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Uroshevich et al.

[11] **3,889,847**

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[54] **CHILD-RESISTANT PILL DISPENSER**

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[52] **U.S. Cl.** ..... **221/265;** 221/276; 221/312 R

[51] **Int. Cl.** **B65h 3/36**

[58] **Field of Search** ..... 221/265, 263, 264, 237, 221/246, 277, 289, 288, 298, 233, 312 R, 276; 222/264, 336, 339, 370, 449, 452, 299, 362; 206/42

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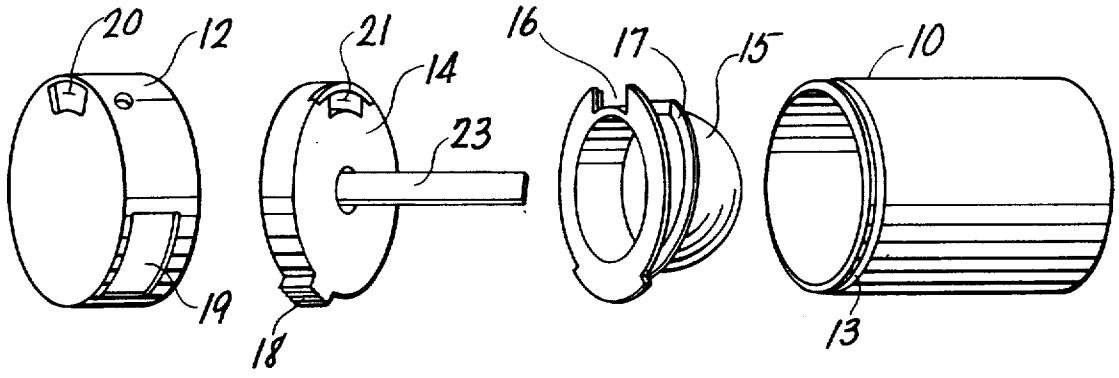
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[57] **ABSTRACT**

A pill or tablet dispensing container is presented which includes a closure which dispenses only one tablet at a time and is very difficult for an uninstructed child to operate while simple for an adult to use. The container is first inverted and held in that position to allow a tablet to enter a chamber in the rotary member in the cap which is then rotated against a torsion spring until the tablet-containing chamber becomes aligned with an outlet in the cap and the tablet falls out. The cap, however, is free to turn all of the way around with respect to the container and must be held with the hand and fingers along with the container to prevent any rotation between them while the rotor is moved into position with the thumb.

