

[54] CONTAINER FOR GRANULAR MATERIALS

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FOREIGN PATENTS OR APPLICATIONS

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[22] Filed: Apr. 9, 1973

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 Attorney, Agent, or Firm—Sughrue, Rothwell, Mion,  
 Zinn and Macpeak

[21] Appl. No.: 349,581

[30] Foreign Application Priority Data

Apr. 11, 1972 Italy..... 6964/72

[52] U.S. Cl..... 220/254, 215/237, 222/556,  
 220/339, 220/306, 215/321

[51] Int. Cl..... B65d 43/00

[58] Field of Search..... 220/31 SR, 32, 31 R, 60;  
 215/237; 222/153, 480, 541, 534, 536, 556

[57] ABSTRACT

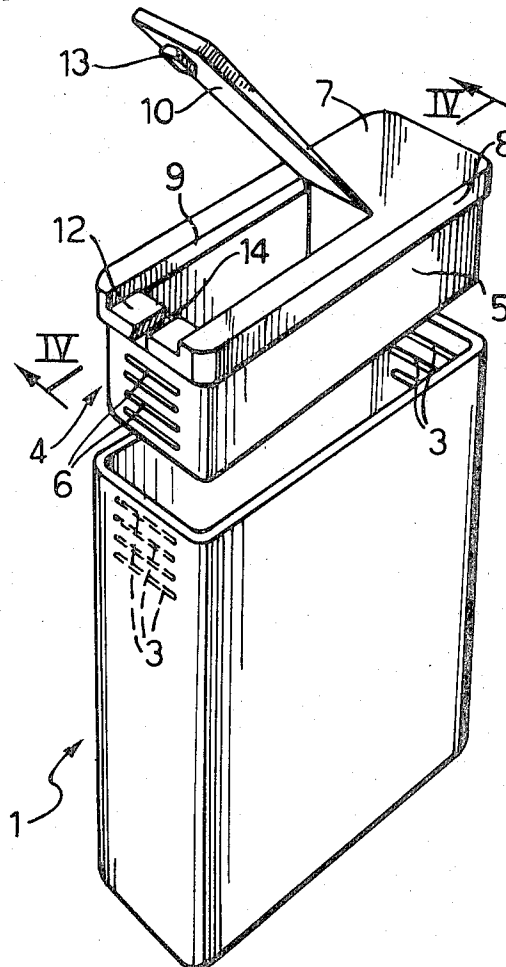
A dispensing container comprising a flat parallelepipedic body having an open end into which a generally rectangular plug or cover is inserted. The cover is moulded of plastics integrally with an elongate closing flap the free end of which protrudes beyond the perimeter of the cover for actuation by the thumb of a hand sizing the container. The free end portion of the flap-snappingly engages with the underlying cover portion by cooperating tenon and mortise formations extending in a longitudinal direction of the flap.

