

May 12, 1970

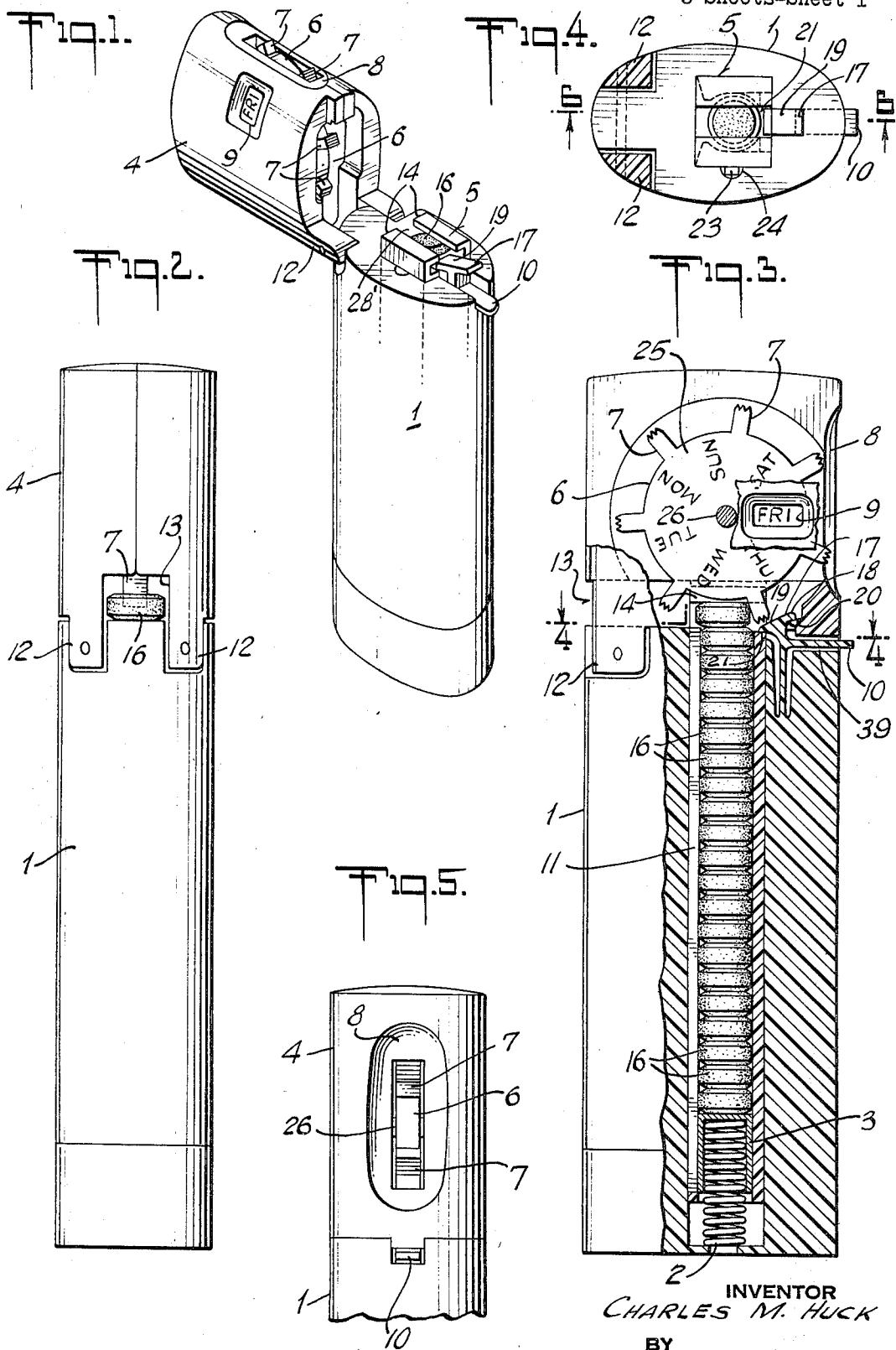
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3,511,409

TABLET DISPENSER WITH HINGED TOP AND INDICATOR EJECTING WHEEL

Filed Oct. 9, 1968

3 Sheets-Sheet 1



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TABLET DISPENSER WITH HINGED TOP AND INDICATOR EJECTING WHEEL

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3 Sheets-Sheet 2

Fig. 6.

