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(54) **DATE DISPLAY CAP FOR MEDICINE BOTTLE**

(57) The present invention relates to a date display cap for a medicine bottle, which includes: an outer cap (10, 110) configured to be rotated forwardly or reversely by a user and having a display window (11, 111); an inner cap (20, 120) having a screw unit (20a, 120a) screw-coupled to a mouth (B1) of a medicine bottle (B) on an inner peripheral surface thereof and rotatably installed

at an inside of the outer cap (10, 110); and a date display unit (30, 130) installed between the outer cap (10, 110) and the inner cap (20, 120), for displaying a changed date through the display window (11, 111) when the outer cap (10, 110) is rotated forwardly and reversely with respect to the inner cap (20, 120).

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Description

[Technical Field]

[0001] The present invention relates to a date display cap for a medicine bottle, and more particularly to a date display cap for a medicine bottle by which dates are automatically changed whenever a cap is opened to take out a medicine.

[Background Art]

[0002] Due to industrial development of the modern society, various forms of diseases are generated by various solutions and business stresses so that the population of patients who should take various medicines for a long time continuously increases, and the society becomes aged, the population of the aged people who take medicines for a long time increases. Then, patients who require a long-term treatment or suffer from various diseases need to take medicines every day.

[0003] However, a patient may not remember whether he or she took a medicine, may not take a medicine sometimes, and may frequently take medicines repeatedly due to busy life. The phenomenon frequently occurs particularly to aged patients, and accordingly, performance of a medicine can be achieved fully and a proper treatment cannot be realized.

[0004] In order to solve the problems, patients often directly checks whether a medicine has been taken every day from a calendar or a scheduler or take medicines after writing dates when to take medicines on a prescribed medicine bag in advance, but cannot keep the rule due to busy business or lowering of memory.

[Disclosure]

[Technical Problem]

[0005] The present invention has been made in an effort to solve the above problems, and it is an object of the present invention to provide a date display cap for a medicine bottle by which a displayed date is automatically changed to allow a user to accurately recognize whether a medicine is taken when the user opens a cap from a medicine bottle to take a medicine.

[Technical Solution]

[0006] In accordance with an aspect of the present invention, there is provided a date display cap for a medicine bottle, including: an outer cap 10 and 110 configured to be rotated forwardly or reversely by a user and having a display window 11 and 111; an inner cap 20 and 120 having a screw unit 20a and 120a screw-coupled to a mouth B1 of a medicine bottle B on an inner peripheral surface thereof and rotatably installed at an inside of the outer cap 10 and 110; and a date display unit 30 and 130

installed between the outer cap 10 and 110 and the inner cap 20 and 120, for displaying a changed date through the display window 11 and 111 when the outer cap 10 and 110 is rotated forwardly and reversely with respect to the inner cap 20 and 120.

[0007] A display window 11 is formed at an upper portion of the outer cap 10, and the date display unit 30 has a rotation display end 31 for displaying a plurality of dates exposed through the display window 11 at an upper portion thereof. Then, the outer cap 10 includes a boss 12 formed at a side of an inner peripheral surface thereof, and a resilient boss 13 formed at an upper portion of an inside thereof, the inner cap includes a boss recess 22 into which the boss 12 is inserted to form a space in which the boss 12 moves on an outer peripheral surface thereof, and the date display unit 30 includes a plurality of partitioning ends 32 for partitioning the rotation display end 31 and a plurality of resilient boss catching ends 33 and 33' into which the resilient boss 13 is inserted and circumferentially formed between the partitioning ends 32.

[0008] The boss 12 further includes an inclined insertion surface 12a for allowing the inner cap 20 to be inserted into the boss recess 22 while the inner cap 20 is pushed outwards when the inner cap 20 is coupled to the outer cap 10.

[0009] The resilient boss 13 includes: a fixed end 13a fixed to an upper portion of an inside of the outer cap 10, a resilient end 13b extending from the fixed end 13a to one side, and a pressing insertion end 13c connected to the resilient end 13b to be selectively caught by a specific resilient boss catching end 33 and 33'.

[0010] The date display cap further includes a separation preventing boss 15 formed at a lower end of the outer cap 10 to support a lower end of the inner cap 20.

[0011] The date display cap further includes an inclined surface 15a formed in the separation preventing boss 15 and formed in a direction in which the inner cap 20 is inserted into the outer cap 10.

[0012] The display window 111 is formed at a side of the outer cap 110, and the date display unit 130 has a rotation display end 131 on which a plurality of dates exposed through the display window 111 are exposed on an outer peripheral surface of a side thereof. The date display cap further includes: a first catching unit 140 formed on an outer peripheral surface of the inner cap 120; a second catching unit 150 formed on an inner peripheral surface of the outer cap 110, for providing a space by which the first catching unit 140 is caught to be limitedly moved; a plurality of first latch ends 160 formed at an inside of the outer cap 110 and having an inclined surface in one direction; a plurality of second latch ends 170 formed on an outer peripheral surface of the date display unit 130 and having an inclined surface in the same direction of the first latch end 160; a plurality of third latch ends 180 formed on an inner peripheral surface of the date display unit 130 and having an inclined surface in an opposite direction of the second latch end 170; and a plurality of fourth latch ends 190 formed on an outer

peripheral surface of the inner cap 120 and having an inclined surface in the same direction of the third latch end 180.

[0013] A tubular insertion pipe 112 is formed at an upper end of an inside of the outer cap 110, an insertion boss 132 rotatably inserted into the insertion pipe 112 is formed in the date display unit 130, the first latch end 160 is formed on an inner peripheral surface of the insertion pipe 112, and the second latch end 170 is formed on an outer peripheral surface of the insertion boss 132.

[0014] The first latch end 160 has a wing form slanted in one direction on an inner peripheral surface of the outer cap 110, and the third latch end 180 has a wing form slanted in an opposite direction on an inner peripheral surface of the date display unit 130.

[0015] The inner cap 120 has a first inner cap part 121 and a second inner cap part 122, the first catching unit 140 is formed on an outer peripheral surface of the first inner cap part 121, and the fourth latch end 190 is formed on an outer peripheral surface of the second inner cap part 122.

[0016] The second inner cap part 122 is stepped such that a diameter of the second inner cap part 122 is smaller than a diameter of the first inner cap part 121.

[0017] The first catching unit 140 is realized by a boss protruding from an outer peripheral surface of the first inner cap part 121, and the second catching unit 150 is realized by a circumferential recess circumferentially formed on an inner peripheral surface of a mouth of the outer cap 110, and provides a space in which the first catching unit 140 limitedly moves between a front end 150a and a rear end 150b of the second catching unit 150 that has a circumferential recess form when the outer cap 110 is rotated.

