Oct. 18, 1966 G. J. THOMPSON 3,279,651

ARTICLE DISPENSER HAVING RUPTURABLE CELLS AND MEANS TO EJECT ARTICLES THEREFROM

Filed Feb. 8, 1965

FIG. 1

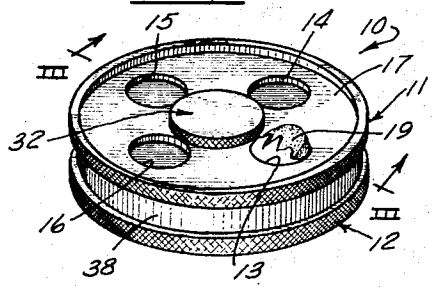


FIG. 2

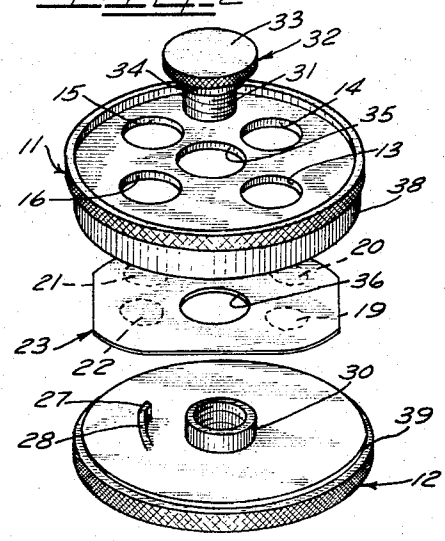


FIG. 3

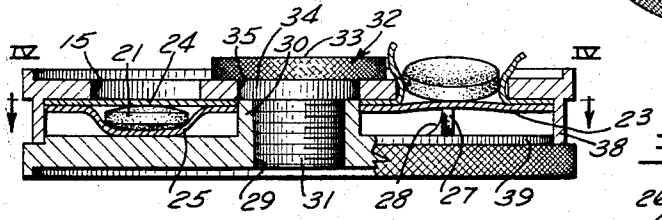


FIG. 5

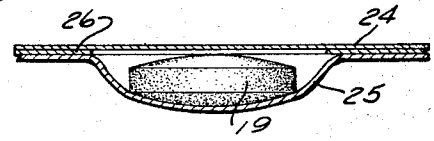


FIG. 4

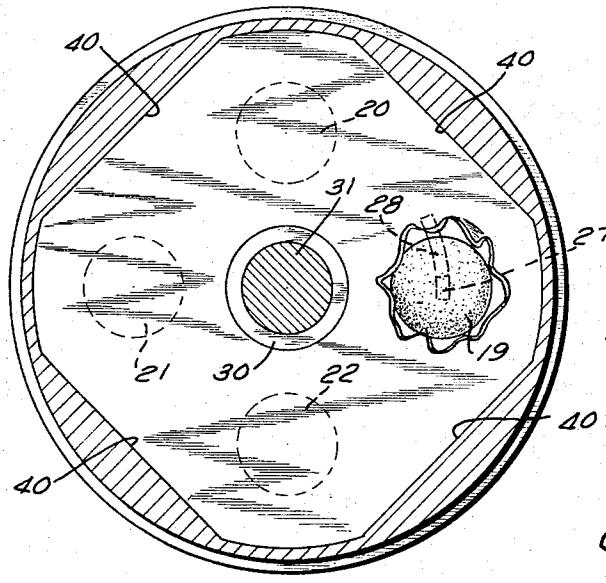
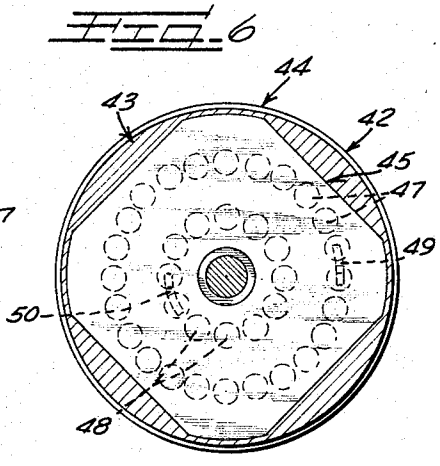


FIG. 6



INVENTOR.

GORDON J. THOMPSON

BY

Alberts, Bregina & Trend

ATTORNEYS

United States Patent Office 3,279,651
Patented Oct. 18, 1966

3,279,651

ARTICLE DISPENSER HAVING RUPTURABLE CELLS AND MEANS TO EJECT ARTICLES THEREFROM

Gordon J. Thompson, 621 Running Water Circle SE., Albuquerque, N. Mex.

