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[54] **PILL DISPENSER WITH DISPOSABLE MAGAZINE  
AND INDICIA**  
9 Claims, 6 Drawing Figs.

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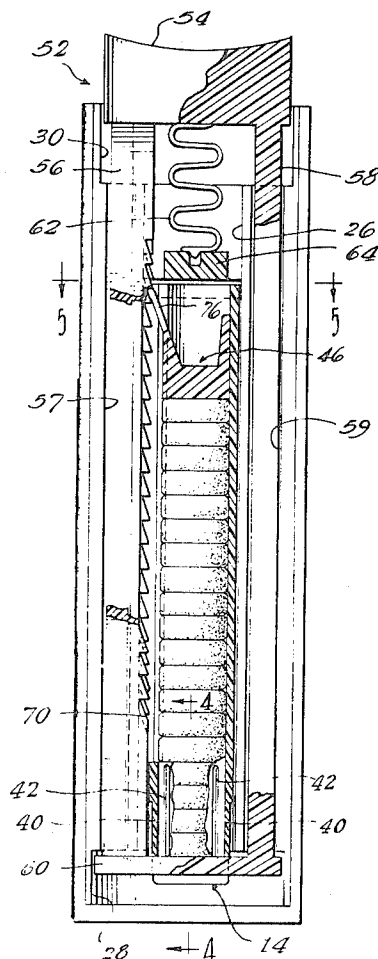
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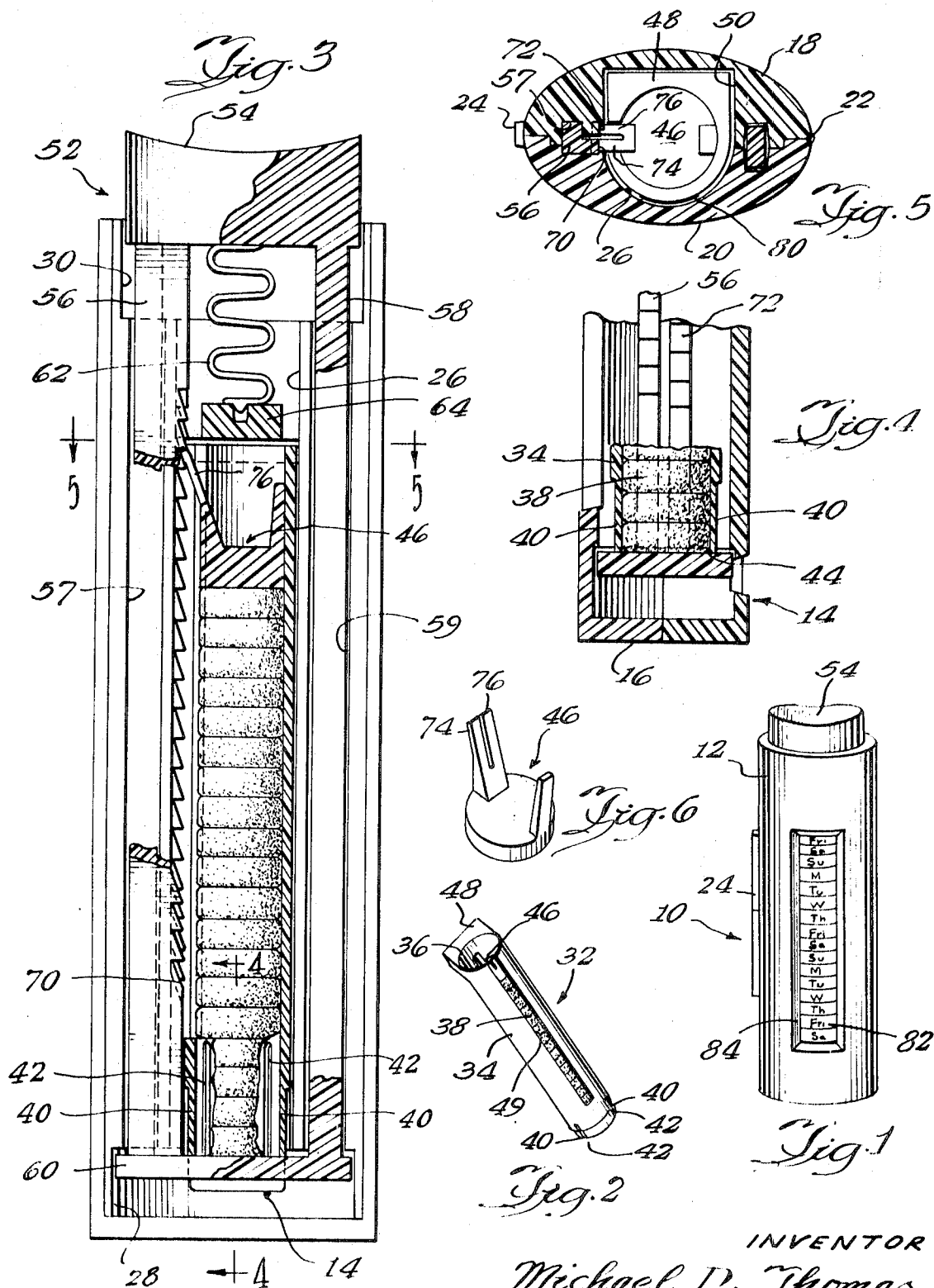
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**ABSTRACT:** A dispensing device including a disposable magazine supported in a container with a plurality of pills carried in the magazine. The magazine has releasable retaining means on one open end for maintaining the pills within the magazine and receives a plunger through the opposite open end for engaging a stack of pills therein. An actuator member is interposed between the container and the plunger which will force individual pills from the magazine and will at all times maintain the plunger in engagement with the stack of pills.

