

[54] **TWISTABLE BAG TYPE DISPENSER**  
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[21] Appl. No.: **387,706**

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[52] **U.S. Cl.**..... 222/105, 222/386.5, 401/154  
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 135, 90, 391; 401/66, 152, 154

[57] **ABSTRACT**

A bag type fluid or paste dispenser in which the content material to be dispensed is contained within a flexible bag having one end communicating with a dispensing valve while the other end is adapted to be twisted to generate pressure for release of material in response to valve operation.

[56] **References Cited**  
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**4 Claims, 4 Drawing Figures**

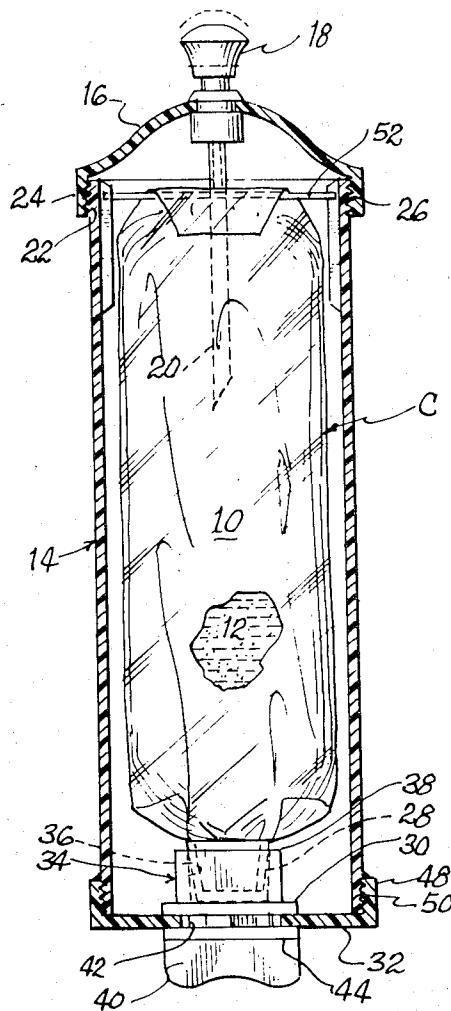


FIG. 1

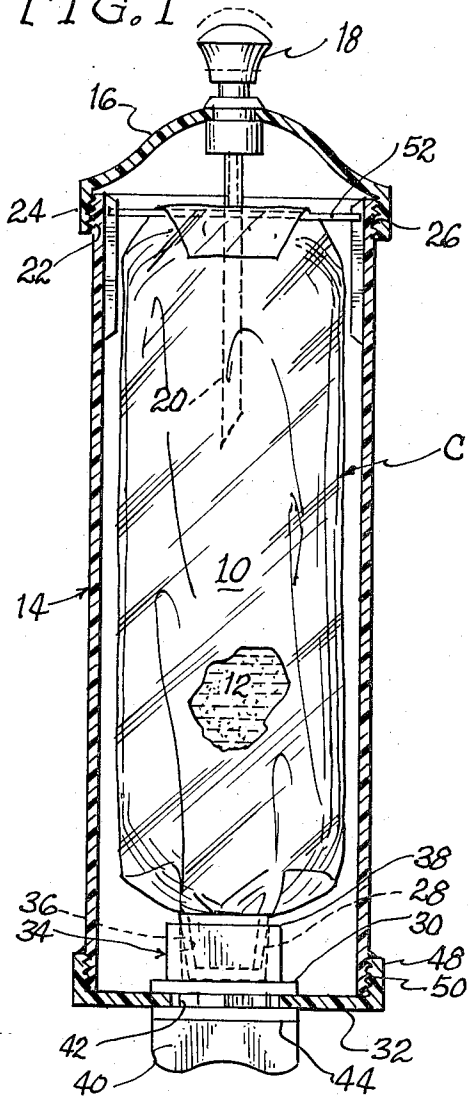


FIG. 2

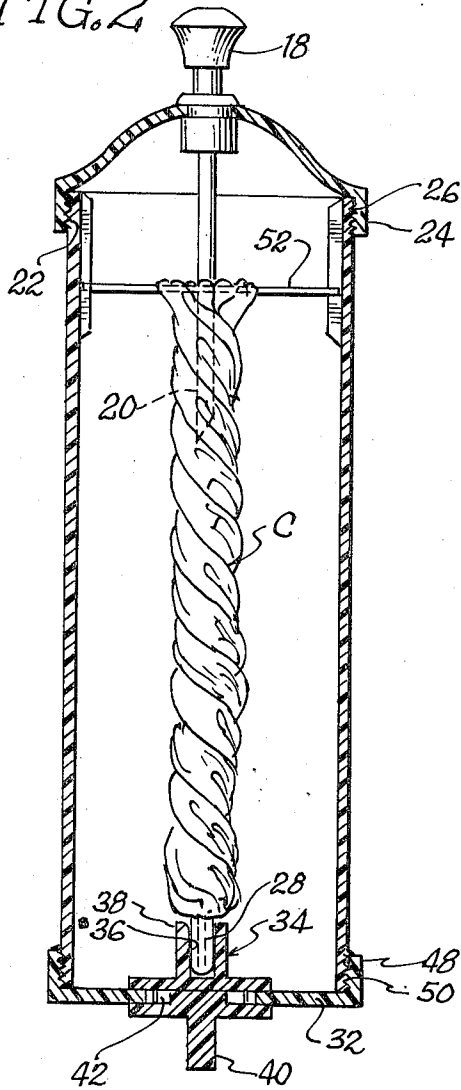


FIG. 3

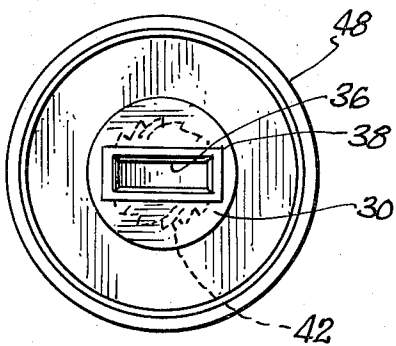
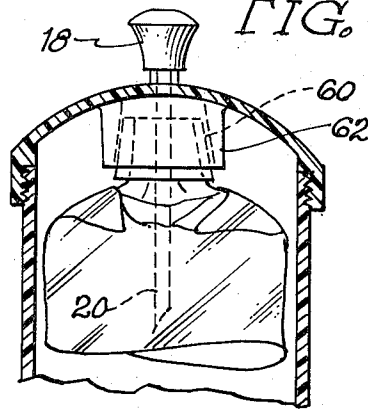


FIG. 4



## TWISTABLE BAG TYPE DISPENSER

This is a related application to my copending application Ser. No. 308,548, filed Nov. 21, 1972, and entitled "Bag Type Fluid Dispenser and Method for Loading the Same".

This invention relates to a non-aerosol type fluid or paste dispenser, which makes use of mechanical pressure generated by a flexible bag for ejection of the paste or fluid in response to release by a manually operable valve.

In the aforementioned copending application, description is made of a rigid dispensing container having a flexible diaphragm secured at its periphery to the open upper end of the container. The container is subsequently sealed by a closure fitted with a dispensing valve. The diaphragm is stretched to substantially line the inner wall of the container and it is retained in the stretched condition by a latching means provided in the bottom wall of the container, releasably to grip an element projecting from the bottom side of the diaphragm when the diaphragm is in stretched position.