Filed Feb. 8, 1965, Ser. No. 430,898
10 Claims. (Cl. 221—88)

This invention relates to a pill dispenser and was evolved with the general object of providing a pill dispenser in which one or more pills can be carried in a sealed enclosure and readily removed therefrom when desired, without disturbing the seal of other pills in the enclosure. In accordance with further objects of the invention, a device is provided which is quite simple and very compact, while being easily and economically constructed and readily operated.

The device of this invention is particularly suitable for use with medicinal preparations but can be used with other objects and the term "pills" is used herein in a generic sense to include objects of a form similar to medicinal pills and also to include capsules or hollow objects.

According to this invention, a dispenser is provided for use with a pill sandwiched between a flexible sheet and a rupturable sheet bonded together about the pill to define a sealed enclosure therefore, wherein means are provided for engaging the flexible sheet and for pressing the pill through an opening of a wall against which the rupturable sheet is disposed, and to thereby force the pill through the rupturable sheet. With this arrangement, the pill is retained in the sealed enclosure prior to use but is readily released when desired.

An important feature of the invention is in the provision of a plurality of openings in the wall for disposition opposite a plurality of pills disposed between the sheets, such that the pills can be dispensed in sequence. An important advantage is that the dispensing of one pill does not disturb the seal of the other pills.

In accordance with another important feature of the invention, the flexible sheet is engaged by the surface of wedge means carried by a member which is manually movable parallel to the wall against which the rupturable sheet is disposed. The manually actuatable member may be a slide movable rectilinearly, but may preferably be a member rotatable about an axis normal to a planar wall against which the rupturable sheet is disposed. With this arrangement, the openings in the wall may be angularly spaced and at equal radial distances from the axis of rotation of the manually actuatable member.

In one preferred embodiment of the invention, a single series or multiple series of openings are provided at one radial distance from the axis of rotation, with a single or multiple series wedge being used, while in another preferred embodiment, two series of openings are provided at different radial distances from the axis, with a pair of wedges being provided.

Other important features of the invention relate to the specific construction of the wedge means and to a specific form of mounting of the walls and actuatable members, to provide an efficient and compact device.

This invention contemplates other objects, features and advantages which will become more fully apparent from the following detailed description taken in conjunction with the accompanying drawings which illustrate preferred embodiments and in which:

FIGURE 1 is a perspective view of a pill dispenser constructed according to the principles of this invention;

FIGURE 2 is an exploded view illustrating the parts

of the dispenser of FIGURE 1 and the mode of assembly thereof;

FIGURE 3 is a sectional view, on an enlarged scale, taken substantially along line III—III of FIGURE 1;

FIGURE 4 is a sectional view taken substantially along line IV—IV of FIGURE 3;

FIGURE 5 is a sectional view on an enlarged scale illustrating the manner of disposition of a pill between sheets to form a sealed enclosure; and

FIGURE 6 is a sectional view similar to FIGURE 4, but illustrating a modified construction.

Reference numeral **10** generally designates a pill dispenser constructed according to the invention, which comprises a pair of parallel disks **11** and **12** of substantially the same diameter which are relatively rotatable about a common axis to cause pills to be ejected seriatim from openings **13**, **14**, **15** and **16** in a generally planar wall portion **17** of the disk **11**, the openings **13–16** being angularly spaced and at equal radial distances from the common axis of rotation of the disks. A pill **19** is shown being ejected from the opening **13** in FIGURES 1, 3 and 4, and pills **20**, **21** and **22** are aligned with openings **14**, **15** and **16**, respectively, for ejection therefrom with further relative rotation of the disks **11** and **12**.

The pills **19–22** are disposed in a sealed enclosure generally designated by reference numeral **23** which comprises a sheet **24** of a rupturable material disposed against the inner face of the planar wall portion **17** of the disk **11** and a sheet **25** of a flexible material, the pills **19–22** being sandwiched between the sheets **24** and **25** and the sheets being bonded together about the pills to define the sealed enclosure therefore.

By way of example, the sheet **24** may be of a metallic foil, such as aluminum foil, and the flexible sheet **25** may be of a plastic material. As shown in FIGURE 5, a sheet **26** of paper or a similar material may be disposed between the sheets **24** and **25**, with openings therein aligned with the pills. In forming the enclosure, the sheet **25** may be pre-formed with pockets into which the pills are disposed and the sheet **26** may be adhesively secured to the sheet **24**, after which the sheet **25** may be adhesively secured to the intermediate sheet **26**.

