

July 18, 1967

C. W. KECK

3,331,369

CUP FOR ADMINISTERING PILLS

Filed March 23, 1966

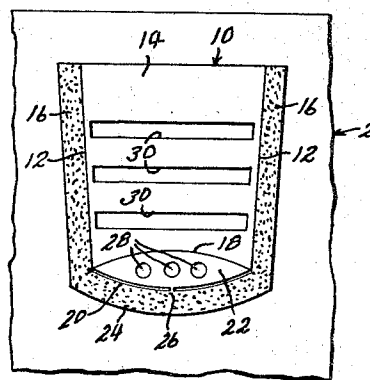
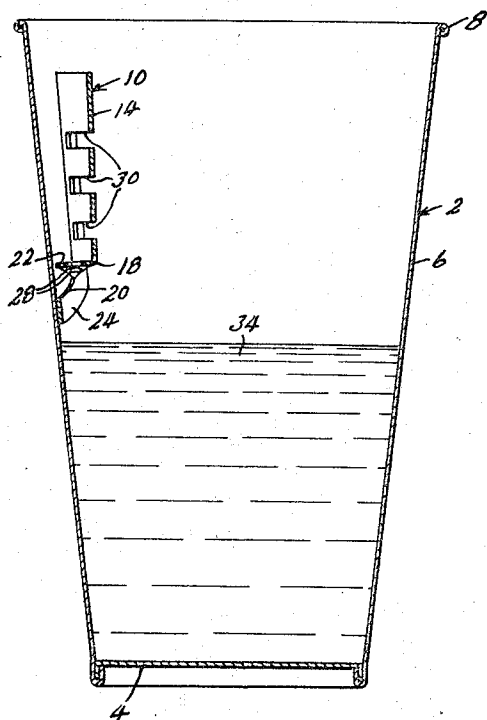
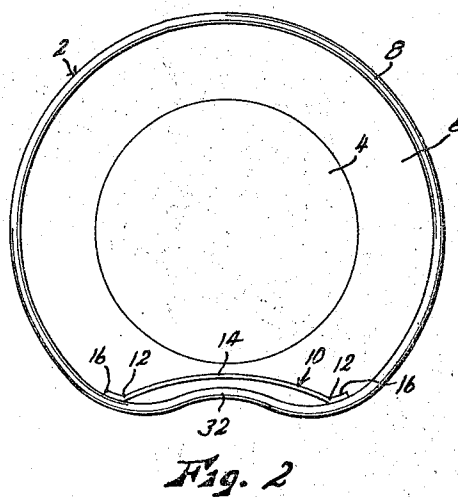
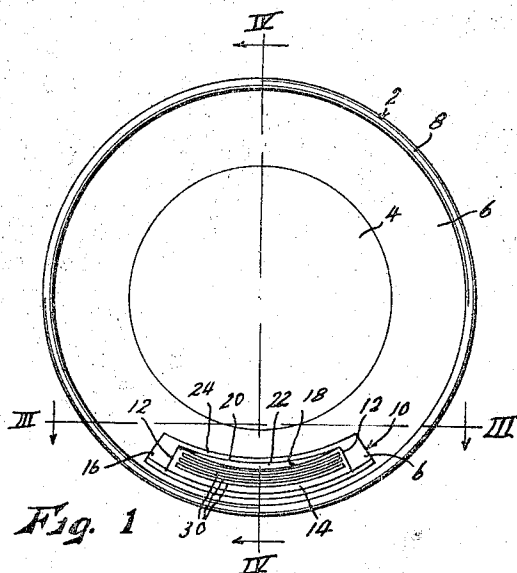


Fig. 4

Fig. 3

INVENTOR.
Cecil W. Keck
BY
John A. Hamilton
Attorney.

1

3,331,369

CUP FOR ADMINISTERING PILLS

Cecil W. Keck, 401 W. Main St., Cartersville, Mo. 64835

Filed Mar. 23, 1966, Ser. No. 536,750

9 Claims. (Cl. 128-222)

ABSTRACT OF THE DISCLOSURE

A cup for administering pills, consisting of a cup formed of resilient material which is temporarily deformable by external pressure thereon, and having an internal pill receptacle adjacent its upper edge, said receptacle including a flat sheet secured to the inner cup surface and normally lying flat thereagainst to permit nesting of the cup with other like cups, but being deflectable away from said cup wall by external pressure on said cup to form a pill-receiving receptacle, from which pills are washed into a patient's mouth with water as the patient drinks from the cup.

