

(12) UK Patent Application (19) GB (11) 2 168 931 A

(43) Application published 2 Jul 1986

(21) Application No 8530888

(22) Date of filing 16 Dec 1985

(30) Priority data

(31) 681604 (32) 14 Dec 1984 (33) US

(71) Applicant  
Colgate-Palmolive Company (USA-Delaware),  
300 Park Avenue, New York, New York 10022, United  
States of America

(72) Inventors  
Eric Baines,  
Harry Greenland,  
Apinan Rothanavibhata

(74) Agent and/or Address for Service  
Kilburn & Strode, 30 John Street, London WC1N 2DD

(51) INT CL<sup>4</sup>  
B43K 29/00 G01F 19/00

(52) Domestic classification (Edition H):  
B6P ADE  
B8N S

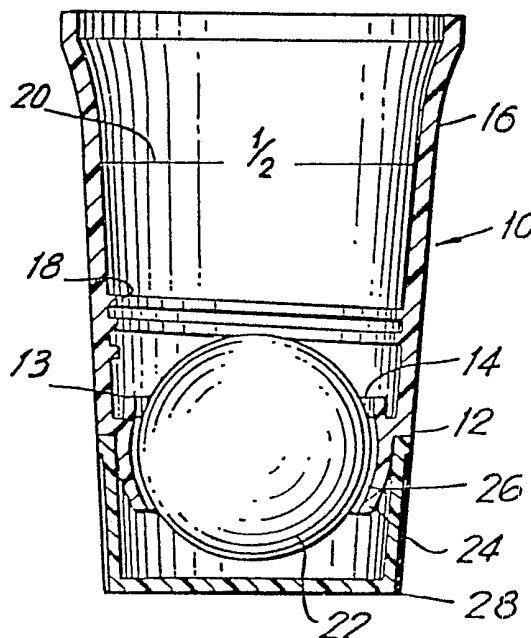
(56) Documents cited  
GB A 2143725 GB 1372577  
GB A 2140675 GB 0844082  
GB A 2082124 GB 0405901

(58) Field of search  
B6P  
B8N  
A4K  
Selected US specifications from IPC sub-classes G01F  
B43K

(54) Multipurpose container closure

(57) A multi-purpose container closure comprising a cap 10, an applicator means 22 passing through the said cap, and a fluid-tight overcap 24 to seal the said applicator means. When the assembly is removed from the container it may be used to measure a dose of liquid.