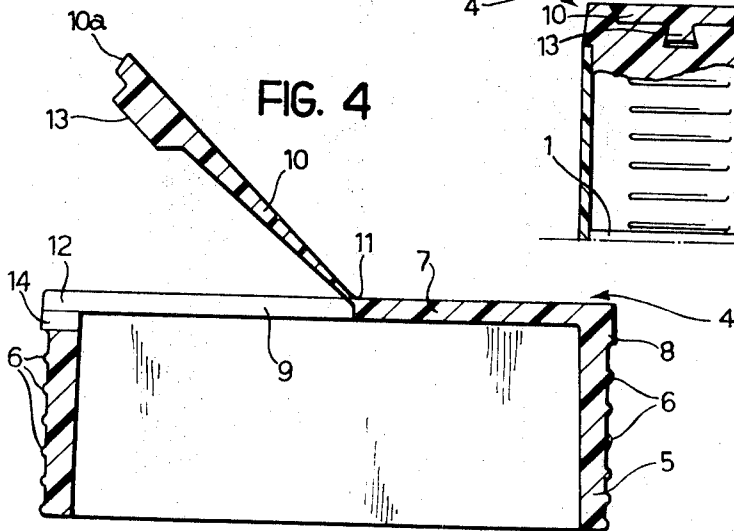
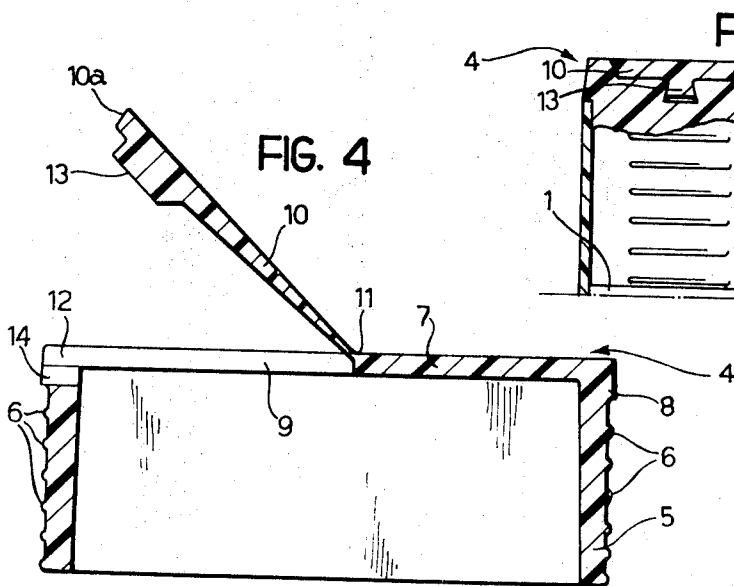
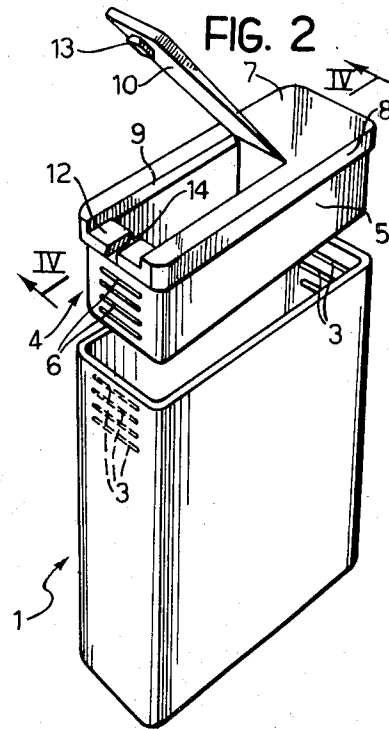
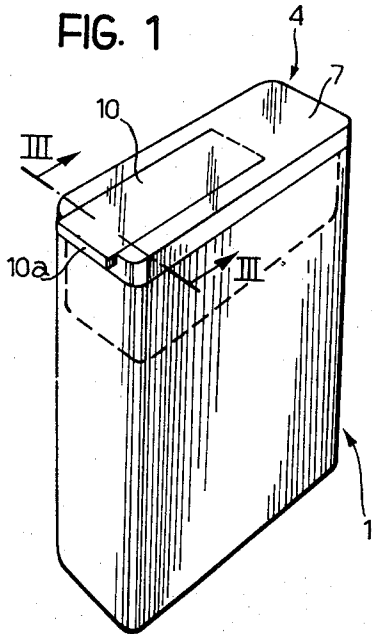
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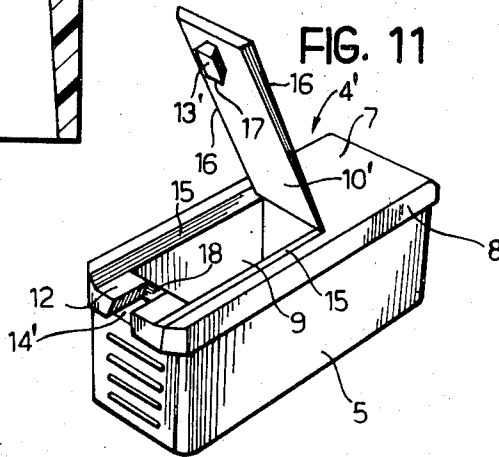
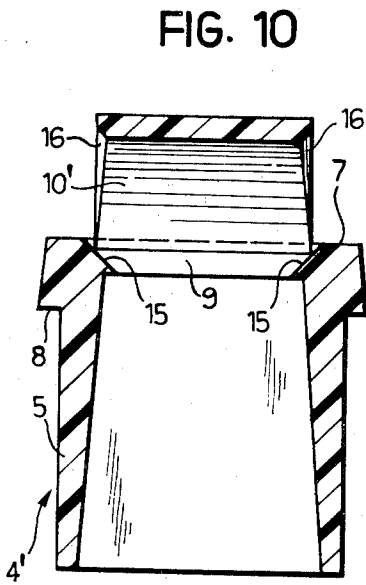
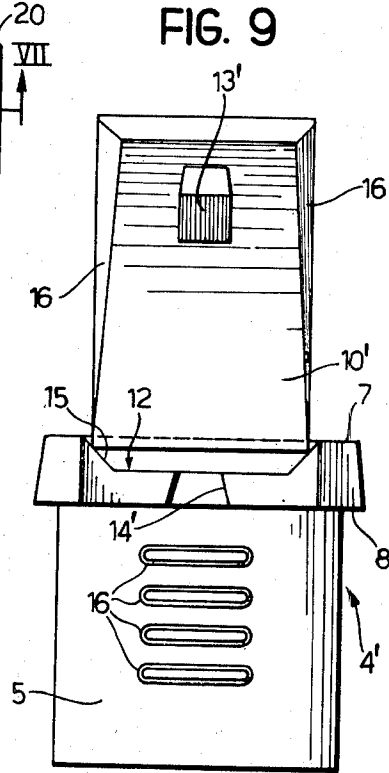
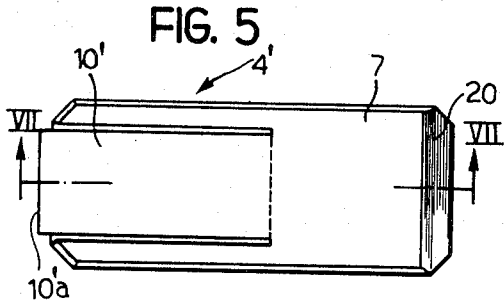
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10 Claims, 11 Drawing Figures







