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2,633,273

DISPENSING CAP FOR CONTAINERS

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FIG. 1

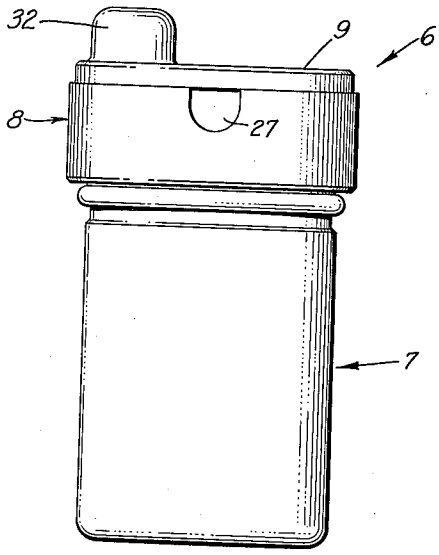
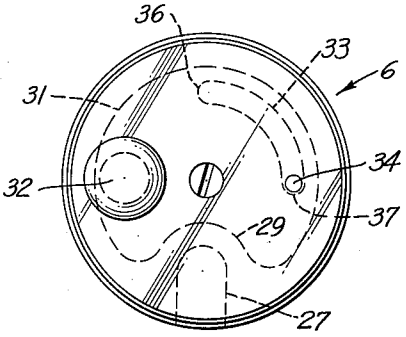


FIG. 2



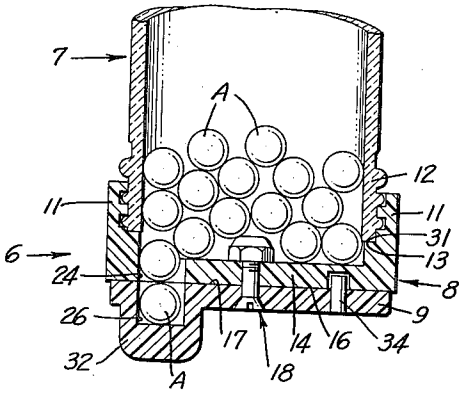


FIG. 3

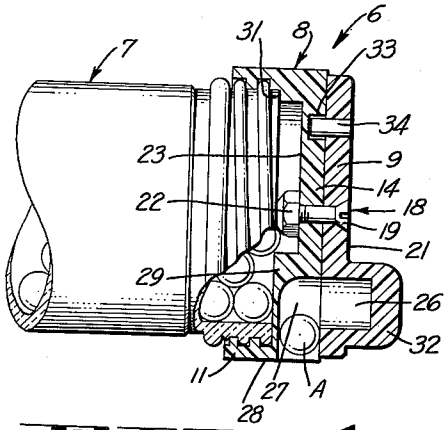


FIG. 4

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DISPENSING CAP FOR CONTAINERS

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6 Claims. (Cl. 222—363)

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The invention relates to dispensing devices incorporated with containers for particulate objects for obtaining a release or discharge of objects from the container in one at a time order or in measured numbers, and relates more particularly to container cap constructions embodying such dispensing mechanisms and which are adapted for attachment to conventional type containers.

An object of the present invention is to provide a dispensing device of the character described which may be quickly and easily attached to conventional type bottle containers and which will afford an improved dispensing of particulate objects therefrom in one at a time order or in measured quantities in a precise, easily operated and foolproof manner.

Another object of the invention is to provide a dispensing device of the character above which may be used for the dispensing of bait eggs which, due to their generally mucilaginous nature have proven to be difficult to handle in a dispensing device of the present character. As a feature of the present construction, bait eggs or the like may be efficiently dispensed in one at a time order without injury or mutilation of the eggs and without danger of spilling numbers of eggs from the container.

A further object of the present invention is to provide a device of the character described in which the dispensing passages are internally contained and the final discharge passage generally covered, whereby the device will remain clean and sanitary in use and be resistant to clogging or other entry of dirt or other matter into the dispensing passages.

Still another object of the invention is to provide a device of the character described which is composed of a minimum number of sturdily constructed parts affording a compact and light weight unit adapted for rapid and economical mass production in which the parts may be quickly and easily disassembled for cleaning when desired and which, when disassembled, will afford direct access to all openings and passages for easy cleaning.