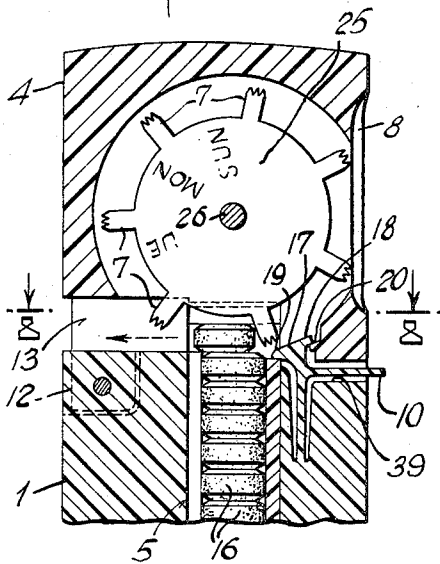


Fig. 9.

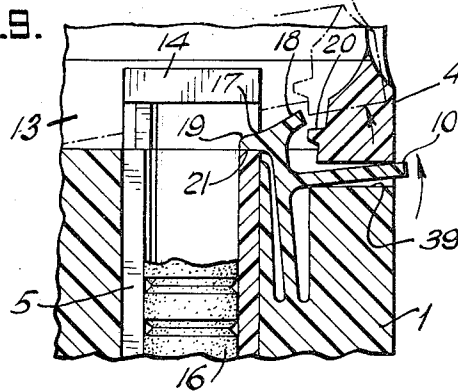


Fig. 10.

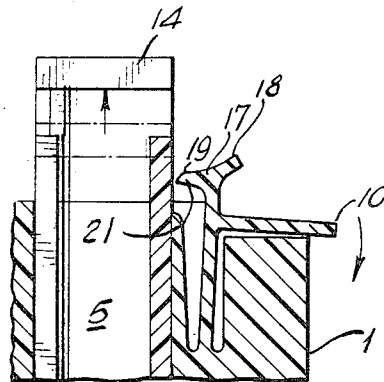


Fig. 11.

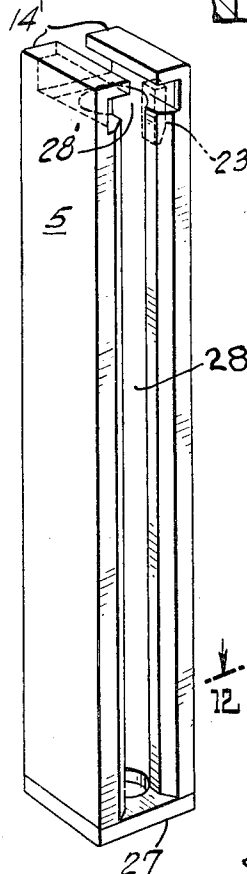


Fig. 12.

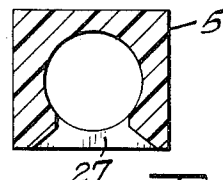


Fig. 13.

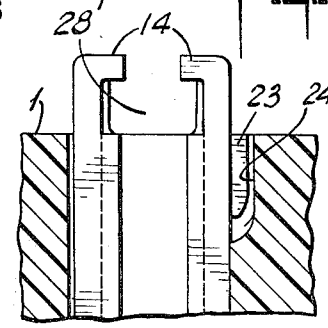


Fig. 7.

