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PILL DISPENSER WITH INDICATING MEANS

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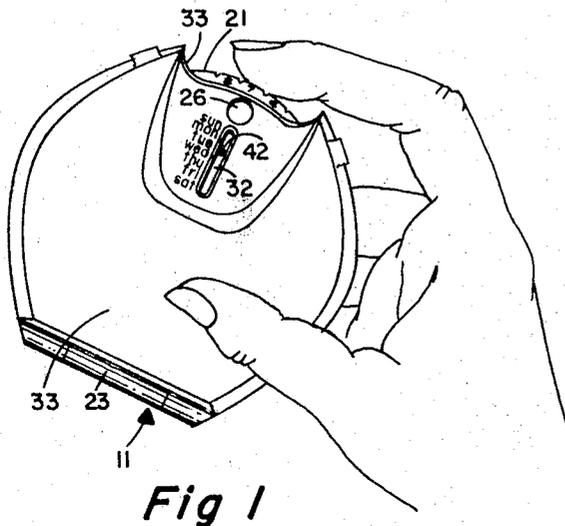


Fig 1

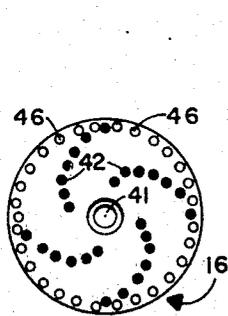


Fig 3

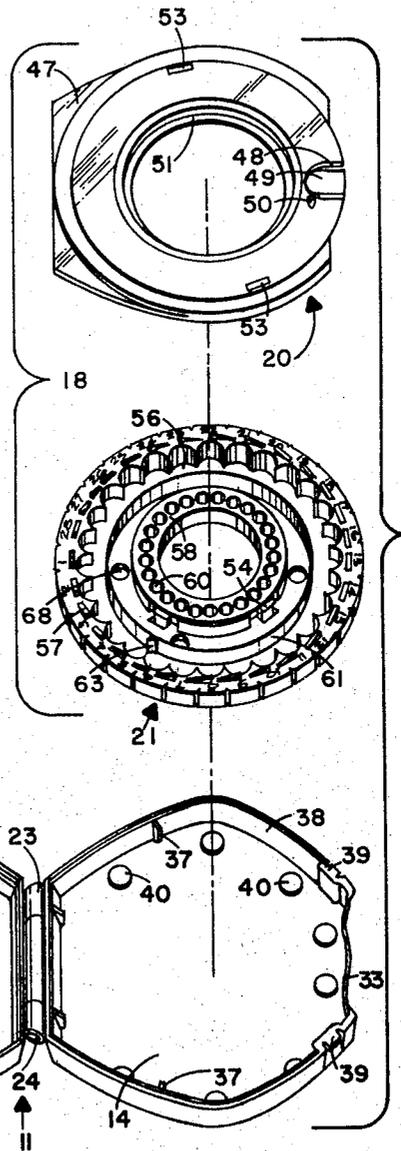


Fig 2

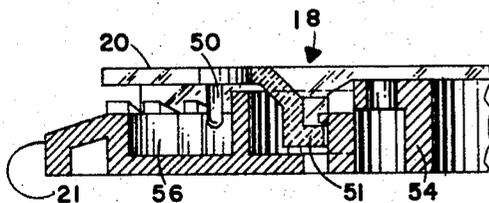


Fig 4

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PILL DISPENSER WITH INDICATING MEANS
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8 Claims

ABSTRACT OF THE DISCLOSURE

A pill dispenser having a replaceable pill-containing cartridge. Relative rotation between the cartridge's base and cover aligns successively a pill with a pill exit and simultaneously advances an indicating dial for the purpose of recording such motion.

Background

This invention relates to a dispenser for medicaments in the form of pills, tablets, capsules and the like, and in particular to a dispenser having a medicament-containing cartridge and means for recording the removal of each medicament dosage from the dispenser.