## CONTAINER FOR GRANULAR MATERIALS

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

The container according to the invention comprises: a flattened prismatic body portion of substantially rectangular cross section having a peripheral wall, a bottom and a mouth opposite the bottom,

a hollow plug of plastics having a bottom wall, a skirt perpendicular to said bottom wall, fitting into the body portion through the mouth over part of its height, formed in its skirt with a stepped portion adapted to bear on the edge of the mouth of the body portion on insertion of the plug into the body, the bottom wall of the plug being formed with an opening extending along the large axis of said wall from one of its small sides,

a flap adapted to close the said opening; integrally formed with the plug and hinged to the bottom 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 reaching axially beyond the said recess in the closed position to act as gripping means,

cooperating snap-action means carried by the said recess and the said free flap end, respectively, for retaining the flap in its closed position, comprising coupling surfaces extending in directions parallel to the longitudinal axis of the flap.

Further characteristic features and advantages of the invention will appear from the following detailed description referring to the accompanying drawing given by way of a non-limiting example, wherein:

FIG. 1 is a perspective view of an assembled container for granular substances according to this invention,

FIG. 2 is an exploded perspective view thereof;

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

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

FIG. 5 is a plan view of a modified plug;

FIG. 6 is a plan view;

FIG. 7 is a longitudinal sectional view on an enlarged scale on line VII—VII of FIG. 5;

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

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

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

FIG. 11 is a perspective view in an open condition.