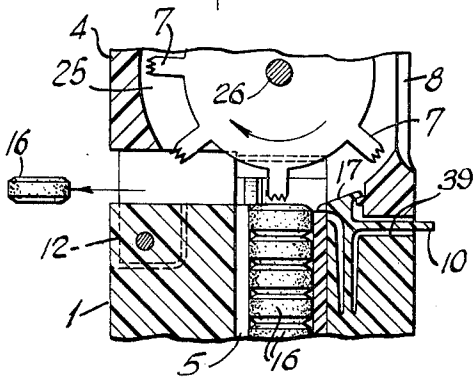
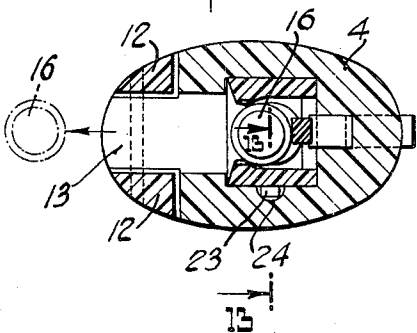


Fig. 8.



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Fig. 14.

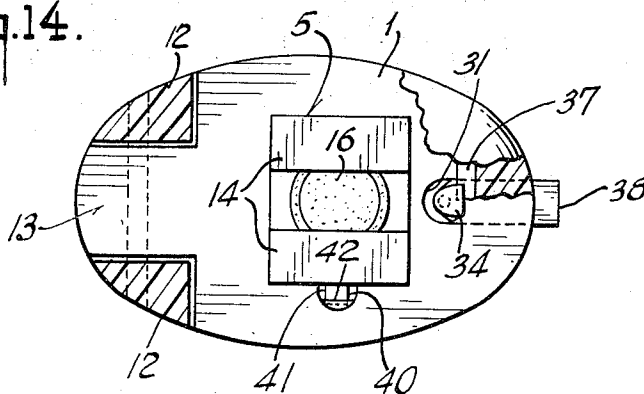


Fig. 15.

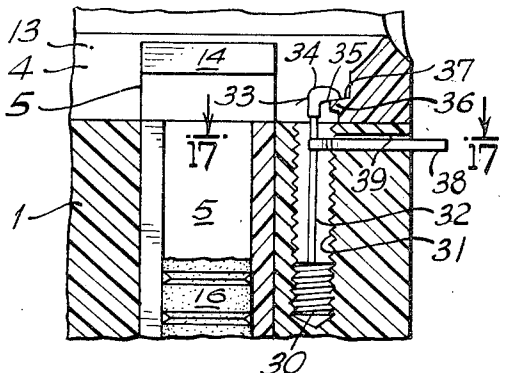


Fig. 16.

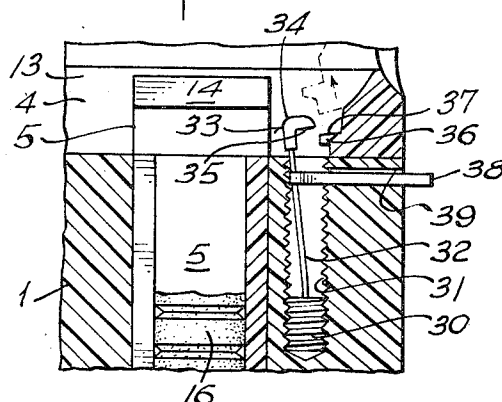


Fig. 17.

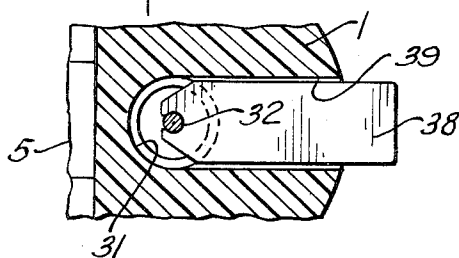


Fig. 18.

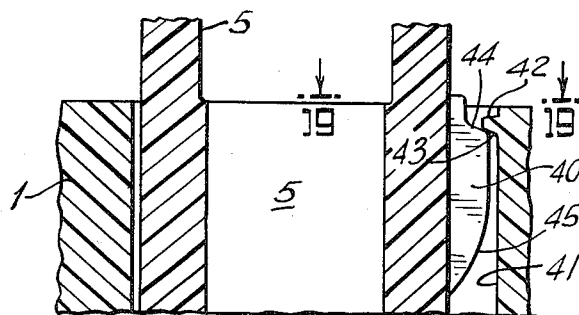
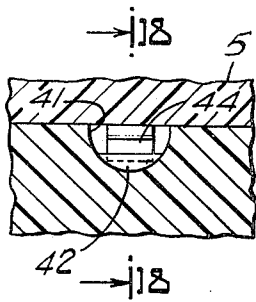


Fig. 19.



