

"CONTAINER AND AN INSERT THEREFOR "

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3 The present invention relates to a container and
4 insert, which can be used for controlled release of a
5 preferably liquid medium, such as a liquid detergent.
6 The container may be in the form of a cup with a dosage
7 insert connected to the said cup.

8 It is in principle known to use a container
9 comprising two halves, one or both of which is provided
10 with openings for the more or less controlled release
11 of a medium inside the container to another medium, the
12 said container either being in contact with or immersed
13 in the said other medium. If this principle is to be
14 used for the controlled release of e.g. a liquid
15 detergent in the drum of a washing machine it is
16 desirable that the detergent should be released in such
17 a way as not to come into direct contact with the
18 clothes in a too concentrated form, since this might
19 damage the clothes. Furthermore the container must be
20 able to resist the strong forces it is subjected to
21 during the washing process, such as especially during
22 spin-drying, without running the risk of being broken
23 or coming apart, since the sharp edges so formed or
24 exposed by the container coming apart could damage the
25 clothes.

26 According to the present invention there is
27 provided a container having an opening defined by a
28 flange or a neck and an insert having first means for
29 engaging the outer surface of the flange or the neck of
30 the container and second means for engaging the inner
31 surface of the container, the insert being provided
32 with flexure means disposed between the said first and
33 second means and locking means extending from the

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1 second means across the insert, the locking means being
2 so dimensioned and constructed as to be movable between
3 two positions, in one of which, the locking position,
4 with the insert located in the opening to the container
5 and the first means bearing against the outer surface
6 of the flange or the neck, the locking means urge the
7 second means into engagement with the inner surface of
8 the flange or the neck of the container and in the
9 other of the two positions, the removable position, the
10 locking means withdraw the second means inwardly
11 relative to the axis of the opening by movement about
12 the flexure means so as to enable the insert, when the
13 locking means are in this position, to be removed from
14 the opening to the container.

15 The invention also extends to a container
16 including a flange part which extends inwardly in a
17 radial direction to define an opening to the container,
18 the flange part having an inner surface, the container
19 opening being centred on a longitudinal axis normal to
20 the radial direction, and a locking insert removably
21 insertable in the container opening, the locking insert
22 comprising a counterpart adapted to be fitted within
23 the said container opening, and a locking part, the
24 counterpart defining an insert opening, the said
25 locking part comprising at least one member, one end of
26 which is swingably hinged by a first hinge part to the
27 said counterpart, and the other end of the member being
28 hingably joined by a second hinge part to a connection
29 body positioned in the said insert opening, the said
30 one end of the said member having an abutting surface,
31 longitudinally along the said axis between two stable
32 positions, so that when the said connection body is in
33 a first one of the said two stable positions, the said

1 abutting surface of the said one end of the said member
2 extends radially inwardly of the said container
3 opening, thereby allowing insertion of the said locking
4 insert in the said container opening, and when the said
5 connection body is moved to the second of the said two
6 stable positions, the said member swings on its first
7 and second hinge parts to extend the said abutting
8 surface radially outward and urged into abutment
9 against the said inner surface of the flange part,
10 thereby locking the said insert in the said container
11 opening.

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13 Preferably the said flange part of the
14 container is formed by a shoulder which extends
15 inwardly in the radial direction and continues into a
16 neck extending upwardly in the longitudinal direction,
17 the said neck having a collar at an upper end thereof
18 which extends outwardly in the radial direction, and
19 wherein the said counterpart of the insert is formed
20 with an upper portion having a circular groove for
21 receiving the said flange part of the container.

22 The said groove is preferably provided with
23 locking means for gripping the said collar of the said
24 flange part of the container. The said counterpart of
25 the insert is preferably provided with one or more
26 beads on an outer surface thereof for forming a seal
27 with the said flange part of the container. The said
28 member of the said locking part of the insert
29 preferably has a curved configuration. The said
30 connection body is preferably a cup-shaped body. The
31 said cup-shaped body preferably includes an inner
32 transverse rib which faces upwardly relative to the
33 said insert opening.