[0018] The date display cap of claim 9, further including a desiccant cap 210 fixed to the inner cap 120.

[Advantageous Effects]

[0019] According to the present invention, when a patient opens or closes a date display cap to take a medicine, an automatically changed date is displayed through a display window of an outer cap. Thus, it can be accurately recognized whether a medicine has been taken on a specific date without directly checking whether the medicine has been taken from a calendar or a scheduler. Accordingly, since a medicine can be accurately taken at a predetermined timing, performance of the medicine can be sufficiently achieved and a proper treatment can be realized.

[Description of Drawings]

[0020]

FIG. 1 is an exploded perspective view showing a date display cap for a medicine bottle according to a first embodiment of the present invention.

FIG. 2 is a sectional view of the date display cap for a medicine bottle of FIG. 1.

FIGS. 3A to 3C are views for explaining an operation of the date display cap for a medicine bottle of FIG. 2. FIG. 4 is a view showing a state in which the date display cap for a medicine bottle of FIG. 1 is coupled to a bottle body.

FIG. 5 is an exploded perspective view showing a date display cap for a medicine bottle according to a second embodiment of the present invention.

FIG. 6A is a side view showing a bottle body of FIG. 5, and FIG. 6B is a top view showing the bottle body of FIG. 6A.

FIG. 7A is a side sectional view showing an outer cap of FIG. 5, and FIG. 7B is a view for explaining a first latch end formed at an inside of the outer cap of FIG. 7A.

FIG. 8A is a side view showing an inner cap of FIG. 5, and FIG. 8B is a top view showing the inner cap of FIG. 8A.

FIG. 9A is a side view showing a date display unit of FIG. 5, FIG. 9B is a view for explaining a second latch end of the date display unit of FIG. 9A, FIG. 9C is a view for explaining that a slide preventing end is connected to the second latch end of FIG. 9B, and FIG. 9D is a view for explaining a third latch end formed at an inside of the date display unit of FIG. 9A.

FIG. 10 is a view showing a state in which the date display cap of FIG. 5 is coupled to the bottle body. FIG. 11 is a sectional view taken along line XI-XI' of FIG. 10.

FIG. 12 is a sectional view taken along line XII-XII' of FIG. 10.

FIG. 13 is a sectional view taken along line XIII-XIII' of FIG. 10.

[Best Mode]

[Mode for Invention]

[0021] Hereinafter, a date display cap for a medicine bottle according to the present invention will be described with reference to the accompanying drawings.

[0022] FIG. 1 is an exploded perspective view showing a date display cap for a medicine bottle according to a first embodiment of the present invention. FIG. 2 is a sectional view of the date display cap for a medicine bottle of FIG. 1. FIGS. 3A to 3C are views for explaining an operation of the date display cap for a medicine bottle of FIG. 2. FIG. 4 is a view showing a state in which the date display cap for a medicine bottle of FIG. 1 is coupled to a bottle body.

[0023] As shown, the date display cap for a medicine bottle according to the first embodiment of the present invention includes: an outer cap 10 configured to be rotated forwardly or reversely by a user (patient) and having a display window 11, an inner cap 20 having a screw unit 20a screw-coupled to a mouth B1 of a medicine bottle B

on an inner peripheral surface thereof and rotatably installed at an inside of the outer cap 10; and a date display unit 30 installed between the outer cap 10 and the inner cap 20, for displaying a changed date through the display window 11 when the outer cap 10 is rotated forwardly and reversely with respect to the inner cap 20.

[0024] As shown in FIG. 1, the outer cap 10 includes a display window 11 formed at an upper side thereof, a boss 12 formed at a side of an inner peripheral surface thereof, and a resilient boss 13 formed at an upper portion of an inside thereof.

[0025] The display window 11 is a hole through which a date formed in a rotation display end 31 that will be described below. Then, the display window 11 has a size large enough to display only one date.

[0026] The boss 12 is inserted into a boss recess 22 of the inner cap 20 that will be described below. Then, an inclined insertion surface 12a is formed at a lower end of the boss 12, and the boss 12 is inserted into the boss recess 22 while being pushed outwards when the inner cap 20 is coupled to the outer cap 10 by the inclined insertion surface 12a. If the inclined insertion surface 12a is not formed, the boss 12 is caught by an upper end of the inner cap 20 when the inner cap 20 is inserted into and assembled in the outer cap 10, and thus assembly performance severely deteriorates.

[0027] The resilient boss 13 is adapted to rotate the date display unit 30 that will be described below when the date display cap is rotated in one direction or in an opposite direction to take out a medicine from the medicine bottle B. As shown in FIGS. 3A, 3B, and 3C, the resilient boss 13 includes a fixed end 13a fixed to an upper portion of an inside of the outer cap 10, a resilient end 13b extending from the fixed end 13a to one side, and a pressing insertion end 13c connected to the resilient end 13b to be selectively caught by specific boss catching ends 33 and 33'.

[0028] An inclined surface is formed in the pressing insertion end 13c, and the pressing insertion end 13c is connected to the resilient end 13b extending from the fixed end 13a to one side. Thus, if the outer cap 10 is rotated in one direction with respect to the inner cap 20 after being caught by the resilient boss catching end 33 as shown in FIG. 3A, the outer cap 10 ascends to an upper portion of a partitioning end 32 of the date display unit 30 as shown in FIG. 3B, and if the outer cap 10 is rotated further, the outer cap 10 is caught by the resilient boss catching end 33'. Further, if the user rotates the outer cap 10 in an opposite direction, the pressing insertion end 13c pushes the partitioning end 32 in an opposite direction, and thus rotates the date display unit 30.

[0029] The inner cap 20 is rotatably inserted into the outer cap 10, and a separation preventing boss 15 is formed at a lower end of the outer cap 10 to prevent the inner cap 20 from being separated from the outer cap 10. Then, an inclined surface 15a is formed in the separation preventing boss 15 in a direction in which the inner cap 20 is inserted. Thus, since the inner cap 20 is easily

inserted into the outer cap 10 by pushing the inner cap 20 into the outer cap 10, assembly performance is excellent. Further, since a lower end of the inner cap 20 is supported by the separation preventing boss 15, the inner cap 20 is prevented from being separated from the outer cap 10.