This invention relates to new and useful improvements in devices for administering medicinal pills, capsules and the like, and has particular reference to a device of that character consisting of a specially formed water cup.

The psychological difficulties experienced by many persons in swallowing medicinal pills and the like are well known. The usual method is to place the pills in the mouth, or on the tongue, with the fingers, then to swallow them with the aid of one or more mouthfuls of water drunk from a cup or tumbler. However, many persons experience gagging or even vomiting during the inescapable time interval between placing the pills in the mouth and the drink of water to wash them down. The same difficulty occurs in hospitals where, for sanitary reasons, the pills are often placed in a small cup from which the patient transfers them to his mouth without touching them, then washes them down with a drink of water from another cup. The likelihood of contaminating pills by handling them before placing them in the mouth, particularly by hospital patients, is of course self-evident. The principal object of the present invention is, therefore, the provision of a pill administering device which largely overcomes both the psychological and sanitary difficulties as outlined above.

To this end, an object of the present invention is the provision of a pill administering device consisting of a water cup having an internal, upwardly opening receptacle therein at one side thereof and intermediate the top and bottom thereof, said receptacle being adapted to receive pills therein and the cup being adapted to receive water therein to a level beneath said receptacle, said receptacle being perforated whereby when the user tilts the cup to drink, water will flow through the receptacle to wash the pills into the mouth, the user then being able to swallow the pills readily because they enter his mouth at the same time as the water.

Another object is the provision of a pill administering device of the character described which may readily be manufactured as a low-cost, single-use disposable item, being formed entirely of paper. This feature contributes to the sanitation advantages of the device.

A further object is the provision of a pill administering device of the character described wherein the internal receptacle is formed of a single thickness of paper normally lying flat against the interior wall of the cup, whereby said cup may readily be nested with other like cups to permit storage of a large number of the cups in a small space. The receptacle may be extended inwardly from the cup wall to its use position by a simple manipulation of

2

the cup not requiring the operator to touch either the receptacle or the interior of the cup.

Still another object is the provision of a pill administering device of the character described wherein the receptacle is specially formed to prevent wedging of pills therein so that they cannot be dislodged by the flow of water through the receptacle.

Other objects are extreme simplicity and economy of construction and efficiency and dependability of operation.

With these objects in view, as well as other objects which will appear in the course of the specification, reference will be had to the accompanying drawing, wherein:

FIG. 1 is a top plan view of a pill administering cup embodying the present invention, with the pill receptacle insert shown collapsed against the wall of the cup,

FIG. 2 is a view similar to FIG. 1, but showing the cup momentarily deformed to extend the pill receptacle insert to its use position,

FIG. 3 is a fragmentary sectional view taken on line III-III of FIG. 1, and

FIG. 4 is a vertical sectional view of the cup taken on line IV-IV of FIG. 1, with the pill receptacle insert extended to its use position.

Like reference numerals apply to similar parts throughout the several views, and the numeral 2 applies generally to a circular cup having a flat bottom 4 secured therein in any suitable manner. For certain aspects of the invention, it is necessary that the circular wall 6 of the cup be frusto-conical, being of larger diameter at its open top than at its bottom, in order that a plurality of like cups may be stacked in a small space by nesting them together, and also that it be formed of a material having a degree of yieldable resistance so that it may be deformed into non-circular shape by external pressure thereon, and will recover its normal circular form when the pressure is released. Paper or cardboard cups of the type commonly used for cold drinks have been found entirely satisfactory. Usually the paper or cardboard is treated with wax or plastic to render it moisture resistant. Such cups are also usually each provided with an outwardly rolled "lip" 8 around the top thereof, although this is not pertinent to the present invention.

