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DISPENSING CONTAINER

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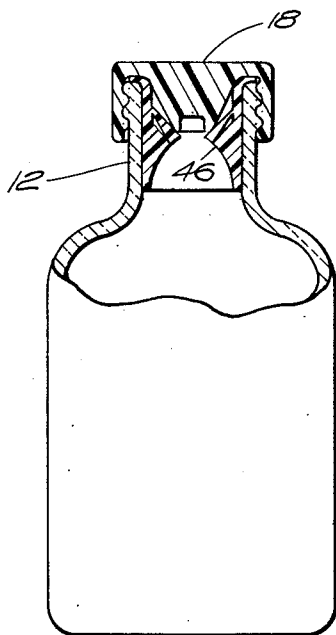


FIG. 1

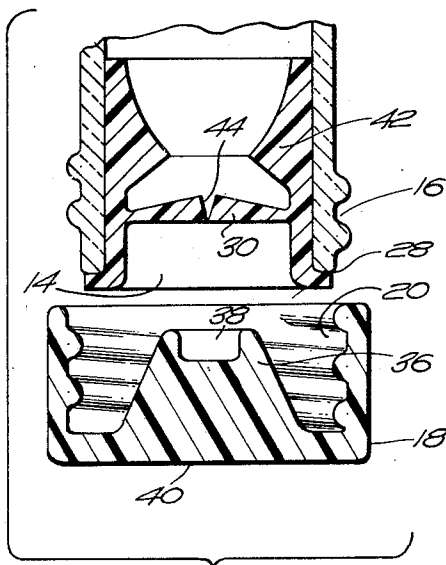


FIG. 2

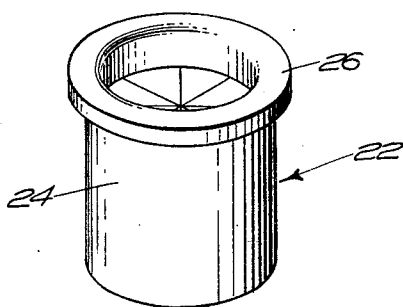


FIG. 3

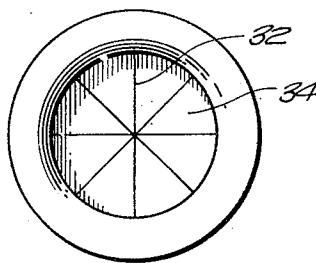


FIG. 4

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3,067,787

DISPENSING CONTAINER

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The present invention relates generally to dispensing containers, and is more particularly concerned with the provision of a container having means associated therewith for controlling the amount or quantity of the contents of the container dispensed with each operation.

My invention is particularly applicable to medicinal containers of the type commonly found in the home, where one of the long-standing problems has been the possibility of infants or children acquiring possession of such a container and taking an overdose of the contents thereof, thereby often resulting in grievous injury or harm to the child. Many attempts have been made to produce containers which are tamper-proof or which have some sort of safety feature to prevent children from inadvertently taking an overdose of the contents of the container, where said contents comprise medicinal tablets or the like. However, these previous attempts have generally proven to be unsatisfactory, either because of inefficiency in operation, or, if efficient, because of difficulty of manipulation by an adult to obtain the desired dosage. For example, some attempts have been made to provide medicinal containers of this type with a cap which perhaps frictionally wedges to the container to close same so that it requires a relatively high degree of strength to remove same. As will be obvious, such an arrangement is undesirable in that there is always the possibility of a cover not being secured in closed position firmly enough, whereupon it would be capable of removal by a child; or, in the alternative, there is always the possibility of a relatively strong child being able to remove the cap, even if firmly secured in its closed position. On the other hand, if the cap is so firmly secured in closed position so as to make it unlikely that any child could remove same, then there is always the possibility that it would be difficult for many adults to effect its removal.

It therefore is a primary object of my invention to provide a container, particularly adapted for medicinal use, wherein removal of the container cap automatically dispenses a predetermined amount or quantity of the contents of the container, while at the same time the container becomes automatically sealed so that additional contents cannot be dispensed.

A further object of the instant invention is the provision of a container having a cap removably associated therewith, said cap and said container having cooperating means for effecting the dispensing of a predetermined quantity of the contents of the container each time the cap is mounted in fully closed position and then removed.

Another object of this invention is the provision of a container of the character described so constructed as to make it highly unlikely that a child would ever take an overdose of the contents of said container, but which still enables an adult to dispense a desired dosage from the container with a minimum of difficulty and lost time.

Still another object is the provision of a dispensing con-

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tainer capable of achieving the afore-enumerated objects, but which nevertheless is simple and economically feasible to manufacture.