As shown in FIGS. 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 a flattened prism, preferably substantially rectangular in cross-section, closed by a bottom wall at one end and having at its top end a mouth extending through-out its cross-sectional area. Accordingly, the body portion is defined at the top by a peripheral edge 2 determined by the thickness of its peripheral walls.

The above mentioned body portion is preferably molded from transparent plastics.

The mouth of the body portion 1 is fitted with a hollow plug 4 of plastics (FIGS. 1 through 4) having a transversely extending top wall 7, a tubular skirt 5 perpendicular to the bottom 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 safely interengage the outer surface of the plug skirt is formed on its small sides with two sets of transverse projections or ribs 6 extending parallel to the top wall 7 adapted to cooperate with matching projections or ribs 3 extending from the inner surface of the body portion small walls.

The top surface of the plug top 7 is formed with a rectangular opening 9 extending along the large axis of the plug from one of its small 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, reaches 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 cooperating snap means are carried by the flap 10 and recess 12 in the plug, respectively. The engaging snap means comprise a longitudinal tenon 13 of substantially dovetailed cross-sectional shape, carried by the bottom surface of the flap and a mortise 14 extending longitudinally in the plug recess 12, of dove-tailed shaped cross section adapted to cooperate 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 is pressed down to thereby deform the cooperating tenon and mortise 13, 14 and release the former from the latter.

FIG. 5 and the following figures show a hollow plug 4' slightly modified over the plug shown by FIGS. 1 and 4. In addition to decreasing in thickness from its free end towards a hinge region 11, the flap 10' is formed with 45° chamfers 16 for coupling with matching chamfers 15 carried by the longitudinal edges of the opening 9 formed in the plug bottom wall 7.

The longitudinal tenon 13' on the flap is terminated at the rear by an inwardly inclined cross wall 17. Similarly, the mortise 14' 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 walls 17, 18 of the tenon 13' and mortise 14' respectively, are arranged parallel to each other as shown in FIG. 7, providing a labyrinth which prevents access of dust to the container.

The inclined wall 18 confining at the rear the mortise 14' is carried by an internal transverse extension 19 on the plug skirt 5 which extends beneath the opening in the extension of the recess 12.

This arrangement slightly limits the longitudinal extension of the tenon and mortise as compared with the

construction shown in FIGS. 1 through 4, though preventing access of dust.

In either case described above, the components are held together by the interengagement of surfaces extending in a longitudinal direction with respect to the bottom wall 7 and flap 10 on the plug, whereby the closing 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, 13') on the flap equals at least the plug thickness at the annular step 8.

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 bottom wall, the mortise (14, 14') 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 of 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 effect of the thrust components exerted by the user thereon will leave operation of the holding means unaffected, contrarily to means having coupling surfaces arranged transversely of the opening and flap.

As shown in FIGS. 5 through 11 the edge of the bottom wall 7 of the plug 4' 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.

I claim:

1. A container comprising:
  - a hollow body portion having an opening of substantially rectangular cross section,
  - a hollow plastic plug of substantially rectangular cross section with a long side and a short side having a top wall and a skirt perpendicular to said top wall adapted to partially fit into the body portion through the opening therein, said skirt having a stepped portion adapted to bear on the edge of the opening in the body portion on insertion of the plug into the body,
  - the top wall of the plug being formed with an opening extending in the direction of the long side of said plug from a short side thereof,
  - a flap, adapted to close the said opening, integrally formed with the plug and integrally hinged to the top wall at the end of the opening remote from said short side,
  - 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 reaching beyond the said short side in the closed position to act as gripping means,
  - cooperating snap-action means disposed in said recess and on the bottom surface said free flap end, respectively, for retaining the flap in its closed position, comprising complementary coupling surfaces extending in directions parallel to said long side of said plug.
2. A container as claimed in claim 1 wherein said cooperating snap-action means comprise a longitudinally extending 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 longitudinally ex-

tending mortise in the recess in said plug, increasing in cross-sectional width from its upper edge.