1 The said locking insert preferably includes a
2 cylinder which extends from an inner rim of the said
3 counterpart into the inside of the said container and
4 has a slot or slots formed therein which are aligned
5 with the said member or members. The said cylinder
6 preferably extends down to a bottom portion of the said
7 container and abuts an annular abutment surface formed
8 on the said bottom portion. The said cylinder may
9 include one or more members in the form of blades which
10 extend into the container. The said counterpart may
11 include one or more members in the form of blades which
12 extend into the said insert opening. The said locking
13 insert preferably includes a plurality of
14 circumferentially spaced members in the form of blades.
15 This arrangement preferably includes a cylinder which
16 extends from an inner rim of the said counterpart of
17 the locking insert into the inside of the said
18 container, the said cylinder including a plurality of
19 slots which are aligned with the said blades.

20 The invention also extends to the locking insert
21 per se.

22 A very secure and reliable connection between the
23 insert and the cup is obtained, since in its locked
24 position the locking and dosage part of the insert
25 presses the counterpart against the flange part of the
26 cup and is itself situated in the inside of the cup so
27 that it cannot from outside be accidentally forced to
28 leave this locked position. At the same time the
29 locking and dosage part causes a controlled release of
30 detergent, since its blades obstruct the
31 inflow of water into the inside of the container as
32 well as the outflow of detergent from the container.

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7 the terminal surfaces of the
8 blades are preferably situated on a diameter smaller
9 than the diameter of the opening of the cup in the
0 insertion position or configuration of the insert. In
1 order to insert the dosage insert into the cup, the
2 insert is brought to its removable configuration and
3 its counterpart located over the flange of the cup.

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1 The locking and dosage part of the dosage insert is
2 then moved to its locked position by pushing it down
3 through the opening in the cup. When this is done the
4 upper terminal surfaces of the members preferably in
5 the form of blades engage beneath the flange of the
6 cup. Thus this movement causes the terminal surfaces
7 of the members or blades to hinge outwardly so that
8 they extend to form a diameter larger than the internal
9 diameter of the cup opening. As a result a large
10 radial abutment surface between the terminal surfaces
11 of the members or blades and the inner surface of the
12 flange part of the cup is obtained and this affords a
13 very secure coupling between the cup and the insert.

14 The members or blades of the dosage insert are
15 preferably of double curvature, curving inwardly
16 towards the longitudinal axis of symmetry and
17 preferably spirally around the said axis.

18 This provides an additional obstruction ^{of} water
19 inflow into the container as well as detergent outflow
20 from the container.

21 ^{As discussed above} The connection body of the dosage insert is,
22 preferably, a cup-shaped body provided with an inner,
23 transverse rib, the cavity of the said body facing
24 towards the opening of the dosage insert when the
25 insert is in its locked position.

26 When the position of the dosage insert is to be
27 changed from the insertion position or removable
28 configuration to its locked position it is possible to
29 turn the locking and dosage part by inserting a
30 cooperating tool into the connection body while the
31 locking and dosage part is passed through the opening
32 of the counterpart.

33 ^{Also as discussed above} In addition there may be provided a cylinder
34 having slots spaced so as to correspond to
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1 the members which are preferably ~~shovel-shaped~~ blades.
 2 In use this cylinder is positioned inside the cup and
 3 extends from the inner rim of the counterpart of the
 4 dosage insert into the inside of the cup. The cylinder
 5 also extends down to the bottom of the cup, where the
 6 lower end of the said cylinder preferably abuts an
 7 ^{annular} ~~circular~~ abutment surface on the inside of the cup.

8 Thus an additional obstruction of the water inflow
 9 into the container as well as detergent outflow from
 10 the container is obtained. Also the rigidity of the
 11 container is increased, especially in the axial
 12 direction. This is of great importance when the
 13 containers are to be stacked or put on top of caps
 14 belonging to detergent containers which are to be
 15 stacked.