Other objects, features and advantages of the invention will become apparent as the description thereof proceeds when considered in connection with the accompanying illustrative drawings.

In the drawings which illustrate the best mode presently contemplated by me for carrying out my invention:

FIG. 1 is an elevational view, partly in section, illustrating a container constructed in accordance with my invention with the cap in fully closed position;

FIG. 2 is a fragmentary sectional view, on an enlarged scale, illustrating the container neck in inverted position with the cap removed therefrom;

FIG. 3 is a perspective detail, on an enlarged scale, showing an insert which may form a part of my invention; and

FIG. 4 is a top plan view of the insert shown in FIG. 3. Referring now to the drawings, and more particularly to FIGS. 1 and 2 thereof, there is shown a container 10 having a neck portion 12 at one extremity thereof, said neck portion being open at its free end as at 14 and externally threaded as at 16 to receive a cap 18 internally threaded as at 20. It will be understood that the container 10 may be of any desired size or shape and that it may be constructed of a material other than glass, as illustrated, such as plastic or the like, for example. Generally speaking, the only requirement for container 10 is that it have a neck portion having an opening, such as 14, through which the contents of the container may be dispensed.

In order to make it mandatory that only a predetermined amount of the contents of container 10 will be dispensed at any one time, the container neck portion is provided with an insert 22 which fits snugly therein. The insert 22 is preferably of integral, one-piece molded construction and has a cylindrical wall 24 and an outwardly extending terminal flange 26, said flange being adapted to engage the open edge 28 of the container 10 with the cylindrical wall 24 extending snugly along the interior of container neck portion 12. For reasons hereinafter to become apparent, insert 22 is constructed of a somewhat resilient material, and I prefer to utilize any non-toxic, resilient plastic, although it will be understood that any material capable of sterilization and having sufficient resilience could effectively be used in the construction of the insert member.

Referring now to FIGS. 2 and 4, it will be seen that the insert 22 is provided with an integral diaphragm 30, which diaphragm is radially slitted from its center point as at 32 so as to provide a plurality of flexible fingers 34. When the insert 22 is secured to the interior of the neck portion 12 of container 10, either by being a press-fit therein, or by any other suitable means, the slitted diaphragm 30 normally spans said neck portion, and is sufficiently rigid so as to prevent the contents of container 10 from spilling outwardly therefrom when the container is inverted and the cap 18 removed.

In order to dispense a desired amount or quantity of the contents of container 10, the cap 18 is provided with a centrally positioned, circular, depending wall 36 which

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defines an open pocket 38. It is important to note that wall 36 extends from the surface 40 of the cap 18 a distance sufficient to penetrate diaphragm 30 when the cap 18 is engaged with container 10 so as to completely close same. Expressed differently, the spacing of diaphragm 30 from edge 28 of container 10 is less than the distance through which wall 36 extends inwardly of the container neck 12, thereby insuring that when cap 18 is threaded completely to its closed position, the said wall 36 will force its way through the slitted diaphragm 30 whereby to expose pocket 38 to the interior of the container 10, as will be seen most clearly in FIG. 1 of the drawings.

Thus, when it is desired to remove a certain number or amount of the contents of container 10, it is simply necessary to make sure that the cap 18 is threaded completely to its closed position, after which the container is inverted and the cap removed. As the cap is removed from the container, the wall 36 in pocket 38 will move outwardly from the diaphragm 30 whereby the latter will automatically assume its closed position due to the natural resilience of the material employed, thereby insuring that the only contents dispensed will be that which is present in pocket 38. My invention is particularly applicable to containers housing tablets, pills or the like, it being apparent that the pocket 38 is shaped and dimensioned so as to receive one or two pills at a time, although it will be understood that the pocket may be dimensioned so as to receive any other desired number of pills during each dispensing operation. Even though my invention is particularly adaptable for use with the dispensing of pills, tablets and the like, it will be understood that it is also of value in connection with the dispensing of a desired amount of powdered material. In such a situation, it is necessary that the diaphragm 30 be sufficiently rigid so as to prevent the powdered or granular material from seeping outwardly therethrough when the container is inverted and the cap removed.

The insert 22 is preferably provided with an annular, inwardly curved guide portion 42 which cooperates with a taper 44 provided at the inner edge of the fingers 34 to provide a smooth, inwardly curved guide surface 46 when the cap 18 is in its closed position. This guide surface functions to facilitate the flow of the contents of the container 10 into pocket 38 when the container is inverted.

