United States Patent [19]

Kuebler

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[54] **DISPENSING APPARATUS**

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[51] **Int. Cl.** **B65h 1/00**

[58] **Field of Search**.... 221/197, 198, 226, 228–230, 221/232, 247, 250, 267, 279, 280, 303, 221/306–311, 200, 299–301, 264; 133/5 A

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[57] **ABSTRACT**

This invention pertains to an apparatus for dispensing articles of uniform size, such as, tablets, pills and the like. An outer housing encloses a dispensing member. The dispensing member comprises an upper and lower portion. The lower portion includes a cavity for placement of a plurality of the articles to be dispensed and an opening in one end thereof for dispensing articles from the apparatus. The upper portion includes a button protruding external of the outer housing for translating the dispensing member from a first position to a second position when depressed and spring bias means for applying constant dispensing pressure to the articles. A second spring bias means is also provided to return the dispenser from the second position to the first position when the depressed button is released. A retaining member is provided on the inner end of the outer housing opposite from the button for allowing a single article to be dispensed when the dispenser is in the second position and ready the next single article for dispensing when the button is released and the dispensing member returns to its first position.

13 Claims, 6 Drawing Figures

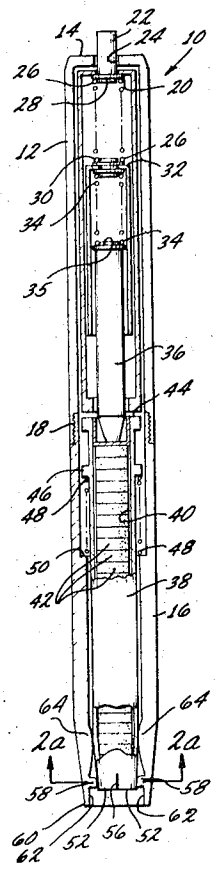


FIG. 1

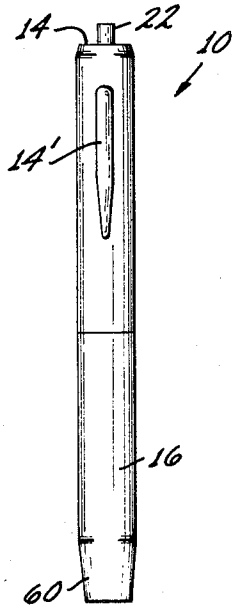


FIG. 2

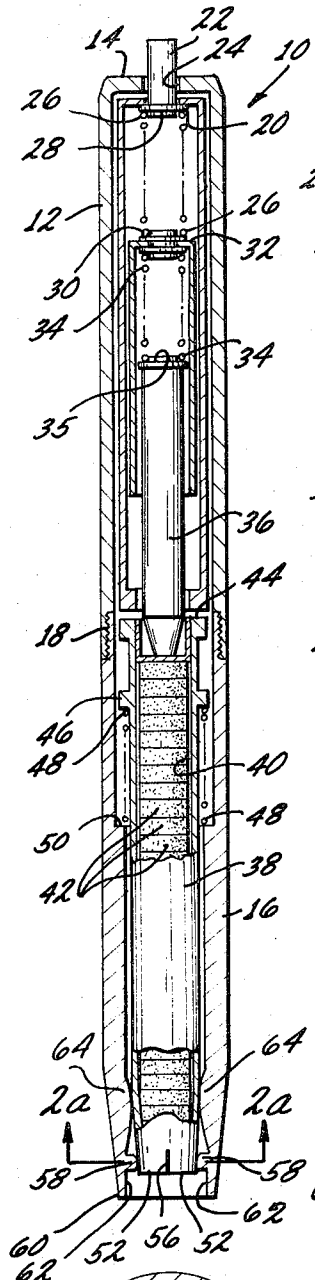


FIG. 3

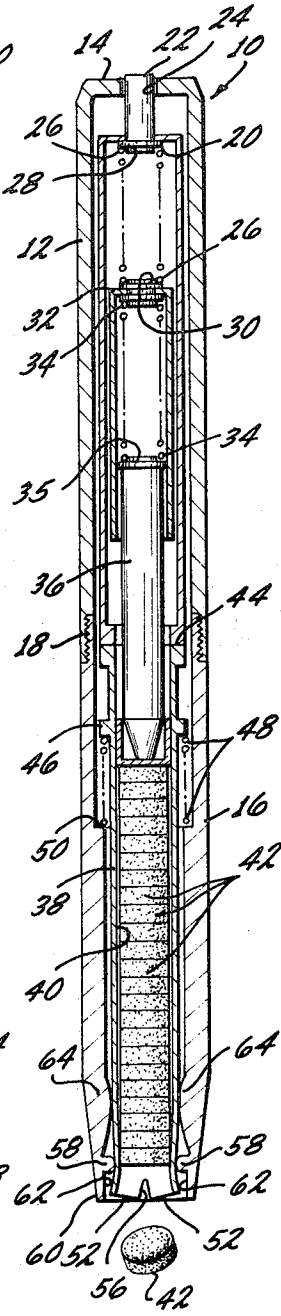


FIG. 4

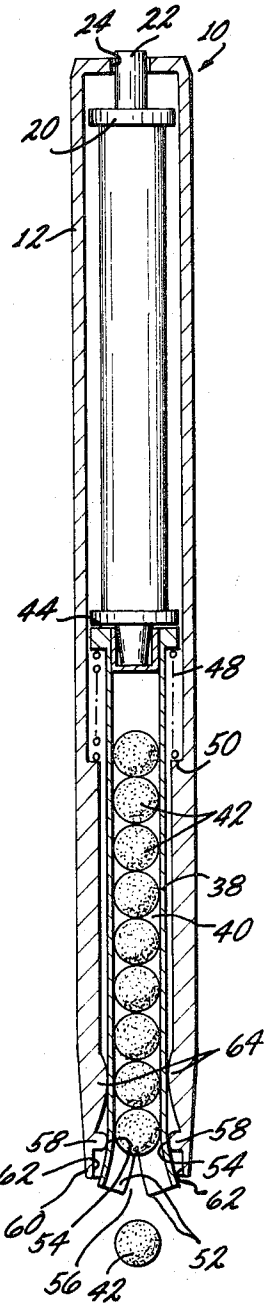
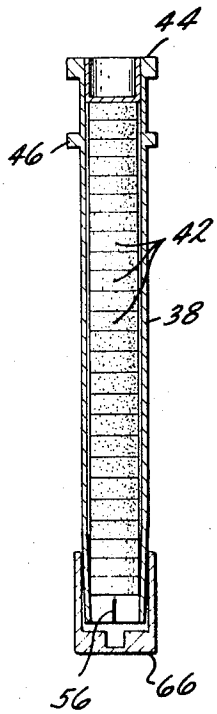


FIG. 5



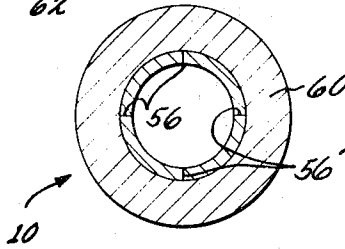


FIG. 2a

DISPENSING APPARATUS

BACKGROUND OF THE INVENTION

The invention relates to an apparatus for dispensing objects of uniform shape and in particular relates to dispensers for dispensing tablets, pills or the like.

A great many people have the requirement or need to periodically ingest tablets, pills or similar items for medicinal or dietary purposes. This creates a need for containers to safely and sanitarily storing these items on the person until such a time that ingesting is required.

These containers must necessarily be small in size and light in weight for ease of concealment and portability. A large variety of vile or box type containers are commonly available. These are generally bulky and consequently hard to conceal and have common disadvantage of accidently becoming open from rubbing contact with the person or article in which they are carried. This accidental opening of the container causes the contents to spill, thus becoming unsanitary or lost. An additional disadvantage is the fact that they look like what they are to the causal observer. A large number of people are embarrassed when observed by other people as having a requirement to take medication or the like when the need arises.