1 Claim, 6 Drawing Figures



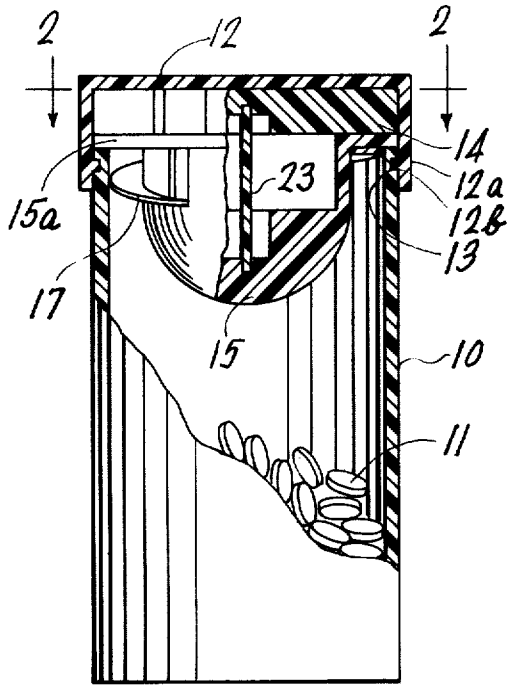


FIG 1

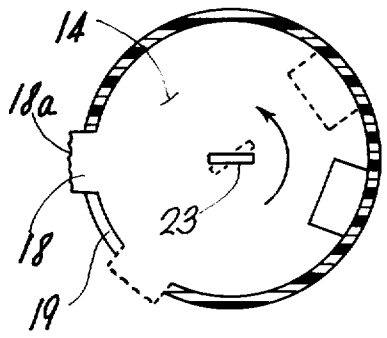


FIG 2

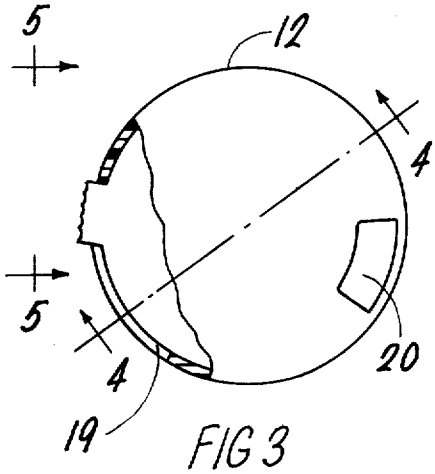


FIG 3

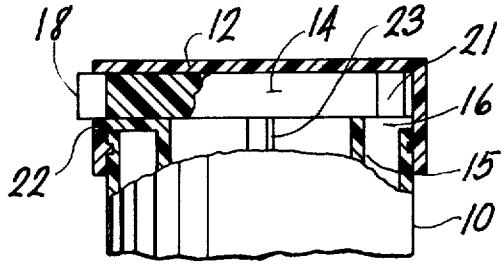


FIG 4

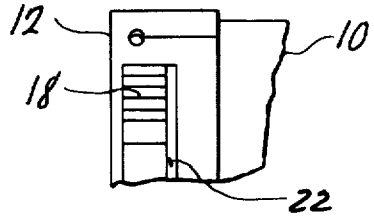


FIG 5

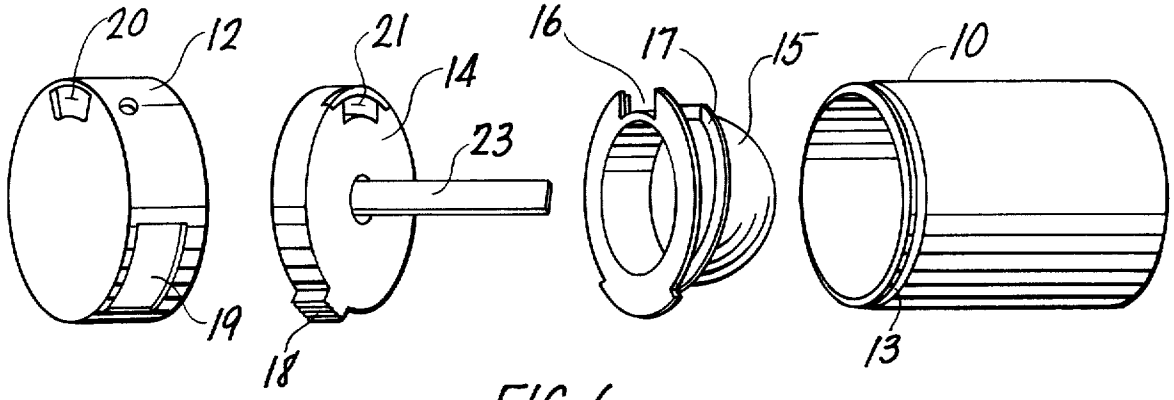


FIG 6

CHILD-RESISTANT PILL DISPENSER

BACKGROUND OF THE INVENTION AND DISCUSSION OF THE PRIOR ART

Along with the wide spread use of drugs in pill or tablet form has come the problem of keeping them from small children who may open the container and swallow the contents with harmful, dangerous and sometimes fatal results to the child. It is, therefore, important that the closure for the container be of a type which is ordinarily too difficult for a child to open without instruction but yet is easy and convenient for an adult to operate. In view of the importance of this problem, a number of closures have been presented in the art which purport to solve it but have various shortcomings which prevent them from performing completely effectively in this respect.

In addition, to the above, it is desirable that the closure for the container provide for the dispensing of one or more tablets at a time depending upon the quantity required for a single dose. A number of dispensing closures have been presented in the art which dispense tablets according to dose but yet lack the feature of a "childproof" closure as well. Applicants invention, on the other hand, has improved on this art and presents a dispensing closure which is at the same time very resistant to opening by small children principally because of the freely turning cap which must be held still with respect to the container while a thumbpiece is moved to permit passage of a tablet from the container, all of this being done while the container is inverted. Such a combination of actions is not likely to be tried by a small child.

OBJECTS OF THE INVENTION

It is, therefore, an object of the present invention to provide a dispensing closure for a pill or tablet container which dispenses a single dose of one or more tablets and is very resistant to opening by a child yet is easily operated by an adult.

It is also an object of the present invention to provide a single dose dispensing closure for a pill or tablet container which requires inversion of the container, holding of the container and its cap together to prevent rotation and concurrent movement of a thumbpiece from a first position to a second position and back again before a tablet is dispensed thus making it difficult for a child to obtain a tablet from it.

It is also an object of the present invention to provide a closure of the foregoing type which, once installed, is not removed from the container and cannot, therefore, be inadvertently left off to expose the contents to children.

It is also an object of the present invention to provide a container closure of the foregoing type wherein the container can be inverted, dropped or shaken without loss of its contents.

Other objects and advantages of the invention will be apparent from the detailed description of the preferred embodiment of the invention and the claims which follow.