[0030] The inner cap 20 is rotatably installed within the outer cap 10, and as shown in FIG. 1, a boss recess 22 is formed on an outer peripheral surface of the inner cap 20 to form a space in which the boss 12 is inserted into the boss recess 22 to be moved by a predetermined separation. The boss recess 22 is formed lengthily along an outer peripheral surface of the inner cap 20, and provides a space in which the boss 12 is moved between a front end 22a and a rear end 22b of the boss recess 22 when the outer cap 10 is rotated.

[0031] The date display unit 30 includes a disk-shaped rotation display end 31 rotatably installed at an upper portion of the inner cap 20, for displaying a plurality of dates exposed through the display window 11, a plurality of partitioning ends 32 for partitioning the rotation display end 31, and a plurality of resilient boss catching ends 33 and 33' on which the resilient boss 13 is fitted and formed between the partitioning ends 32 to form a circumference.

[0032] The rotation display end 31 is disk-shaped and have a through-hole 34 at the center thereof to be rotatably mounted on and coupled to a shaft 24 formed at an upper end of the inner cap 20. Then, it will be appreciated that a shaft may be formed in the rotation display end 31 and a through-hole into which the shaft is inserted is formed at an upper end of the inner cap 20 so that the rotation display end 31 may be rotatably coupled to an upper end of the inner cap 20. Dates and days when a medicine is taken are displayed in the rotation display end 31, and seven letters for displaying a week are formed circumferentially.

[0033] The partitioning ends 32 partition the rotation display end 31 such that seven dates may be displayed, and are pushed by the pressing insertion end 13c of the resilient boss 13.

[0034] The number of the resilient boss catching ends 33 and 33' is the same as the number of dates displayed between the partitioning ends 32, and seven resilient boss catching ends 33 and 33' are formed in the embodiment of the present invention. The resilient boss catching ends 33 and 33' are circumferentially formed at an outside or inside of the rotation display end 31, and the pressing insertion end 13c of the resilient boss 13 is selectively caught by the resilient boss catching ends 33 and 33' when the date display cap is rotated in one direction or in an opposite direction to take out a medicine from the medicine bottle B. The resilient boss catching ends 33 and 33' may be realized in various forms. For example, the resilient boss catching ends 33 and 33' may be recessed from a surface of the rotation display end 31, or may be variously realized in a form such as a latch gear having an inclined surface in one direction. In the embodiment of the present invention, it is described that the

resilient boss catching ends 33 and 33' are recessed from a surface of the rotation display end 31 between the partitioning ends 32.

[0035] Meanwhile, friction ends 25 and 35 for preventing the rotation display end 31 from moving in the inner cap 20 easily is formed between the inner cap 20 and the rotation display end 31. The friction ends 25 and 35 generate frictional forces for preventing the rotation display end from moving when the resilient boss 13 cross the partitioning ends 32 between the resilient boss catching ends 33 and 33'. The friction ends 25 and 35 may be realized in various forms, and are a plurality of recesses formed at a portion where the rotation display end 31 and the inner cap 20 contact each other in the embodiment of the present invention.

[0036] Next, an operation of the date display cap for a medicine bottle will be described.

[0037] As shown in FIG. 3A, the boss 12 is inserted into the boss recess 22 while the inner cap 20 is assembled in the outer cap 10. Then, the pressing insertion end 13c of the resilient boss 13 is inserted into the resilient boss catching end 33.

[0038] Thereafter, if the outer cap 10 is rotated in one direction so that the user may take out a medicine stored in the medicine bottle B, the boss 12 is moved rightwards as shown in FIG. 3B, and the pressing insertion end 13c also ascends along the partitioning ends 32 of the rotation display end 31 while moving rightwards. Then, since the friction ends 25 and 35 are formed between the inner cap 20 and the rotation display end 31, the rotation display end 31 is not moved while the pressing insertion end 13c ascends along the partitioning ends 32.

[0039] Thereafter, if the outer cap 10 is rotated further, the boss 12 is completely moved rightwards to stop at the rear end 22b, and then the pressing insertion end 13c is inserted into the next resilient boss catching end 33'.

[0040] If the date display cap for a medicine bottle, strictly, the outer cap 10 is rotated in an opposite direction to close the medicine bottle B after taking out a medicine from the medicine bottle B, the inner cap 20 is completely coupled to a mouth B1 of the medicine bottle while being rotated, in which state if the outer cap 10 is rotated further, the pressing insertion end 13c rotates the rotation display end 31 while pushing the portioning ends 32 leftwards and overcoming frictional forces of the friction ends 25 and 35. Accordingly, a date displayed through the display window 11 is automatically changed.

[0041] That is, when the user opens and closes the date display cap for a medicine bottle according to the present invention, the date displayed through the display window is automatically changed.

[0042] Next, a date display cap for a medicine bottle according to a second embodiment of the present invention will be described.

[0043] FIG. 5 is an exploded perspective view showing a date display cap for a medicine bottle according to a second embodiment of the present invention. FIG. 6A is

a side view showing a bottle body of FIG. 5, and FIG. 6B is a top view showing the bottle body of FIG. 6A. FIG. 7A is a side sectional view showing an outer cap of FIG. 5, and FIG. 7B is a view for explaining a first latch end formed at an inside of the outer cap of FIG. 7A. FIG. 8A is a side view showing an inner cap of FIG. 5, and FIG. 8B is a top view showing the inner cap of FIG. 8A. FIG. 9A is a side view showing a date display unit of FIG. 5, FIG. 9B is a view for explaining a second latch end of the date display unit of FIG. 9A, FIG. 9C is a view for explaining that a slide preventing end is connected to the second latch end of FIG. 9B, and FIG. 9D is a view for explaining a third latch end formed at an inside of the date display unit of FIG. 9A.

[0044] As shown, the date display cap for a medicine bottle according to the second embodiment of the present invention includes: an outer cap 110 configured to be rotated forwardly or reversely by a user (patient) and having a display window 111, an inner cap 120 having a screw unit 120a screw-coupled to a mouth B1 of a medicine bottle B on an inner peripheral surface thereof and rotatably installed at an inside of the outer cap 110; and a date display unit 130 installed between the outer cap 110 and the inner cap 120, for displaying a changed date through the display window 111 when the outer cap 110 is rotated forwardly and reversely with respect to the inner cap 120.