The invention possesses other objects and features of advantage, some of which, with the foregoing, will be set forth in the following description of the preferred form of the invention which is illustrated in the drawing accompanying and forming part of the specification. It is understood, however, that variations in the showing made by said drawing and description may be adopted within the scope of the invention as set forth in the claims.

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Referring to said drawing:

Figure 1 is a side elevational view of the dispensing device constructed in accordance with the present invention and shown in operative association with a conventional bottle container.

Figure 2 is a plan view of the device illustrated in Figure 1.

Figure 3 is a cross-sectional view of the dispensing device and part of the associated container in inverted position.

Figure 4 is a cross-sectional view similar to Figure 3 but showing the parts in a final dispensing position.

The dispensing device of the present invention and as illustrated in the accompanying drawing is here incorporated in a unitary and self-contained cap construction 6 adapted for attachment to a conventional type bottle container 7. The unit consists briefly of a generally cup-shaped cap or body section 8 adapted for attachment to the open end portion of the container, and a relatively movable cover plate 9 cooperating therewith and providing upon appropriate displacement a one at a time discharge of objects stored in the container. The cap or body section here includes a depending skirt 11 formed to embrace the end portion 12 of the bottle container 7 adjacent the open end face 13 of the container, and a solid end wall section 14 which is integrally formed with the skirt 11 and is arranged to seat upon and extend across the end face 13 to provide a closure for the container. In order to fit the usual bottle container, the skirt 11 is preferably of annular form internally threaded to engage and mate with threads customarily provided on the outer periphery of the bottle portion 12.

As an important feature of the present invention, the end section 14 of the cap is provided with a smooth, planar exterior face 16 upon which is seated for sliding movement a similarly formed smooth, planar interior face 17 of the cover plate 9, and the coacting passages for effecting a one at a time discharge of objects from the container are incorporated between these sliding faces, whereby such passages are concealed within the unit and constantly protected from the entry of dirt or other matter. Any suitable means may be used for retaining the faces 16 and 17 in sliding operative contact to provide the relative movement between the closure plate and cap section as above noted. Conveniently, both of these parts may be made of circular form and secured together in concentric attachment for relative rotation of the cover plate by means of a center pivoting and securing member 18.

As here shown, these members may consist simply of a threaded bolt mounted through aligned center openings in the plate and cap end, the bolt being here arranged with its head 19 countersunk in the exterior face 21 of the plate and with a nut 22 secured on the inner end of the bolt and bearing against the interior face 23 of the end wall 14. The countersinking of the head 19 provides a flush and smooth construction at the outer face 21 and, if desired, the nut 22 may be of a self-locking construction to hold the plates in proper engagement and against loosening in normal use.

Exit of objects, here generaly denoted by A, from the container is effected through a port or opening 24 through the end wall 14 interiorly of and preferably adjacent to the skirt 11 so as to pass objects from the interior of the container to the confronting face 17 of the cover plate 9. Provided within the face 17 is a recess 26 located radially from the member 18 by the same distance as the opening 24 so that, upon appropriate rotation of the cover plate 9, as illustrated in Figure 3, the recess will register with the opening 24. The size and depth of the recess, as illustrated, is predetermined so as to contain but one of the objects A to be dispensed or, if desired, this recess may be enlarged to contain a definite number of such objects. Discharge of the object from the recess 26 is effected by another passage 27 (see Figures 2 and 4) provided in the end wall 14 in circumferentially spaced relation to the opening 24 whereby, upon appropriate rotation of the cover plate, the object in the recess 26 will be carried to the passage 27. The latter passage opens to the face 16 at a radial distance from the center member 18 the same as the radial positioning of opening 24 and recess 26, so that upon rotation of the cover plate to the position illustrated in Figure 4 the passage 27 will register with thhe recess 26 for receipt of an object therefrom. The passage 27 is arranged of sufficient size at the recess 26 to serve this purpose, and extends outwardly, in a generally radial direction, to the outer periphery 28 of the cap end wall for discharge of the object. Preferably, and as here shown, the passage 27 is formed as a radial groove in the end face 16 of the cap end wall and which is covered by the confronting interior face 17 of the cover plate to provide a closed side for the passage. In this manner all of the passages are fully internally contained and concealed with the exception of the outer end of passage 27, and such end is arranged at the side of the unit where it is normally protected. In order to provide the passage 27 within the end wall 14 while keeping the end wall to a minimum wall thickness, we prefer to arrange the passage within a boss 29 formed in the end wall 14 at the interior side thereof. The boss 29 is here formed inwardly with an annular shoulder 31 which provides the seating area for the cap section on the end face 13 of the container.