3. A container as claimed in claim 2, wherein the mortise has a transverse wall closing one end thereof cooperating with a portion of the flap in closed position to provide a sealing arrangement.

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.

5. A container for granular substances comprising: a hollow body portion having an opening of substantially rectangular cross section,

a hollow plastic plug of substantially rectangular cross section with a long side and a short side having a top wall and a skirt perpendicular to said top wall adapted to partially fit into the body portion through the opening therein, said skirt having a stepped portion adapted to bear on the edge of the opening in the body portion on insertion of the plug into the body,

the top wall of the plug being formed with an opening extending in the direction of the long side of said plug from a short side thereof,

a flap, adapted to close the said opening, integrally formed with the plug and integrally hinged to the top wall at the end of the opening remote from the short side,

the plug being formed with a recess adapted to receive the free end of the flap in its closed position equalling in depth the thickness of the top wall, the flap being provided with an extension reaching beyond the said short side in the closed position to act as gripping means,

cooperating snap-action means disposed in said recess and on the bottom surface of said free end of the flap, respectively, for holding the flap in its closed condition; said means comprising a longitudinally extending 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 longitudinally extending mortise in the recess in said plug increasing in cross-sectional width from its upper edge and matching in depth the spacing of the bottom in the recess and base of the annular step carried by the skirt.

6. A container for granular substances comprising: a hollow body portion having an opening of substantially rectangular cross section,

a hollow plastic plug of substantially rectangular cross section with a long side and a short side having a top wall and a skirt perpendicular to said top wall adapted to partially fit into the body portion through the mouth, said skirt having a stepped portion adapted to bear on the edge of the opening in the body portion on insertion of the plug into body, the top wall of the plug being formed with an opening extending in the direction of the long side of said plug from a short side thereof,

a flap adapted to close the said opening, integrally formed with the plug and integrally hinged to the top wall at the end of the opening remote from said short side,

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 reaching beyond the said short side in the closed position to act as gripping means,

cooperating snap-action means disposed in said recess and the bottom surface said free end of the flap, respectively, for holding the flap in its closed condition, said means comprising a longitudinally extending 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 longitudinally extending mortise in the recess in said plug increasing in cross-sectional width from its outer edge wherein the longitudinally extending tenon on the flap is formed with a transverse surface inclined towards the hinged portion of said flap, the longitudinally extending mortise in the plug recess being closed at the innermost end by a transverse inclined wall, the transverse inclined surface of the tenon and the said inclined wall extending parallel to each other in a spaced relationship when the flap is in its closing position.

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

8. A container as claimed in claim 1, wherein the flap decreases in thickness from its free end towards its hinged portion.

9. A container as claimed in claim 1, wherein the longitudinally extending edges of the flap are chamfered and the longitudinally extending edges of the opening in the plug top wall and of the recess in the plug are provided with inclined surfaces which abutt in the closing position of the flap.

10. A container as claimed in claim 1, in which two opposite side walls 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 adapted for snap-interengagement with the ribs on the plug upon insertion of the plug into the body portion.

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UNITED STATES PATENT AND TRADEMARK OFFICE  
**CERTIFICATE OF CORRECTION**

PATENT NO. : 3,872,996

DATED : March 25, 1975

INVENTOR(S) : Amilcare DOGLIOTTI

It is certified that error appears in the above-identified patent and that said Letters Patent are hereby corrected as shown below:

IN THE DRAWINGS:

Add Figs. 6, 7, and 8 per attached sheet.

**Signed and Sealed this**

*twenty-ninth* **Day of** *July* 1975

[SEAL]

*Attest:*

**RUTH C. MASON**  
*Attesting Officer*

**C. MARSHALL DANN**  
*Commissioner of Patents and Trademarks*