A pill receptacle insert designated generally by the numeral 10 is mounted against the interior surface of the circular wall 6 of the cup, intermediate the top and bottom edges thereof. Said insert consists of a generally rectangular sheet of resilient sheet material. It may conveniently be made of the same medium-stiff paper or cardboard of which the cup itself is formed, similarly treated to render it moisture resistant. Normally it lies flat against the interior surface of wall 6 as shown in FIGS. 1 and 3, conforming to the conical curvature of said wall.

Adjacent each of the vertical edges of the insert sheet, said sheet is scored along a straight line 12 to permit easy folding of the insert. The portion 14 of the insert sheet between these lines may be termed the body portion of the insert, constituting the major portion of the area thereof, while the portions 16 of the sheet outside of lines 12 may be termed edge flaps. Lines 12 are preferably not parallel, but downwardly convergent, so that when the insert sheet is mounted in the cup as shown, said lines lie in, or are parallel with, generating lines of the conical form of the cup.

The lower ends of lines 12 are connected by an upwardly convex arcuate score line 18 formed in the insert sheet, and by an upwardly concave cut line 20 also formed in the insert sheet. Score line 18 permits easy folding of the sheet therealong. The portion 22 of the sheet between lines 18 and 20 constitutes the receptacle bottom, as will appear, and the portion of the sheet below cut line 20 con-

3

stitutes a bottom flap 24. Cut line 20 completely severs the insert sheet therealong, except for a very narrow and fragile tab 26 (see FIG. 3) at the midpoint of the line, which is left to connect bottom portion 22 and flap 24. The lines 18 and 20 have equal radii of curvature, preferably equal to the radius of circular curvature of cup 2 at the elevation of said cup corresponding to the elevation of the lower ends of score lines 12. The bottom portion 22 of the insert sheet has perforations 28 formed therethrough, as shown in FIGS. 3 and 4, and body portion 14 of the insert may also be perforated, as by slots 30 formed horizontally thereacross. Of course, none of the perforations should be so large as to permit the passage therethrough of the smallest pill to be administered with the device.

The insert sheet is mounted in the cup by holding it in the proper position in the cup infull area contact with the interior surface of wall 6 of the cup, and bonding the side flaps 16 and bottom flap 24 firmly to said wall by any suitable means. Said flaps could for example be glued or cemented to the cup wall, or, if the cup and insert sheet are formed of a plastic-treated paper or cardboard, could be heat-and-pressure sealed to the cup wall. The bonded area is indicated by stippling in FIG. 3. Alternatively, the insert sheets could be affixed to the flat stock sheets from which the cups are to be formed, but before they are formed.

The insert sheet, particularly the body portion 14 and bottom portion 22 thereof, will normally continue to lie flat against the inner surface, being held in their outwardly bowed position against said wall by their resilience. Due to this outwardly bowed configuration, the horizontal straight line distance between score lines 12, at any elevation, is slightly less than the horizontal width of body portion 14 between the lines at that elevation, and therefore movement of body portion to an inwardly bowed position, as in FIGS. 2 and 4, requires a compound resilient flexure of said body portion. While the insert sheet is bowed outwardly as described, the cup may be readily stacked or nested with other like cups, and this permits a large number of cups to be supplied in a relatively small package, as is common in the merchandising of paper cups in general.

When it is desired to use the cup for administering pills, the cup is resiliently deformed by manual pressure on the outer surface of the cup, so that the portion of cup wall 6 overlapped by body portion 14 of the insert is bowed inwardly instead of outwardly, as shown at 32 in FIG. 2. This forces body portion 14 to an inwardly bowed position, also as shown in FIG. 2. Actually, when body portion 14 has been forced inwardly sufficiently to pass through the plane determined by score lines 12, it will be "popped" or "snapped" by its own resilience through the remainder of its travel to its inwardly bowed position. When the external pressure on the cup is released to allow it to return resiliently to its normal circular form, body portion 14 will remain in its inwardly bowed position, and be retained therein, by its transverse resilience. Thus an open-topped pill receptacle is formed between cup wall 6 and insert body portion 14 of the insert.