To eject the pills, the disk **12** carries an integral wedge member **27** having a surface **28** for engagement with the flexible sheet **25** at areas thereof aligned with the pills, the wedge member **27** being at a radial distance from the axis of relative rotation of the disks **11** and **12** equal to the distance of the centers of the openings **13** and **16** therefrom. The surface **28** is at an angle to the plane of the disk **12** sufficiently great as to obtain a snap action in rupturing the sheet **24**, but at an angle less than that at which excessive friction occurs. Preferably, the angle is on the order from 20 to 60 degrees.

To support the disks **11** and **12** for relative rotation while maintaining the proper distance therebetween, the disk **12** has a central opening **29** and has an integral sleeve portion **30** about the opening **29**, with the opening **29** and the sleeve **30** being internally threaded to receive an externally threaded shank **31** of a screw member **32** having a knurled head **33** and having an intermediate portion **34** of approximately the same diameter as the outer diameter of the sleeve **30**, less than the diameter of the knurled portion **33** and greater than the diameter of the shank **31**. The intermediate portion **34** is disposed in opening **35** of the wall **17** of the disk **11**, to define a bearing, upon assembly of the parts.

After all pills **19–22** are dispensed from the enclosure **23**, the screw **32** may be removed to permit separation of the disks **11** and **12**, and an enclosure **23** containing a fresh supply of pills may be placed in position, it being noted that the enclosure **23** has a central opening **36** of

a diameter equal to or slightly larger than the outside diameter of the sleeve **30**.

Other types of connections may be used in place of the illustrated threaded connection such as a quick disconnect coupling using a radial projection on the shank **31** engageable in a locking groove in the sleeve **30**. For a disposable or one-use type unit, a permanent connection may be used, equivalent to making the screw **32** an integral part of the disk **12**, eliminating the threaded connection.

To prevent entry of extraneous matter into the space between the disks **11** and **12** and also to maintain the disks in properly spaced relation, a generally cylindrical side wall **38** is provided which in the illustrated embodiment is formed integrally with the disk **11**, so as to have one end secured thereto, the other end of the wall **38** rides in an annular groove **39** of the disk **12**.

To insure registry of the pills **19–22** with the openings **13–16**, the side wall **38** is preferably formed with widened portions such as to provide four planar surfaces **40** parallel to the axis of the device and in a square relationship, while the enclosure **23** is formed with a complementary shape. It is noted that suitable indicia may be placed on the device, as for example to correlate particular pills with particular days of the week and for registry, a notch or series of notches may be provided in the edge of enclosure **23** to mate with a stud or series of studs, or inward projections of the wall **38**.

It may also be noted that although the disk **11** having the openings **13–16** and the wall **17** thereof is shown disposed above the disk **12** in the drawings, the position may be reversed and the device may be operated in any position.

Referring to FIGURE 6, reference numeral **42** generally designates a modified form of pill dispenser which comprises disks **43** and **44** similar to the disks **11** and **12**, used with a sealed pill enclosure **45** similar to the enclosure **23**, but having an outer series of pills **47** in angularly spaced relation at a certain radial distance from the axis of the device and an inner series of pills **48** at a lesser radial distance from the axis of the device, with a pair of wedges **49** and **50** at corresponding radial distances for ejection of the pills **47** and **48**, respectively. With this arrangement, a greater number of pills can be accommodated in a container of the overall dimensions.

It will be appreciated that more than two rows or rings of pills and associated wedges may be provided, staggered or in line, and two or more pills may be dispensed at a time depending upon requirements.

It is noted that in both of the illustrated devices **10** and **42**, the principal parts may be of a plastic material, which may be readily formed to the required configuration, and the parts may be of a transparent material to permit the user to visually ascertain the number of pills remaining in the device.

It will be understood that modifications and variations may be effected without departing from the spirit and scope of the novel concepts of this invention.

I claim as my invention:

1. In a dispenser for use with a pill sandwiched between a flexible sheet and a rupturable sheet bonded together about the pill to define a sealed enclosure therefore, a generally planar wall having an opening therein slightly larger than the pill, means for holding said sealed enclosure with said rupturable sheet against said wall and with the pill aligned with said opening, manually actuatable means movable in a plane parallel to said wall, and wedge means carried by said manually actuatable means and having a surface engageable with said flexible sheet for pressing the pill through said opening and through said rupturable sheet.