The dispensing device further includes indicia of periodicity on the magazine which are aligned with an opening in the container and which cooperate with the plunger to serve as a reminder of whether a pill has been taken for any given period.

The device is designed so that the magazine and indicia may be sold as a disposable unit, and the remainder of the device may be reused.





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# PILL DISPENSER WITH DISPOSABLE MAGAZINE AND INDICIA

## CROSS-REFERENCE TO RELATED APPLICATIONS

This application relates to subject matter disclosed and claimed in my copending application Ser. No. 855,588, filed on Sept. 5, 1969, and entitled "Programmed Pill Dispenser."

## BACKGROUND OF THE INVENTION

The present invention relates generally to pill dispensers and more particularly to an improved dispensing device incorporating a disposable magazine for a plurality of pills.

As is well known, certain pharmaceutical preparations are prescribed or recommended to be used on definite dosage schedules over relatively lengthy time periods but at relatively infrequent intervals, and a patient's adherence to such a dosage schedule is a matter of great importance. It is equally important to avoid accidental overdosages of the preparation by inadvertently taking more than one pill or tablet during a given time period. This is especially true for users of birth control pills.

While various types of packaging devices have been proposed for the dispensing of these types of pills, in many instances the cost of the packaging devices approximates or exceeds the cost of the pills. Thus, there still remains a need for a packaging and dispensing device for pills of this type which has the functional advantage of previously known expensive devices and still is capable of being marketed on a competitive basis.

## BRIEF SUMMARY OF THE INVENTION

The present invention contemplates a dispensing device for pharmaceutical preparations wherein the majority of the parts of the dispensing device are reusable so that the preparation may be sold in a relatively inexpensive, disposable package to be inserted into the dispensing container.

The dispensing device of the present invention includes a disposable magazine which has a plurality of pills maintained therein and which is capable of being supported in a fixed position within a container. The container is in the form of a hollow member and a plunger adapted to cooperate with the disposable package to dispense individual pills from the container. The mechanism for dispensing the individual pills includes an actuating member that cooperates with the plunger, received in the magazine, and with the hollow member to force individual pills from the disposable package as the actuator is moved in one direction and maintained a fixed relationship between the plunger and hollow member when the actuator member is moved in the opposite direction.

The present invention further contemplates the sale of the pills in inexpensive disposable magazines which are packaged with indicia to assist in maintaining a predetermined dosage schedule. The indicia includes a strip having a plurality of indicators corresponding to the predetermined dosage schedule. The indicators are greater in number than the pills in the magazine and are spaced at intervals corresponding to the thickness of the respective tablets or pills. Thus, the indicator corresponding to the initiation of the pill taking schedule may be arranged with the uppermost pill in the magazine and attached to the magazine. The plunger forcing each successive pill from the magazine will serve as a reminder for the prescribed dosage scheduled of the pills.

