

[54] **PILL DISPENSER WITH REMOVABLE CARTRIDGE**

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[57] **ABSTRACT**

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A pill dispenser having a disposable cartridge containing a stack of pills. Means is provided for effecting relative rotation between the cartridge and the dispenser's casing whereby a follower device coupled therebetween ejects a pill in synchronization with a day indicia means.

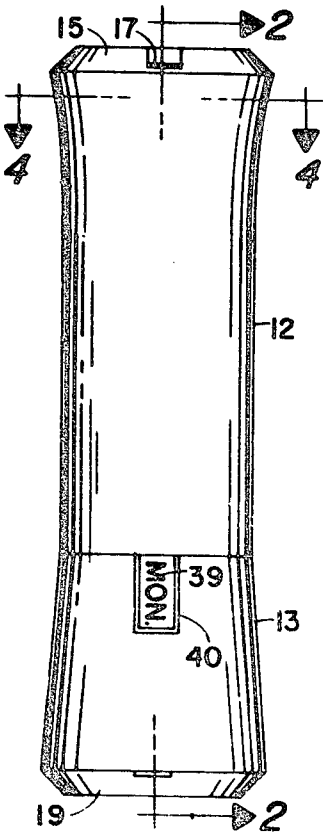
[52] U.S. Cl.....221/7, 221/279
[51] Int. Cl.....G07f 11/00
[58] Field of Search 222/327, 390; 221/2, 7, 8, 221/279, 209

[56] **References Cited**

2 Claims, 6 Drawing Figures

UNITED STATES PATENTS

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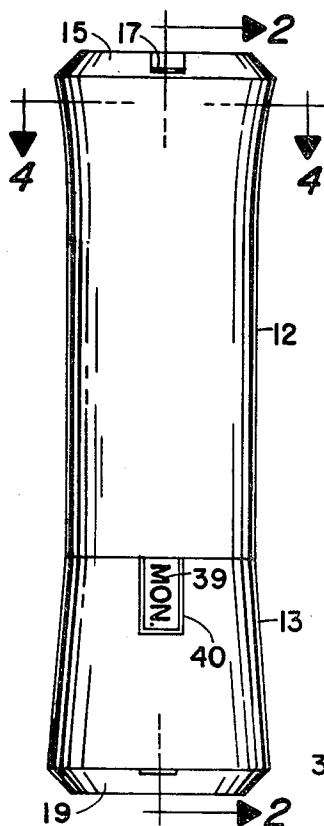