16 The invention may be put into practice in various
 17 ways and two specific embodiments will be described to
 18 illustrate the invention by way of example with
 19 reference to the accompanying drawings, in which:

20 Figure 1 shows a vertical section through an
 21 embodiment of a container according to the invention
 22 comprising a cup and dosage insert, the dosage insert
 23 being in the locked or operation position;

24 Figure 2 shows part of above section, the opening
 25 region, on a large scale;

26 Figure 3 shows the container of Figure 1, the
 27 dosage insert being in its insertion position or
 28 removable configuration;

29 Figure 4 is a top view of the above; and

30 Figure 5 shows a vertical sectional view through a
 31 second embodiment of container according to the
 32 present invention.

33 Figures 1 to 4 show a first embodiment of a
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container according to the invention comprising a cup 1 and a dosage insert 2 connected to the said cup and ready for use. The substantially spherical cup 1 is provided with an inwardly directed flange part 4 which defines a cup opening 3. The said flange part comprises an inwardly directed shoulder 5 (see Figure 2) continuing into an upwardly directed neck 6, the said neck being provided at its upper end with an outwardly directed collar 7.

The dosage insert 2 has a flange-like counterpart 8, shaped and dimensioned to cooperatively engage the flange part 4 of the cup 1. The dosage insert also has a locking and dosage part 15. The counterpart 8 abuts and envelopes the flange part 4 of the cup 1. It is provided with a circular groove 9 for receiving the neck 6 of the flange part 4. It comprises an outer wall 10, an upper wall 11 and an inner wall 12. The inner wall 12 extends towards the inside 14 of the cup substantially parallel to the neck 6 of the flange part 4 thus forming an opening 13.

The locking and dosage part 15 of the dosage insert 2 is able to occupy two positions or configurations in relation to the counterpart 8. These are an insertion position or removable configuration, as shown in Figure 3 and Figure 4, and a locked position, as shown in Figures 1 and 2. The locking and dosage part 15 is provided with a number of shovel-shaped blades 17 separated by curved trapezoidal-like openings 50. The blades 17 are connected to the inner rim 16 of the inner wall 12 of the counterpart 8 via thin-walled areas 18 which act as hinges. These shovel-shaped blades 17 possess upper terminal surfaces 19 abutting, as shown in the locked position in Figure 1, against

the inner portion 20 of the lower surface 51 of the flange part 4 of the cup 1. The blades 17 extend convergently from the said upper terminal surfaces 19 into the inside 14 of the cup where they are connected with a cup-shaped connection body 22 via thin-walled areas 21 which also act as hinges. The cavity of the said connection body 22 faces the opening 13 of the dosage insert 2 and is provided with an inner, transverse rib 23.

10 In its other stable position, i.e. its insertion position or removable configuration, the locking and dosage part 15 of the dosage insert 2 extends upwards through the opening 13 of the counterpart 8 from the connection areas 18 between the locking and dosage part 15 and the counterpart 8, as shown in Figure 3. In this position the terminal surfaces 19 of the blades 17 are situated on a or located inwardly of a diameter smaller than the diameter of the opening 3 of the cup. A cooperating tool inserted into the cup-shaped connection body 22 and possessing a groove corresponding the rib 23 can be used to pass the locking and dosage part 15 through the opening 13 of the counterpart 8 and into its locked position as shown in Figure 1. In this position the terminal surfaces of the blades 17 fold outwardly about the hinges 18 and extend to a diameter larger than that of the cup opening 3. This locks the assembly against the inner surface 20 of the flange part 4 of the cup 1. The cooperating tool engaging the inner transverse rib 23 can be used to twist the cup-shaped connection body 22 in relation to the counterpart 8 as the connection body 22 and thus the locking and dosage part 15 are passed through the opening 13 of the counterpart 8. Such twisting facili-

tates the passing or pressing of the locking and dosage part through the opening 3.