FIG. 3



GB 2 168 931 A

1/2

FIG. 1

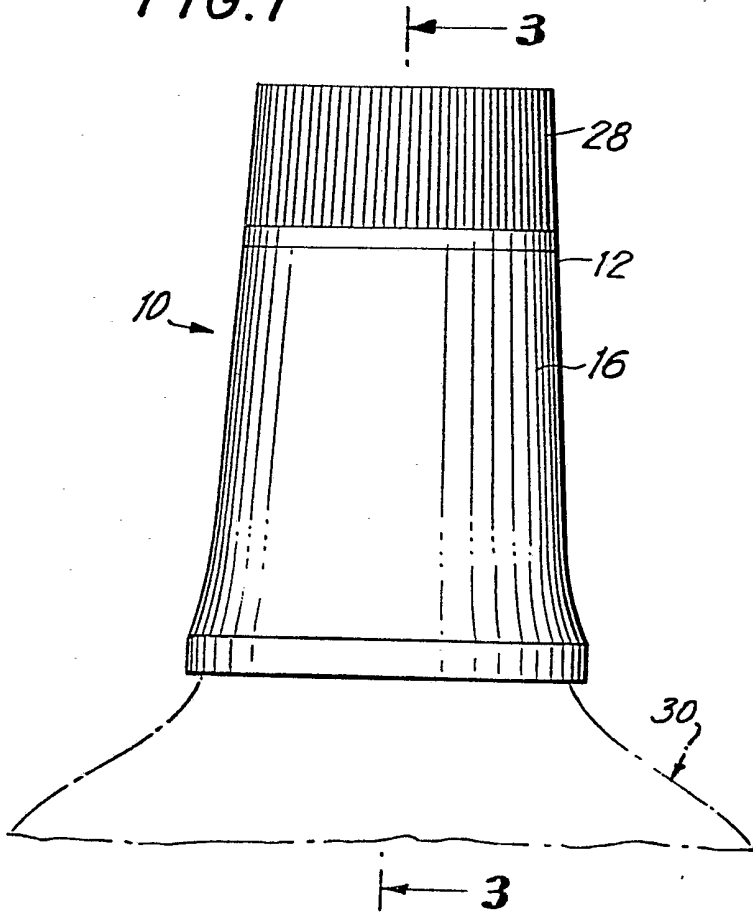


FIG. 2

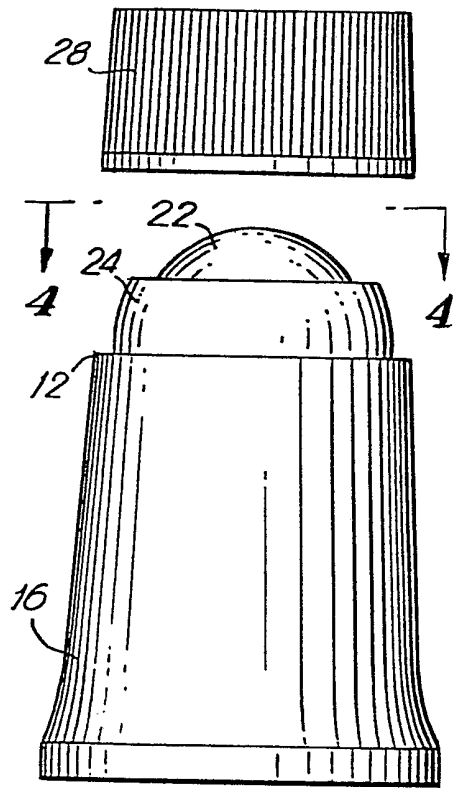


FIG. 3

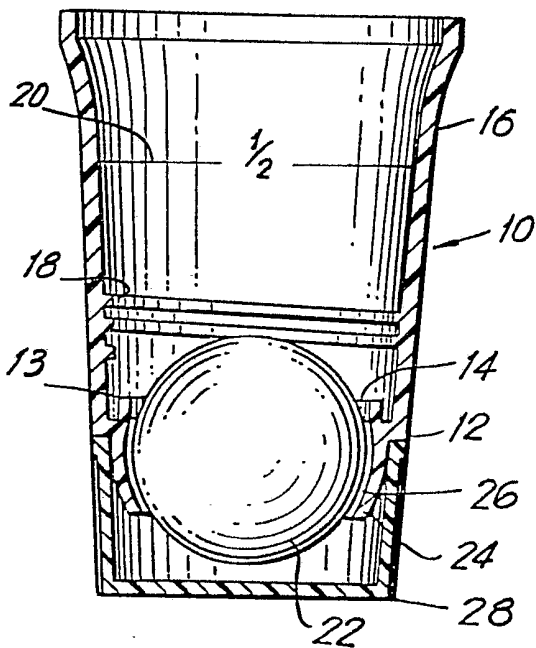
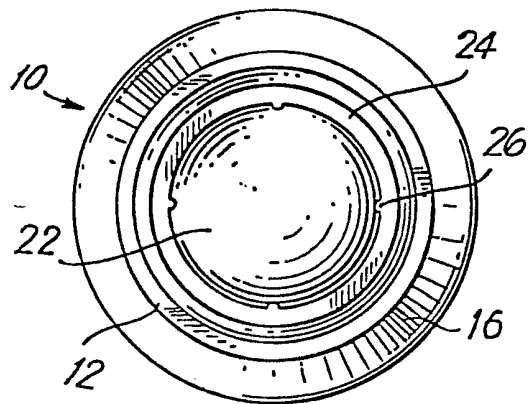


