower movable in said tube, connections between said shaft and piston or follower and between said end closure and shaft, whereby upon rotation of said end closure said piston is moved in said tube to discharge the contents therefrom, and means for preventing backward rotation of said end closure.

3. A device of the character described, comprising a receptacle having a discharge orifice, an end closure rotatably mounted on the receptacle, a piston or follower in said receptacle, a winding shaft rotatably mounted in said receptacle, a flexible connector secured to the piston and adapted to be wound on said shaft, and connections between said end closure and winding shaft whereby the shaft may be rotated from the end closure to move the piston and force the contents of the receptacle throughout the discharge orifice.

4. A device of the character described, comprising a receptacle having a discharge orifice, an end closure rotatably mounted on the receptacle, means in said receptacle arranged when operated to force the con-

tents through the discharge orifice, a transverse shaft rotatably mounted in said receptacle, connections between the middle portion of said shaft and said means for operating the same, connections between said end closure and said shaft whereby the shaft may be rotated from the end closure, and coiled springs closely surrounding the ends of said shaft, each of said springs having one end free and the other end secured to a fixed part of the receptacle to prevent rotation of said shaft except in one direction.

5. A device of the character described, comprising a receptacle having a discharge orifice, an end closure rotatably mounted on the receptacle, a piston or follower in said receptacle, a winding shaft rotatably mounted in said receptacle, a flexible connector secured to the piston and adapted to be wound on said shaft, and connections between said end closure and winding shaft whereby the shaft may be rotated to move the piston and force the contents of the receptacle through the discharge orifice, said connections comprising gear teeth on the shaft, and a cooperating gear therefor on the end closure.

6. A device of the character described, comprising a tube having a discharge orifice and provided with an annular shoulder, an end closure therefor having an annular portion fitting said shoulder, a piston or follower movable in the tube, a winding shaft rotatably mounted in the tube and having a gear thereon, and a flexible member connected to the piston and adapted to be wound on said shaft, the inner surface of the end closure being provided with gear teeth arranged to operate said gear.

7. In a device of the character described, the combination of a piston, a draw band therefor passing through the piston and means for retaining the piston on the draw band, comprising a retaining member, the draw band having a loop projecting through the retaining member, a clip within the loop, the draw band having its free end bent laterally and held between the piston and retaining member.

8. A device of the character described, comprising a piston, a draw band therefor passing through the piston, and means for retaining the piston on the draw band, comprising a retaining member, the draw band having a portion passing through the retaining member and bent to form a wide flat loop, a flat clip within the loop, the draw band having its free end bent laterally and held between the piston and the retaining member.

9. A device of the character described, comprising a cylinder having an enlarged end provided with an annular shoulder, said enlarged end having oppositely disposed notches, an end closure having an inturnd

annular shoulder rotatably mounted on said
cylinder, a winding shaft seated in said
notches, a piston in said cylinder, a flexible
member connecting the shaft and piston, and
5 connections between said end closure and
shaft for rotating the latter to force the con-
tents of the receptacle therefrom.

In testimony whereof, I have hereunto set
my hand.

JAMES F. CRAVEN.

Witnesses:

F. W. WINTER,
MARY E. CAHOON.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents,
Washington, D. C."