Earlier unsuccessful attempts were made to solve these problems. One earlier device attempted to solve these problems by housing the medication or the like in a dispenser having the appearance of a pen or pencil. This attempt was not entirely satisfactory and the device found little or no use because of its complexity and expense in manufacturing. It encountered repeated failure because of its complexity and the additional requirement of disks made from a foreign substance separating each of the items to be dispensed.

These and other problem in discrete dispensing apparatus had not been satisfactorily resolved until the emergence of the instant invention.

SUMMARY OF THE INVENTION

In accordance with the instant invention, there is provided a novel apparatus for safely and sanitarily storing medication and discretely dispensing the same as required.

The apparatus is inexpensively manufactured of a pre-formed plastic material or the like, has a minimum of both complexity and moving parts, requires no additional foreign substance between the objects to aid in the dispensing and has the overall appearance of a pen, or pencil so as to provide a discrete and unobservable means for dispensing medication or the like.

The invention both as to its organization and method of operation, as well as additional advantages thereof, will be more readily apparent from the reading of the following description in connection with the accompanying drawings in which:

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 is an outside view of the dispenser.

FIG. 2 is a prospective sectional view of an embodiment of the device for dispensing tablets with the dispensing member in the stowed or non-dispensing position.

FIG. 2*a* is an enlarged cross-section of the dispensing end of the device of FIG. 2.

FIG. 3 is a prospective sectional view of the device of FIG. 2 in the deployed or dispensing position.

FIG. 4 is a prospective view of an embodiment of the device for dispensing pills.

FIG. 5 is a showing of a disposable cartridge of dispensable items.

DESCRIPTION

Referring now to FIG. 2, the dispensing device **10** has an outer housing **12** shaped to resemble on ordinary pen or pencil and may include a clip **14** for holding the dispensing device **10** in the pocket of the user. The housing **12** is formed from inexpensive material such as plastic, metal alloy or the like. The housing **12** may be of a one piece construction as shown in FIG. 4 joined to lower portion **16** by threads **18** at substantially the mid section of housing **12.** The two portions **14, 16** of the housings may be interconnected by any other convenient means such as a friction held slide connection or the like not shown.

The upper dispenser member **20** is provided with a button **22** on its upper surface. The button **22** is slideably engaged with housing **12** through an aperture **24** in the top center portion. Within the upper dispenser member **20** is a coil spring **26** positioned between the top inside surface **28** beneath the button **22** and the top outer surface **30** of the inner housing **32.**

Within inner housing **32** is a second coil spring **34** positioned against the inside top of inner housing **32** and the top **35** of follower rod **36.**

The lower dispenser member **38** contains cavity **40** for receiving and storing the articles **42** to be dispensed. Near the top end **44** of bottom dispenser member **38** is a lip **46** for retaining the top of a coil spring **48.** The bottom of coil spring **48** is retained by the small diameter portion **50** of the lower portion **16** of outer housing **12.** The end **52** of the lower dispenser member **38** is preformed in a normally flaired configuration as shown in FIGS. 3 and 4. The preforming of the lower dispenser member **38** can be accomplished by any known means such as heat and pressure after the lower dispenser member **38** is initially formed or by pour molding, injection molding or like means when lower dispenser member **38** is being originally formed. When flaired end **52** is formed a slightly concave portion **54** is also formed. In some instances, depending on the shape of the article **42** to be dispensed and the type of material used in the fabrication of the dispenser members **20, 40,** a plurality of slits **56** may be required between end **52** of the lower dispenser member **40** and concave portion **54.** The slits are to insure the proper configuration of end **52** and concave portion **54** when end **52** is deformed as shown in FIG. 2 and is hereinafter explained. The distance between the concave portion **54** and the flaired end **52** is critical. This distance should be slightly greater than the height of **42** so as to allow the bottom most **42** to be free of concave portion **54** for dispensing while the second bottom most **42** is held securely to prevent dispensing at the same time.

