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(54) CONTAINER

(71) We, P. FERRERO & C. S.p.A., an Italian Joint Stock Company, of Piazza Pietro Ferrero 1, Alba (Cuneo) Italy, do hereby declare the invention, for which we pray that a patent may be granted to us, and the method by which it is to be performed, to be particularly described in and by the following statement:—

The invention provides a container preferably moulded from transparent plastics for dispensing granular substances, tablets, drops, and the like which can be opened and closed by seizing and handling it with one hand and affords a safe closure, though having a construction allowing substantial manufacturing allowances, and is therefore unaffected by shrinking or constructional inaccuracies.

The container according to the invention comprises:

- a body portion of substantially open-topped rectangular parallelepiped shape having peripheral walls, a bottom and a mouth opposite the bottom,
- a hollow plug of plastics having a top wall, a skirt perpendicular to said top wall, fitting into the body portion through the mouth, the skirt being formed with a stepped portion bearing on the edge of the mouth of the body portion,
- the top wall of the plug being formed with an opening extending from one side,
- a flap adapted to close the said opening, the flap being integrally formed with the plug and hinged to the top wall at the inner end of the opening,
- the plug being formed with a recess adapted to receive the free end of the flap in its closed position,
- the flap being provided with an extension extending beyond the said recess in the closed position to act as gripping means,
- cooperating snap-engagement means on the said recess and the said free flap end, respectively, for retaining the flap in its closed position, comprising coupling surfaces extending in a direction perpendicular to the side from which the opening extends.

For a better understanding of the inven-

tion, and to show how the same may be carried into effect, reference will now be directed, by way of example, to the accompanying drawings, in which:—

Figure 1 is a perspective view of an assembled container for granular substances according to this invention;

Figure 2 is an exploded perspective view thereof;

Figure 3 is a part cross-sectional view on line III—III of Figure 1;

Figure 4 is a longitudinal sectional view of the plug alone, on line IV—IV of Figure 2;

Figure 5 is a plan view of a modified plug; Figure 6 is an underneath plan view of the plug of Figure 5;

Figure 7 is a longitudinal sectional view on an enlarged scale on line VIII—VIII of Figure 5;

Figure 8 is a representation similar to Figure 7 showing the plug with the flap in its open position;

Figure 9 is a front view of the plug in an open condition;

Figure 10 is a cross-sectional view on line X—X of Figure 8; and

Figure 11 is a perspective view of the plug of Figure 10 in an open condition.

As shown in Figures 1 and 2, the container according to the invention for granular substances, drops, tablets and the like comprises a hollow body portion 1 in the form of an open-topped rectangular parallelepiped, closed by a bottom wall at one end and having at its top end a mouth extending throughout its cross-sectional area. Accordingly, the body portion is confined at the top by a peripheral edge determined by the thickness of its peripheral walls.

The above-mentioned body portion is preferably moulded from transparent plastics.

The mouth of the body portion 1 is fitted with a hollow plug 4 of plastics (Figures 1 to 4) having a transversely extending top wall 7, a skirt 5 perpendicular to the top wall, adapted to be forced into the mouth of the body portion 1 and an annular step 8 extending from the skirt, adapted to bear

on the edge 2 of the mouth of the body portion 1 on insertion of the plug into the body portion.

In order to cause the body portion 1 and plug 4 to interengage safely the outer surface of the plug skirt is formed on its small sides with two sets of transverse projections 6 extending parallel to the top wall 7 adapted to co-operate with matching projections 3 extending from the inner surface of the body portion small walls.

The top wall 7 is formed with a rectangular opening 9 extending along the long axis of the plug from one of its short sides.

A swing flap 10 is provided above the opening 9 and is formed integrally with the plug and hinged thereto at a region 11 reduced in thickness acting as an integral hinge.

The swing flap 10 is formed with an axial extension 10a at its free end, which, in the closed condition, extends beyond the top wall to act as a gripping means. The top wall is formed in its end adjacent the opening 9 with a recess 12 adapted to receive the flap in the lowered closing position of the latter. In order to hold the flap in its closed position co-operating snap-engagement means are formed on the flap 10 and recess 12 in the plug, respectively. The snap-engagement means comprise a longitudinal tenon 13 of substantially dovetailed transverse cross-sectional shape, carried by the bottom surface of the flap and a mortise 14 extending longitudinally in the plug recess 12, of dovetailed-shape transverse cross section adapted to co-operate with the tenon 13 on the flap. On lowering of the flap the tenon 13 snaps into the mortise 14 in the plug recess 12 and is held therein.

In order to open the container the gripping extension 10a on the flap extending beyond the contour of the container body portion is pressed down to thereby deform the co-operating tenon and mortise 13, 14 and release the former from the latter.

