ABSTRACT: A device for dispensing pills and the like and including a hollow member having an exit opening at one end thereof with an actuator slideable in the hollow member. The actuator has a pill support on one end thereof and is biased to normally block the exit opening while being movable to expose the exit opening. A plunger engages one end of a group of pills to maintain the other end of the pills in engagement with the pill support. The plunger cooperates with the actuator and hollow member to move relative to the hollow member when the actuator is moved to expose the exit opening and is fixed relative to the hollow member when the actuator is returned to close the exit opening.

Indicia are normally packed with the device and the indicia comprises a strip having indicators serially arranged and corresponding to the respective days of the week. There are seven more indicators than there are pills in the device so that the starting date for taking the pills may be aligned with the plunger and serve as a reminder as to whether a pill has been taken for any given day.
BACKGROUND OF THE INVENTION

The present invention relates generally to pill dispensers and more particularly to a simple and inexpensive programmed dispensing device.

In recent years the affluence of our society has resulted in an increasing number of persons taking various types of medicines. In many instances the medicines are in the form of tablets or pills. One particular area which has received considerable attention in most recent years is the use of oral contraceptives and various devices have been proposed for the packaging of such tablets or pills. One of the problems encountered in the use of oral contraceptives is that the pills must be taken on a daily basis for a certain period of time and a certain number of pills must be taken during a given period of time in order to produce the desired results.

Various packaging devices have been proposed for the dispensing of various types of pills, these devices have several drawbacks. For example, one type of packaging device for oral contraceptives is an apertured card having pills maintained in the aperture by plastic or other material. However, such a package is not reusable and large and cumbersome to package in large quantities and store for sale.

SUMMARY OF THE INVENTION

The present invention contemplates a programmed pill dispenser in the form of a kit including a dispensing device in the form of a hollow member having a pill receiving bore therein which has a transversely extending exit opening at one end thereof. The hollow member slidably receives an actuator which has a pill support at the remote end thereof. The actuating member is normally biased to a position wherein the support closes the pill exit and is movable to a second position where a pill adjacent the support is free to be removed through the exit opening.

The device further includes a plunger which is always maintained in engagement with the opposite end of a group of pills in the bore and is movable relative to the hollow member when the actuator is moved to the second position but is maintained fixed relative to the hollow member when the actuator is returned to its released position. The mechanism for accomplishing this includes a pair of opposed resilient fingers carried by the plunger each of which engages ratchet teeth, respectively, defined on the actuating member and on the hollow member. The longitudinally spaced ratchet teeth are located at diametrically opposed places on the bore and have inclined walls which incline outwardly and upwardly away from the exit opening. Thus, one of the fingers is carried with the actuating member when the member is moved to expose the exit opening while the second resilient finger slides along the inclined wall formed between the ratchet teeth on the hollow member. When the actuator member is returned to its released position, the opposite finger engages a tooth formed on the hollow member and thus remains in a fixed position relative to the hollow member while allowing the actuator member to return. In this manner, the plunger is at all times in contacting engagement with the upper end of the plurality of pills.

According to another aspect of the invention, indicia are normally packaged with the dispensing unit with the indicia comprising a strip having a plurality of indicators corresponding to the respective days of the week. The indicators have a spacing which is substantially equal to the spacing on the fixed ratchet defined on the hollow member as well as the approximate thickness of the respective pills. The strip includes an additional seven indicators beyond the number of pills in the dispensing unit so that the indicia may be attached to the hollow member with the starting day for the taking of the pills arranged with the plunger. Thus, the position of the plunger at any given time will indicate whether a certain pill has been taken for a given day of the week. Such an arrangement substantially eliminates the possibility of the recipient of the pills to either skip a day without taking a pill or alternatively taking more pills than is desired for any given day.

BRIEF DESCRIPTION OF THE SEVERAL VIEWS OF THE DRAWINGS

FIG. 1 is a vertical sectional view of the dispensing unit construction in accordance with the present invention;

FIG. 2 is a transverse sectional view taken generally along lines 2—2 of FIG. 1;

FIG. 3 is a vertical sectional view taken along lines 3—3 of FIG. 1; and

FIG. 4 is a plan view of the indicia.