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**TABLET DISPENSER WITH HINGED TOP AND
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U.S. Cl. 221-7

3 Claims

ABSTRACT OF THE DISCLOSURE

A vertical cartridge type tablet dispenser with date referencing means is provided in which after the cartridge is inserted into the dispenser, the date referencing means may be adjusted without the ejection of a tablet. This is accomplished by providing a "snap top" configuration in which the tablet cartridge is disposed in the bottom of the dispenser and the date referencing mechanism, and, preferably, the tablet ejection mechanism, is disposed in the top of the dispenser.

BACKGROUND OF THE INVENTION

It has become the general practice in the treatment of patients to prescribe that medication be taken in accordance with a fairly rigid time schedule. This is particularly true in the case of oral contraceptives where the patient must strictly adhere to a schedule of use which is determined by the patient's individual menstrual cycle. Failure to adhere to the prescribed schedule of use will generally result in a failure of the medication to induce the physiological effect on which contraception is based.

In order to assist users of oral contraceptives in following the prescribed regimen, oral contraceptive tablets are generally packaged in dispensers which permit the user to determine immediately on any given day of the week whether a tablet was in fact taken on that day. This is most often accomplished by associating a movable member, carrying a series of indicia of days of the week, with a reference window. In order to remove any given tablet from the dispenser, it is necessary to first activate the member carrying the indicia, this required movement acting to align the indicia representing the day on which the tablet is to be taken with the reference window. Thus, the patient is able to determine whether or not a tablet was taken on the day in question by noting the indicia appearing in the window. If the indicia representing that particular day is observable in the window, and if the corresponding tablet location is empty, the patient knows that a tablet has, in fact, been taken.

When oral contraceptives were first sold, flat tablet dispensers with the tablets arranged in an annular pattern were most often used. However, in recent years, dispensers in which the tablets are vertically stacked have also become commonplace. The latter type dispenser comprises a casing; a confined, vertical, upwardly biased stack of tablets within the casing; a tablet ejecting mechanism and a date referencing mechanism, the date referencing mechanism being engaged with the tablet ejecting mechanism so that activation of the date referencing mechanism will eject a tablet. The casing defines an exit passage in alignment with the uppermost tablet of the stack of tablets and leading outward through the casing. The casing also defines a passage which receives a tablet ejecting arm in alignment with the uppermost tablet of the stack of tablets on the side opposite the exit passage. Movement of the date referencing mechanism activates the tablet ejecting mechanism and the tablet ejection arm pushes the uppermost tablet in the stack of tablets outward through the exit passage. Only one tablet can be

removed with each movement of the date referencing mechanism. Typical of tablet dispensers of this type are those described in U.S. Pats. 3,270,915; and 3,344,951.

THE INVENTION IN GENERAL

Now according to this invention, there is provided a tablet dispenser of the general type described above but also incorporating certain improvements providing the advantages set out hereinafter.

In particular, the casing of the dispenser has a top portion, the bottom portion of the casing containing a confined, upwardly biased, vertical stack of tablets and the top portion of the container containing the tablet ejection mechanism and the date referencing mechanism. The top portion of the casing is physically separated from the bottom portion of the casing and preferably hingedly connected thereto so that the dispenser has both an open and closed position. When the dispenser is closed, the tablet ejection arm is aligned with the uppermost tablet in the stack of tablets and the date referencing mechanism is engaged with the tablet ejection mechanism. When the dispenser is open, the tablet ejection mechanism is either not aligned with any of the tablets in the stack of tablets or is disengaged from the date referencing mechanism so that upon activation of the date referencing means, no tablets will be ejected.