FIG. 4



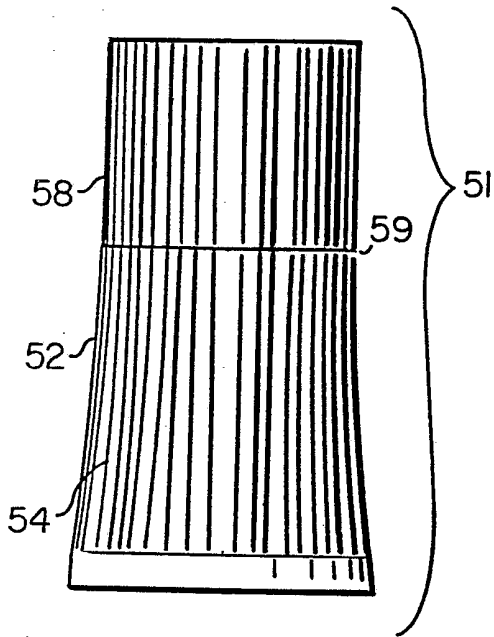


FIG. 5

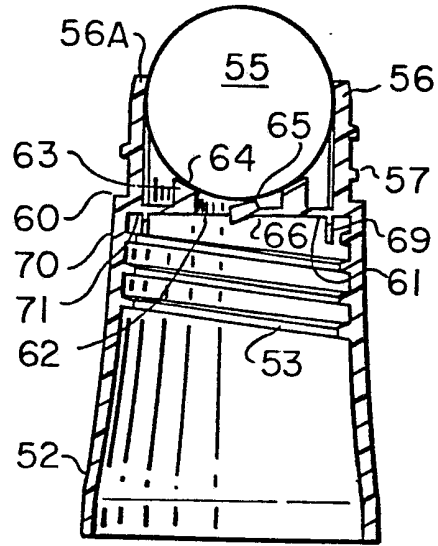


FIG. 6

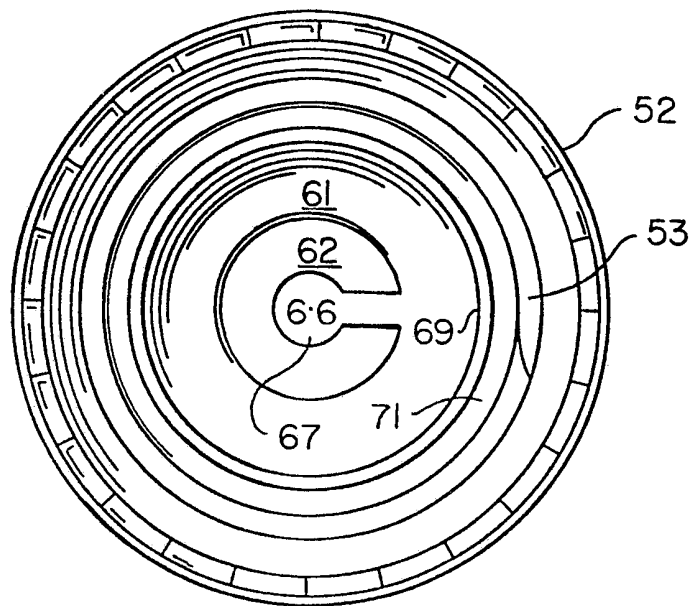


FIG. 7

## SPECIFICATION

**Multi-purpose container closure**

5 The present invention relates to a multi-purpose container closure for applying cleaning agents to localised soiled areas of textiles or the like and for measuring dose amounts of such cleaning agents for normal cleaning operations in an automatic washing machine. More particularly, this invention pertains to a combined applicator/dose measuring cap for liquid laundry detergents and the like.

10 An advantage of known heavy duty liquid laundry detergents is that, in their concentrated form, they function as pre-treatment compositions on heavily stained areas of textile fabrics. Such stains may be of biological origin, such as perspiration, blood or the like, or they may be the result of heavy concentration of soil in certain areas of the fabric such as grease stains, food stains, cosmetic stains, grass stains, or similar localised staining on an otherwise soiled garment. The usual method of pre-treating these stains has been to either prepare a pre-soaking solution or to pour a concentrated liquid laundry detergent on the stained areas and rub the stained material upon itself to loosen the stain, and then to wash the garment or fabric with other articles in an automatic washing machine. These methods of use are somewhat messy and time-consuming, and do not control the amount of liquid heavy duty laundry detergent applied and offer results in an excess usage of such detergent.

