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MEDICAMENT DISPENSER WITH CARTRIDGE AND INDICATING MEANS

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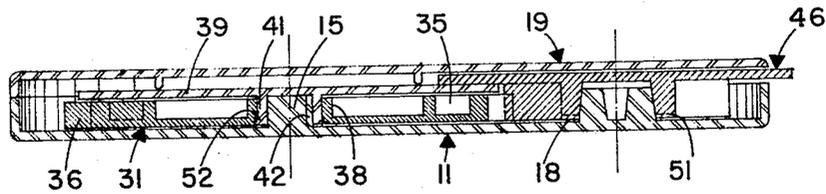


Fig. 3

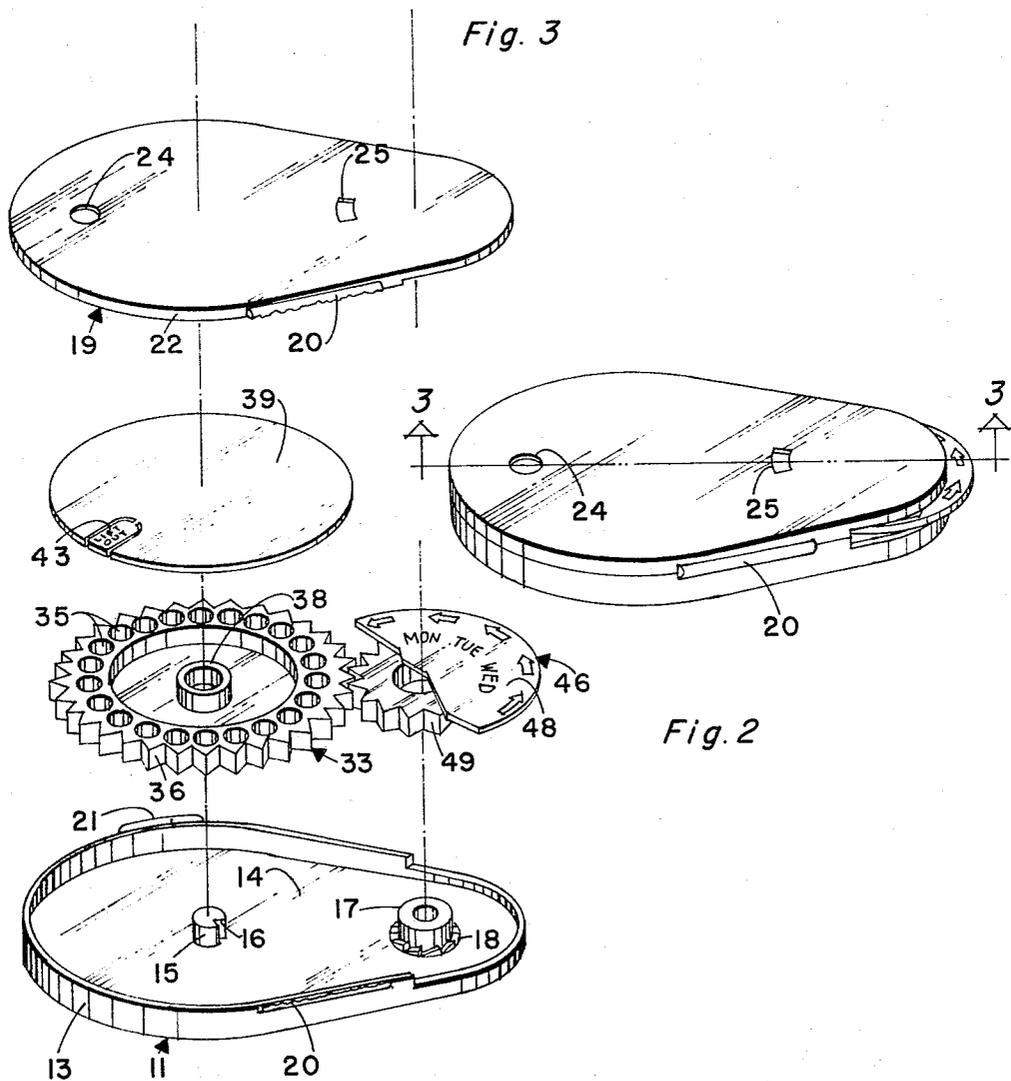


Fig. 2

Fig. 1

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MEDICAMENT DISPENSER WITH CARTRIDGE AND INDICATING MEANS

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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 indicating 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 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 has tended to forget entering 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 waste of dispenser material, and the result is an increase in cost and price. In an effort to overcome this disadvantage the dispenser of this invention is adapted to be re-used by the patient an indefinite number of times. This is accomplished by providing for a cartridge containing pills which is readily inserted into the dispenser. In effect, the dispenser receives a cartridge filled with pills which are pre-packaged under the appropriate sanitary safeguards by the manufacturer.