## BRIEF DESCRIPTION OF THE SEVERAL VIEWS OF THE DRAWINGS

FIG. 1 is a perspective view of the dispensing device constructed in accordance with the present invention;

FIG. 2 is a perspective view of the disposable package adapted to be utilized in the dispensing device of FIG. 1;

FIG. 3 is a vertical sectional view of the dispensing device shown in FIG. 1;

FIG. 4 is a vertical sectional view taken generally along lines 4-4 of FIG. 3;

FIG. 5 is a horizontal sectional view taken generally along lines 5-5 of FIG. 3; and

FIG. 6 is a perspective view of the plunger forming part of the dispensing device.

## DETAILED DESCRIPTION

While this invention is susceptible of embodiment in many different forms, there is shown in the drawings and will herein be described in detail one specific embodiment, with the understanding that the present disclosure is to be considered as an exemplification of the principles of the invention and is not intended to limit the invention to the embodiment illustrated.

The several views of the drawings disclose a pill dispensing device generally designated by the reference numeral 10. The dispensing device 10 includes a container 12 in the form of an elongated hollow member open at one end and having an exit opening 14 adjacent a closed end 16 thereof. Preferably, the elongated hollow member is formed in two sections and is designed so as to be readily moldable by a single step molding process. As more clearly shown in FIG. 5, the hollow elongated member 12 includes first and second halves 18 and 20 which are interconnected along one adjacent edge by an integral hinge 22. The opposite adjacent edges of the sections 18 and 20 have suitable latch means 24 formed thereon for maintaining the two sections in the position shown in FIG. 5.

The two sections 18 and 20 cooperate to define an elongated bore 26 terminating at the exit opening 14 in an enlarged portion 28. The bore 26 further has an enlarged portion 30 adjacent the opposite end thereof for a purpose which will be described later.

A disposable package 32 is designed to receive and maintain a plurality of pills in predetermined relation and is designed to be supported within the container 10 so that the pills may be forced from the package and be removed from the exit opening 14. For this purpose, the disposable package 32 is in the form of an elongated magazine 34 which defines an opening 36 having a cross-sectional configuration equal to the cross-sectional configuration of the pills 38 to be supported therein. The opening 36 is open at both ends and the magazine 34 has releasable retaining means defined on one end for maintaining the pills within the magazine.

In the illustrated embodiment, the releasable retaining means includes a pair of resilient arms 40 each having one end secured to the magazine at circumferentially spaced locations. The arms are preferably formed by first and second pairs of circumferentially spaced slots 42 extending from the end of the magazine and terminating at a point spaced inwardly from the free end. Each pair of slots cooperates to define one of the resilient arms 40 and the resilient arms have inwardly directed portions 44 formed on the free end thereof which are normally disposed within the opening 36 and obstruct the exit end of the magazine. Thus, in the normal position, the free end 44 of the arms 40 prevent the plurality of pills 38 from exiting from the magazine 34.

The disposable package further includes plug means 46 received in the opposite end of the opening 36 and engaging the opposite end of the stack of pills so as to maintain the pills within the magazine. The disposable package 32 further includes a lateral projection 48 integral with one end of the magazine 34 and an elongated slot 49 extending substantially the length of the magazine, for a purpose which will be described later.

The disposable package 32 is adapted to be received within the bore 26 so as to locate the exit or outlet end of the magazine, defined by the releasable retaining means 40, adjacent the exit opening 14 of the container 10. For this purpose, the bore 26 has a lateral recess 50 which is adapted to receive the lateral projection 48. The lateral recess 50 is spaced from the enlarged portion 28 by a distance substantially equal to the length of the magazine 34 so as to locate the lower or free end of the magazine just above the lateral aperture defining the exit opening 14. Also, the cross-sectional configuration of the magazine or sleeve 34, which is

preferably transparent, is substantially equal to the cross-sectional configuration of the bore 26 so that the magazine is maintained in a fixed relationship within the hollow member when the two sections 18 and 20 are in the closed condition, shown in FIG. 5.

The dispensing device 10 further includes means for moving the plug member or plunger 46 within the opening 36 to force successive pills through the releasable retaining means 40 to be removed through the exit opening 14. The actuator means 52 includes a button 54 received in the open end of the hollow member and slidable in the enlarged portion 30 of the bore 26 with a portion extending beyond the open end of the hollow member. The actuating member 52 further includes first and second spaced legs 56 and 58 depending from the lower surface of the button 54. The legs are guided in slots 57 and 59 formed adjacent the bore 26 and are interconnected at their free ends by a pill support 60. The pill support 60 is larger than the size of the bore 26 and is adapted to be moved between first and second positions within the enlarged portion 28 of the bore.