15 Another factor to be considered when using liquid laundry detergent and the like in automatic washing machines is proper dosage so that a sufficient amount of the liquid detergent is used in the wash cycle without adding an excess amount which can be wasteful, both by giving no significant additional cleaning effect and by failing to be fully rinsed out of the fabric during the normal washer cycles, thereby leaving the fabric not fully cleaned.

20 To treat stains on fabric, a number of pre-spotters have been used to get a pre-spotting liquid to the soiled area. These have included rolls, pads, sprays and like small volume delivery systems. While they solve the problem to varying degrees, they are not wholly satisfactory in providing a sufficient dose of cleaning agent for operation of an automatic washing machine.

25 The present invention aims to provide an applicator/dosing closure system which will not be subject to one or more of the above disadvantages.

30 The invention provides a multi-purpose container closure comprising a cap with an applicator, means passing therethrough and a fluid-tight overcap to seal the applicator means and which is detachable from the container closure to provide a measuring means to dose liquids from the container.

35 In a preferred embodiment the applicator means is a freely rotatable mounted ball which is held in a socket in the top wall of the closure cap.

40 The invention may be put into practice in various ways and a number of specific embodiments will

be described by way of example with reference to the accompanying drawings, in which:

45 *Figure 1* is a side view showing the container closure of the invention;

50 *Figure 2* is an elevational view showing the container closure with its overcap removed exposing the applicator ball;

55 *Figure 3* is a sectional view taken along the line 3-3 of *Figure 1*, showing the container closure in an inverted measuring mode;

60 *Figure 4* is a top plan view of the container closure taken on line 4-4 of *Figure 2*;

65 *Figure 5* is a side view showing another embodiment of the container closure of the present invention;

70 *Figure 6* is a cross-sectional view of the said other embodiment of *Figure 5*; and

75 *Figure 7* is a view when looking into the bottom of the said closure of the embodiment of *Figure 5*.

80 The invention provides a novel container closure 10 comprising a top wall 12 having a central circular opening 14, a depending circular inner ring 13 (see *Figure 3*), and an outwardly depending side wall 16, which may be circular or outwardly flared as shown. A generally helical thread 18 is formed on the interior surface of the side wall 16 (see *Figure 3*). The graduation mark 20 may also be formed on the interior surface of the side wall 16.

85 The opening 14 is adapted to receive an applicator ball 22, whose diameter is larger than the diameter of the opening 14 in the top wall 12. A retainer ring 24 is provided on the top surface of the top wall 12 to form a socket to retain the applicator ball 22 and to permit it to be universally freely rotatable. The retainer ring 24 may be integrally molded with the container closure 10 and may flex to admit insertion of the applicator ball 22 into the socket formed. Projections 26 (see *Figure 4*) may be provided on the interior surface of the retainer ring 24 to provide a discrete space between the applicator ball 22 and the interior surface of the retainer ring to permit the controlled flow of liquid to the external surface of the applicator ball.

90 An overcap 28 detachably fits over the top of the container closure 10 to provide a fluid-tight seal of the applicator means.

95 The container closure 10 is used to close a bottle 30 (shown in phantom, broken-away form in *Figure 1*) which may contain liquid heavy duty laundry detergent or the like. The closure may be attached by means of a helical thread on the neck of the bottle 30 which cooperates with the thread 18 on the interior surface of the side wall 16 of the container closure 10. Other conventional means for releasable attachment such as snap-fit or the like are also contemplated.

100 The exterior surfaces of the cap and of the overcap may be fluted, grooved or knurled to provide a sure gripping surface for positive removal to permit use of the cap for its various functions.

105 The container closure of the invention conveniently may be used as follows. As a fabric pre-spotter, the overcap 28 is removed from the container closure 10, thus exposing the exterior surface of

the applicator ball 22. The fluid-filled container 30 is inverted and the applicator ball 22 is run over the stained surface, thus delivering the liquid contents of the container 30 to the stained area. The mechanical force of the applicator roller will be effective to at least partially loosen the staining material from the fabric substrate in the presence of the liquid heavy duty laundry detergent. After applying the pretreating amount of liquid detergent to the stained areas, the overcap 28 is replaced and the container closure 10 is detached from the liquid container, inverted, and used to measure a proper dose of liquid laundry detergent for use in an automatic washing machine.