Fig. 1

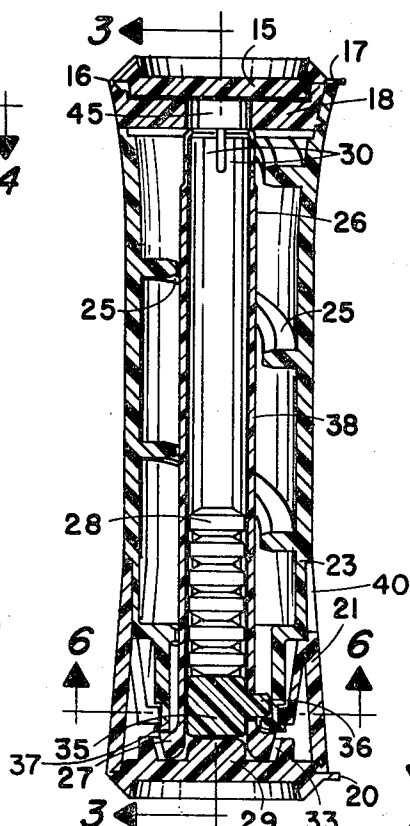


Fig. 2

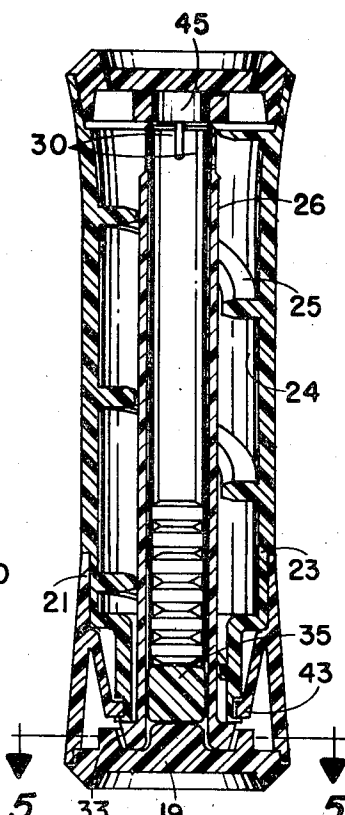


Fig. 3

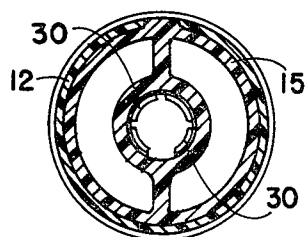


Fig. 4

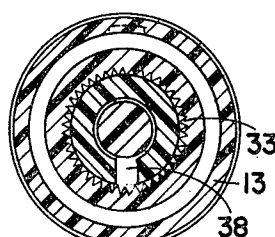


Fig. 5

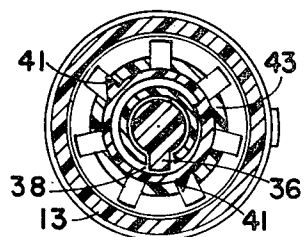


Fig. 6

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PILL DISPENSER WITH REMOVABLE CARTRIDGE

BACKGROUND OF THE INVENTION

In writing out prescriptions it is generally the practice of physicians to specify that the medicament (hereafter referred to as a pill) should be taken at prescribed intervals. Such interval may be only a matter of hours; or, on the other hand, may be on the basis of one per day, or perhaps one every other day. In any event, it is essential that the patient be able to determine whether or not he has taken a pill for that interval since it is quite possible that his memory will fail him. Various devices have been contrived in which the patient, upon taking a pill from the dispenser or container, will, in a separate physical action, record this fact. For those patients who are always able to remember to make a recording mark or other similar act, such a procedure is sufficient. However, many a person forgets to enter on his own personal record the fact that he has taken a pill at the specified time. Thus, he is confronted with the problem of trying to remember whether or not he actually took a pill for that interval.

A number of pill dispensers have been designed to provide automatic or semiautomatic recording of pill consumption. In many instances the pill dispenser is discarded after the last pill has been taken. Generally speaking, it is preferable that the medicament be placed in the dispenser by the manufacturer rather than by the patient. Consequently, the normal procedure is to sell pre-loaded dispensers containing medicament, then discard the dispensers once they are empty.

It is apparent that with such a procedure there is wastage of the dispenser, and the result is an increase in cost and price. In an effort to overcome this disadvantage a portion of the dispenser of this invention is adapted to be re-used by the patient an indefinite number of times. This is accomplished by providing a cartridge containing pills which is readily inserted into the dispenser. Thus, the dispenser can be re-loaded by the user with a cartridge filled with pills which are pre-packaged by the manufacturer under the appropriate sanitary safeguards.

In addition, there are some instances where the physician desires to prescribe a sequence of pills comprising at least two different types. Thus, he may wish to prescribe fifteen pills initially of one hormone to be followed by five pills of a different hormone. In such instances it is essential that the patient take the pills precisely as prescribed. Therefore, it is desirable to have a pill dispenser which may be easily filled with two different types of pills in a prescribed sequence and which will assure the dispensing of the pills in accordance with the physician's instructions.

The majority of prior pill dispensers with indicating means have depended on an individual compartmentizing approach. Each pill was isolated from other pills, usually by providing a recess or pocket for the pill. In this manner the pills would not be chipped or broken during shipment. However, the loading of pills into individual compartments has increased costs since specially designed equipment was usually required.

BRIEF DESCRIPTION OF THE INVENTION

The above disadvantages have been overcome by the dispenser of this invention through the use of a car-

tridge or tube which holds the pills in a stacked relationship. The pills are snugly contained in the cartridge and cannot shake around loosely in the dispenser. Loading the cartridge is relatively easy; and the pills, if comprised of two types of medicaments, can be stacked in a predetermined sequence for proper dispensement.

Briefly, the dispenser of this invention comprises a cylindrical casing with a removable cartridge containing stacked pills. The cartridge has means for maintaining the pills in a snug relationship during shipment and throughout their dispensement. A rotatable selector on the casing has indicia which align with a reference means on the casing to automatically indicated the proper hour, day, etc. each time a pill is dispensed.

It is therefore one object of this invention to provide a new and improved pill dispenser.

Another object of this invention is to provide for a new and improved pill dispenser adapted for receiving pre-loaded pill cartridges.

Another object of this invention is to provide a pill cartridge for a pill dispenser in which the pills may be pre-arranged in a prescribed sequence.

Another object of this invention is to provide a new and improved pill dispenser having a disposable cartridge containing pills maintained in a snug and stacked relationship.

Another object of this invention is to provide a new and improved pill dispenser having a removable pill cartridge and an automatic indicating means.

Other objects and advantages of this invention will be made apparent upon reading the following specification in connection with the drawings.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 is a front view in elevation of the pill dispenser of this invention.

FIG. 2 is a longitudinal view in cross section taken along line 2—2 of FIG. 1.

FIG. 3 is a longitudinal view in cross section taken along line 3—3 of FIG. 2; and

FIGS. 4, 5, and 6 are views in cross section along lines 4—4, 5—5 and 6—6 of FIGS. 1, 2 and 3, respectively.