Briefly, the dispenser of this invention comprises a cover and base adapted for receiving a pill cartridge. The pill cartridge is provided with a means for engaging an indicator dial which is also contained between the dispenser's cover and base. Thus, rotation of the dial causes rotation of the pill cartridge which in turn advances a pill to an ejection aperture in the dispenser's cover. When the pill cartridge has been emptied it is discarded. But the cover, base and indicator dial are saved for use with a new pill cartridge.

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

Another object of this invention is to provide for a new and improved pill dispenser which has a simplified automatic indicator.

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

Other objects and advantages of this invention will be

made apparent in the disclosure of the accompanying specification and drawing in which:

FIG. 1 is a perspective view in exploded relationship of the pill dispenser of this invention;

FIG. 2 is a perspective view of the dispenser in its assembled form; and

FIG. 3 is a sectional view taken along line 3-3 of FIG. 2.

Referring to FIGS. 1-3, all of the illustrated parts may be formed from a plastic material such as polypropylene or polystyrene. Consequently, the parts are adaptable to conventional injection molding techniques and are relatively inexpensive to produce. While materials other than plastic are also suitable, it has been found that plastics are the most advantageous from an economical standpoint as well as being compatible with the particular medicament.

The exploded view of the dispenser in FIG. 1 illustrates a base 11 having a side wall 13 integrally molded therewith. On the interior face 14 of the base a spindle 15 is formed. A keyway 16 is provided along the full length of the post. At an eccentric location a second spindle 17 is provided. A plurality of ratchet teeth 18 circumscribe the base of spindle 17. A cover 19 may be molded integrally with the base and connected therewith by a thin flexible plastic hinge member 20. On the other hand, if it is not desired to permanently connect cover 19 to base 11, a conventional plastic hinge such as the ball and socket type may be adapted. Latch 21 on side wall 13 of the base 11 may be used to secure the cover and base by extending the latch over a small projection (not shown) on the cover's side wall 22. A pill ejection aperture 24 is formed in cover 19. A reference indicator which may be in the form of an aperture or window 25 is also formed in the cover. Instead of a window, a reference line or other mark may be molded on the edge of the pill cover 19.

The dispenser's base and cover are dimensioned for closely receiving a pill cartridge 31. Pill cartridge 31 comprises a pill receptacle 33 which is of disk configuration and contains a ring of pill compartments 35 about its perimeter. Pill compartments 35 are of circular configuration, but may be otherwise shaped to conform generally to the medicament to be dispensed, and comprise recesses which extend part way through the pill receptacle. Around the edge of the pill receptacle are a plurality of gear teeth 36. A hollow hub 38 is integrally molded at the center of the pill receptacle.

Forming a part of the pill cartridge 31 is a pill retainer 39 of disk-like configuration and with a diameter equal to that of the pill receptacle. Disposed at the center of the pill retainer is a hollow connecting hub 41 (FIG. 3) which is dimensioned to freely fit in the bore of the pill receptacle's hub 38. On the inner surface of hollow hub 41 a key 42 (FIG. 3) is formed for engaging keyway 16 to prevent rotation of the pill retainer 39. Alternatively, a force fit or other conventional locking device may be used which will prevent rotation of the retainer. A tear-out tab 43 with a width equal to that of one of the pill compartments is also molded in pill retainer 39.

The fifth element of this pill dispenser comprises the dial indicator wheel 46 which is a disk member 48 integrally molded on a ring of supporting spur gear teeth 49. The inside diameter of the ring of gear teeth 49 is dimensioned for free rotation over spindle 17 on base 11. Gear teeth 49 are of a pitch equal to the gear teeth in the pill receptacle. Disk 48 of the dial wheel 46 bears indicia which in the particular illustration are the seven days of the week. Consequently, it is readily determined when the daily medication has been removed.