The bottom surface of the inner ring 13 serves as a stop or abutment to ensure that the top lip of the bottle 30 seats properly so as not to interfere with the smooth rotation of applicator ball 22.

The second preferred embodiment shown in Figures 5 to 7, has a container closure 51 which includes two components. The first component is a lower tubular cap 52 which is to be threaded onto the mouth of a bottle 30, of the type shown in Figure 1. Its outside surface carries conventional striations 54 to assist in removal of the lower tubular cap 52 from the bottle in a conventional manner.

It will be seen from the cross sectional view shown in Figure 6 that the lower tubular cap 52 is downwardly outwardly flared, i.e. arranged to embrace a portion of the neck of the said bottle 30. The design of the flare will be varied to appropriately accommodate the neck of the bottle.

Helical threads 53, are provided inside the lower tubular cap 52, adapted and constructed to threadedly engage the externally positioned threads normally found about the pour spouts of bottles containing liquid detergent formulations.

The lower tubular cap 52 has mounted, internally, a rotatable and relatively loose fitting ball 55. The ball 55 is positioned internally of an upwardly extending tubular collar 56 which is concentric with the lower portion of the lower tubular cap 52 but is of a somewhat smaller diameter.

The outwardly facing surface of the said collar 56 is provided with radially outwardly facing threads 57 adapted and constructed to be threadedly engageable with inwardly extending internal threads of the closure cap 58 as shown in Figure 5. It will be seen that the construction of the collar 56 with a smaller diameter permits the external surface of the cap 58 to fit flush with the external surface of the upper portion of the lower tubular cap 52 to present an aesthetically pleasing effect. The cap 58 is also appropriately striated for aesthetics and to promote ease of removal.

The downwardly depending edge 59 of the cap 58 is permitted to be in abutment with an annular shoulder 60 located at the juncture of the collar 56 and the upper portion of the said lower portion of the lower tubular cap 52.

The ball 55 has a somewhat larger diameter than the upwardly extending edge portion 56A of the collar 56 whereby the ball is prevented from falling out of the collar. As at least the said collar is manufactured from deformable material such as a ther-

moplastic material, the said edge portion 56A may be temporarily deformed, that is, briefly widened, to accommodate the passage therethrough of the ball 55 during assembly of the device.

The ball 55 is further maintained into its desired position by an annular cross-piece 61, the ball being sealed against the upwardly facing portion thereof. The annular cross-piece has a centrally located concentric opening 62. The cross-piece 61 is fitted with an upwardly extending annular abutment 63 located about the said opening 62. The upwardly facing edge 64 of the said abutment has a downwardly inwardly facing sloped surface arranged to accommodate a surface portion of the ball and to act as a seat therefor.

From Figure 7 it will be noted that a keyhole shaped appendage 66 extends into and somewhat across the said opening 62. One end of this appendage is integral with the said cross-piece 61. The other wider end 67 has an upwardly facing block portion 65 adapted and constructed to abut against the lower most portion of the ball. The appendage 66 is arranged to urge the ball upwardly against the upwardly extending edge portion 56A of the collar 56 designed to restrain the ball in place. In doing so the ball seals the bottle and the contents therein.

The cross-piece 61 also has a downwardly depending annular flange 69 in upwardly spaced relationship with the upper portion 70 of the lower tubular cap 52. The space defined therebetween is designed to accept the upwardly extending portion of the mouth of the bottle containing the liquid detergent. The bottle is sealed at its upwardly extending edge as it is in sealing engagement with the underside 71 of the cross-piece defined by said annular flange 69 and the upper portion of the lower tubular cap 52.