The floor of the pill receptacle is formed by bottom portion 22 of the insert sheet. As body portion 14 snaps to its inwardly bowed position as described above, its initial movement tears and severs the small tab 26 securing said bottom portion to bottom flap 24. The slight resistance to this tearing action forces said bottom portion to fold outwardly toward cup wall 6 at least to a slight degree, the fold occurring on score line 18. Once this folding motion has been initiated in this manner, further inward bowing of body portion 14 forces bottom 22 to fold more and more sharply until said bottom is bent substantially at right angles to body portion 14, as shown in FIG. 4. This forcing action results from the upwardly

4

convex curvature of score line 18, the outward and upward pivoting of the bottom portion on line 18 being necessary to accommodate it to the inwardly bowed lower edge of body portion 14. With the curvature of lines 18 and 20 at a radius equal to the cup radius at that elevation, bottom 22 will conform to the horizontal contour of the bottom of the pill receptacle between cup wall 6 and insert body portion 14, to form a floor for said receptacle, and will be supported in this position with ample strength to support the weight of any pills contained in the receptacle. However, the tear resistance of tab 26, or its equivalent, is necessary to initiate folding on line 18. Without it, bottom portion 22 of the insert would in some cases simply be snapped to an inwardly bowed position together with body portion 14, whereby to form merely an extension of the conical curvature of said body portion.

It may be noted that easy and reliable extension of the pill receptacle insert to its use position as described above requires a free, hinge-like pivoting along the lines 12 and 18. To this end, said lines may be scored deeply, or the insert sheet could be pre-folded along these lines to break the resistance of the sheet to folding, in order to obtain the necessary free action. It has been found desirable to provide a generally flat bottom or floor 22 for the pill receptacle, rather than tapering the lower edge of insert sheet body portion 14 all the way to the cup wall, since the latter configuration produced a pill receptacle having narrowly converging walls, between which pills could become wedged so as not to be dislodged by water flowing through the receptacle. Provision of the bottom portion 22 as shown has solved this difficulty. It is quite important that in the process of extending the receptacle insert for use, it is not necessary for the user to touch either the receptacle or the interior of the cup at any time. This contributes greatly to the sanitary advantages of the device.

Once the pill receptacle has been extended to its use position by the process already described, the pills, capsules, or the like to be administered are placed in said receptacle to rest on bottom 22. If possible contamination is important, the pills may be handled with tongs, and probably would be so handled in hospital usage. The cup is filled with water 34 to a level below the receptacle, as shown in FIG. 4, either before or after the pills are placed in the receptacle. The patient then drinks from the cup in the usual way, making sure that his lips are aligned with the receptacle insert 10. Water flows through the receptacle on the way to the patient's mouth, entering said receptacle through perforations 28 and 30, and washing the pills contained therein into the patient's mouth. Since the pills enter the mouth simultaneously with the water, they need not be retained in the mouth for any appreciable time period, and can be swallowed easily by most persons who have suffered even acute psychological difficulties in swallowing pills administered by usual methods. In fact, with the present device it is possible to swallow the pills without ever being directly conscious that the pills are in the mouth.

As to the vertical position of the pill receptacle insert in the cup, it is desirable that it be positioned sufficiently far below the top of the cup that it is never engaged by the patient's lips, but sufficiently far above the bottom that the cup can contain an ample amount of water below the level of the receptacle. On the other hand, it is generally desirable to use the least amount of water which will permit the patient to swallow the pills effectively, since a low water level requires the cup to be tilted to a more nearly horizontal position to drink, and thus in turn brings the receptacle to a more nearly horizontal position so that the pills may be washed therefrom more easily by the flow of the water. The amount of water required by each user can be determined easily by experimentation.

While I have shown and described a specific embodiment of my invention, it will be readily apparent that

5

6

many minor changes of structure and operation, other than those already mentioned could be made without departing from the spirit of the invention as defined by the scope of the appended claims. For example, perforations 30 are of only secondary importance compared to perforations 28 and could be dispensed with. Bottom section 22 of the insert could also be dispensed with, so long as the proportions of the insert were so adjusted that the resulting opening at the bottom of the receptacle, when said receptacle is extended, is small enough to prevent pills from falling therethrough. This, however, could result in wedging of pills as previously discussed. As shown, flow of water through bottom 22 is permitted by perforations 28, but could be provided with an imperforate bottom by shaping said bottom to obstruct the bottom of the receptacle only partially. This could be done, for example, by forming the cut line 20 to a larger radius of curvature, so that the lower edge of bottom 22, when the receptacle is extended, will be spaced apart from cup wall 6 to provide a water passage therebetween. The initial folding of the bottom provided by tab 26 could also be provided in other ways. For example, bottom flap 24 could be eliminated and tab 26 could be bonded directly to the cup wall. The tab could be larger if it were adhered only lightly to the cup wall, or the tab could be eliminated entirely, and the lower edge of bottom section 22 could be adhered lightly to the cup wall.