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 the past 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 or misplaces said separate record. 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 for many reasons that the medicament be placed in the dispenser by the manufacturer rather than by the patient. Consequently, the normal procedure is to sell preloaded dispensers containing medicament, then to discard the dispensers once they are empty.

It is apparent that with such a procedure there is waste of the dispenser, and the result is an increase in cost and price to the consumer. In an effort to overcome this disadvantage a portion of the dispenser of this invention is adapted to be reused 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 reloaded by the user with a cartridge filled with pills which are prepackaged by the manufacturer under the appropriate sanitary and other 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 ten pills initially of one hormone to be followed by eleven pills of a different hormone. In such instances it is essential that the patient take the pills precisely in the order prescribed. Therefore, it is desirable to have a pill dis-

penser 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.

Summary

Briefly the dispenser of this invention comprises a cover and base adapted for containing a disposable pill cartridge. The cartridge is annular and contains a concentric ring of individual pill compartments. A portion of the base of the cartridge extends beyond the perimeter of the dispenser's case and upon being actuated simultaneously advances a dial relative to a plurality of indicia on the dispenser's case. The indicia may be hourly markings, day of the week legends or portions thereof.

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 preloaded pill cartridges.

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

Another object of this invention is to provide a new and improved pill dispenser having a disposable cartridge engageable with an automatic recording means.

Another object of this invention is to provide as an integral part of the dispenser a record of doses taken.

Another object of this invention is to contain the pills so they may be inspected at the point of packing and at the point of use.

Another object of this invention is to provide an internal surface to which a druggist's prescription label may be affixed.

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 perspective view of the dispenser of this invention illustrating the manner in which it is used.

FIG. 2 is an exploded perspective view of the five components comprising the dispenser of the invention.

FIG. 3 is a top plan view of the indexing dial for the dispenser; and

FIG. 4 is a partial view in cross section of the assembled cartridge taken on a radial line extending through the pill exit of the cartridge.

Description of the preferred embodiment

Referring to FIG. 2 of the drawing, it is to be noted that the dispenser of this invention comprises five components consisting of a case 11 having a cover 13 and a base 14, an indicating dial 16, and a pill cartridge 18 having a transparent top 20 and a bottom 21. These components may be manufactured of any materials or combinations thereof which meet basic functional, sanitary and chemical requirements with particular claim upon those materials known as thermoplastics which as a class satisfy all requirements. Also, these components may be manufactured by any standard fabrication method which will provide an economic structure that will not deter discard of the pill cartridge by a consumer when the cycle has been completed and all pills have been used.

The cover 13 and base 14 of the dispenser's case 11 are shown connected in a hinged relationship. In the particular embodiment of this invention hinge 23 is maintained together by a metal pin 24. However, it is to be understood that cover 13 and base 14 may be hinged together by conventional ball and socket hinges or other standard means. It is also possible to integrally form the cover and base by the inclusion of a thin section of

plastic material therebetween which is generally referred to as "a living hinge."

Cover 13 has a pill exit 26 with an inwardly extending chute 27 for the purpose of guiding the pills to the exit hole. A hub 29 is centrally positioned on the interior surface of cover 13 to provide a pivot for rotation of the indexing dial 16 which may be retained by any means which permit free rotation and efficient assembly. In this instance a split segment 30 is the engagement member which provides a snap-together assembly.

Indexing information corollary to that provided on the exterior of the case may be provided by any means on the interior of cover 13 to act in conjunction with an indicator provided on the corresponding visible surface of the indexing dial 16 thus providing a secondary method of initially coordinating the indexing system with pill taking. An elongated window 32 is provided in cover 13 between pill exit 26 and hub 29.

The perimeter of cover 13 has an offset portion 33 to permit access of a finger to the cartridge rim to cause its rotational advance. Cover 13 may also include alignment and engagement fittings as per flange 35 and a method of latching as per lugs 36. These may be of any standard configuration.

Base 14 is of similar configuration to cover 13 to act in concert but in addition provides controlled, correct, convenient orientation of the cartridge refill upon its insertion, by means of its non-concentric configuration and by small locating lugs 37 molded into its periphery. Base 14 also includes bosses 40 projecting from its inner surface which provide proper bearings for the rotational movement of the bottom of the cartridge. Latch projections 39 on flange 38 are engageable with cover latch lugs 37.