[0045] The date display cap according to the second embodiment of the present invention includes: a first catching unit 140 formed on an outer peripheral surface of the inner cap 120, a second catching unit 150 formed on an inner peripheral surface of the outer cap 110, for providing a space by which the first catching unit 140 is caught to be limitedly moved; a plurality of first latch ends 160 formed at an inside of the outer cap 110 and having an inclined surface in one direction; a plurality of second latch ends 170 formed on an outer peripheral surface of the date display unit 130 and having an inclined surface in the same direction of the first latch end 160; a plurality of third latch ends 180 formed on an inner peripheral surface of the date display unit 130 and having an inclined surface in an opposite direction of the second latch end 170; a plurality of fourth latch ends 190 formed on an outer peripheral surface of the inner cap 120 and having an inclined surface in the same direction of the third latch end 180; a catching boss 200 formed on an inner peripheral surface of the inner cap 120 and caught by the latch boss B2 formed in the mouth B1 of the bottle body B; and a desiccant cap 210 fixed to the inner cap 120.

[0046] The bottle body B accommodates a medicine, and a mouth B1 having a screw thread is formed at an upper end thereof. Then, as shown in FIGS. 6A and 6B, a latch boss B2 is formed at an upper end of the mouth B1 of the bottle body B and an inclined surface B2' is formed in the latch boss B2 in one direction.

[0047] As shown in FIGS. 7A and 7B, the outer cap 110 has a substantially cylindrical shape, and is rotated in a clockwise or counterclockwise direction. The display

window 111 formed at a side of the outer cap 110 allows a date displayed on the rotation display end 131 that will be described below to be viewed from the outside.

[0048] A tubular insertion pipe 112 is formed at an upper end of an inside of the outer cap 110, and as shown in FIG. 5, an insertion boss 132 rotatably inserted into the insertion pipe 112 is formed in the date display unit 130. In this case, the first latch end 160 is formed on an inner peripheral surface of the insertion pipe 112, and the second latch end 170 is formed on an outer peripheral surface of the insertion boss 132.

[0049] As shown in FIGS. 8A and 8B, the inner cap 120 has a first inner cap part 121 and a second inner cap part 122 that have a substantially cylindrical shape. Then, the first and second inner cap parts 121 and 122 are stepped, and the diameter of the first inner cap part 121 is larger than the diameter of the second inner cap part 122. The first catching unit 140 is formed on an outer peripheral surface of the first inner cap part 121, and the fourth latch end 190 is formed on an outer peripheral surface of the second inner cap part 122.

[0050] As shown in FIGS. 9A, 9B, 9C, and 9D, the date display unit 130 has a substantially cylindrical shape. The date display unit 130 has a cylindrical rotation display end 131 in which a date viewed through the display window 111 is displayed, and a date and a day when a medicine is taken is displayed on the rotation display end 131. In the embodiment of the present invention, seven letters, that is, days that means Monday, Tuesday, Thursday, Wednesday, Friday, Saturday, and Sunday are displayed along a circumferential direction. However, it will be appreciated that fourteen letters may be displayed to indicate mornings and evenings of the days or twenty one letters or days may be displayed to indicate mornings, daytimes, and evenings. That is, since the date display unit 130 has a display space that is cylindrical and large, a large number of letters may be displayed.

[0051] As shown in FIGS. 5 and 8B, the first catching unit 140 is realized in a form in which a boss protrudes from an outer peripheral surface of the first inner cap part 121 of the inner cap 120.

[0052] As shown in FIGS. 5 and 7A, the second catching unit 150 is realized by a circumferential recess circumferentially formed on an inner peripheral surface of the mouth of the outer cap 110 by a predetermined angle. Since the second catching unit 150 has a circumferential recess, the first catching unit 140 in the form of a boss provides a space in which the first catching unit 140 limitedly moved between a front end 150a and a rear end 150b of the second catching unit 150 as shown in FIG. 11 when the outer cap 110 is rotated. That is, a rotation angle of the outer cap 110 with respect to the inner cap 120 is limited by the first and second catching units 140 and 150 when the outer cap 110 is rotated in a clockwise or counterclockwise direction.

[0053] As shown in FIGS. 5, 7A, and 7B, the first latch ends 160 are formed on an inner peripheral surface of the insertion pipe 112 of the outer cap 110. The first latch

end 160 have a structure in which an inclined surface is formed in one direction, and in more detail, is realized in a wing form slanted toward a central axis thereof.

[0054] As shown in FIGS. 5, 9A, 9B, and 12, the second latch ends 170 are selectively caught by the first latch ends 160, and are formed on an outer peripheral surface of the insertion boss 132 to have an inclined surface in the same direction as the first latch end 160. Thus, the first latch ends 160 ascend along the second latch ends 170 according to a rotation direction of the outer cap 110, or are caught by the second latch ends 170 to move the second latch ends 170. The number of the second latch ends 170 is the same as the number of dates, and seven second latch ends 170 are formed since the number of dates is seven.

[0055] Meanwhile, as shown in FIG. 9C, a slide preventing end 170a having a function of preventing the first latch end 160 from excessively sliding between a second latch end 170 and another second latch end may be connected to the second latch end 170. Since the slide preventing end 170a limits a space in which the first latch end 160 may freely move to a very small range, the first latch end 160 does not deviate from a determined range when a force of a predetermined magnitude or larger is not applied to open the medicine bottle, and accordingly, a date of the date display unit 130 is accurately located within the display window 111.

[0056] If the slide preventing end 170a is not employed, the first latch end 160 is slid even by a small external force in a relatively wide range space between a second latch end 170 and an immediately adjacent second latch end 170, in which case a date of the date display unit 130 cannot be accurately located in the display window 111.

[0057] As shown in FIGS. 5 and 9D, the third latch ends 180 are formed on an inner peripheral surface of the date display unit 130. The third latch end 180 have a structure in which an inclined surface is formed in an opposite direction, and in more detail, as shown in FIG. 9D, are realized by a wing form slanted toward a central axis thereof.

[0058] As shown in FIGS. 5, 8A, 8B, and 13, the fourth ends 190 are formed on an outer peripheral surface of the second inner cap part 122. As shown in FIG. 13, the fourth latch ends 190 are formed to have an inclined surface having the same direction as the third latch end 180. Thus, the third latch ends 180 ascend along the fourth latch ends 190 according to a rotation direction of the date display unit 130, or are caught by the fourth latch ends 190 to move the fourth latch ends 190.

[0059] That is, the direction of the inclined surfaces of the first and second latch ends 160 and 170 face an opposite direction of the inclined surfaces of the third and fourth latch ends 180 and 190.

[0060] As shown in FIG. 5, a catching boss 200 is formed on an inner peripheral surface of the first inner cap part 121. The catching boss 200 is selectively caught by or separated from the latch boss B2 formed in the

bottle body B of the mouth B1 shown in FIGS. 6A and 6B.