Upper dispenser member portion **20** may be constructed of the same material as the outer housing, however, this would not be a limitation as semi-flexable material would work equally as well as the inner walls of the outer housing gives support to the entire upper and lower dispensing members **20, 38** respectively. The lower dispensing member **38** must be constructed from a formable material so it can be formed as hereinbefore

discussed. In addition, the material must have memory so that when the dispenser member **38** is in the stowed or non-dispensing position of FIG. **2**, the semi-flaired portion **52** is compressed inward by retainer **58** to the extent that slits **56** are closed along their entire length as shown in FIGS. **2** and **2***a*. When the lower dispensing member **38** is in the FIG. **3** or **4** position the semi-flaired end portion **52** must again return to its pre-formed semi-flaired condition. There are numerous plastics and other materials that have this required property.

At the lower dispensing end **60** of outside housing **12** the diameter **62** is slightly greater than the diameter of portion **64** that has sliding contact with the lower dispensing member **38** to insure the centering of lower dispenser member **38** when translated within housing **12** for more precise movement. Housing retainer **58** has an inside diameter less than the inside diameter of lower dispensing end **60.** The retainer number may be formed as part of the housing **12** or later inserted as a separate item, such as, in the apparatus of the FIG. **4** showing. When the FIG. **4** apparatus is initially assembled the objects **42** are inserted by dropping them through the opening formed at **52** and then installing separate retainer **58** to prevent there uncontrolled release. The retainer **58** could be in the form of a ring fitting into preformed receiver in housing **12** not shown.

Referring now to FIG. **5**, the lower dispensing member **38** is shown removed from the lower portion **16** of outer housing **12.** The removal is accomplished by disassembling portions **14** and **16** at their connection **18,** inserting portion **16** and then allowing dispensing member **38** to slide freely out of **16.** The opposite operation performed when the cavity **40** of lower dispenser **38** is refilled with more articles or a new prefilled lower dispenser **38** is installed. This easily removal portion provides ease of refilling as the insertion of pre-filled lower dispensers **38.** A protected end **66** is shown, this is removed and discarded just prior to inserting **38** for use.

OPERATION

Prior to use the cavity **40** must be filled with the items **42** to be dispensed as hereinbefore described. When the apparatus is of the type shown in FIG. **4,** that is one sealed when manufactured, the cavity must be filled during manufacture. When the apparatus is of the type shown in FIGS. **2** and **3,** it is taken apart and the cavity **40** is either filled manually or a pre-filled disposable lower dispenser member **38** is inserted. The assembly is then reassembled and ready for use.

To dispense a tablet, pill or the like **42,** button **22** of the upper dispenser member **14,** as shown in the FIG. **2** in its pre-dispense position, is depressed downwardly until the top of the button is flush with the top of the outer housing **12.**

Upper dispenser member **14** is translated downward which because of its abutting relationship with the lower dispenser member **38** at top end **44** likewise translates lower dispenser member **38** downward.

As the lower dispenser member **38** translates downward spring **48** compresses and the lower semi-flaired end portion **52** is allowed to return to its pre-formed semi-flaired configuration as the retainer member **58** is now positioned above the upper end of the slit **56** and does not deform normally flaired end **52** inward. When end portion **52** again flaires and the slit **56** opens the bottom most item **42** to be dispensed is allowed to pass through the end opening **52, 60,** and be dispensed. The plunger **36** resting on the upper most item **42** to be dispensed is biased downward, as hereinbefore noted, by bias springs **26, 34,** to insure that sufficient pressure is applied to the items to force them downward to aid in dispensing. Referring now to FIGS. **3** and **4,** when the button **22** is flush with the top of outer housing **12,** concave portion **62** returns to its preformed configuration restricting the now bottom most article **42** in lower dispenser member **38** from also being dispensed.

When button **22** is released the now compressed spring **48** confined between **46, 50** relaxes forcing the upper and lower dispenser members **20, 38** to return to their FIG. **2** position. In the FIG. **2** position, the semi-flaired end **52** of the lower dispensing members is again inward and reformed to a smaller diameter by retainer member **58** so that the opening **52** is less than the diameter of the items **42** to be dispensed. The forcing inward of the lower semi-flaired portion **52** by the retainer member **58** further causes the concave portion **54** to become rectilinear or slightly convex providing an enlarged opening at **54** having a greater diameter than the item **42** to be dispensed. The expansion of the concave portion **54** allows the lower most item **42** held in the FIG. **3** position of the lower dispensing member **38** to be now released and to be held by the deformed reduced diameter of end **52.**

The apparatus is now ready to dispense the second bottom most item **42.** The dispensing can be continued in this manner until all of the items **42** are dispensed.