Indicating dial 16 is a flat disc which may be of any configuration with bore 41 making it adaptable for rotatable mounting and retention on hub 29. Pins 44 are engageable with cartridge bottom 21 to provide simultaneous rotation of these two elements. An indicating device such as an arrow 45 may be provided on the same surface of the dial as the engageable pins 44.

The reverse side of the dial as shown in FIG. 3 has a plurality of markings 42 arranged in a predetermined pattern to coordinate with the index window 32 provided on the exterior of the dispenser cover. For the particular embodiment of this invention these markings are twenty-eight in number and are arranged in four spirals resembling a pin wheel. Twenty-eight cupped depressions 46 are equally spaced at the circumference of the dial to engage two corresponding projections 65 on the inner surface of the dispenser cover which provide a means of producing a clicking sound audible to the user as well as physical retention of the dial in position at the moment it is being set for use.

The top member 20 of pill cartridge 18 is substantially annular and is preferably of transparent material. Two projecting flanges 47 form corners which prevent incorrect insertion of the cartridge in the dispenser. A break-away seal 49 covers exit hole 48 and provides retention of the first pill in the sequence. Adjacent to the exit opening 48 is an inwardly extending member 50 (FIG. 4) which determines proper alignment of the top and bottom with the first pill cavity at the packing line and prior to insertion in the dispenser, and further acts as a physical deterrent to unintentional skipping of a pill by engagement against the side of the succeeding pill still in the adjacent cavity. It further engages at the twenty-eighth pill compartment a limiter projection 63 to maintain a correct record of the occasion on which this last pill was taken as it would relate to the next refill of the dispenser. Pawls 53 are also formed on the underside of the cartridge top 20 to engage corresponding ratchets 57 provided in the cartridge bottom 21 and prevent counter-rotation therebetween.

The cartridge bottom member 21 is also of annular

configuration and has a plurality of spring action detents 54 which engage the inner flange 51 of cartridge top 20 for assembly of the two elements to each other while permitting free rotation. A plurality of individual pill compartments 56 (in this instance 28) are recessed into the periphery of the bottom 21 in conjunction with sequential identifying numbers.

Bottom 21 also has a raised annular portion 58 which has a plurality of coupling elements which in this particular embodiment consist of holes 60 to receive projecting pins 44 of dial 16. Also included is a concentric axially-extending flange 61 which carries projection 63 strategically located to provide an interference stop to defeat further rotation past the last pill. Holes 68 are also provided to enable bottom 21 to be precisely oriented with automatic filling machinery.

In assembling the cartridge of this invention, cartridge bottom 21 is first filled with pills. In the event more than one type of medicament is to be loaded in the dispenser, the first type of pills may be inserted in the bottom beginning with the first pill compartment with reference to the numerals appearing on the periphery of the bottom. If seven pills of the first type are desired, then the second type of pills will begin in pill compartment 8. In this fashion there will be complete certainty that the pills are dispensed in their prescribed sequence. Top 20 is then snapped into place with its inner flange 51 engaged underneath detents 54. Break-away seal 49 on top 20 is aligned over the first pill compartment.

Indicating dial 16 is readily snapped onto hub 29 of the dispenser's cover. Prior to inserting the loaded cartridge 18 into case 11 the patient may rotate dial 16 until arrow 45 thereon points to the appropriate day of the week marking on the inner surface of cover 13. When this has been accomplished break-away seal 49 of the cartridge is removed and the cartridge is inserted into the case in the only possible position which places flange 47 of the cartridge's top adjacent to hinge 23. In this fashion the exposed portion of cartridge bottom 21 aligns with the offset portion 33 of the case. With the cartridge now in its proper position, case cover 13 may be closed onto base 14 with the latch lugs 36 snapping over the latch projections 39. As the cover is closed the four pins 44 on dial 16 engage in a coupling relationship with four of the holes 60 on the annular portion 58 of cartridge bottom 21. Alignment of the four pins and holes is assured by the provision of a pair of projections 65 on the inner surface of cover 13 which track on two of the plurality of indentations 46 ringing the edge of dial 16. In addition, seating of projections 65 in indentations 46 assures alignment of a marking 42 with an exterior day marking.