In the drawings:

FIG. 1 is a longitudinal cross-sectional view of the closure and its associated container with the closure in its unopened or closed position and with the cap in place on the container;

FIG. 2 is a view taken on section 2—2 looking downward on the rotor with the rotor in its normal or unopened position;

FIG. 3 is a partially cutaway view looking down on the top of the cap and showing its port and the slot in its skirt;

FIG. 4 is a partial cross-sectional view of the upper portion of the container and closure taken on section 4—4;

FIG. 5 is an external view of a portion of the closure and container showing the slot in the cap and the plug lug and thumbpiece therein;

FIG. 6 is an exploded view of the various parts in their relative positions before assembly.

DETAILED DESCRIPTION AND OPERATION OF THE INVENTION

With reference to FIG. 1 of the drawings, a cylindrical container **10** containing medicinal pills or tablets **11** is fitted with a closure cap **12** which includes a flat circular top and an annular skirt **12***a* having an annular lip **12***b* on its inner periphery. As will be seen from FIG. 1 of the drawings, lip **12***b* fits within an annular groove **13** on container **10** and is free to slide in it in an annular direction so that the whole cap **12** can be rotated freely with respect to container **10.** Disposed between cap **12** and the rim of container **10** are two separate members comprising a rotor **14** and a tablet guide or plug **15.** Guide or plug **15** is substantially dome-shaped with the dome extended into the container in the manner shown in FIG. **1** with the widest diameter of the dome being so dimensioned that an annular space sufficient to loosely accomodate one row of tablets stood on edge exists between the dome and the wall with the dome supported by an annular flange **15***a* which bears upon the container's rim. In flange **15***a* there is a tablet port or slot **16** which extends through flange **15***a*, and is sized so as to allow just one tablet to pass easily through it at a time. It is located at the lower end of a helical ramp **17** which is wound or formed upon the dome of plug **15** and leads downwardly to slot **16** in the manner shown in the drawings particularly in FIG. **6.** Atop the flange **15***a* of plug **15** and between it and cap **12,** is interposed rotor **14** which is free to rotate by sliding in rotary fashion upon both flange **15***a* and the inner face of cap **12** and is restrained only from lateral movement by the annular skirt of cap **12.** Rotor **14** has a cut out portion or chamber **21** in its periphery as shown in FIG. **1** which serves in cooperation with flange **15** and cap **12** as a tablet receiving chamber, and a tab or thumbpiece **18** extends outwardly from rotor **15** through a slot **19** in the annular skirt of cap **12** as shown in FIG. **3** and is provided with grooves or knurlings **18***a* on its exterior end to serve as a non-skid surface. Cap **12** has a tablet dispensing port or opening **20** in its upper face adjacent to its annular side and which is adapted to be brought into register with tablet chamber **21** upon rotation of rotor **14** to that location as will be explained later.

Flange **15***a* of plug **15** includes an integral projection or lug **22** which extends outwardly in FIG. **4** into the lower part of slot **19** in the skirt of the rim of the cap **12** between rotor **14** and the upper rim of container **10.** Lug **22** is substantially co-extensive in length with the slot **19** and fits in it closely to prevent rotation of plug **15** with respect to cap **12.** Plug **22** is unattached to con-

tainer **10** and will rotate freely with respect to it with any rotational movement of cap **12.**

A torsion bar spring **23** is provided which extends from a fixed position push fit in the center of rotor **14** to a fixed position push fit inside the center of dome piece **15** as shown in FIG. **1.** It is intended that bar spring **23** be made of plastic having resilient qualities which will cause it to return to its original shape after it has been twisted as much as a quarter of a turn but other materials such as various spring metals including, but not limited to, stainless steel could be used so long as they are compatible with the material of the cap and other parts and the container and its contents. It is possible, however, in another embodiment to eliminate the spring **23** entirely by careful dimensioning of the clearance between the upper and lower faces of rotor **14** and the plug **15** and cap **12** so that friction is produced as the rotor is moved which is of sufficient magnitude to keep rotor **14** in place during handling, dropping or shaking but yet permits it to be easily rotated by pushing on thumbpiece **18.** Rotor **14** will not return to its original position with this arrangement but must be manually pushed in both directions. Such an arrangement can be used if desired for some reason, but orindarily a spring return of rotor **14** is used since it is ordinarily more convenient since the rotor is then always in the original or starting position.