[0061] The desiccant cap 210 is inserted into and fixed to the inner cap 120 as shown in FIG. 5, and a desiccant is filled in the desiccant cap 210.

[0062] Generally, a desiccant such as silica gel for removing moisture is filled in the medicine bottle. Thus, when a medicine is to be taken out, a desiccant should be grasped by a hand and then should be put into the bottle body again. Then, since the desiccant is grasped by a hand, it may be contaminated by foreign substances or germs stuck to the hand, in which case the medicine may be contaminated by foreign substances or germs by the desiccant again.

[0063] However, according to the present invention, since the desiccant cap 210 filled with the desiccant is fixed to the inner cap 120, it can be taken out from the bottle body B without being grasped by a hand when a cap is separated from the bottle body B. Thus, a possibility of contaminating a desiccant with foreign substances or germs stuck to the hand may be excluded.

[0064] The first, second, third, and fourth latch ends 160, 170, 180, and 190, and the catching boss 200 are formed toward the central axis C to be injection-molded, and are formed together when the outer cap 110, the inner cap 120, and the date display unit 130 are injection-molded. That is, the outer cap 110, the inner cap 120, the date display unit 130, the first, second, third, and fourth latch ends 160, 170, 180, and 190, and the catching boss 200 may be structurally injection-molded.

[0065] FIG. 10 is a view showing a state in which the date display cap of FIG. 5 is coupled to the bottle body. FIG. 11 is a sectional view taken along line XI-XI' of FIG. 10. FIG. 12 is a sectional view taken along line XII-XII' of FIG. 10. FIG. 13 is a sectional view taken along line XIII-XIII' of FIG. 10.

[0066] The first latch end 160 and the second latch end 170 are coupled to each other as shown in FIG. 12, the date display unit 130 is rotated according to a rotation direction of the outer cap 110. In the embodiment of the present invention, the first latch 160 cross the second latch 170 when the outer cap 110 is rotated in a counterclockwise direction, and the first latch end 160 rotates the insertion boss 132 to rotate the date display unit 130 when the outer cap 110 is rotated in a clockwise direction.

[0067] The third latch end 180 and the fourth end 190 are coupled to each other as shown in FIG. 13, and the second inner cap part 122 of the inner cap 120 is rotated according to a rotation direction of the rotation display end 131 of the date display unit 130.

[0068] Next, an operation of the date display cap will be described.

[0069] The date display unit 130 is inserted into the outer cap 110, and the inner cap 120 is inserted into the date display unit 130 to completely assemble the date display cap. If the date display cap is coupled to the bottle body B, the catching boss 200 is caught by the latch boss B2.

[0070] If the user rotates the outer cap 110 forwardly

or reversely to take out a medicine stored in the medicine bottle, the first catching unit 140 caught by the second catching unit 150 is selectively attached to a front end 150a or a rear end 150b of the second catching unit 150 as shown in FIG. 11 so that the mouth B1 of the bottle body B is opened or closed while being rotated together with the outer cap 110.

[0071] Then, whenever the outer cap 110 is rotated in a counterclockwise or clockwise direction, the first latch end 160 crosses or rotates the second latch end 170 or the third latch end 180 having an inclined surface having an opposite direction to the first and second latch ends 160 and 170 crosses or rotates the fourth latch end 190 to rotate the date display unit 130 according to a date. Accordingly, the date displayed through the display window 11 is automatically changed. That is, when the user opens and closes the date display cap for a medicine bottle according to the present invention, the date displayed through the display window 111 is automatically changed.

[0072] In this way, in the date display cap for a medicine bottle according to the second embodiment of the present invention, since the display window 111 is located at a side of the outer cap 110, a date can be identified even from a relatively long distance while the medicine bottle is erected so that it can be easily confirmed whether a medicine is taken. In particular, it can be confirmed whether a medicine is taken even by viewing a place where the medicine bottle is located without causing a troublesomeness of moving a human body, going to the place of the medicine, and raising and confirming medicine bottles one by one by a person who frequently take medicines or a patient whose behavior is inconvenient.

[0073] Further, the display window 111 is located on a side surface of the outer cap 110 to secure a wider space of the display window 111. Thus, aged people having bad eyesight can confirm a date more easily, and a date can be confirmed from a relatively long distance due to the large letters of the date. In particular, since the display window 111 is located on a side surface of the outer cap 110, the shape of the display window 111 can be selected more freely.

[0074] Further, since the rotation display end 131 for displaying a date through the display window 111 is cylindrical, a large display space can be provided. Thus, fourteen letters (mornings and evenings for respective days) or twenty one letters (mornings, daytimes, and evenings for respective days) can be displayed on the rotation display end 131, so that a date display cap for people who take medicines two or three times a day as well as people who take a medicine one a day can be manufactured. That is, an on-demand date display cap for consumers having various medicine taking patterns can be manufactured.

[0075] In this way, in the date display caps for a medicine bottle according to the first and second embodiments of the present invention, an automatically changed date is displayed through the display windows 11 and

111 when the date display caps are opened and closed to allow a patient to take a medicine. Thus, a user (patient) can accurately recognize whether a medicine has been taken on a specific date without directly checking whether a medicine has been taken from a calendar or a scheduler. Accordingly, since a medicine can be accurately taken at a predetermined timing, performance of the medicine can be sufficiently realized and a proper treatment can be realized.

[0076] Although the present invention has been described with reference to the embodiments shown in the drawings, the embodiments are merely exemplary, and it will be appreciated that those skilled in the art to which the present invention pertains can variously modify the present invention and carry out the equivalent embodiments.

Claims

1. A date display cap for a medicine bottle, comprising:

an outer cap (10, 110) configured to be rotated forwardly or reversely by a user and having a display window (11, 111);

an inner cap (20, 120) having a screw unit (20a, 120a) screw-coupled to a mouth (B1) of a medicine bottle (B) on an inner peripheral surface thereof and rotatably installed at an inside of the outer cap (10, 110); and

a date display unit (30, 130) installed between the outer cap (10, 110) and the inner cap (20, 120), for displaying a changed date through the display window (11, 111) when the outer cap (10, 110) is rotated forwardly and reversely with respect to the inner cap (20, 120).

2. The date display cap of claim 1, wherein a display window (11) is formed at an upper portion of the outer cap (10), and the date display unit (30) has a rotation display end (31) for displaying a plurality of dates exposed through the display window (11) at an upper portion thereof.