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.

As shown in the drawing, the programmed pill dispensing unit 10 includes four simple inexpensive parts which respectively are a hollow member 12, an actuator member 14, a plunger 16 and biasing means 18.

The hollow member 12 includes a housing having a central bore 20 extending substantially the entire length thereof with the bore being closed at one end at 22 and having an exit opening 24 through which pills 26 may be removed. The central bore 20 has a slot 30 extending from one side thereof with the slot extending substantially the entire length of the bore. The slot is preferably T-shaped, for a purpose which will become apparent hereinafter.

The actuator member 14 has a major portion 32 which corresponds in cross-sectional configuration to the cross-sectional configuration of the slot and is slidable within the slot.

At the lower or remote end thereof, the major portion or leg 33 of the actuator 14 has a transversely extending pill support 34 which extends across the bore 20. The remote end of the bore 20 has an enlarged portion 36 which defines shoulders 38 and 40 respectively adapted to be engaged by the opposed surfaces of the pill support 34 to define upper and lower extreme positions for the pill support 34 as well as the remainder of the actuator 14.

The upper end of the actuator 14 has a button 44 integral therewith and slidably received in an enlarged portion 46 defined on the upper end of the bore 20. The actuator button has a stop member 47 depending from the lower surface thereof which is adapted to engage a fixed stop member 48 which extends inwardly from the bore 20. The spring 18 acts as biasing means between the stop 48 and the lower surface of the actuator button 44 to maintain the actuator 14 in the position shown in FIG. 1 wherein the pill support 34 substantially closes the opening or pill exit 24 to prevent the accidental removal of pills from the unit. Preferably, a flexible pill stop 50 in the form of a resilient finger is located adjacent the exit opening 24 and further maintains the pills in a fixed position as well as restricting the size of the opening 24 so that only one pill may be removed at any given time.

The plunger 16 of the pill dispenser 10 is in the form of a substantially cylindrical member or disc 58 that is slidable within the bore 20 and has one surface thereof in engagement with the group of pills 26 which are arranged in end-to-end relationship within the bore 20 defined in the hollow member 12.

According to one aspect of the present invention, the plunger has first and second portions which are respectively engageable with the hollow member and the actuating member and which cooperate with means on the respective members to maintain the plunger in a fixed position relative to the actuating member when the actuating member is moved.
from a first or released position to a second or operating position and also maintains the plunger fixed relative to the hollow member when the actuating member is moved in the opposite direction to move from the operative to the released position. The resilient fingers 60 and 62 which extend upwardly and are integral with the substantially circular member or disc 58. The resilient finger 60 cooperates with ratchet teeth 64 defined on the leg or elongated portion 32 of the actuating member which extends substantially the entire length of the bore (see FIG. 1), while the finger 62 cooperates with ratchet teeth 66 defined on the hollow member 12. As more clearly shown in FIG. 1, the ratchet teeth 64 are in the form of a plurality of transversely extending ledges 68 which are interconnected by inclined walls 70. Likewise, the ratchet teeth 66 are in the form of transversely extending ledges 72 interconnected by inclined walls 74. An inspection of FIG. 1 shows that the perspective walls 70 and 74 incline upwardly and outwardly from the central axis of the bore 20 as well as the exit opening 24 and the spacing between the adjacent ledges 68 of the ratchet teeth 64 and the ledges 72 of the ratchet teeth 66 are longitudinally spaced a distance substantially equal to the thickness of one of the pills 26.

The operation of the device is believed to be apparent from the above description, but for purposes of completeness applicability, the device shown in FIG. 1 is the dispensing unit or other means of conveying the prescription unitary. A dispensing unit has been completely filled with a plurality of pills 26 and the device is in the condition substantially as shown in FIG. 1, when the operator depresses the actuator button 44, the downward movement of the actuator 14 and more specifically the main portion 32 will cause the finger 60 to engage one of the ledges 68 thereby moving the plunger downwardly with the actuator. Downward movement of the plunger and actuator will maintain the pills in a fixed position between the circular disc 58 and the support 34 so that the entire group of pills moves with the actuator. This downward movement of the actuator is terminated by either having the stop 47 engage the stop 48 or by having the lower surface of the pill support 34 engaged with the lower shoulder 40 defined by the enlarged bore. Preferably, both members are simultaneously in engagement to define the second or operating position of the actuator relative to the hollow member 14.