In the embodiment shown in Figures 1 to 4 the circular groove 9 of the counterpart 8 on the inner wall 12 possesses a seal in the form of a circular bead 24 abutting the outer surface 25 of the neck 6 of the flange part 4 when the insert 2 is locked to the cup 1, thus forming a tight seal. On the inner surface 26 of the upper wall 11 of the counterpart 8 there is a corresponding seal in the form of a circular bead 27 which presses against the outer surface 28 of the collar 7 of the flange part 4, thus forming a tight seal when the locking and dosage part 15 of the dosage insert 2 is in its locked position. Finally there are a number of locking means 30 on the inner surface 29 of the outer wall 10 of the counterpart 8 gripping behind the collar 7 of the flange part 4.

As an optional extra a further component 31 may be provided. This is a cylinder 31 (shown in dotted lines) provided with slots corresponding to the shovel-shaped blades 17. It extends into the inside 14 of the cup 1 from the inner rim 16 of the counterpart 8 of the dosage insert 2 to the inner bottom 32 of the cup 1, where the lower end 33 of the said cylinder abuts a circular abutment surface 34 on the inside 14 of the cup. At its lower end the cylinder is provided with a number of inwardly directed shovel-like blades 35 (shown in dotted lines). Corresponding shovel-like blades 36 (shown in dotted lines) extend inwards from the inner surface 37 of the neck 6.

Figure 5 shows a second embodiment of the container according to the invention. This differs

from the first embodiment shown in Figures 1 to 4 in that the flange part of the cup comprises an inwardly directed flange 40 having a seal in the form of a circular bead 42 on its outer surface. Also the counterpart of the dosage insert possesses an L-shaped cross-section, a web 43 abutting the outer surface 41 of the flange part of the cup while another web 44 extends along the inner periphery of the flange part towards the inside of the cup. In the same way as in the embodiment shown in Figures 1 to 4, the flange part is connected to the locking and dosage part at its inner rim, via thin-walled areas 18, which act as hinges. As a further difference this embodiment does not include a slotted cylinder for increasing the rigidity of the container or the shovel-like structures in the inlet.

In both the embodiments shown the surfaces of the container which face outwardly in an operational position are formed in such a way as not to possess sharp edges which could damage clothes while the container is used. In the connection area between the cup and the insert the flange part of the dosage insert continues smoothly into the cup.

The container according to the invention may be either of the disposable type, being filled with the necessary amount of detergent at the factory and its opening is closed by means of a piece of foil welded to the container at the upper surface 38 of the insert, or it may be supplied without containing detergent. In the latter case the opening 13 is suitably dimensioned in such a way as to allow the dosage container to be put on the cap of the storage container in which the detergent is supplied and is thus attached thereto when

supplied. The container according to the invention is preferably made of transparent or translucent material and provided with one or more measuring indications 45 so that the user may fill the container himself with the necessary amount of detergent. In this respect the cup possesses a flat bottom 46 so that the container will sit stably on a flat surface during filling with detergent. When the container is supplied already filled with detergent it is useful with respect to the filling at the factory to equip the cup with a flat bottom.

The cup as well as the dosage insert are preferably made of plastic, preferably polypropylene. The cup may be made by injection blow moulding or extrusion moulding. Injection moulding is preferably used for the manufacture of the dosage insert. The dosage insert is most conveniently moulded in its insertion position or removable configuration.

The invention may be varied in many ways without deviating from the scope of the invention. Thus both the shovel blades 36 and the slotted cylinder 31 of the embodiment shown in Figures 1 to 4 may be omitted. Moreover, it may be preferred in the prefilled embodiment to weld the flange part of the cup to the counter-part of the dosage insert, e.g. by using ultrasonic welding, heat sealing or spin welding, in order to further secure the connection between the insert and the cup.



CLAIMS

1. A container having an opening defined by a flange or a neck and an insert having first means for engaging the outer surface of the flange or the neck of the container and second means for engaging the inner surface of the container, the insert being provided with flexure means disposed between the said first and second means and locking means extending from the second means across the insert, the locking means being so dimensioned and constructed as to be movable between two positions, in one of which, the locking position, with the insert located in the opening to the container and the first means bearing against the outer surface of the flange or the neck, the locking means urge the second means into engagement with the inner surface of the flange or the neck of the container and in the other of the two positions, the removable position, the locking means withdraw the second means inwardly relative to the axis of the opening by movement about the flexure means so as to enable the insert, when the locking means are in this position, to be removed from the opening to the container.