3. The date display cap of claim 2, wherein the outer cap (10) comprises a boss (12) formed at a side of an inner peripheral surface thereof, and a resilient boss (13) formed at an upper portion of an inside thereof, the inner cap comprises a boss recess (22) into which the boss (12) is inserted to form a space in which the boss (12) moves on an outer peripheral surface thereof, and the date display unit (30) comprises a plurality of partitioning ends 32 for partitioning the rotation display end (31) and a plurality of resilient boss catching ends (33, 33') into which the resilient boss 13 is inserted and circumferentially formed between the

partitioning ends (32).

4. The date display cap of claim 3, wherein the boss (12) further comprises an inclined insertion surface (12a) for allowing the inner cap (20) to be inserted into the boss recess (22) while the inner cap (20) is pushed outwards when the inner cap (20) is coupled to the outer cap (10).

5. The date display cap of claim 3, wherein the resilient boss (13) comprises:

a fixed end (13a) fixed to an upper portion of an inside of the outer cap (10), a resilient end (13b) extending from the fixed end (13a) to one side, and a pressing insertion end (13c) connected to the resilient end (13b) to be selectively caught by a specific resilient boss catching end (33, 33').

6. The date display cap of claim 2, further comprising a separation preventing boss (15) formed at a lower end of the outer cap (10) to support a lower end of the inner cap (20).

7. The date display cap of claim 6, further comprising an inclined surface (15a) formed in the separation preventing boss (15) and formed in a direction in which the inner cap (20) is inserted into the outer cap (10).

8. The date display cap of claim 1, wherein the display window (111) is formed at a side of the outer cap (110), and the date display unit (130) has a rotation display end (131) on which a plurality of dates exposed through the display window (111) are exposed on an outer peripheral surface of a side thereof.

9. The date display cap of claim 8, further comprising:

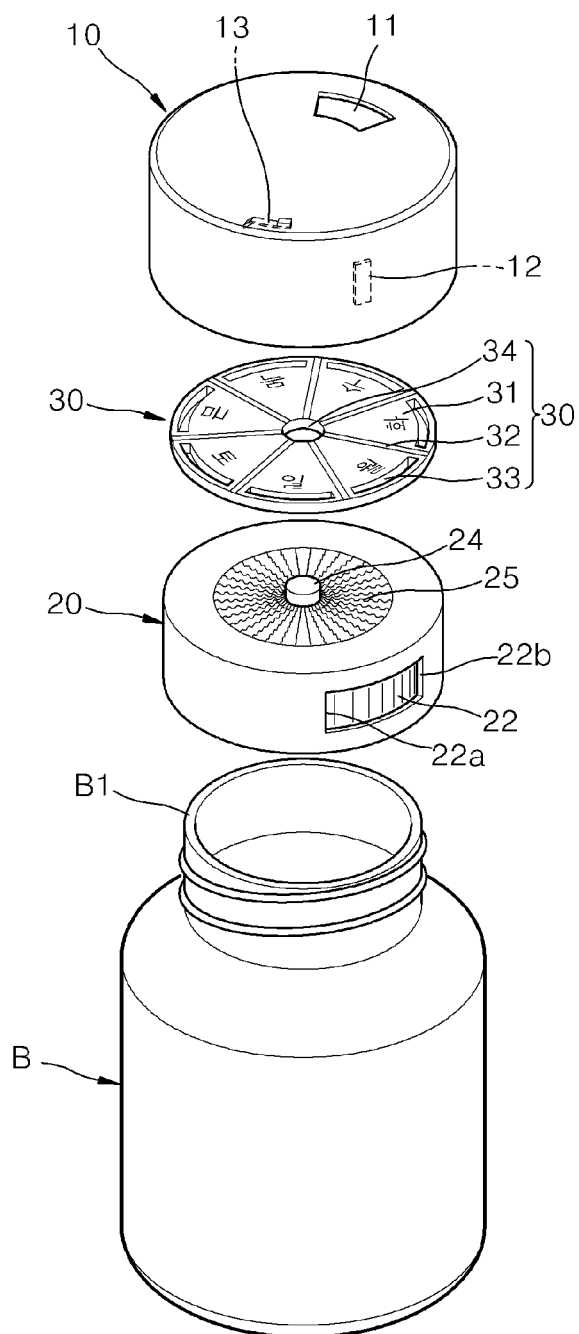
a first catching unit (140) formed on an outer peripheral surface of the inner cap (120);
a second catching unit (150) formed on an inner peripheral surface of the outer cap (110), for providing a space by which the first catching unit (140) is caught to be limitedly moved;
a plurality of first latch ends (160) formed at an inside of the outer cap (110) and having an inclined surface in one direction;
a plurality of second latch ends (170) formed on an outer peripheral surface of the date display unit (130) and having an inclined surface in the same direction of the first latch end (160);
a plurality of third latch ends (180) formed on an inner peripheral surface of the date display unit (130) and having an inclined surface in an opposite direction of the second latch end (170); and

a plurality of fourth latch ends (190) formed on an outer peripheral surface of the inner cap (120) and having an inclined surface in the same direction of the third latch end (180).