The pill support 60 and button 54 are normally maintained in a first position by biasing means that is illustrated as a sinusoidal member 62 integral with the lower surface of the button 54 and depending therefrom. The free end of the sinusoidal member or spring 62 cooperates with a projection 64 integral with the hollow member 12 and extending across a major portion of the bore 26, directly above the lateral recess 50. Thus, the biasing means or spring 62 will normally maintain the pill support 60 in an uppermost position or first position in which the pill support blocks communication between the pill exit 14 and the outlet end of the magazine 34 having the retaining means 40 thereon. However, an axial force on the end of the button 54 will move the pill support 60 to a second position which provides communication between the pill exit and the outlet end of the magazine.

The dispensing device 10 further includes means, respectively on the hollow member and one of the legs of the actuating member 52, which cooperate with the plunger to move the plunger relative to the hollow member and the magazine when the button is moved in one direction and maintain the plunger fixed relative to the hollow member and the magazine when the button is moved in an opposite direction. During the movement of the plunger in the one direction, a pill 38 is forced through the retaining means 40 and is capable of being removed through the exit opening of the container 10. This means includes first and second ratchet teeth 70 and 72 respectively defined on one of the legs, 56, of the actuating member 52 and on the hollow member 12, adjacent the bore 26. The ratchet teeth 70 and 72 respectively cooperate with first and second portions or fingers 74 and 76 respectively defined on the plunger 46 and extending through the slot 49 in magazine 34. In order to maintain a fixed relationship between the ratchet teeth 70 and the finger 74, the leg 56 is preferably L-shaped in configuration and the slot 57 receiving the leg 56 is correspondingly L-shaped.

According to another aspect of the present invention, the dispensing device further includes indicia of periodicity to serve as a reminder of whether a pill has been taken for any given time period. The indicia of periodicity includes a strip 80 adapted to be attached to the peripheral surface of the magazine 34 and having a plurality of indicators 82 at uniformly spaced intervals corresponding to the thickness of the pills 38 within the magazine 34. The respective indicators designate, in serial order, the number of days of a week and are connected to the peripheral surface of the magazine so as to be in alignment with a slot 84 formed in the container body 12. Thus, the position of the plunger 46 within the transparent magazine 34 will be visible through the transparent strip and will indicate whether a given pill has been taken for any given period.

Applicant contemplates that the indicator strip include several indicators more than the number of pills 38 within the disposable magazine 34 to supply a repetition of a pill taking

cycle. For example, if the dosage is on a daily basis, the indicator strip would have seven indicators beyond the number of pills in the magazine. The indicator strips can then be packaged with the disposable magazines and the appropriate time for the initiation of the taking of the pills may be arranged with the uppermost pill to begin the dosage schedule. Thereafter, as each pill is forced through the exit opening, the plunger will move one succeeding interval towards the outlet end of the magazine and will be aligned with the next successive indicator and serve as a reminder of whether a pill has been taken for any given period. Of course, it will be appreciated that while the indicia has been described in connection with the taking of pills on a daily basis, the indicia could also readily be designed for dosage schedules wherein a plurality of pills must be taken for any given day or, alternatively, for any other time schedule.

With the arrangement described above, the pharmaceutical tablets or pills can be sold in a disposable package 32 with an indicia of periodicity 80 packaged therein. When the dosage schedule is to begin, the strip may be attached to the peripheral surface of the magazine 34 and the entire magazine may be inserted into the bore 26 of the container or hollow member 12. Each pill may then be forced through the outlet end of the magazine 34 by movement of the button 54 from the first to the second position with the ratchet teeth cooperating with the portion of finger 74 to move the stack of pills towards the outlet end. The pill may subsequently be removed through the exit opening and taken by the user. As each pill is moved through the exit opening of the magazine 34, the plunger will move downwardly by a distance equal to the thickness of one given pill and will be maintained in this position by the ratchet means 72 on the hollow member 12. Thus, the uppermost pill will then be aligned with the next given period for the dosage schedule.

When all of the pills in one magazine 34 have been taken, the entire magazine may be removed and replaced with a new magazine having an additional supply of pills. With such an arrangement, a patient may purchase an initial supply of pills in a disposable package within a dispensing unit and may subsequently utilize the more expensive portions of the dispensing unit by merely replacing the disposable package 32.