Fluid or paste material, to be dispensed from the container, is introduced into the interior of the stretched diaphragm through the open upper end of the container, in an amount substantially to fill the container. Thereafter, the cover is mounted in sealed relation to close the upper end of the container, to complete the dispensing package in which the fluid or paste to be dispensed is housed in sealed relation within the container but without subjecting the material to pressure.

The filled container can be stored, shipped or displayed in the pressureless state thereby to avoid loss due to leakage, marring the appearance of the container due to leakage of content material, or danger of explosion due to internal pressures.

When it is desired to place the container into operation for dispensing content material, the latch is operated from the outside to release its grip on the diaphragm thereby to release the stretched diaphragm for normal return to its relaxed position. Thus the diaphragm becomes effective to impose pressure on the fluid or paste contained therein whereby such fluid or paste is ejected from the container in response to the operation of the valve and in amounts controlled thereby.

It is an object of this invention to produce a non-aerosol type fluid and paste dispenser of the type described but in which a modification is embodied for the generation of pressure sufficient to achieve the desired rate of ejection of content material, in which pressures can be regenerated to bring the operative dispensing pressures to a desired level as ejection proceeds, and in which the container can be reloaded with a replaceable bag for dispensing the same or a different fluid or paste material, and it relates further to a cartridge for loading or reloading the container.