Figure 5 and the following figures show a hollow plug 4¹ slightly modified over the plug shown by Figures 1 and 4. In addition to decreasing in thickness from its free end towards the hinge region 11, the flap 10¹ is formed with 45° chamfers 16 for co-operating with matching chamfers 15 along the lateral edges of the opening 9 formed in the plug top wall 7.

The longitudinal tenon 13¹ in the flap is formed at the rear with an upwardly inclined surface 17. Similarly, the mortise 14¹ in the plug recess 12 is confined at the rear by a similarly inclined wall 18, whereby in the closed condition of the flap the inclined surface 17 and end wall 18 of the tenon 13¹ and mortise 14¹ respectively, are arranged parallel to each other as shown in Figure 7,

providing a labyrinth which prevents access of dust to the container.

The inclined wall 18 at the rear end of the mortise 14¹ is carried by an internal transverse extension 19 on the plug skirt 5 which extends beneath the opening in extension of the recess 12.

In either case described above, the flap is held down by the interengagement of surfaces extending in a longitudinal direction with respect to the top wall 7 and flap 10 on the plug, whereby the snap-engagement means operate satisfactorily and are unaffected by any inaccuracy due for instance to shrinking of the material, within wide manufacturing allowances. The axial length of the tenon 13 or 13¹ on the flap equals at least the thickness of the plug.

The recess 12 in the plug adapted to receive the free end of the flap in its closed condition equals in depth the thickness of the top wall, the mortise 14 or 14¹ equalling in depth the spacing of the bottom of the recess 12 and base of the annular step 8 on the skirt.

The above-described container can be made in a size such that it can be seized by one hand only, whereby opening and closing of the flap can be effected by the thumb of the same hand holding the container. Any deformation of the flap during handling by the force exerted by the user thereon will leave operation of the snap-engagement means unaffected, contrarily to means having coupling surfaces arranged transversely of the opening and flap.

As shown in Figures 5 to 11, the edge of the top wall 7 of the plug 4¹ opposite the edge formed with the recess 12 for the free end of the flap is chamfered at 20 so that a plurality of containers can be mutually juxtaposed during filling and packing effected by automatic machines.

WHAT WE CLAIM IS:—

1. A container comprising
 - a body portion of substantially open-topped rectangular parallelepiped shape having peripheral walls, a bottom and a mouth opposite the bottom,
 - a hollow plug of plastics having a top wall, a skirt perpendicular to said top wall, fitting into the body portion through the mouth, the skirt being formed with a stepped portion bearing on the edge of the mouth of the body portion,
 - the top wall of the plug being formed with an opening extending from one side,
 - a flap adapted to close the said opening, the flap being integrally formed with the plug and hinged to the top wall at the inner end of the opening,
 - the plug being formed with a recess adapted to receive the free end of the flap in its closed position,



on the edge 2 of the mouth of the body portion 1 on insertion of the plug into the body portion.

5 In order to cause the body portion 1 and plug 4 to interengage safely the outer surface of the plug skirt is formed on its small sides with two sets of transverse projections 6 extending parallel to the top wall 7 adapted to co-operate with matching projections 3
10 extending from the inner surface of the body portion small walls.

The top wall 7 is formed with a rectangular opening 9 extending along the long axis of the plug from one of its short sides.

15 A swing flap 10 is provided above the opening 9 and is formed integrally with the plug and hinged thereto at a region 11 reduced in thickness acting as an integral hinge.

20 The swing flap 10 is formed with an axial extension 10a at its free end, which, in the closed condition, extends beyond the top wall to act as a gripping means. The top wall is formed in its end adjacent the opening 9 with a recess 12 adapted to receive the
25 flap in the lowered closing position of the latter. In order to hold the flap in its closed position co-operating snap-engagement means are formed on the flap 10 and recess 12 in the plug, respectively. The snap-
30 engagement means comprise a longitudinal tenon 13 of substantially dovetailed transverse cross-sectional shape, carried by the bottom surface of the flap and a mortise 14
35 extending longitudinally in the plug recess 12, of dovetailed-shape transverse cross section adapted to co-operate with the tenon 13 on the flap. On lowering of the flap the tenon 13 snaps into the mortise 14 in the
40 plug recess 12 and is held therein.

In order to open the container the gripping extension 10a on the flap extending beyond the contour of the container body portion is pressed down to thereby deform
45 the co-operating tenon and mortise 13, 14 and release the former from the latter.

Figure 5 and the following figures show a hollow plug 4¹ slightly modified over the plug shown by Figures 1 and 4. In addition
50 to decreasing in thickness from its free end towards the hinge region 11, the flap 10¹ is formed with 45° chamfers 16 for co-operating with matching chamfers 15 along the lateral edges of the opening 9 formed in the
55 plug top wall 7.

The longitudinal tenon 13¹ in the flap is formed at the rear with an upwardly inclined surface 17. Similarly, the mortise 14¹ in the plug recess 12 is confined at the rear
60 by a similarly inclined wall 18, whereby in the closed condition of the flap the inclined surface 17 and end wall 18 of the tenon 13¹ and mortise 14¹ respectively, are arranged parallel to each other as shown in Figure 7,

providing a labyrinth which prevents access 65 of dust to the container.