The first pill which is now aligned with pill exit 26 and its chute 27 may be removed by merely inverting the dispenser thereby causing the pill to fall out. When the next pill is to be taken, the patient as shown in FIG. 1 advances cartridge bottom 21 in a clockwise fashion one audible click and until one of the markings 42 on dial 16 appears through window 32 in alignment with the appropriate day marking provided on the exterior surface of the case. The pill is then removed again by simply causing it to fall through the opening. Accidental over-advancement of the cartridge bottom with respect to its top is avoided by the anti-travel pill stop 50. Thus, as a pill becomes aligned with the pill exit, pill stop 50 butts against the pill and thereby prevents further rotation of bottom 21. Subsequent advancement of bottom 21 is possible only when the pill aligned with exit 26 is removed.

Improper rotation of the cartridge bottom in a counter-clockwise fashion is prevented by the engagement of anti-reverse pawls 53 on ratchets 57. When the final pill has been removed from the cartridge, pill stop 50 rests against the limiting projection 63 on the cartridge bottom. Thus, the patient, without having to first examine the cartridge inside the case, will become aware that the car-

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tridge is now empty and has a record of the day on which this occurred. In order to insert a new cartridge containing pills in the case, the patient need only open and drop out the empty cartridge and subsequently re-load with a new cartridge as described in the above procedure after advancing the index one day.

Thus, this invention provides a dispenser which may be styled in an attractive yet durable fashion and which can be used a number of times. Only the cartridge 18 is disposed of, and consequently, the economics of the overall concept are sound. The automatic recording by dial 16 each time a pill is removed is a great convenience to the patient in maintaining proper cadence of dosages over a period of time.

Although only one embodiment of this invention has been illustrated and described it will be apparent to those with ordinary skill in the art that modifications may be made without departing from the spirit of the invention.

We claim:

1. A pill dispenser comprising:

a case having a cover and a base connected therewith, said cover having a pill exit and a plurality of indicia means,

a pill-containing cartridge removably positioned in said case, said cartridge having a top defining an opening in alignment with said pill exit and non-rotatable therewith, said cartridge further having a bottom rotatably coupled to said top and defining a circular pattern of individual pill compartments, an indicating dial rotatably mounted on the inner surface of said cover, said indicating dial having a plurality of markings equal to the number of said pill compartments arranged in a predetermined pattern singularly visible through said cover and in alignment with one of said indicia, and driving means on said indicating dial removably coupled to said cartridge bottom whereby rotation of said cartridge bottom relative to said top advances said indicating dial for alignment of a successive one of said markings with respect to one of said plurality of indicia means.

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2. A pill dispenser as defined in claim 1 in which a segment of said pill-containing cartridge bottom extends beyond the perimeter of said case.

3. A pill dispenser as defined in claim 2 in which said pill-containing cartridge cover has an anti-reverse pawl on its interior surface adapted to act in conjunction with a circular pattern of ratchets on said cartridge base.

4. A pill dispenser as defined in claim 3 in which said driving means includes an off-center, inwardly-projecting pin on said indicating dial, said pin being engageable with any one of a plurality of coupling surfaces on said cartridge.

5. A pill dispenser as defined in claim 4 in which said plurality of coupling surfaces comprise a plurality of holes equal to the number of pill compartments and concentric therewith.

6. A pill dispenser as defined in claim 5 in which a break-away seal is positioned on said cartridge top and over said top opening.

7. A pill dispenser as defined in claim 6 in which the perimeter of said non-rotatable cartridge top is non-circular and in close conformity with the interior perimeter of said case bottom.

8. A pill dispenser as defined in claim 1 in which an anti-travel interference stop interiorly extends adjacent said cartridge top opening to butt against the selected pill aligned for exit through said opening.

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