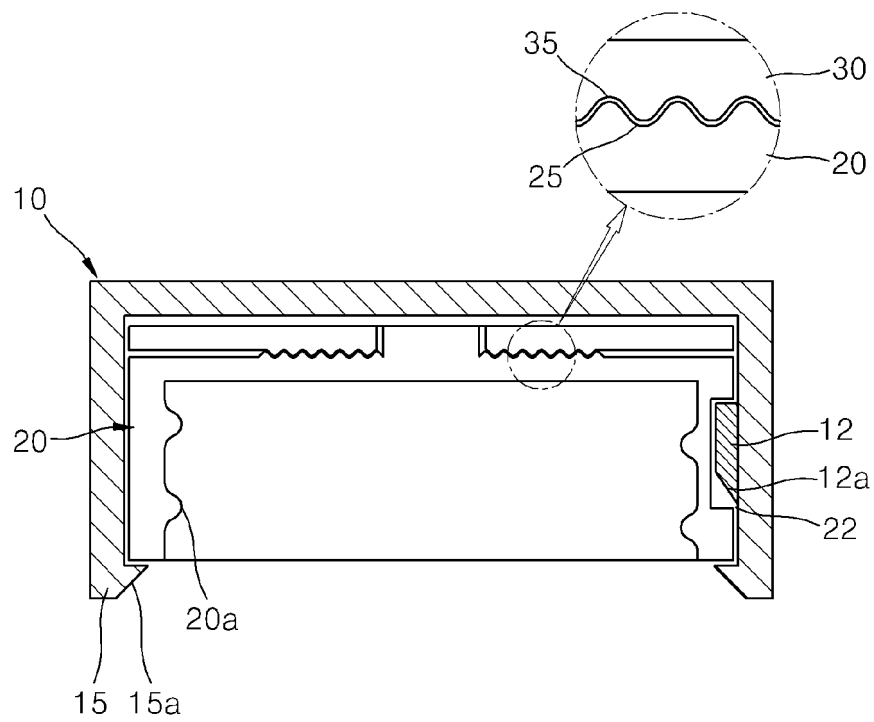
5

10. The date display cap of claim 9, wherein a tubular insertion pipe (112) is formed at an upper end of an inside of the outer cap (110),
an insertion boss (132) rotatably inserted into the insertion pipe (112) is formed in the date display unit (130),
the first latch end (160) is formed on an inner peripheral surface of the insertion pipe (112), and
the second latch end (170) is formed on an outer peripheral surface of the insertion boss (132). 10
15
11. The date display cap of claim 9, wherein the first latch end (160) has a wing form slanted in one direction on an inner peripheral surface of the outer cap (110), and
the third latch end (180) has a wing form slanted in an opposite direction on an inner peripheral surface of the date display unit (130). 20
12. The date display cap of claim 9, wherein the inner cap (120) has a first inner cap part (121) and a second inner cap part (122),
the first catching unit (140) is formed on an outer peripheral surface of the first inner cap part (121), and
the fourth latch end (190) is formed on an outer peripheral surface of the second inner cap part (122). 25
30
13. The date display cap of claim 12, wherein the second inner cap part (122) is stepped such that a diameter of the second inner cap part (122) is smaller than a diameter of the first inner cap part (121). 35
14. The date display cap of claim 12, wherein the first catching unit (140) is realized by a boss protruding from an outer peripheral surface of the first inner cap part (121), and
the second catching unit (150) is realized by a circumferential recess circumferentially formed on an inner peripheral surface of a mouth of the outer cap (110), and provides a space in which the first catching unit (140) limitedly moves between a front end (150a) and a rear end (150b) of the second catching unit (150) that has a circumferential recess form when the outer cap (110) is rotated. 40
45
50
15. The date display cap of claim 9, further comprising a desiccant cap (210) fixed to the inner cap (120). 55