2. In a dispenser for use with a pill sandwiched between a flexible sheet and a rupturable sheet bonded together about the pill to define a sealed enclosure therefore, a generally planar wall having an opening therein slightly larger than the pill, means for holding said sealed enclosure with said rupturable sheet against said wall and with the pill aligned with said opening, manually actuatable means movable in a plane parallel to said wall, and wedge means carried by said manually actuatable means and having a surface engageable with said flexible sheet for pressing the pill through said opening and through said rupturable sheet, said surface of said wedge means having an angle to the plane of movement to said manually actuatable means sufficiently great as to obtain a snap action in rupturing said rupturable sheet.

3. In a dispenser as defined in claim **2**, said angle being on the order from 20 to 60 degrees.

4. In a dispenser for use with a pill sandwiched between a flexible sheet and a rupturable sheet bonded together about the pill to define a sealed enclosure therefore, a wall having an opening therein slightly larger than the pill, means for holding said sealed enclosure with said rupturable sheet against said wall and with the pill aligned with said opening, manually actuatable means, wedge means carried by said manually actuatable means and having a surface engageable with said flexible sheet for pressing the pill through said opening and through said rupturable sheet, and means supporting said manually actuatable means for rotation relative to said wall to move said wedge means in a path generally parallel to said wall.

5. In a dispenser for use with pills sandwiched between a flexible sheet and a rupturable sheet bonded together about the pills to define a sealed enclosure therefore, a wall having a plurality of openings therein slightly larger than the pills, means for holding said sealed enclosure with said rupturable sheet against said wall and with the pills aligned with said openings, manually actuatable means movable in a plane parallel to said wall, and a plurality of wedge means carried by said manually actuatable means and having surfaces for engagement with said flexible sheet for pressing pills through said openings and through said rupturable sheet.

6. In a dispenser for use with pills sandwiched between a flexible sheet and a rupturable sheet bonded together about the pills to define a sealed enclosure therefore, a wall having a plurality of openings therein slightly larger than the pills, means for holding said sealed enclosure with said rupturable sheet against said wall and with the pills aligned with said openings, manually actuatable means rotatable about an axis normal to said wall, and wedge means carried by said manually actuatable means and having a surface engageable with said flexible sheet for pressing the pill through said rupturable sheet.

7. In a dispenser for use with pills sandwiched between a flexible sheet and a rupturable sheet bonded together about the pills to define a sealed enclosure therefore, a wall having a plurality of openings therein slightly larger than the pills, means for holding said sealed enclosure with said rupturable sheet against said wall and with the pills aligned with said openings, manually actuatable means rotatable about an axis normal to said wall, and wedge means carried by said manually actuatable means and having a surface engageable with said flexible sheet for pressing the pill through said opening and through said rupturable sheet, said openings being angularly spaced and at equal radial distances from said axis of rotation of said manually actuatable means.

8. In a dispenser for use with pills sandwiched between a flexible sheet and a rupturable sheet bonded together about the pills to define a sealed enclosure therefore, a wall having a plurality of openings therein slightly larger than the pills, means for holding said sealed enclosure with said rupturable sheet against said wall and with the pills aligned with said openings, manually actuatable means rotatable about an axis normal to said wall, said openings being arranged in two series with one series being angularly spaced and at a certain radial distance from said axis and with the other series being angularly spaced and at a greater radial distance from said axis,

and a pair of wedge means carried by said manually actuatable means and having surfaces engageable with said flexible sheet for respectively pressing the pill of said two series sequentially through said openings and through said rupturable sheet.

9. In a dispenser for use with pills sandwiched between a flexible sheet and a rupturable sheet bonded together about the pills to define a sealed enclosure therefore, a planar wall having a plurality of openings therein slightly larger than the pills and arranged in angularly spaced relation at equal radial distances from an axis normal to said wall, a cylindrical wall projecting from said annular wall in coaxial relation to said axis and radially outside said openings, said cylindrical wall being arranged for holding said sealed enclosure with said rupturable sheet against said planar wall and with the pills aligned with said openings, a second annular wall parallel to the first-mentioned annular wall and engaged with one end of said cylindrical wall, means journaling said second

annular wall for rotation relative to said first-mentioned annular wall about said axis, and wedge means carried by said second planar wall and having the surface engageable with said flexible sheet for pressing the pills through said openings and through said rupturable sheet.

10. In a dispenser as defined in claim **1**, said wedge means being fixedly carried by said manually actuatable means.

References Cited by the Examiner

UNITED STATES PATENTS

1,240,026	9/1917	Chapman	221—88
2,415,859	2/1947	Ancker	206—42
2,512,207	6/1950	Isaac	221—79
2,957,604	10/1960	Goldman et al.	221—88
3,199,489	8/1965	Ruoss et al.	206—42 X

ROBERT B. REEVES, *Primary Examiner.*

WALTER SOBIN, *Examiner.*