It will be understood that where insert 22 is a separate member, as illustrated, the terminal flange 28 functions to insure that the diaphragm 30 is always properly positioned in the container neck portion. This is important since my invention would become completely inoperative if the diaphragm should somehow become sufficiently spaced from edge 28 so as to become incapable of penetration by wall 36 when cap 18 is moved to its closed position. At the same time, terminal flange 28 functions as a compressible gasket to insure proper closing and sealing of the container when cap 18 is threaded tightly to its closed position.

In some situations, where container 10 is of plastic construction, it may be possible and even desirable to integrally mold the insert 22 within the container neck portion. Obviously, such a modification will have no effect on either the concepts or operation of my invention as afore-described. By the same token, although the cap 18 is illustrated as being of integral, molded plastic construction, it may be otherwise constructed, and specifically, the wall 36 may be a separate element secured to the interior of cap 18 by any suitable means. In such a situation, it might be possible to have different size pockets 38, each of which could be readily attachable to the cap 18, in order to enable a different number or quantity of the contents of the container to be dispensed in a given operation. In other words, where it is desired to dispense one pill at a time, a certain size pocket would be mounted to the interior of cap 18; whereas when it is

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desired to dispense two pills at a time, a correspondingly larger pocket would be secured to the cap.

It is also important to note that while I prefer to utilize a cap which threadedly engages the neck of container 10, such is not essential to successful operation of my invention, since the cooperation of the parts would be substantially the same where the cap is constructed so as to slidably engage the bottle neck, for example. No matter what the specific nature of the engagement between the cap and the container may be, however, it will be apparent that each time it is desired to dispense a pill from container 10, the container must first be inverted and then the cap removed. While such a modus operandi is extremely simple and uncomplicated for an adult, it would be quite unlikely that a small child would be able to figure out how to obtain a plurality of pills, and even if the child should catch on to the operation of my device, it is unlikely that he would have sufficient patience to repeatedly thread and unthread the cap such as would be necessary to effect a plurality of dispensing operations. It therefore follows that the instant invention provides a dispensing container which is substantially as simple and rapid for an adult to manipulate when it is desired to remove one or more pills or the like from the container, and which has the added advantage of enabling said pill or pills to be automatically dispensed without the necessity of handling a plurality of the pills to segregate the desired dosage. This obviously is a considerable advantage from a standpoint of cleanliness and sanitation. In addition, as hereinbefore described, it is extremely unlikely that an infant or small child could or would successfully manipulate the instant container so as to obtain a damaging overdose therefrom.

While there is shown and described herein certain specific structures embodying the invention, it will be manifest to those skilled in the art that various modifications and rearrangements of the parts may be made without departing from the spirit and scope of the underlying inventive concept and that the same is not limited to the particular forms herein shown and described except in so far as indicated by the scope of the appended claims.

What is claimed is:

1. A dispensing container having an opening at one end thereof, a cap removably engageable with said one end to selectively open or close said opening, an insert including a slitted resilient diaphragm located adjacent to and spanning said opening, whereby when said container is inverted its contents will be maintained therewithin by said diaphragm even when said cap is removed, and an inwardly curved guide portion integrally formed in said insert and located adjacent to and beneath said diaphragm when the container is upright, said cap having a centrally positioned, circular depending wall defining a pocket, said wall extending inwardly of the container a distance sufficient to flex said slitted resilient diaphragm to open position when said cap is engaged with said container, said diaphragm being radially slitted so as to provide a plurality of pointed fingers, the under surface of said diaphragm tapering downwardly to the center thereof whereby each finger is substantially thicker at its inner pointed edge than at its outer edge, the under surface of each finger being in abutting relation with the upper end of the aforesaid guide portion when said diaphragm is flexed to open position by said cap, whereby the thickened pointed edge of each finger forms a smooth continuation of the inwardly curved part of said guide portion to insure funneling of the contents of said container into said pocket when the container is capped and inverted.

2. A dispensing container having an open end at one extremity thereof, a slitted resilient diaphragm spanning said open end, and a cap removably engageable with said container open end to close same, said cap having a centrally positioned, circular depending wall defining a pocket, said wall extending inwardly of said container open end when the cap is in its normal engaged position a dis-

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tance sufficient to flex said diaphragm to open position, said diaphragm being radially slitted so as to provide a plurality of pointed fingers, the under surface of said diaphragm tapering downwardly to the center thereof, whereby each finger is substantially thicker at its inner pointed edge than at its outer edge, each of said pointed inner edges tapering outwardly from top to bottom, said thickened pointed edges, when the fingers are fully flexed, extending angularly toward said pocket to help guide contents of the container into said pocket when the container is capped and inverted.

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