In the specific embodiment of the invention contemplated, the tablets are present in a self-contained cartridge, preferably removable, the upper end of the cartridge containing a stop to prevent the ejection of the biased tablets. The cartridge projects beyond the upper surface of the bottom portion of the dispenser and contains a crosswise channel in which the uppermost tablet lies and through which the tablet ejection arm may pass. This projecting portion of the tablet cartridge fits into a recess in the top portion of the dispenser when the dispenser is closed. The tablet ejection arm is also disposed adjacent to this recess in the top portion of the dispenser, spaced inward from the bottom surface of the top portion of the dispenser by a distance which is essentially equal to the distance which the tablet cartridge projects beyond the upper surface of the bottom portion of the dispenser. When the dispenser is closed, the tablet ejection arm is aligned with the uppermost tablet in the tablet cartridge. The date referencing means is also situated in the upper portion of the dispenser and is engaged with the tablet ejection mechanism so that the ejection of a tablet will activate the date referencing means or the activation of the date referencing means will eject a tablet.

It is preferred that the tablet ejection mechanism and the date referencing means be one and the same; and in the particular embodiment contemplated, a rotatably mounted sprocketed wheel is located in the upper portion of the dispenser. The sprockets are spaced from each other a distance approximately equal to the diameter of a tablet and have a length slightly greater than the thickness of the tablets. The wheel is preferably positioned so that its axis of rotation coincides with the center line of the tablet cartridge. The stop on the top surface of the tablet cartridge contains a channel which is at least as wide as the sprockets. When the container is closed, one sprocket will be on each side of the uppermost tablet in the tablet cartridge.

By rotating the wheel, the following sprocket will push the tablet forward and outward through the exit passage. Indicia of the various days of the week are printed on the wheel and are visibly registerable with a date referencing window located in the side of the top portion of the dispenser. In order to eject one tablet it is necessary to rotate the wheel a distance equal to the distance between indicia. When the dispenser is open, the wheel can

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be rotated to align any of the indicia with the date referencing window without ejecting a tablet.

By virtue of this construction, the date referencing means can be set by the patient to the first day on which the medication is to be taken after the tablets are inserted into the dispenser. Thus, the dispenser can be sold fully loaded. This is an advantage which is not provided by presently available dispensers described, for example, in the patents set forth earlier.

In particular, U.S. Pat. 3,270,915 to Auer describes a stacked table dispenser in which the date referencing means cannot be adjusted after loading the tablets in the dispensers. The stack of tablets is not part of a self-contained cartridge, the tablets being inserted individually by the patient, thus leading to medication loss. This dispenser also requires a complicated double gate type closure which is both expensive and difficult to operate.

While the dispenser described in Pat. 3,344,915 to Gervais contains a relatively simple date referencing means and tablet ejection mechanism, it is nevertheless more complicated than the dispenser of this invention. It is again impossible to adjust the date referencing means after loading the dispenser with the tablets.

The invention will now be more fully described with reference to the appended drawings.

In the drawings, FIG. 1 is a view in perspective of a tablet dispenser of this invention;

FIG. 2 is a rear elevation of the dispenser of FIG. 1;

FIG. 3 is a side elevation view of the dispenser of FIG. 1, partially broken away and partially in section;

FIG. 4 is a plan view, partially in section, of the dispenser of FIG. 1 taken along line 4—4 of FIG. 3;

FIG. 5 is a fragmental front elevation of the upper portion of the dispenser of FIG. 1;

FIG. 6 is a vertical cross-section of the upper portion of the dispenser of FIG. 1 taken along line 6—6 of FIG. 4 and further showing the first stage of ejecting a pill from the dispenser;

FIG. 7 is a view similar to FIG. 6 showing the pill and the position of the ejecting mechanism immediately after the pill is dispensed;

FIG. 8 is a plan view, partially in section, of the dispenser of FIG. 1 taken along lines 8—8 of FIG. 6;

FIG. 9 is a fragmental enlarged vertical cross-section similar to that shown in FIG. 3 showing in particular the tablet cartridge locking means and dispenser locking means;