What I claim as new and desire to protect by Letters Patent is:

1. A device for administering pills comprising:
 - (a) an open-topped cup adapted to contain water therein, said cup being of frusto-conical form, having a larger diameter at its top than at its bottom, whereby to be nestable with other like cups, and
 - (b) a pill receptacle insert comprising a generally rectangular sheet of resilient material normally lying in full area contact with the interior surface of said cup intermediate the top and bottom thereof, said insert sheet having generally vertical side edges and generally horizontal top and bottom edges, the side edge portions of said sheet being affixed to said cup wall and the intermediate body portion of said sheet being divided from said edge portions by weakened fold lines formed in said sheet, said fold lines being generally vertical, said body portion of said sheet normally being maintained in its outwardly bowed position against said cup wall by its resilient resistance to flexure, but being extendable to an inwardly bowed position, whereby to form a pill receptacle between the body member portion of said insert sheet and said cup wall, by forcing it inwardly through a plane determined by said fold lines, and retainable in said extended position by its resilience, the body portion of said insert sheet having openings formed therethrough whereby water may flow through said pill receptacle as water is drunk from said cup.
2. The structure as recited in claim 1 wherein said cup is formed of a resiliently deformable material, whereby said insert body portion may be moved to said extended position by manual pressure on the exterior surface of said cup over said insert.

3. The structure as recited in claim 2 with the addition of means operable to partially close the bottom of the pill receptacle between said insert body portion and said cup wall when said insert body is moved to said extended position.

4. The structure as recited in claim 3 wherein said closure means constitutes a downward extension of the body portion of said insert sheet, said extension normally lying in full area contact with said cup wall together with said body portion, and being divided from said body portion by an upwardly convex arcuate fold line formed in said sheet and connecting the lower ends of said first-named generally vertical fold lines.

5. The structure as recited in claim 4 wherein the radius of curvature of said arcuate fold line is generally equal to the horizontal radius of said cup at the elevation of the lower ends of said generally vertical fold lines.

6. The structures as recited in claim 5 wherein the lower edge of said extension is formed with a downwardly convex arcuate curvature connecting the lower ends of said generally vertical fold lines, and wherein said extension has openings formed therethrough.

7. The structure as recited in claim 4 with the addition of means securing the lower edge of said extension lightly to said cup wall, said securing means being severable by movement of said insert body to said extended position.

8. The structure as recited in claim 4 wherein said insert sheet extends below said extension to form a bottom edge portion also affixed to said cup wall, said bottom edge portion being divided from said extension by a cut formed in said sheet, said cut being complete except for a small interruption whereby to leave a narrow, easily severable tab connecting said extension and said bottom edge portion.

9. The structure as recited in claim 1 wherein said cup is formed of resiliently deformable material, wherein the straight fold lines dividing the intermediate body portion of said insert sheet from the side edge portions of said sheet lie in generating lines of the conical form of said cup, wherein the lower edge portion of said insert sheet is bonded to said cup wall, and wherein the lower ends of said straight fold lines are connected by an upwardly convex arcuate fold line and a downwardly convex arcuate cut line formed in said insert sheet, said cut line severing that portion of the sheet between said arcuate fold and cut lines from the bonded bottom edge portion of said insert sheet with the exception of a narrow, easily severable connecting tab, the radii of curvature of said arcuate fold and cut lines being equal to the circular radius of the cup at the elevation of the lower ends of said straight fold lines, the body portion of said insert sheet, as well as the portion thereof between said arcuate fold and cut lines, having perforations formed therethrough.

References Cited

UNITED STATES PATENTS

2,919,694 1/1960 Von Gunten ----- 128—222

JOSEPH R. LECLAIR, *Primary Examiner*.

DONALD F. NORTON, *Examiner*.