These and other objects and advantages of this invention will hereinafter appear and for purposes of illustration, but not of limitation, an embodiment of the invention is shown in the accompanying drawings, in which:

FIG. 1 is a schematic sectional elevational view showing the loaded dispensing package embodying the features of this invention;

FIG. 2 is a sectional elevational view similar to that of FIG. 1 showing the dispensing package after the con-

tent material has been substantially completely dispensed therefrom;

FIG. 3 is a top plan view of the female turntable illustrated in FIG. 1; and

FIG. 4 is a sectional view showing a modification in the construction at the top of the container for interengagement between the bag and cover.

Instead of making use of a diaphragm which is secured at its edges to the container and stretched to extended position to be filled with the fluid or paste to be dispensed, the modification of this invention comprises the use of a bag 10 that is formed of a flexible material that is impervious to the fluid or paste 12 preloaded to fill the bag. The filled bag, hereinafter referred to as the cartridge C, is dimensioned to be received in fitting relationship within an elongate housing 14 or enclosure which may be formed to various shapes, such as square, rectangular, oblong or other curvilinear shape, but preferably round or cylindrical in shape for use with a cartridge of similar shape adapted to be received in fitting relation therein.

Ordinarily, the housing will be formed with a removable closure 16 at the top which is fitted with a dispensing pressure release valve 18 of conventional construction, and with a hollow piercing needle 20 which extends downwardly from the valve for a distance beyond the upper end of the housing for piercing the top wall of the cartridge, so that the needle will extend into the interior of the bag for communication with the content material. The closure is provided with screw threads 22 on the internal wall of a cylindrical extension 24, for threaded engagement with the threaded end portion 26 on the outer wall of the upper end of the housing. Thus the closure and valve can be replaceably secured onto the open end of the housing after the filled cartridge has been inserted into position of use. The cover can be removed from the open end of the housing to enable removal of an exhausted cartridge and replacement with another that is filled.

The cartridge is provided with a member 28 which extends lengthwise from the bottom side thereof into engagement with a turntable 30 mounted for rotational movement in one direction in the bottom wall 32 of the housing. For this purpose, the bottom wall of the cartridge is provided with an extension in the form of a bar 28 or other member having a shape other than round, which functions as a male member adapted to be received in a corresponding aligned slot or opening 36 of a female member 34, which forms a part of the turntable, either as a recess therein or as an extension 38, having the desired aligned slot or opening.

The turntable 30 is mounted in an opening in the bottom wall 32 of the housing and is provided with a turning key 40 which extends outwardly beyond the bottom wall to provide a finger grip for actuation of the turntable. Means are provided for supporting the turntable within the opening in the bottom wall in a manner which permits free turning movement in one direction and which blocks turning movement in the opposite direction. For this purpose, the peripheries of the turntable and the wall adjacent the opening in which the turntable operates are provided with interengaging ratchets 42 which are angled in a manner to enable override in one direction while blocking relative turning movement in the opposite direction.

The turntable is maintained in the desired position within the opening of the bottom wall by a bottom plate

44 which is dimensioned to span the opening and overlap portions of the bottom wall, to which it is secured, as by rivets, setscrews, adhesive, or other suitable fastening means.

The bottom plate is provided with a journal which rotatably supports the shaft of the turntable with the key 40 on the outwardly extending portion thereof and with the female member on the through extending portion. Instead, the turntable can be disposed for free turning movement between confining top and bottom plates fixed in spaced relation to the opposite side of the bottom wall.

When formed separate and apart from the housing, as shown in FIG. 1, the bottom wall is separately assembled with the turntable and secured as a pre-assembly to the open bottom end of the housing. For this purpose, the bottom wall is formed with an internally threaded, inwardly extending flanged portion 48 adapted threadably to engage the outer threaded end portion 50 of the housing.

Means are provided to stabilize the upper end of the cartridge to prevent turning movement relative to the enclosure. For this purpose, as shown in FIG. 1, the upper end of the cartridge is provided with an arm 52 which is in position to engage an abutment or stop rigid with the housing to block the upper end of the cartridge from turning. It is desirable for the abutment to be of a length sufficient to compensate for any lessening in the length of the cartridge during operation.

