Nov. 21, 1950 H. C. SCHLOER 2,531,300

DISPENSING CONTAINER

Filed June 9, 1949

FIG. 1

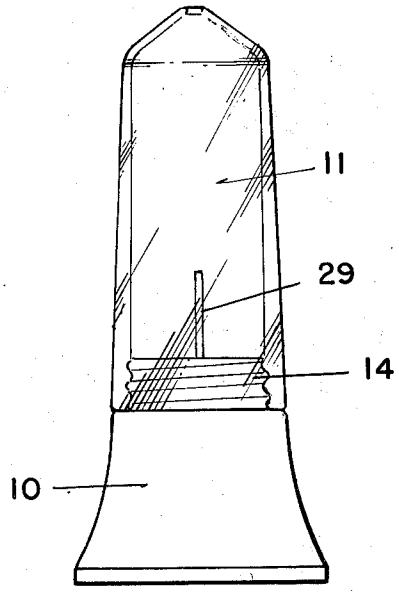


FIG. 2

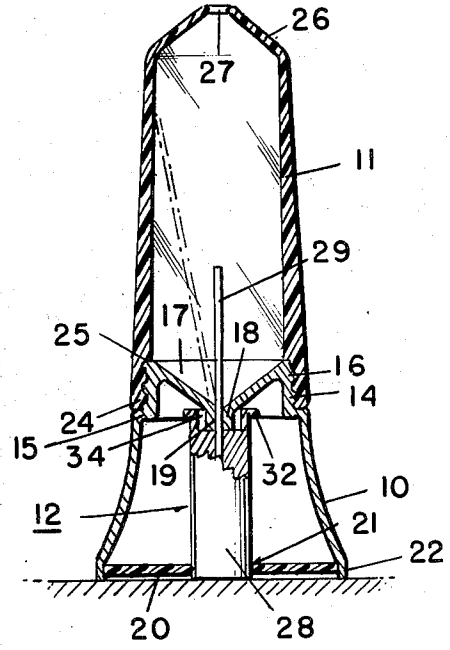


FIG. 3

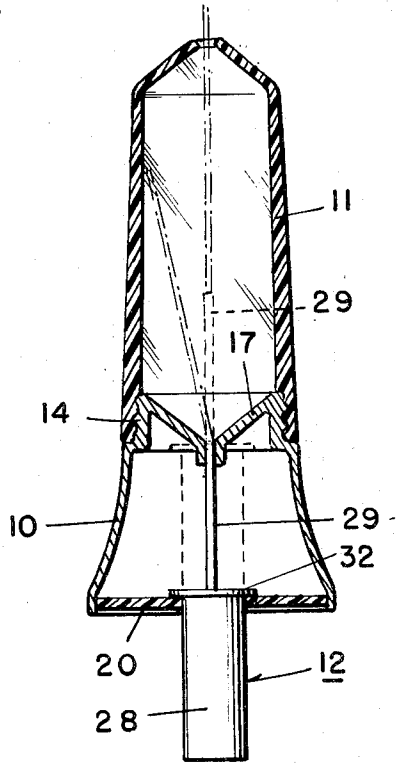
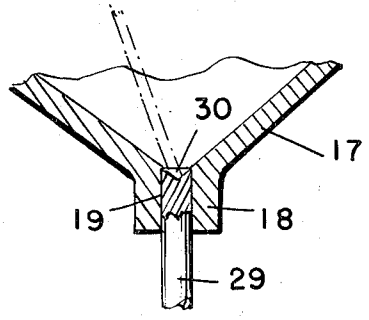


FIG. 4



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DISPENSING CONTAINER

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4 Claims. (Cl. 312—78)

1

This invention relates to improvements in dispensing containers, and more particularly to an improved dispensing container for dispensing articles of tubular or rod-like shape, one at a time, from a container.

Among the objects of the invention may be noted the provision of a dispensing container characterized by improved design making for manufacturing efficiency and inexpensive production; the provision of a dispensing container of simple, compact construction adapted both for personal and public use; the provision of a dispensing container employing a minimum of component parts which are so organized as to reduce the overall vertical height, as compared to prior dispensing containers; the provision of a dispensing container which may be simply operated and which is thoroughly dependable in use; and the provision of a dispensing container which will eject one of a plurality of tubular or rod-like articles within the container in a satisfactory and practical manner without any requirement of the hand coming in contact with the remaining articles in the container.

The above and other objects and features of advantage of the invention will be seen from the following detailed description taken with the accompanying drawing illustrative of a physical embodiment thereof, wherein—

Fig. 1 is a side elevation of the improved dispensing container according to the invention;

Fig. 2 is a vertical section taken through the dispensing container illustrated in Fig. 1, the view further illustrating the action of the ejector unit in ejetcing one of a plurality of articles from the container;

Fig. 3 is a vertical sectional view illustrating the ejector unit in its retracted position; and

Fig. 4 is an enlarged sectional detail view illustrating the action of the ejecting pin in engaging one of the articles to be dispensed at the beginning of the ejecting operation.