In use, the cap 58 of this embodiment is unscrewed. The bottle 30 is inverted. The ball 55 of the assembly is brought into rolling and touching relationship with the surface of the soiled material. A relatively slight pressure on the ball 55 will upset the ball 55 from its abutting sealing position with respect to the upwardly extending edge portion 56A of the collar 56. As the diameter of the said collar is larger in the direction of the cross-piece an annular space will be disposed about the said ball permitting the passage of some liquid detergent. The amount of liquid and/or the speed of dispensing is a function of the size of the said annular space, the period of time of inversion of the bottle and the viscosity of the liquid detergent. Usually the liquid detergent has a viscosity in the range of 1500-2500 cps. One could, of course, make suitable adjustments to the system to accommodate different viscosities.

The invention may be embodied in other specific forms without departing from the spirit or essential characteristics thereof. The present embodiments are, therefore, to be considered in all respects as illustrative and not restrictive, the scope of the invention being indicated by the appended claims rather than by the foregoing description, and all changes which come within the meaning and

range of equivalency of the claims are therefor intended to be embraced therein.

#### CLAIMS

5

1. A multi-purpose container closure comprising a cap, an applicator means passing through the said cap, a fluid-tight overcap to seal the said applicator means, and having liquid-metering or

10

measuring means to provide controlled or dose amounts of liquid from the container closure.  
2. A closure as claimed in Claim 1, in which the applicator means is a universally freely rotatably mounted ball.

15

3. A multi-purpose container closure comprising a fluid applicator means having a top wall, having a circular opening therein, a depending circular inner ring, and a depending exterior sidewall, an applicator ball, and a retaining ring which with

20

the said circular opening forms a socket to retain the said applicator ball, a detachably mounted overcap to provide fluid-tight seal of the said applicator means, and a fluid measuring and dispensing means having means to detachably fasten the said

25

container closure to a container to close the said container, the said detached container closure being provided with means to measure out dose amounts of the contents of the said container or deliver controlled amounts therefrom.

30

4. A container closure as claimed in Claim 3, in which said retainer ring is integral with the said top wall.  
5. A container closure as claimed in Claim 3 or Claim 4, in which a projection is provided on the

35

interior surface of the retaining ring.  
6. A container closure as claimed in Claim 3, 4 or 5, in which graduations are provided on the interior surface of the said side wall.  
7. A container closure as claimed in Claim 3, 4,

40

5 or 6, in which said circular inner ring provides a stop for the travel of the container neck.  
8. A container closure as claimed in any one of Claims 3 to 7, in which the said applicator ball is universally freely rotatably mounted.

45

9. A container closure as claimed in any one Claims 3 to 8, in which the outer surface of the container closure is fluted, grooved or knurled.

10. A container closure as claimed in any one of Claims 3 to 9 in which the exterior sides of the

50

overcap are fluted, grooved or knurled.  
11. A container closure as claimed in Claim 1 or Claim 2, in which said cap has an upper annular tubular portion adapted and constructed to permit a portion of the said applicator ball to protrude therefrom, the said ball being partly restrained by an upper annular edge portion which is of a smaller diameter than the said ball, the said ball also being partly restrained by an annular cross-piece means displaced from the said upper annular

60

edge portion.  
12. A container closure as claimed in Claim 1, 2 or 11, in which the said annular cross-piece has an annular seat adapted and constructed to lie against a portion of the said ball.

65

13. A container closure as claimed in Claim 12,

in which the cross-piece has a resilient extension extending inwardly and preferably radially and adapted and constructed to lie against the said ball and to urge the said ball in the direction of the said upper annular edge portion when at an at-rest position and to define an annular space about the said ball when the said ball is pressed against the said seat and the said resilient extension.

70

14. A container closure as claimed in Claim 13, in which the cross-piece has a depending flange extending downwardly opposite to the said seat whereby together with an internal portion of the said cap and an annular portion of the said cross-piece to define an annular space whereby to receive the mouth portion of a bottle whenever the said cap is affixed to the said bottle.

75

80

15. A container closure as claimed in Claim 1 substantially as specifically described with reference to Figures 1 to 4 or 5 to 7 of the accompanying drawings.

85

Printed in the UK for HMSO, D8818935, 5/86, 7102.  
Published by The Patent Office, 25 Southampton Buildings, London, WC2A 1AY, from which copies may be obtained.