Other indicia such as hours, weeks, etc. may be used depending on the dosage instructions which in turn may call for different gear ratios.

For assembly, the pill receptacle 33 may be loaded with pills at the place of manufacture. Pill retainer 39 is then placed on receptacle 33 with its hub 41 inside hub 38, said hub 41 being dimensioned for free movement relative to the receptacle 33. To prevent accidental separation of the retainer 39 and receptacle 33 a small lip 52 may be formed on the end of the hub 41 to engage the bottom of the receptacle. The lip will not interfere with the assembly of the cartridge nor the rotation of the receptacle.

The resulting assembled pill cartridge 31 is then positioned over hub 15 in the base member 11 with key 42 engaged with keyway 16 on spindle 15. This prevents rotation of the retainer 39 and also automatically aligns tear-out tab 43 with pill exit aperture 24.

After the pill cartridge has been mounted on base 11 the dial indicator wheel 46 may be placed on the base's second spindle 17. As shown in FIGS. 2 and 3, a portion of the dial indicator wheel extends beyond the edge of the cover and base. The cover's window 25 and the dial indicator wheel 46 are also dimensioned to cause only one marking on the wheel to appear through window 25. With the pill cartridge and dial indicator wheel properly positioned and showing the designated day for taking the first pill the patient removes the tear-out tab 43 and latches the cover to the base, thereby completing assembly of the pill dispenser.

In operation, the patient may take a pill by permitting it to fall through the space left by the removal of tab 43 and through pill ejection aperture 24. To take the next pill the patient simply advances the dial wheel by thumbing the extending portion of the wheel until the next medication period appears in window 25. Through cooperating gear teeth 36 and 49, the wheel and pill cartridge are in torque transmitting engagement. If preferred, friction engaging surfaces may be substituted for gear teeth. Thus, actuation of the dial wheel causes advancement of the pill receptacle which is relatively movable with respect to its retainer 39 as well as the dispenser's base and cover. In this manner the pills may be removed from the dispenser, and when the last pill has been taken the dispenser may receive a new pre-loaded pill cartridge. The cover of the dispenser is merely unlatched from its base, dial indicator wheel 46 is removed and the empty cartridge is removed. The process for reloading the dispenser is similar to that described above.

On the underneath surface of the ring of gear teeth 19 a pair of diametrically opposed ratchet teeth 51 are formed. These teeth are complementary with ratchet teeth 18 and permit the dial indicator wheel 46 to move in only one direction. While this feature is not essential it serves to minimize the possibility of an error in taking the prescribed dosage of medicament.

It is apparent that other means for rotating the pill

receptacle 33 and dial wheel 46 are available. For example, the pill receptacle instead of the dial wheel may have a portion of its periphery extend beyond the edge of the cover 19 and base 11. If desired, both the receptacle and wheel may be fully contained between the cover and base with access provided for grasping either the receptacle or dial to cause rotation. In any of these arrangements the cartridge and dial are still in torque-transmitting engagement. Likewise, the pill retainer 39 is relatively fixed with the cover and pill aperture 24, and the pill receptacle 33 is mounted for rotation.

While only several embodiments of this invention have been described, it will be apparent to those with skill in the art that other variations may be made without departing from the spirit of the invention and scope of the appended claims.

I claim:

1. A pill dispenser comprising: a base; a cover mounted on said base and defining a pill exit opening; a circular pill cartridge removably mounted between said cover and base, said pill cartridge comprising a rotatably mounted pill receptacle containing a plurality of pill compartments arranged in a pattern for individual alignment with said pill exit opening; a pill retainer freely coupled to said pill receptacle and covering said pill compartments, said pill retainer having an aperture in fixed alignment with said cover's pill exit opening; an indicia-bearing dial rotatably mounted on said base and positioned for successive individual alignment of said indicia with a reference means on said cover; said dial and said pill cartridge being in torque transmitting engagement whereby advancement of said dial indicia is simultaneous with the advancement of said pill compartments.

2. The pill dispenser of claim 1 where said torque transmitting engagement comprises engagement of gear teeth on the edges of said dial and pill cartridge.

3. The pill dispenser of claim 2 where said pill retainer disk has a centrally disposed spindle rotatably extending through said pill receptacle and removably mounted for nonrotation on a spindle formed on the interior face of said base.

4. The pill dispenser of claim 3 where said dial is in ratchet complement on said base for unidirectional rotation about a fixed point.

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