A dispensing container according to the invention is shown to comprise a base 10, a container shell 11 mounted on the base and forming therewith a container for a plurality of tubular or rod-like articles to be dispensed, and an ejector unit generally designated 12. As seen in Figs. 2 and 3, the base 10 is of hollow, open-bottom construction and is preferably bell-shaped as shown for stability. At its upper end, the base is provided with a cylindrical neck 14 having reduced diameter so as to provide an upwardly facing external shoulder 15, the neck having external threads 16 formed therein during molding, casting or in a subsequent machining operation. The base is provided with an inverted cone-shaped top wall 17 provided in its apex portion with a downwardly depending boss formation 18 which is drilled or molded to provide a vertical through opening 19 disposed on the axis of the base. The open bottom of the base is closed by a closure disk or plate 20 having a central opening 21 and of substantially larger diameter than the boss opening 19. Preferably, the bottom closure plate 20 has snap fit in the bottom of the base which is provided along its peripheral bottom edge with a retaining rib 22 for securing the closure plate in position as shown. The closure plate 20 may also be held in position by an adhesive, or by permanently molding it into place after assembly.

2

The container shell 11 is preferably molded from a suitable transparent plastic material in the form of an elongated cylinder whose tubular wall may have increased thickness toward its open bottom end which is counterbored or so molded as to provide a short length cylindrical recess having somewhat greater diameter than the shell proper. The inner circumferential wall of the counterbore is formed in molding or by a machining operation with internal threads 24 mating with the threads 16 of the base neck 14. The counterbore provided in the shell terminates at its upper end in an internal shoulder 25, and it is a feature of the invention that the axial depth of the counterbore may closely correspond to the vertical height of the neck 14 whereby when the container shell 11 is screwed onto the neck, its lower edge bears on and seals against the external shoulder 15 of the base, and also the internal shoulder 25 of the shell bears on and seals against the top edge corner of the base. The described arrangement provides smooth surfaces and avoids crevices between the junctures of shell and base in which dirt or other unsanitary material may accumulate; it also provides smooth external merging surfaces between shell and base, as indicated in Fig. 1, with similar sanitary effect. At its upper end, the container shell 11 is formed with a conical top wall 26 provided at its central or apex portion with a dispensing opening 27.

The ejector unit 12 is shown to comprise a weighting element 28, preferably in the form of a cylinder of aluminum having substantial diameter, and a small diameter ejecting pin 29 of length as normally to project well into the container shell 11, as indicated in Fig. 2. Preferably, the weighting element and ejecting pin may be

formed separately and the pin assembled in the weighting element with a drive fit. This arrangement materially reduces manufacturing cost and machining time. As seen in Fig. 4, the upper end of the pin is provided with an inverted cone-shaped recess 30 for the purpose to be described, but the shape of the recess, and in fact the design of the point of the ejector pin, may be varied according to the requirements of the articles being dispensed.

As seen in Figs. 2 and 3, the weighting element 28 extends through and is guided in the central opening 21 of the bottom closure plate 20 of the base, and the ejecting pin 29 extends through and is guided in the central opening of the conically shaped base top 17. It will be observed that the axial depth of the boss 18 in which the ejecting pin 29 moves provides good sliding bearing for the pin. Thus, the base 10, in addition to providing a container base, also provides a dual guide for the ejector unit 12.

Due to the weight of the ejector unit and its sliding mounting in the base, the unit is adapted to lower or retract by gravity relative to the base and container, when the latter are lifted from a horizontal supporting surface such as a counter, table or the like. To prevent complete separation of the ejector unit from the base, the weighting element 28 of the unit is provided at its upper end with a radial flange 32 of substantially greater diameter than that of the central opening 21 of the base closure plate 20. Accordingly, the ejector unit may move axially downwardly relative to the base to a position in which the flange 32 engages against the upper surface of the closure plate 20, the flange 32 then serving as a stop which prevents complete separation of ejector unit from base. The axial movement permitted the ejector unit is predetermined in relation to the effective axial length of the ejector pin 29, the latter having length such that when the stop flange 32 engages the bottom closure plate 20, the upper recessed end 30 of the ejector pin has receded slightly below the dished or coned top surface of the base top 17, as indicated in Fig. 4.

The described arrangement in which the ejector unit may move into and out of the base, as distinguished from a construction in which the base is made sufficiently deep to completely house the ejector unit, results in reduced overall height of the present dispensing container as compared with prior containers of like function. The overall depth may be further reduced by providing a cavity 34 in the upper end of the weighting element 28 of the ejector unit, in which the downwardly depending boss 18 of the base top wall is accommodated when the parts are in their normal position illustrated in Fig. 2.