While the disposable package has been disclosed as being sold with a plunger 46 specifically designed for utilization in a container having the ratchet teeth 70 and 72 thereon, it will be appreciated that the disposable package 32 could also have an inexpensive plug inserted in the open end during shipment. When the package is to be located in the dispensing unit, the plug could be removed and the plunger 46, forming part of the dispensing unit, could be inserted into the open end prior to location of the magazine 34 within the bore 26.

I claim:

1. A dispensing device for a plurality of pills comprising an elongated hollow member having a bore open at one end and closed at the opposite end and having a lateral exit opening adjacent the closed end; a disposable magazine defining an opening open at opposite ends and having a cross section corresponding to the cross section of one of said pills, said magazine having a plurality of said pills within said opening; cooperating means on said hollow member and said magazine for maintaining one end of said magazine in a location adjacent said exit opening; a plunger in said opening engaging said pills; releasable retaining means on said one end of said magazine for maintaining said plurality of pills in said magazine; actuator means for moving said plunger in said opening and forcing a pill from said magazine into a position from which it can be removed through said exit opening, said actuator means extending substantially the length of said bore and having a pill support in said bore adjacent said closed end; and biasing means normally maintaining said actuator means in a first position in which said pill support blocks said exit opening and said one end of said magazine, said actuator being movable to a second position where said pill support is spaced from said exit opening and said one end of said

magazine to provide communication between said one end and said exit opening and accommodate removal of only one pill.

2. A dispensing device as defined in claim 1, in which said cooperating means comprises means defining a lateral recess in said bore with said bore having a cross-sectional configuration substantially equal to the cross-sectional configuration of said magazine; and a projection integral with said magazine and disposed in said recess.

3. A dispensing device as defined in claim 1, in which said releasable retaining means includes a first and second opposed resilient arms adjacent said one end of said magazine, said arms each having an inwardly directed portion normally disposed in the path of said pills.

4. A dispensing device as defined in claim 1, including the further improvement of indicia of periodicity on said magazine comprising a strip having a plurality of indicators serially arranged at intervals corresponding to the thickness of said pills, said plunger being visible through said magazine and said plunger and strip being visible through said hollow member whereby the position of said plunger will serve as a reminder of whether a pill has been taken for any given period.

5. A dispensing device as defined in claim 1, in which said actuator means includes a button and a pair of spaced legs depending from said button and which includes the further improvement of guide means on said hollow member receiving said legs; and means respectively on said hollow member and one of said legs and cooperating with said plunger to (1) move said plunger relative to said hollow member when said button is moved in one direction and (2) maintain said plunger fixed relative to said hollow member when said button is moved in an opposite direction.

6. A dispensing device as defined in claim 5, in which said last means includes first and second ratchet teeth respectively on said hollow member and said one of said legs, and first and second resilient portions on said plunger respectively engaging said ratchet teeth.

7. A dispensing device for a plurality of pills comprising an elongated hollow member defining an elongated bore having a closed end and an open end, said hollow member having a

lateral aperture defining a pill exit adjacent said closed end; an actuator member including a button extending from said open end, a pill support adjacent said closed end and a pair of legs interconnecting said pill support and said button; a disposable magazine in said bore, said magazine having an elongated chamber open at both ends with a plurality of pills in stacked relation therein; cooperating means on said magazine and said hollow member for supporting one end of said magazine adjacent said pill exit; biasing means normally maintaining said actuator member in a first position in which said pill support blocks communication between said pill exit and said end of said magazine and accommodating movement to a second position providing communication between said pill exit and said one end of said magazine; a plunger in said chamber engaging said stack of pills, said plunger having first and second resilient portions extending from said chamber; and means defining first and second ratchet teeth respectively on said hollow member and one of said legs, said resilient portions respectively cooperating with said first and second ratchet teeth to move said plunger relative to said magazine when said actuating member is moved from the first to the second position and maintain said plunger fixed relative to said magazine when said plunger is moved from the second to the first position.

8. A dispensing device as defined in claim 7, including the further improvement of transparent indicia of periodicity on said magazine, said indicia being visible through said hollow member and comprising a strip having a plurality of indicators for successive days of the week equal in number to the number of pills in said magazine, said indicators being arranged at intervals corresponding to the thickness of a pill, said plunger being visible through said magazine and cooperating with said strip to serve as a reminder of whether a pill has been taken for any given day.

9. A dispensing device as defined in claim 7, in which said hollow member has first and second lateral recesses on opposite sides of said bores, said recesses, respectively, defining guide means for said legs and in which said first ratchet teeth are defined on said hollow member adjacent the recess guiding said one of said legs.

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