The cap **12,** rotor **14,** spring **23** and domed guide plug **15** are first assembled by placement of the rotor **14** in cap **12** with the thumbpiece **18** extended outward through slot **19.** It should be noted that the opening or port **20** of cap **12** becomes aligned with chamber of rotor **14** when thumbpiece **18** is as far as it will go in one direction to assume a first or open position and is completely blocked by cap **12** when the thumbpiece **18** is moved as far as it will go in the opposite direction to a second or closed position. Spring **23** is then pushed into place in rotor **14** and will stay in place therein becuase of the push fit. Tablet guide plug **15** is then centered over rotor **14** and the free end of spring **23** is located in position in its receiving slot inside the dome and is pushed into place therein. At this point, guide **15** is rotated sufficiently with respect to cap **12** to bring thumbpiece **18** as far as it will travel in slot **19** to its original position against its stop i.e., the end of slot **19,** and then is rotated slightly more to twist spring **23** sufficiently to force thumbpiece **18** lightly against its stop so that it will remain there unless moved by the thumb in the opposite direction. When this is achieved, lug **22** of plug **22** will fit into slot **19** to prevent relative rotation between cap **12** and plug **22** as previously described herein.

At this point, container **10** is filled with pills or tablets **11** along with a moisture absorber such as a cotton wad at the bottom of container **10,** and the entire assembly just described above is then placed on its open top and pushed down upon it until lip **12***b* of cap **12** snaps in place in its mating groove **13** in container **10** and thus retains the whole assembly to container **10** but leaves it free to rotate thereon. The skirt **12***a* of cap **12** can be slit longitudinally in one or more locations to facilitate this installation by allowing the skirt **12***a* to spread sufficiently to allow it to be forced over the rim of container **10** until it reaches groove **13.** It will be seen that cap **12** is now almost impossible to remove without considerable prying and possible breakage yet is entirely free to rotate with respect to container **10** and cannot be removed by ordinary rotary unscrewing, pulling or lifting motions. Also, no pill or tablet can fall out or be removed by any such motions without a further combination of motions as described below. Since these are not the motions which an uninstructed child would be likely to make in attempting to open the container or to get a pill out of it, it is apparent that this is a very child resistant feature.

In order for a pill or tablet to be released from the container **10,** the container is first inverted upon which action a tablet falls on the dome of guide piece **15,** is guided into the space between it and rolls or slides down helical guide track **17** which leads it directly to port **16** in flange **15***a*. The tablet cannot pass through port **16** since it is blocked by the solid portion of rotor **14.** The user, however, keeping the container in the inverted position, grasps the container **10** and the cap **12** with the hand and fingers to prevent their relative rotation then moves thumbpiece or knob **18** as far as it can go in slot **19** in the only direction in which it can go (its second position). This action further twists spring **23** and brings chamber **21** of rotor **14** into register or alignment with port **16** and the tablet falls into chamber **21,** its other side being blocked by cap **12.** Thumbpiece **18** is then released rotor **14** is returned under the biasing action of spring **23** to its original or first position carrying the tablet around with it and bringing chamber **21** and dispensing port **20** into the user's hand. The operation must be repeated by full movement of the rotor **14** through another complete cycle in order for the user to obtain another tablet.

It is possible to size the ports and receiving chamber so that more than one tablet will be dispensed per cycle if desired but this must be done at the time of manufacture and is not within the control of the user.

While it is possible to make the various parts of the present invention of many different materials, it is expected that some of the plastic materials such as a fairly stiff polyethylene, for one stance would be used in its manufacture. Any material used should be compatible with the contents and with each other and not of a type which could contaminate the contents or adversely affect the user.

While there have been shown and described and pointed out the fundamental novel features of the invention as applied to a preferred embodiment, it will be understood that various emissions and substitutions and changes in the form and details of the device illustrated and in its operation may be made by those skilled in the art, without departing from the spirit of the invention. It is the intention, therefore to be limited only as indicated by the scope of the following claim.

What is claimed is:

1. A dispenser container for tablets comprising, in combination, a container having a circular open end and a closed end, a guide plug freely rotatable in said open end and closing said open end except for a port extending through said plug and sized to permit passage therethrough of one tablet at a time, a dome on said plug extended into the interior of said container, a helical ramp on said dome leading to the port in the plug, a rotor rotatably mounted in juxtaposition to said plug and including a chamber adapted to receive a tablet, means including a thumbpiece for rotating said rotor from a first position with respect to the plug where said chamber and said port are sufficiently in register to permit passage of a tablet therebetween to a second posi-

tion with respect to the plug where said chamber and port are out of register sufficiently to prevent passage of a tablet therebetween, a cap rotatably mounted to the container and covering both the plug and the rotor except for slot means in the cap through which the rotor rotating thumbpiece is extended and is free to allow movement of the rotor to the first and second positions, means preventing relative rotation between the cap and the plug, a port through said cap adapted to come into register with the chamber in the rotor only when the rotor is moved to the second position and sufficiently in register to allow passage of a tablet therebetween, and a torsion bar spring extended between the rotor and the plug and non-rotatably mounted in each of them with the spring biasing the rotor so that it returns to the said first position but allows easy rotor movement to the second position.

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