The apparatus as shown in FIGS. **2** and **3** can now be refilled for further use and the apparatus shown in FIG. **4** can be discarded.

The improved dispensing apparatus described herein and constructed according to the invention is relatively simple in construction and provides an inexpensive and efficient means for dispensing uniform shaped objects.

It will be apparent that while the drawings and specifications illustrate two embodiments of the invention that variations may be made in the style, construction and details thereof within the scope of the following claims without departing from the purposes and intentions of the invention.

What is claimed is:

1. An apparatus for dispensing objects of uniform size comprising:

a hollow outer housing having an upper portion with an aperture therethrough and a lower portion with an inner retaining member positioned inward from an outer open end, said open end having a larger diameter than said inner retaining member;

a movable dispensing member disposed within said hollow outer housing and movable from a first position to a second position said dispensing member comprising an upper portion forming an operating button, said button passing through said aperture and has sliding engagement therewith for translating said dispensing member downwadly when depressed and a lower portion having a cavity of uniform diameter for storing a plurality of loose fitting objects for dispensing, a normally restrictive inner wall portion having a smaller diameter than said cavity and a normally flaired outer lip having a larger diameter than said cavity, when said dispens-

ing member is in said first position said inner retaining member is positioned adjacent the normally flaired lip for applying inward pressure thereto for deforming same to a diameter less than said cavity thereby restricting the dispensing of the bottom most object in said cavity and the deforming of said normally flaired lip causes said normally restrictive inner wall portion to bow outwardly to a diameter equal to said cavity thereby allowing unrestricted movement of the objects therethrough and when said operating button is depressed, said dispensing member moves downwardly to said second position placing said normally flaired lip below said inner retaining member thus allowing said normally flaired lip to return to its original configuration for releasing said bottom most object and allowing said restrictive inner wall portion to return to its normal configuration for retaining the now bottom most object and preventing its release therethrough.

2. The apparatus of claim **1** wherein the distance between said retaining member and said open end is greater than the height of said objects to be dispensed.

3. The apparatus of claim **2** wherein said hollow outer housing includes a guide member positioned inwardly from said inner retaining member for guiding the translation of said dispensing member.

4. The apparatus of claim **2** wherein said lower portion of said dispensing member additionally comprises a plurality of equally spaced slots with progressively diminishing width originating at said normally flaired outer lip and terminating at said normally restrictive inner wall portion.

5. The apparatus of claim **4** wherein said slots are substantially closed when said movable member is in said first position.

6. The apparatus of claim **2** additionally comprising a compressable coil spring surrounding said movable member and retained thereby at one end thereof and retained at the other end by said lower portion of said hollow outer casing for returning said movable member from said second position wherein said spring is compressed to said first position wherein said spring is relaxed when said depressed operating button is released.

7. The apparatus of claim **2** wherein said objects to be dispensed are spherical.

8. The apparatus of claim **2** wherein said outer casing comprises a removeably engaged upper and lower portion.

9. The apparatus of claim **8** wherein the engagement of said upper and lower portion is by threaded means.

10. The apparatus of claim **9** wherein said upper portion of said dispensing member additionally comprises downward biasing means applying dispensing pressure on said objects to be dispensed.

11. The apparatus of claim **10** wherein said downward biasing means comprises a first coil spring within said upper portion of said dispensing member and positioned between the inner side of said operating button and the upper outer end portion of a plunger housing, a second coil spring positioned between the upper inside of said plunger housing and the top surface of a plunger positioned within said plunger housing with the lower end of said plunger applying constant downward pressure on the upper most item to be dispensed.

12. The apparatus of claim **11** wherein the lower portion of said movable dispensing member is removable.

13. The apparatus of claim **12** wherein said objects to be dispensed are tablets.

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