In the modification shown in FIG. 4, the cartridge is provided with a projection 60 which extends from its upper end, in a manner similar to that of the male member that extends from the bottom side. The female member having a slot dimensioned to receive the male member is secured as an extension 62 from the underside of the closure, preferably centrally aligned with the valve 18 but dimensioned to have a length less than the length of the hollow needle 20 so that the needle will extend beyond the interengaged male and female members, into the interior of the cartridge.

In practice, the pre-filled cartridge C is dropped into the open upper end of the housing and turned until the male member 28 fits as a key into the slot of the female member 34. Thereafter, the closure 16 is secured onto the housing and the hollow dispensing needle pierces the bag.

The dispenser is now ready for use. First the key 40 is turned whereby concurrent turning movement is imparted to the interengaged bottom end portion of the bag. The entire bag is free to turn until the upper end is blocked by the abutment 52 or by the interengagement previously affected between the male and female members, during mounting of the closure, as described with reference to FIG. 4.

Continued turning movement imparts turning movement of the lower portion of the bag relative to the remainder to provide a type of wringing action which places the fluid or paste content material under pressure. Turning movement is discontinued when sufficient pressure has been built up. Thereafter, when the valve is subsequently opened, the pent up pressure causes fluid or paste to flow from the bag and through the needle to the outlet opening of the valve.

When the amount dispensed is of the order to relax the internal pressure, additional turning movement can be imparted by turning the key to regenerate the desired dispensing pressure in the bag. This can be re-

peated until substantially all of the content material has been wrung from the bag, as illustrated in FIG. 2.

Thereafter the entire exhausted unit can be discarded, in the event that it is a single use dispenser. However, for purposes of economy, it is desirable to remove the empty cartridge for replacement by a filler in the form of a replaceable cartridge which has been pre-filled with content material.

For this purpose, it is only necessary to unscrew the closure 16 to free the open end of the housing for removal of the empty cartridge and for replacement by a filled cartridge in the manner previously described. The replaceable cartridge is turned to interengage the male and female members at the bottom and then the closure is screwed back onto the top.

It will be understood that the female and male members can be interchanged to provide the male member on the turntable and the female member on the bottom side or top side, as the case may be, of the bag. The bag is formed throughout its length of a resilient or flexible material, such as an elastomeric material which is fluid and vapor impervious and is capable of being tightly twisted to provide a wringing action. Such material may be selected of a natural or synthetic rubber such as a copolymer or interpolymer of butadiene with styrene, acrylonitrile and the like, polypropylene, silicone rubber, polyester rubber, and the like.

The housing can be formed of metal, plastic or paper-metal-plastic laminates, formed or otherwise molded to the desired shape.

It will be understood that changes may be made in the details of construction, arrangement and operation without departing from the spirit of the invention especially as defined in the following claims.

I claim:

1. In a bag type fluid or paste dispenser, a rigid enclosure having a dispensing valve at one end, a bag filled with the fluid or paste to be dispensed extending lengthwise within the enclosure in which the bag is formed of a flexible material which is impervious to the material being dispensed, means communicating the interior of one end of the bag with the dispensing valve, means stabilizing the one end of the bag against turning movement relative to the enclosure comprising an arm extending laterally from the upper end of the bag and an abutment fixed to the enclosure to extend into the path of the arm, and means operatively engaging the other end of the bag for turning the bag in one direction and to block turning movement of the bag in the opposite direction comprising a turntable supported in the bottom wall for rotational movement relative to the enclosure; male and female members one of which is fixed to the end of the bag while the other is fixed to the turntable for twisting the bag in response to turning movement of the turntable; and rake teeth in the adjacent peripheral surfaces between the turntable and bottom wall to enable override during turning movement in one direction while blocking turning movement in the opposite direction.

2. A dispenser as claimed in claim 1 in which the enclosure is an elongate enclosure and the bag is an elongate bag adapted to be received in fitting relationship within the enclosure.

3. A dispenser as claimed in claim 1 in which the enclosure comprises a rigid cylindrical member and the bag is also of cylindrical shape.

4. A dispenser as claimed in claim 1 in which the turntable is rotatably supported by the enclosure with a portion extending beyond the enclosure for access to the exterior for turning movement.

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