In use, the container may be loaded by unscrewing the shell 11 from the base 10, filling the container with a plurality of the articles to be dispensed, thereupon screwing the loaded shell onto the base. The articles to be dispensed may be tubular, such as drinking straws, or may have rod-like form such as tooth-picks, matches, etcetera. When used to dispense drinking straws, the axial length of the shell is increased in proportion to the length of drinking straws as compared to tooth-picks, matches and such articles. To dispense one of the articles within the container, the base is lifted from its supporting surface, with the result that the ejector unit moves downwardly relative to base by gravity, to a position in which the upper end 30 of the ejecting pin 29 recedes slightly into the central opening 19 of the conically shaped base top 27. Due to the conical shape of said top, articles within the container tend to converge on the opening 19, and one of said articles will drop slightly into said opening so that its lower end abuts against the top of the ejecting pin and seats in the recess provided therein. The device is now lowered onto the supporting surface, with the result that the ejector unit is returned to its normal position shown in Fig. 2. During such movement, the one article engaged by the upper end of the ejecting pin is propelled upwardly in the shell, and by virtue of the inclination of the conical top wall 26 of the shell is caused to converge on the discharge opening 27, with the result that the upper end of the article is positively forced through said opening by an amount such that it may be readily grasped and manually withdrawn from the shell.

Without further analysis, it will be seen that the described dispensing container of this invention achieves an article ejecting operation in satisfactory and thoroughly dependable manner. It will also be observed that the dispensing container is characterized by a design making for manufacturing efficiency and low cost production. The overall height of the improved dispensing container is small as compared to prior dispensing containers serving similar function, so that when used for dispensing articles such as tooth-picks and matches, it may be built to size making it adapted for pocket use. In larger sizes it is adapted also for use in public establishments such as lunchrooms, store counters, and the like, and as an advertising novelty. It will be understood that when the dispensing container of the invention is employed for personal use, the ejector unit 12 may be actuated in its return movement by finger pressure on the lower end of the unit, rather than bringing it against a horizontal supporting surface, such as a counter or table.

As many changes could be made in carrying out the above construction without departing from the scope of the invention, it is intended that all matter contained in the above description or shown in the accompanying drawings shall be interpreted as illustrative and not in a limiting sense.

I claim:

1. A dispensing container comprising a hollow base having an inverted cone-shaped top wall provided with a central opening and a bottom closure provided with a central opening, an open-bottom shell having its lower end affixed to the upper portion of the base, the upper end of the shell being conical and having a central dispensing opening, and an ejector unit comprising a weighting element movable through and guided in the central opening of said bottom closure and an ejecting pin projecting upwardly therefrom and movable through and guided in the central opening of said cone-shaped top wall, said ejector unit being retractable from a normal position within base and shell under the influence of the weight of the weighting element upon lifting the base from a supporting surface to a position in which the upper end of the ejecting pin recedes a slight distance into the central opening in said base top wall, and being returnable to said normal position upon said base being lowered onto said surface.

2. A dispensing container as set forth in claim 1, wherein said ejector unit is provided with stop means adapted to cooperate with said bottom

closure in limiting the retracting movement of the ejector unit.

3. A dispensing container comprising a hollow, bell-shaped base having a reduced diameter neck separated from the base body by an external shoulder and an inverted cone-shaped top provided with a central opening, a closure plate for the open bottom of the base having a central opening, a cylindrical container shell having an open bottom and a cone-shaped top provided with a central dispensing opening, the shell being provided at its bottom end with a neck-receiving counterbore terminating in an internal shoulder, the depth of the counterbore corresponding to the vertical height of the neck, and said shell being affixed to the neck so that its lower terminal edge seats against said external shoulder and so that the upper edge corner of the base closes against said internal shoulder of the shell, and an ejector unit comprising a weighting element movable through and guided in the central opening of the base bottom, and an ejecting pin projecting upwardly therefrom and movable through and guided in the central opening of the base top, said ejecting unit being retractable from its normal position in base and shell under the weight of the weighting element upon lifting of the base from a supporting surface to a position in which the uper end of the ejecting pin recedes a slight distance into the central opening of the base top, and being returnable to said normal position upon the base being lowered onto said surface.

4. A dispensing container comprising a hollow bell-shaped base having an inverted cone-shaped top wall provided with a downwardly depending boss at its apex portion, said boss being provided with an axial through opening, a closure plate

for the open bottom of the base provided with a central opening, an open bottom container shell affixed to the upper end of the base and having a cone-shaped top provided with a central dispensing opening, and an ejector unit comprising an elongated weighting element and an axially disposed ejecting pin extending upwardly therefrom, said weighting element being provided in its upper end with an upwardly opening cavity for normally receiving said downwardly depending boss and with a radial flange extending from its upper edge, said weighting element and ejecting pin being slidably guided in the openings of the closure plate and of said boss, respectively, said flange being operative to engage the upper surface of said closure plate upon downward movement of the ejector unit relative to said base, thereby to prevent physical separation of ejector unit from base, the spacing of flange from said bottom plate and the effective length of the ejecting pin being such that the upper end of said pin recedes a slight distance into the opening of said boss upon the flange engaging said closure plate.

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