Rotation of the cover plate to effect the discharge of objects as above described is here conveniently effected by a knob 32 formed as an outwardly projecting boss on the external surface 21 of the plate. As a feature of the present construction this knob is positioned on the plate at a radial distance lining up with the opening 24, and the recess 26 may thus be provided in part within the interior of the knob as illustrated in Figures 3 and 4. In this manner an adequate size recess 26 may be retained while keeping the wall thickness of the cover plate to a minimum.

Positioning of the knob radially as described, locates the knob adjacent the outer periphery of the unit where it may be most conveniently engaged by one of the fingers of the hand holding the unit, thus enabling a one-handed operation where desired.

Since the several openings and passages are internally arranged, it is highly desirable to provide appropriate stop means for the rotation of the end plate so as to define terminal positions which will precisely align and register the passages 24 and 27 with the travelling compartment or recess 26. This is effected, as here shown, by the provision in the end face 16 of the cap section of an arcuate slot or recess 33 concentric to the pivot pin 18 and in which is mounted a pin 34 carried by the cover plate, the circumferential length of the slot 33 being such that the pin 34 will abut the opposite circumferential ends 36 and 37 of the slot 33 in the two terminal positions of the cover plate above noted and illustrated in Figures 3 and 4. It will be seen that the provision of the slot 33 and pin 34 at the confronting faces 16 and 17 of the cap and cover plate effect a complete concealment of the stop means within the interior of the unit.

As a further feature of the unit, we prefer to construct the cap section and cover plate of a transparent plastic material which affords several important operating features. Such construction permits a viewing of the operation of the device so that the user can readily see the entry of an object into the travelling compartment 26 when thhe parts are aligned as illustrated in Figure 3, prior to rotation of the cover plate to discharging position as illustrated in Figure 4. By forming the parts of plastic, they may be readily moulded to effect a high speed, low cost mass production of the unit. Also, with such material the obtaining of smooth, polished surfaces for the confronting faces 16 and 17 is likewise afforded, so that an excellent sealing of the unit is obtained, while at the same time an easy gliding action of the end plate across the outer face of the cap section is afforded.

Preferably the bolt 18 and its lock nut 22 are constructed of suitable corrosion resistant material such as stainless steel, aluminum or the like, so that with the plastic construction above described all of the parts of the unit will be well adapted for use with various objects to be dispensed. As will be noted from the foregoing, the device may be quickly and readily disassembled for cleaning by loosening the bolt, when the cover plate may be removed from the cap section to fully expose for easy brushing or other cleaning all of the openings, recesses and the like.

In the use of the present device, the usual threaded cap will be removed from the container 7 and in its stead the cap section of the present unit threaded into place on the bottle to tightly seat the cap shoulder 31 onto the end face 13 of the container. To facilitate this attachment and to remove possible straining on the stop pin 34 of the cover plate, the cover plate is preferably formed of a slightly smaller diameter than the cap section so that only the latter will be normally manually gripped in effecting attachment to the container. To remove the object from the container, the cover plate is rotated to its terminal position illustrated in Figure 3, that is, with the stop pin 34 in abutment with the slot end 37. The container is inverted as shown in Figure 3 in order to pass the object through opening 24 and into the travelling compartment 26. Where the bottle contains objects of a muci-

laginous character, or where the objects otherwise tend to stick together, an object may be loosened to fall into the compartment by appropriate shaking of the container. The cover plate is then rotated to its other terminal position as illustrated in Figure 4, that is, with the stop pin 34 in abutment with the slot end 36 and the container turned to a sidewise position as illustrated with the passage 27 extending downwardly, when the object will pass from the recess 26 into the passage 27 for discharge from the under side of the unit and into the hand of the user. The device in this manner functions in an efficient, precise and foolproof fashion to remove the objects in one at a time order and may, if desired, be held and completely operated in and by one hand only of the user.

While the device of the present invention has been illustrated and described as a unitary attachment to existing bottle type containers, it will be understood that the device may be directly incorporated in and as a part of a container while retaining the essential features of the invention.