2. A container including a flange part which extends inwardly in a radial direction to define an opening to the container, the flange part having an inner surface, the container opening being centered on a longitudinal axis normal to the radial direction, and a locking insert removably insertable in the container opening, the locking insert comprising a counterpart adapted to be fitted within the said container opening, and a locking part, the counterpart defining an insert

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opening, the said locking part comprising at least one member, one end of which is swingably hinged by a first hinge part to the said counterpart, and the other end of the member being hingably joined by a second hinge part to a connection body positioned in the said insert opening, the said one end of the said member having an abutting surface, and the said connection body being movable longitudinally along the said axis between two stable positions, so that when the said connection body is in a first one of the said two stable positions, the said abutting surface of the said one end of the said member extends radially inwardly of the said container opening, thereby allowing insertion of the said locking insert in the said container opening, and when the said connection body is moved to the second of the said two stable positions, the said member swings on its first and second hinge parts to extend the said abutting surface radially outward and urged into abutment against the said inner surface of the said flange part, thereby locking the said insert in the said container opening.

3. A container and insert combination as claimed in Claim 2 in which the said flange part of the container is formed by a shoulder which extends inwardly in the radial direction and continues into a neck extending upwardly in the longitudinal direction, the said neck having a collar at an upper end thereof which extends outwardly in the radial direction, and wherein the said counterpart of the insert is formed with an upper portion having a circular groove for receiving the said flange part of the container.



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1 4. A container and insert combination as claimed
2 in Claim 3 in which the said groove is provided with
3 locking means for gripping the said collar of the said
4 flange part of the container.

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6 5. A container and insert combination as claimed
7 in Claim 2, 3 or 4 in which the said counterpart of the
8 insert is provided with one or more beads on an outer
9 surface thereof for forming a seal with the said flange
10 part of the container.

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12 6. A container and insert combination as claimed
13 in any one of Claims 2 to 5 in which the said member of
14 the said locking part of the insert has a curved
15 configuration.

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17 7. A container and insert combination as claimed
18 in any one of Claims 2 to 6 in which the said
19 connection body is a cup-shaped body.

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21 8. A container and insert combination as claimed
22 in Claim 7, in which the said cup-shaped body includes
23 an inner transverse rib which faces upwardly relative
24 to the said insert opening.

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26 9. A container and insert combination as claimed
27 in any one of Claims 2 to 8 in which the said locking
28 insert includes a cylinder which extends from an inner
29 rim of the said counterpart into the inside of the said
30 container and has a slot or slots formed therein which
31 are aligned with the said member or members.

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1 10. A container and insert combination as claimed
2 in Claim 9, in which the said cylinder extends down to
3 a bottom portion of the said container and abuts an
4 annular abutment surface formed on the said bottom
5 portion.

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7 11. A container and insert combination as claimed
8 in Claim 9 or Claim 10 in which the said cylinder
9 includes one or more members in the form of blades
10 which extend into the container.

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12 12. A container and insert combination as claimed
13 in any one of Claims 2 to 11 in which the said
14 counterpart includes one or more members in the form of
15 blades which extend into the said insert opening.

16
17 13. A container and insert combination as claimed
18 in any one of Claims 2 to 12 in which the said locking
19 insert includes a plurality of circumferentially spaced
20 members in the form of locking insert blades.

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22 14. A container and insert combination as claimed
23 in Claim 13 which includes a cylinder which extends
24 from an inner rim of the said counterpart of the
25 locking insert into the inside of the said container,
26 the said cylinder including a plurality of slots which
27 are aligned with the said locking insert blades.

28
29 15. A container and insert combination as claimed
30 in Claim 1 substantially as specifically described
31 herein with reference to Figures 1 to 4 or Figure 5.

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33 16. A locking insert as specified in any one of
34 the preceding Claims.