In the downward position or operating position, the pill support and more particularly the upper surface thereof is located below the lower edge of the opening and the lower pill 26 will be engaged with the upper support 34 has moved past the resilient finger 50 and is in alignment with the exit opening 24 to be free to be removed therefrom. When the actuating member 14 reaches the lowest position, the fingers 62 on the plunger 16 is below the first or upper transversely extending ledge 72 so that a release of the actuator button 44 will allow the spring 18 to move the actuator 14 to the position shown in FIG. 1. However, during this return movement of the actuator to its first or released position, the plunger will remain in a fixed position relative to the hollow member through the cooperation of the second resilient finger 62 and the ratchet teeth or ledge 72. It will be appreciated that such return movement cannot occur until after the lowest pill 26 has been removed from the unit so as to allow upward movement of the pill support relative to the hollow member. When the actuator 14 is returned to its released position, the support 34 engages the ledge or shoulder 38 defined by the large opening 36 and in such position blocks the opening 24 and prevents the inadvertent removal of pills 26.

According to a further aspect of the present invention, the dispensing device is adapted to be sold as a kit in conjunction with a specifically designed indicia which are capable of being attached to the hollow member 12 which defines the outer surface of the dispensing unit or container. The indicia are more clearly illustrated in FIG. 4 and consist of an elongated strip 80 having a plurality of serially arranged indicators 82 vertically spaced therefore. The spacing between the respective indicators 82 is approximately equal to the spacing between the ratchet teeth or ledges 72 as well as the approximate thickness of the pills 26. The drug strip or indicia 80 has a number of indicators which are equal to the number of pills within the container plus an additional seven indicators.

Thus, the recipient of a container of pills may attach the drug strip or indicia 80 into a recessed slot 86 defined on the outer surface of the container or hollow member with the starting date being transversely aligned with the main portion or circular disc 58 of the plunger 16. The excess number of indicators on the lower end of the tape or drug strip may be cut off and the cooperation between the indicia and the plunger will indicate to the recipient whether a pill has been taken for any given day. The particular arrangement allows the recipient of the kit to be able to start the taking of the pills at any given day of the week and still have an accurate indication as to whether a pill has been taken for any given date during the pill taking cycle.

The indicia or drug strip may have a pressure responsive adhesive on the remote surface thereof and is preferably formed of a translucent or transparent material so that the plunger and more particularly the surface of the plunger is visible through the tape. Also, the entire casing or container is preferably formed of a translucent or transparent plastic material and the portion of the plunger and more particularly the disc 58 is suitably colored to make the location of the plunger more apparent. In order to simplify the molding process, the hollow member or casing 12 is preferably formed in halves and is suitably interconnected by appropriate latch means in the form, for example, of a tongue and groove arrangement.

The programmed dispensing unit has several distinct advantages over previously known medical dispensers such as of the type disclosed in U.S. Pat. No. 2,718,299. For example, the entire unit has a minimum number of parts all of which can be readily molded and which uniquely cooperate to perform the intended functions. It will be noted that there are only four parts to the entire mechanism and the entire unit may readily be opened for refilling at the beginning of a pill taking cycle. Also, the pills are at all times maintained in a sanitary condition and the device is preferably designed so that only a single pill may be removed when the actuator is moved from the released to the operative position.

The programmed dispenser insures that the pills are taken at the appropriate time since the indicator date will show whether a pill for a given day has been taken. The unique indicia makes it possible to accurately set the starting date for any given day of the week.