We claim:

1. In a dispensing device for releasing objects from a container having an open end, a cap formed for attachment to and across said container end, a cover plate having a surface mounted for sliding movement upon an exterior surface of said cap for relative movement between first and second terminal positions, said plate being formed with a recess in its surface in confronting relation to said exterior cap surface, said cap being formed with an opening therethrough communicating the interior of said container to said exterior surface at a position registering with said recess in one terminal position of said plate, and said cap being formed with a passage opening to said exterior surface in confronting relation to said plate surface and spaced from said opening for registration with said recess in the other terminal position of said plate, said passage extending to the outside of said cap for removal of objects therefrom.

2. In a dispensing device for releasing objects from a container having an open end, a cap formed with a skirt adapted for connection to said container and a substantially perpendicularly arranged section formed for extending across and closing said container end, said section being formed with a substantially planar surface at the exterior side thereof, a cover plate having a substantially planar surface mounted for sliding movement upon said cap surface, said cap section being formed with an opening communicating the interior of said container to said cap surface, said plate being formed with a recess in its surface positioned for registration with said opening upon movement of said plate to one position, and said cap section being formed with a passage opening to said cap surface in spaced relation to said opening and positioned for registration with said recess in another position of said plate, said passage extending to the outside of said cap for removal of objects therefrom.

3. In a dispensing device for releasing objects in one at a time order from a container having an open end, a cap formed for attachment to and across said container end and having an opening therethrough to an end face thereof for allowing one at a time passage of objects therethrough, a cover plate pivotally mounted for rotative displacement on said cap face over said opening and having a face in sliding contact with said cap face, said plate being formed with a recess in its face for registration with said opening in one position of said plate for receipt of an object from said opening, and said cap being formed with a passage opening to said face thereof in spaced relation to said opening and in the line of motion of said recess for registration with said recess and receipt of an object therefrom upon rotative displacement of said cover plate to a second position, said passage extending to a side of said cap for removal of an object therefrom.

4. In a dispensing device for releasing objects in one at a time order from a container having an open end, a cap formed for attachment to and across said container end and formed with a disc shaped planar end face and with an opening therethrough for allowing one at a time passage of objects to said face, a disc shaped cover plate pivotally mounted concentrically on said cap face and provided with a planar surface in sliding contact therewith, said plate being formed with a recess in said surface for registration with said opening in one position of said plate for receipt of an object from said opening, and a generally radially extending groove formed in said cap face in circumferentially spaced relation to said opening and in the line of motion of said recess for registration with said recess and receipt of an object therefrom upon rotative displacement of said plate to a second position, said groove extending to a side of said cap and cooperating with said plate surface to provide a passage for removal of an object from the device.

5. In a dispensing device for releasing objects in one at a time order from a container having an open end, a cap formed for attachment to and across said container end and having an opening therethrough to an end face thereof for allowing one at a time passage of objects therethrough, a cover plate pivotally mounted for rotative displacement on said cap face over said opening and having a face in sliding contact with said cap face, said plate being formed with a recess in its face for registration with said opening in one position of said plate for receipt of an object from said opening, said cap being formed with a passage opening to said face thereof in spaced relation to said opening and in the line of motion of said recess for registration with said recess and receipt of an object therefrom upon rotative displacement of said cover plate to a second position, said passage extending to a side of said cap for removal of an object therefrom, one of said faces being formed with a concentrically arranged recess having opposed circumferentially spaced ends, and a pin carried by the other of said faces and projecting into said last named recess and coacting with the opposite ends thereof to stop rotation of said plate at said positions.

6. In a dispensing device for releasing objects in one at a time order from a container having an open end, a cap formed for attachment to and across said container end and formed with a disc shaped planar end face and with an opening therethrough spaced from the center thereof for allowing one at a time passage of objects to said face, a disc shaped cover plate pivotally mounted concentrically on said cap face and provided with exterior and interior sides, the interior side of said plate being in sliding contact with said cap face, a boss provided on the exterior side of said plate for manual engagement and located for movement with said plate across the axis of said opening, said plate being formed

with a recess in its interior surface and extending into said boss for registration with said opening in one position of said plate for receipt of an object from said opening, and said cap being formed with a passage opening to said face in spaced concentric relation to said opening and in the line of motion of said recess for registration with said recess and receipt of an object therefrom upon rotation of said plate to a second position, said passage extending radially to a side of said cap for removal of an object therefrom.

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