DESCRIPTION OF THE PREFERRED EMBODIMENT

The pill dispenser of this invention as illustrated in FIGS. 1—3 has a stylized contour formed from a casing 12 and a selector 13. These members may be injection molded from polystyrene, polypropylene or some other suitable plastic materials. Casing 12 has a removable cover 15 which in the particular embodiment may be connected to a plug 18 by a thin web of plastic material 16 frequently referred to as a "living hinge." A small tab 17 extends from cover 15 to provide an easy means for lifting the cover from its casing. Selector 13 likewise has a cover 19 which can be integrally formed therewith and also has a tab 20. Casing 12 and selector 13 are rotatably mounted together and in the particular illustration this is accomplished by telescoping end 21 of the selector over a recessed shoulder 23 on the casing.

The casing has a substantially cylindrical inner surface defining a chamber 24. On the inner surface of the casing a helical guide track 25 is formed. Positioned

within chamber 24 is a substantially cylindrical cartridge 26 adapted for containing a plurality of stacked pills 28. Pill cartridge 26 is removably positioned within the casing and has a flanged end 27 which abuts the inner surface of selector cover 19 over its hub 29. The opposite end of cartridge 26 comprises four flexible fingers 30 which are contoured inwardly to retain pills within the cartridge. Inner surface of cover 19 is provided with a plurality of small gear teeth 33 which snugly grip flanged end 27. A pill guide 35 is initially positioned near flanged end 27 and comprises a cylindrical plug with a projection 36. Projection 36 rides within a longitudinal groove 38 which extends the full length of cartridge 26.

In operation removable pill cartridge 26 is inserted into the chamber of the casing through the cover of cylinder 13. The cartridge becomes seated in a fixed position against flanged end 37 of casing 12 and is maintained in this position by the selector's cover 19 when it is closed. In order to eject a pill from the cartridge, selector 13 is rotated in a clockwise direction until the proper day of the week marking 39 on casing 12 appears through a reference means 40 which in this embodiment is a rectangular window. Selector 13 can be rotated in only a clockwise direction due to the cooperation of a pair of antireverse ratchets 41 on casing 12 which cooperate with a series of seven retaining fingers 43 on selector 13.

As the selector is rotated, cartridge 26 is rotated due to the driving engagement of gear teeth 33. The projection 36 on the pill guide is thus rotated along the helical guide track and is thereby forced toward the end of the pill cartridge having the flexible fingers 30. As this pressure continues, the pill adjacent the flexible fingers causes the fingers to slightly separate thereby permitting the pill to be forced into pill exit 45 of cover 15. Markings 39 are spaced around the periphery of the selector to correspond with the successive ejection of pills. In addition, the antireverse ratchets 41 override the seven retaining fingers 43 to provide a positive action as each pill is ejected. The synchronization of the pill ejection with the day marking and resulting click from the ratchets and fingers is effected by a predetermined pitch for the helical guide track 25.

The operation of this dispenser has been performed

with cover 15 in its closed position over pill exit 45. In this manner the pill will not be accidentally dropped as it is discharged from cartridge 26. However, in order to prevent accidental breakage of the pill to be ejected against the inner surface of cover 15, the dimensions of teeth 33 should be of predetermined size and strength. In particular, these tiny gear teeth may be flexible whereby they override flanged end 27 when the pill guide forces the stack of pills against casing cover 15. In this manner pressure on the pill to be ejected will be minimized and breakage will be avoided.

It is apparent that other modifications can be made such as a different type of indicia. In addition, the helical gear track on the inner surface of casing 12 can be formed in other manners such as on a separate tube that fits within the casing.

I claim:

1. A pill dispenser comprising:

a casing having a substantially cylindrical inner surface defining a chamber therein,
a pill exit at one end of said chamber,
a replaceable cover positioned over said pill exit,
a helical guide track on said casing's inner surface,
a cylindrical cartridge adapted for containing a plurality of stacked pills therein, said cartridge being rotatably positioned within said casing's chamber and having an opening adjacent said casing pill exit,
a pill guide seated in said cartridge for longitudinal travel therein and engaged with a longitudinally helical guide track in said chamber,
and a selector rotatably mounted on said casing in rotary engagement with said cartridge, said selector having indicia adapted for successive alignment with a reference means on said casing upon rotary advancement of said selector and cartridge for urging said outermost pill through said opening and to said pill exit, said selector overriding its engagement with said cartridge upon rotation thereof after blockage of longitudinal travel of said pill guide.

2. A pill dispenser according to claim 1 in which the engagement between said selector and cartridge comprises a ring of feather gears on said selector gripping the perimeter of said cartridge.

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