FIG. 10 is a view similar to that shown in FIG. 9 showing the locking mechanism in its alternate position;

FIG. 11 is a view in perspective of the tablet cartridge utilized in the dispenser of FIG. 1;

FIG. 12 is a horizontal cross-section of the capsule cartridge illustrated in FIG. 11 taken along lines 12—12 of FIG. 11;

FIG. 13 is a fragmented enlargement of the upper portion of the capsule cartridge in cross-section taken along lines 15—15 of FIG. 8 and in particular showing the cartridge retaining means and locating means;

FIG. 14 is a view similar to that of FIG. 4 on a larger scale of a dispenser utilizing alternate cartridge locking means and dispenser locking means;

FIG. 15 is a view similar to that of FIG. 9 showing in detail the modified locking means of the dispenser of FIG. 14;

FIG. 16 is a view similar to that of FIG. 15 showing the dispenser locking mechanism in an open position;

FIG. 17 is an enlarged plan view in cross-section along lines 17—17 of FIG. 15 and showing particularly the dispenser locking means;

FIG. 18 is an enlarged view similar to that of FIG. 13 showing the alternate cartridge locking means; and

FIG. 19 is a horizontal cross-section taken along lines 19—19 of FIG. 18 again showing particularly the alternate cartridge locking means.

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Referring now to FIG. 1, there is shown a tablet dispenser of this invention having a bottom portion, 1, and an upper portion or cap, 4, connected one to another by hinge 12. A tablet cartridge, 5, containing a stack of tablets, 16, is disposed in the center of the bottom portion, 1, of the container. The tablets are biased upwardly by a spring, 2, which transmits pressure to the bottom of the column of stacked tablets through the tablet follower, 3, which extends through an aperture in the base, 27, of the tablet cartridge.

The tablet cartridge has a channel, 28, running the length of the front of the same and having a width slightly less than the diameter of a tablet. In its normal position the tablet are securely held in the cartridge but the walls adjacent the channel are deformable so that by the exertion of sidewise pressure the channel, 28 can be widened over most of its length to facilitate loading of the cartridge. The uppermost portion of the front and back of the tablet cartridge, 5, has a slot, 28', having a width which is slightly greater than the diameter and a length slightly greater than the thickness of one of the tablets which is to be dispensed. Thus, the tablet can be ejected from the cartridge through this slot. The top surface of the tablet cartridge contains two stops, 14, running from the front to the back of the same which retain the upwardly biased tablets in the cartridge, the stops defining a channel therebetween, the purpose of which is herein-after more fully described.

The tablet cartridge, 5, is contained in a compartment, 11 in the bottom portion of the tablet dispenser, the spring, 2, and tablet follower, 3, being disposed at the base of the compartment, 11. When the cartridge, 5, of tablets, 16, is inserted into the compartment, 11, thus compressing spring, 2, upward pressure is exerted on the stack of tablets by the spring. In order to insure that the tablet cartridge, 5, is inserted into the dispenser in the proper position, the cartridge is provided with a boss, 23, which fits into depression, 24, in the wall of the compartment, 11, as shown most clearly in FIG. 13.

Once the tablet cartridge, 5, is properly positioned in the compartment, 11, it is locked in place by one edge, 19, of T shaped stop 17 as shown most clearly in FIG. 3. This T shaped stop is mounted for to and fro movement at the top of and adjacent the compartment, 11. As shown, the T shaped stop is integrally molded of a flexible material in a cavity in the bottom of the dispenser. Handle 10 connected to the shaft of the stop extends outward from the dispenser through a channel, 39, in one wall of the same. Thus, when it is desired to insert the tablet cartridge, the user pulls on arm 10 to bend the T shaped stop to its backward position as shown in FIG. 10. Once the cartridge has been inserted, the stop is moved forward to the position shown in FIG. 9 so that underside, 21, of edge 19 catches the top edge of the cartridge, 5. In order to remove the tablet cartridge, this process is simply reversed.