I claim:

1. A device for dispensing pills and the like comprising an elongated hollow member having a pill receiving bore therein and a transversely extending exit opening at one end thereof; an actuating member movable between first and second positions in said hollow member, said actuating member having a pill support defined thereon and received in said bore; biasing means normally maintaining said actuating member in said first position where said pill support closes said opening; a plunger spaced from said support, said plunger adapted to engage an opposite end of a group of pills, said plunger having first and second portions respectively engageable with said hollow member and said actuating member; and means respectively on said hollow member and said actuating member, said means cooperating with said portions for (1) maintaining said plunger fixed relative to said actuating member when said actuating member is moved from the first to the second position and (2) maintaining said plunger fixed relative to said hollow member when said actuating member is moved from the second to the first position, said movement of said actuator to the second position exposing said exit opening in said hollow member whereby a pill is free to be removed.

2. A device as defined in claim 1, in which said last means comprises ratchet means which are operatively connected to said plunger and said actuating member; said ratchet means each comprising ledges interconnected by inclined walls, said walls being
3,612,349

3. A device as defined in claim 1, including the further improvement of indicia adapted to be connected to said device, said indicia comprising a strip having a plurality of indicators serially arranged and corresponding to respective days of the week, said indicators being equal in number to the original number of pills in said device plus seven, whereby the day of the week for the initial pill may be aligned with said plunger and said indicia attached to said device, thereby serving as a reminder of whether a pill has been taken at any given day.

4. A device as defined in claim 3, in which said bore has a closed end adjacent said exit opening and a slot communicating with said bore and extending the length thereof; and said actuating member has a leg slideable in said slot with said pill support on the remote end thereof and received in said bore; and an actuator button on the opposite end of said leg and normally extending beyond said hollow member.

5. A device as defined in claim 4, in which said means respectively on said hollow member and said actuating member includes first ratchet means on said leg adjacent said bore and second ratchet means on the hollow member adjacent said bore, said first and second portions comprising resilient fingers extending towards said actuator button and respectively engageable with said first and second ratchet means.

6. A device for dispensing pills and the like comprising an elongated hollow member having a bore closed at one end and a transverse exit opening adjacent said closed end; a plunger adapted to engage one end of a plurality of pills disposed in end-to-end relation in said bore, said plunger being movable towards said exit opening to align respective pills with said exit opening; an actuator movable between first and second positions, said actuator having a pill support located in said bore between opposite ends thereof closing said exit opening when the actuator is in said first position; cooperating means between said plunger and said actuator to move said plunger toward said exit opening in response to movement of said actuator; and indicia adapted to be attached to said hollow member, said indicia comprising a strip having a plurality of indicators serially arranged and indicating respective days of a week, said indicators being equal number to said pills plus an additional seven, said indicia being applied to said hollow member with the date corresponding to the starting day for the taking of pills aligned with said plunger whereby said indicia will serve as a reminder of whether a pill has been taken for any given day.

7. A device as defined in claim 6, in which said bore is open at its opposite end and in which said actuator includes a button received in the opposite open end of said bore and a leg extending substantially the length of said bore, said leg interconnecting said pill support and said button, further including biasing means between said hollow member and said actuator for normally maintaining said actuator in said first position, and guide means on said hollow member receiving said leg and guiding said actuator during movement between said positions.

8. A device as defined in claim 7, in which said cooperating means comprises a pair of resilient fingers on said plunger extending towards said button; and means defining a ratchet teeth on said leg and said hollow member, said ratchet teeth being respectively aligned with said resilient fingers and cooperating therewith to (1) move said plunger relative to said hollow member when said actuator is moved to expose said exit opening and (2) maintain said plunger fixed relative to said hollow member when said actuator is moved to close said exit opening.
UNITED STATES PATENT OFFICE
CERTIFICATE OF CORRECTION

Patent No. 3,612,349 Dated October 12, 1971

Inventor(s) Michael D. Thomas

It is certified that error appears in the above-identified patent and that said Letters Patent are hereby corrected as shown below:

Column 1 line 10, "re" should be "are"
Column 2 line 73, "nd" should be "and"
Column 3 line 5, "end" should be "and"
Column 6 line 27, delete "a"

Signed and sealed this 18th day of April 1972.

(SEAL)
Attest:

EDWARD M. FLETCHER, JR. ROBERT GOTTSCHALK
Attesting Officer Commissioner of Patents