The inclined wall 18 at the rear end of the mortise 14¹ is carried by an internal transverse extension 19 on the plug skirt 5 which extends beneath the opening in extension of the recess 12. 70

In either case described above, the flap is held down by the interengagement of surfaces extending in a longitudinal direction with respect to the top wall 7 and flap 10
75 on the plug, whereby the snap-engagement means operate satisfactorily and are unaffected by any inaccuracy due for instance to shrinking of the material, within wide manufacturing allowances. The axial length of the tenon 13 or 13¹ on the flap equals at
80 least the thickness of the plug.

The recess 12 in the plug adapted to receive the free end of the flap in its closed condition equals in depth the thickness of
85 the top wall, the mortise 14 or 14¹ equalling in depth the spacing of the bottom of the recess 12 and base of the annular step 8 on the skirt.

The above-described container can be made in a size such that it can be seized by one hand only, whereby opening and closing of the flap can be effected by the thumb of the same hand holding the container. Any deformation of the flap during handling by
90 the force exerted by the user thereon will leave operation of the snap-engagement means unaffected, contrarily to means having coupling surfaces arranged transversely of the opening and flap. 95

As shown in Figures 5 to 11, the edge of the top wall 7 of the plug 4¹ opposite the edge formed with the recess 12 for the free end of the flap is chamfered at 20 so that a plurality of containers can be mutually juxtaposed during filling and packing effected by automatic machines. 100

WHAT WE CLAIM IS:—

1. A container comprising
110 —a body portion of substantially open-topped rectangular parallelepiped shape having peripheral walls, a bottom and a mouth opposite the bottom,

—a hollow plug of plastics having a top wall, a skirt perpendicular to said top wall, fitting into the body portion through the mouth, the skirt being formed with a stepped portion bearing on the edge of the mouth of the body portion, 120

—the top wall of the plug being formed with an opening extending from one side,

—a flap adapted to close the said opening, the flap being integrally formed with the plug and hinged to the top wall at the inner end of the opening, 125

—the plug being formed with a recess adapted to receive the free end of the flap in its closed position,



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—the flap being provided with an extension extending beyond the said recess in the closed position to act as gripping means,

- 5 —co-operating snap-engagement means on the said recess and the said free flap end, respectively, for retaining the flap in its closed position, comprising coupling surfaces extending in a direction perpendicular to the side from which the opening extends.

- 10 2. A container as claimed in claim 1 wherein said co-operating snap-engagement means comprise a longitudinal tenon on the bottom surface of the flap increasing in cross-sectional width from its connection to the bottom surface of the flap, and a longitudinal mortise in the recess, increasing in cross-sectional width from its upper edge.

- 15 3. A container as claimed in claim 2, wherein the mortise is open-ended and extends over the full width of the edge of the recess.

- 20 4. A container as claimed in claim 1, wherein the recess in the plug adapted to receive the free end of the flap in its closing position equals in depth the thickness of the top wall.

- 25 5. A container as claimed in claim 1, wherein said snap-engagement means comprises a longitudinal tenon on the bottom surface of the flap increasing in cross-sectional width from its connection to the bottom surface of the flap and a longitudinal mortise in the recess increasing in cross-sectional width from its upper edge and equal in depth to the spacing of the bottom of the recess from the base of the stepped portion which is carried by the skirt around its upper edge.

- 30 6. A container as claimed in claim 5, wherein the longitudinal tenon on the flap is formed with an upwardly inclined surface at its rear end, the longitudinal mortise in the recess being confined at its rear end by a transverse, upwardly inclined wall, the rear surface of the tenon and the said rear wall

extending parallel to each other in a spaced relationship when the flap is in its closed position.

7. A container as claimed in claim 6, wherein the transverse inclined wall at the rear end of the longitudinal mortise is carried by an internal extension on the skirt.

8. A container as claimed in any preceding claim, wherein the flap decreases in thickness from its free end towards the hinge.

9. A container as claimed in any preceding claim, wherein the lateral edges of the flap are chamfered and the lateral edges of the opening in the top wall of the plug are provided with correspondingly chamfered surfaces abutted by the lateral edges of the flap in its closing position.

10. A container as claimed in any preceding claim, in which two opposite sides of the plug skirt are formed on their outer surfaces with ribs extending parallel to the top wall, the corresponding walls of the body portion being provided on their inner surfaces with ribs engaged with the ribs on the plug.

11. A container as claimed in any preceding claim, in which the edge of the top wall of the plug opposite the edge formed with the recess for the free flap end is chamfered.

12. A container as claimed in any preceding claim, wherein the body portion of the container is made of transparent plastics.

13. A container substantially as hereinbefore described with reference to the accompanying drawings.

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