When the tablet cartridge is inserted, the top portion, 4, of the dispenser is open as illustrated in FIG. 1. As illustrated, the top portion, 4, of the dispenser contains the tablet ejecting means and the date referencing means. The date referencing means comprises a sprocketed wheel, 25, rotatably mounted on an axle, 26, in a recess in the top, 4, of the dispenser. This wheel has a series of sprockets, 7, to which the user may obtain access through aperture 8 so that the wheel can be rotated. A series of indicia representing the times at which the medication is to be taken are printed or otherwise disposed on one surface of the sprocketed wheel as seen most clearly in FIG. 3. A referencing window, 9, is located on the side of the top portion of the dispenser and is horizontally aligned with the axis of rotation of the sprocketed wheel so that each of the indicia may be indexed with the aperture, 9, as the wheel is rotated. This wheel, 9, contains a number of sprockets equal to the number of different

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times in a given calendar cycle (day, week or month) at which the medication is to be taken.

The upper portion of the tablet cartridge containing exit slot 28' projects above the plane along which the top portion of the dispenser is divided physically from the bottom of the same. The sprocketed wheel is aligned widthwise with the center of the tablet cartridge and is recessed in the top portion of the dispenser a calculated distance so that when the dispenser is closed as shown in FIG. 3, the ends of the sprockets are aligned with the exit slot 28' as well as the channel between end stops 14.

Thus, each sprocket, 7, serves not only as a means for rotating the date wheel, but when the dispenser is closed also serves to eject the tablets. Sprockets 7 are spaced so as to provide therebetween a tablet compartment, 6, which is of sufficient size to receive one tablet, 16. The angular distance between each sprocket is equal to the angular distance between the indicia located on the surface of the wheel. Thus, as the user rotates the wheel, each sprocket, 7, passes in turn through the channel between stops 14 at the upper end of the tablet cartridge, 5, thus pushing a tablet, 16, outward through the exit slot 28', of the tablet cartridge and through the dispenser exit aperture, 13, as most clearly shown in FIGS. 6, 7 and 8.

Thus, by virtue of this construction, the tablet ejection means (i.e., the sprockets) can be disengaged from the tablet stack by simply opening the top, 4, of the dispenser. When this is accomplished stops 14 serve to retain the biased tablet, 16, in the tablet cartridge, 5. The date referencing means and the tablet ejection means are still engaged, however. The date referencing means may now be adjusted to the first day on which a tablet is to be taken without ejecting a tablet from the dispenser. Thus, the tablets may be inserted into the dispenser prior to the adjustment of the date referencing means and in fact, most often the dispenser and tablets will be sold together. If the user improperly adjusts the date referencing means and closes the cap of the dispenser, the same may be opened to adjust the date referencing means at any time without removing the tablets from the dispenser. It is clear that this control feature of the invention can be afforded by providing for disengagement of the tablet ejection arm from the tablet stacks by opening the dispenser, as specifically shown herein, or by similarly providing for disengagement of the date referencing means from the tablet ejection arm. This may be accomplished in a number of ways only one of which is disclosed herein by way of example.

It is desirable to lock the top and bottom portions of the dispenser after initiation of the medication cycle so as to eliminate the danger of the dispenser opening and the date referencing means being knocked out of adjustment. In the dispenser illustrated in FIGS. 1 to 13, such a lock is provided by the T shaped stop which, as previously noted, also serves to hold the tablet cartridge in the dispenser. Thus, as seen most clearly in FIG. 9, the surface of the recess in the top of the dispenser is provided with a lip, 20, which, when the dispenser is closed, is positioned adjacent edge, 18, of the T shaped stop. As shown most clearly in FIG. 3, this stop can serve to both lock the dispenser and lock the tablet cartridge in the dispenser.

When it is desired to open the dispenser, the T is pushed forward as shown in FIG. 9. After the dispenser is opened, the T is moved backward as illustrated in FIG. 10 so that the tablet cartridge may be removed.

Referring now to FIGS. 14-17, there is illustrated a modified means, 34, for locking the dispenser. Specifically, there is provided a threaded recess, 31, near the top surface of the bottom portion of the dispenser. The lock consists of a base, 30, disposed in recess, 31, and containing threads on its outer surface which mesh with the threads on the surface of recess 31. Connected to the base, 30, is a shaft, 32, narrower than recess 31 which

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contains head, 33, projecting beyond the top surface of the bottom of the dispenser and having an outwardly facing shoulder, 35. The shaft is movably connected to the base, in this case by being integrally molded therewith of a flexible plastic, so that the shaft may be moved to and fro in the recess, 31, as shown in FIGS. 15 and 16. Shoulder 34 is positioned so that it may be engaged with the top surface, 37, of lip, 36, formed on the surface of the recess in the top portion of the dispenser, to thus lock the dispenser. Shaft 32 is moved forward and backward by virtue of arm 38, shown most clearly in FIG. 17. This arm, 38, is disposed in a channel, 39, drilled or otherwise formed in the wall of the dispenser.

Finally, referring to FIGS. 14, 18 and 19, there is illustrated and alternate means for aligning and locking the tablet cartridge in the dispenser. This means consists of a boss, 40, on the side of the tablet cartridge which fits into a slot, 41. The boss has an upper shoulder 44, which engages the bottom surface, 43, of lip 42. The boss 40, is provided with a curved lower surface, 45, so that the cartridge may be inserted into the dispenser with a minimum of resistance. When it is desired to remove the tablet cartridge, the cartridge is pushed to one side to release the shoulder, 44, from lip, 42.

What is claimed is:

1. A tablet dispenser comprising in integral combination, a casing; a vertical, confined, upwardly biased stack of tablets within said casing; a tablet ejecting mechanism including a tablet ejecting arm; and a date reference mechanism;

said date referencing mechanism including a member with indicia representing in chronological order the various times at which tablets are to be taken, said member being movable with respect to a time reference indicator to register said time reference indicator in turn with any of said indicia;

said casing being physically divided into a top and bottom portion hingedly joined one to another, said dispenser thus having both an open and closed configuration; when said dispenser is closed, said casing defining an exit passage in alignment with the uppermost tablet in said stack of tablets and defining a receiving passage for said tablet ejection arm located on the side of said tablet opposite said exit passage and in alignment with said exit passage;

also, when said dispenser is closed, said tablet ejection arm being resident in said passage, said tablet ejection arm being engaged with the remainder of said tablet ejection mechanism, and said tablet ejection mechanism being engaged with said date referencing mechanism, whereby activation of said indicia carrying movable member to register said time reference indicator with the indicia indicating the time for taking the next tablet will activate the tablet ejection mechanism and said tablet ejection arm thus ejecting a tablet from the dispenser;

when said dispenser is open, said date referencing mechanism being disengaged from said tablet ejection arm, whereby the date referencing mechanism may be activated without ejecting a tablet.

2. A tablet dispenser of claim 1 in which said tablets are present in a removable, self-contained cartridge having an exit slot in registration with said exit passage and a slot opposite said exit slot to receive said tablet ejection arm.

3. A tablet dispenser of claim 2 in which said date referencing means comprises a sprocketed wheel rotatably mounted in a recess in said top portion of the dispenser, said sprockets being spaced one from another by a distance greater than the diameter of one tablet to thus form a tablet compartment therebetween,

said sprocketed wheel having on one flat surface thereof a series of indicia representing in chronological order the times at which tablets are to be taken, the angular distance between said indicia being essen-

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tially equal to the angular distance between said sprockets, one and only one of said indicia being visible and registered with said time reference indicator at any one time, and each indicia, in turn, being registrable therewith upon rotation of said wheel, 5 said tablet cartridge having a channel through the upper end thereof of a width at least as great as the width of said sprockets, when said dispenser is closed, said wheel is aligned with said cartridge so that upon rotation, the bottom edge 10 of said sprockets pass within the plane of the upper-

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most tablet in said stack of tablets and within said channel to thus eject a tablet from the dispenser.

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STANLEY H. TOLLBERG, Primary Examiner

U.S. Cl. X.R.

221—231