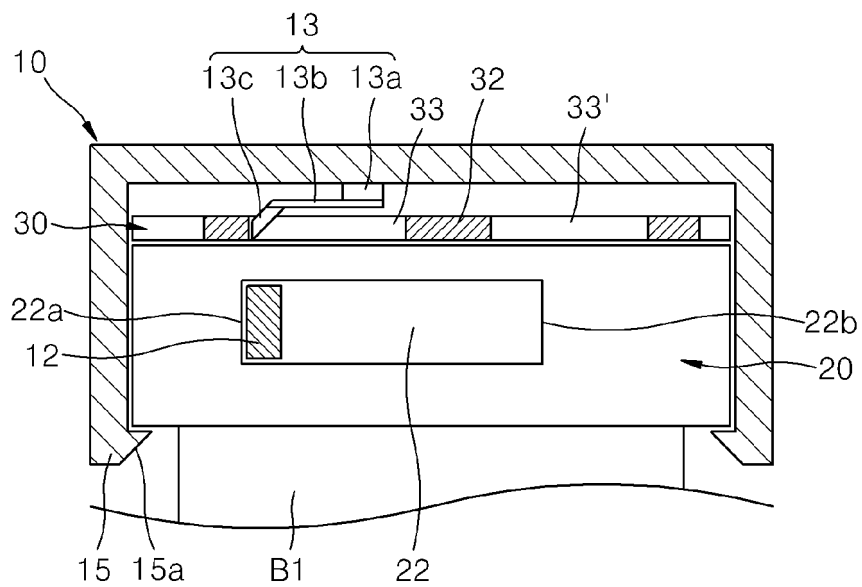
【FIG. 1】



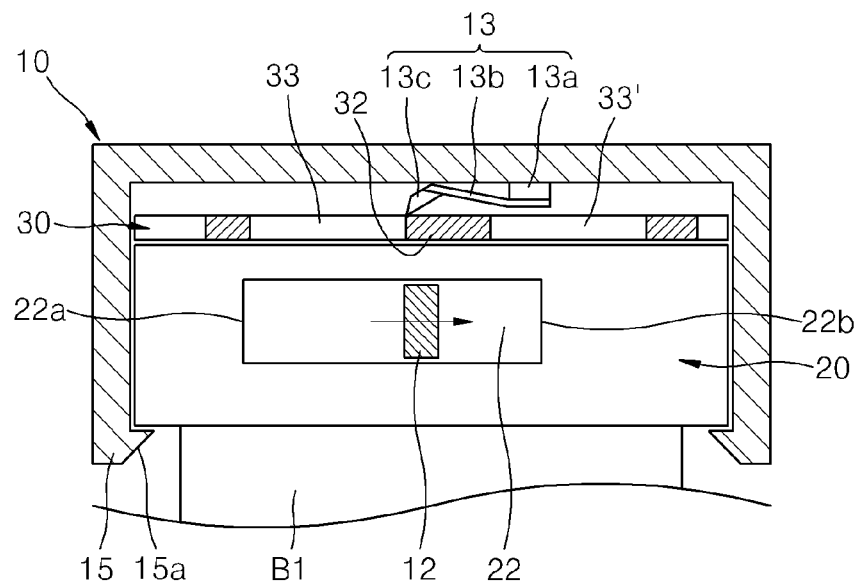
【FIG. 2】



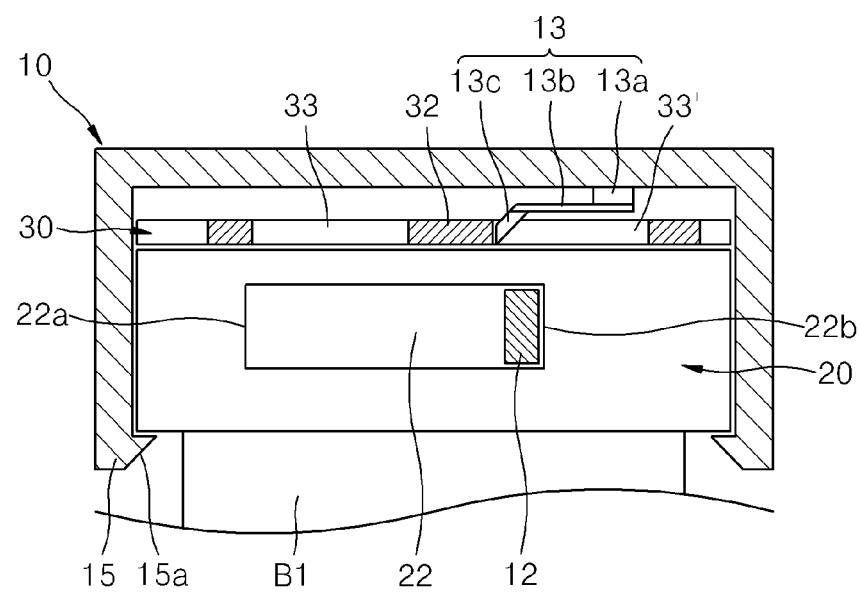
【FIG. 3a】



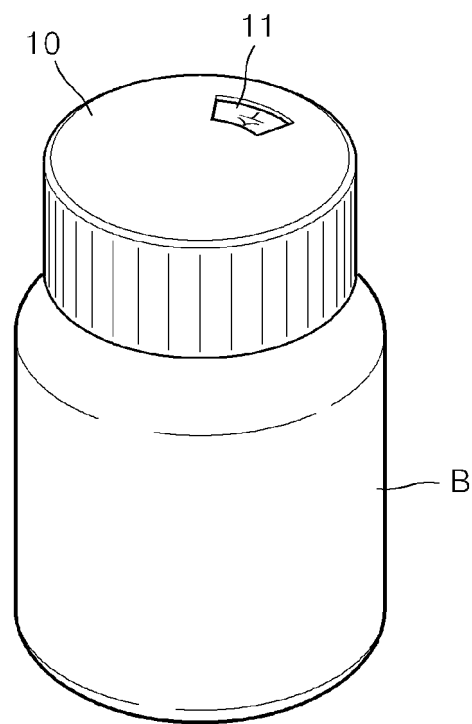
【FIG. 3b】



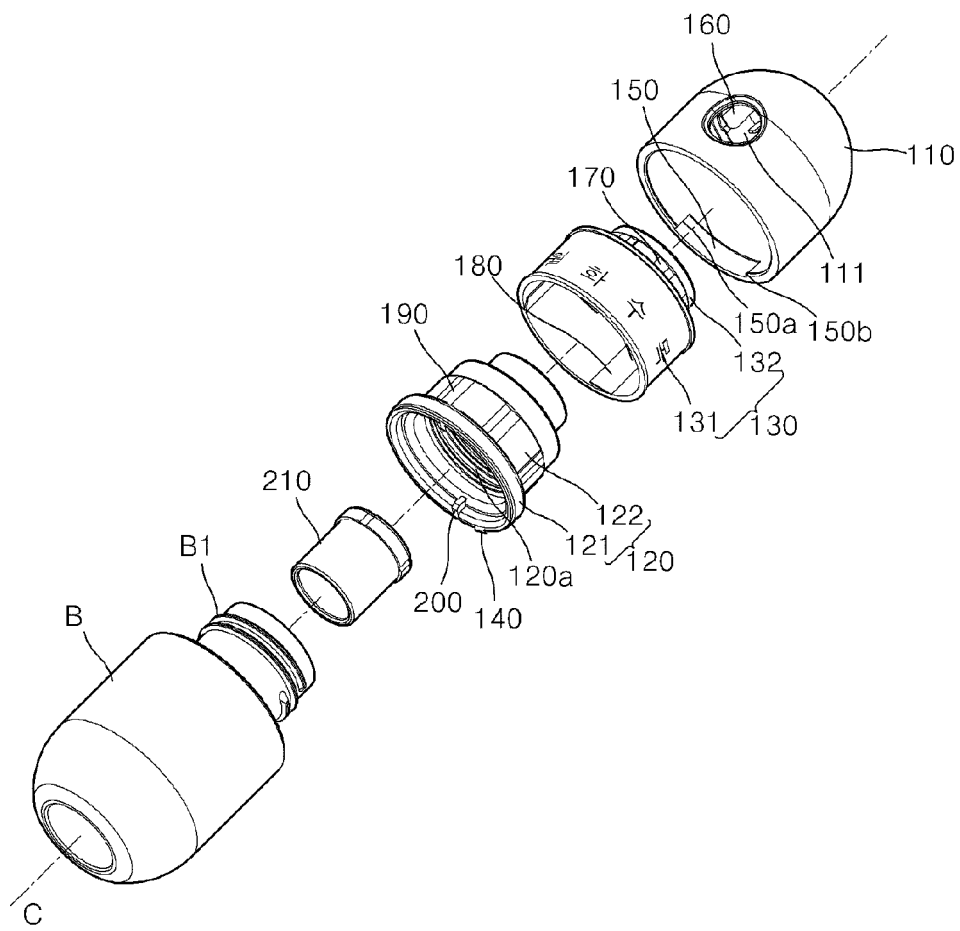
【FIG. 3c】



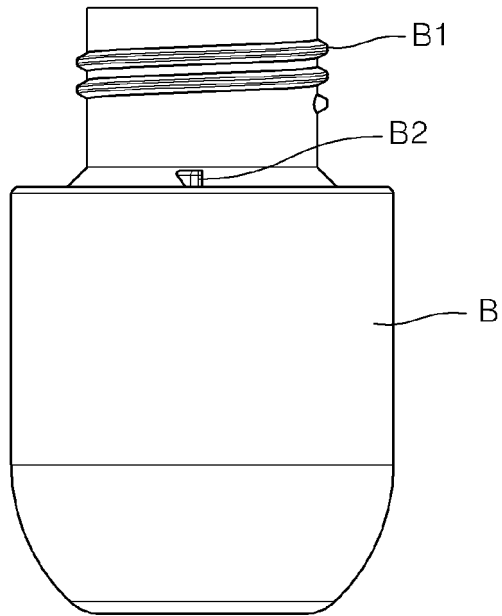
【FIG. 4】



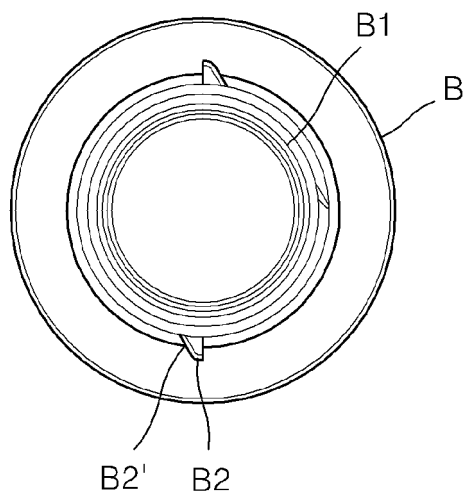
【FIG. 5】



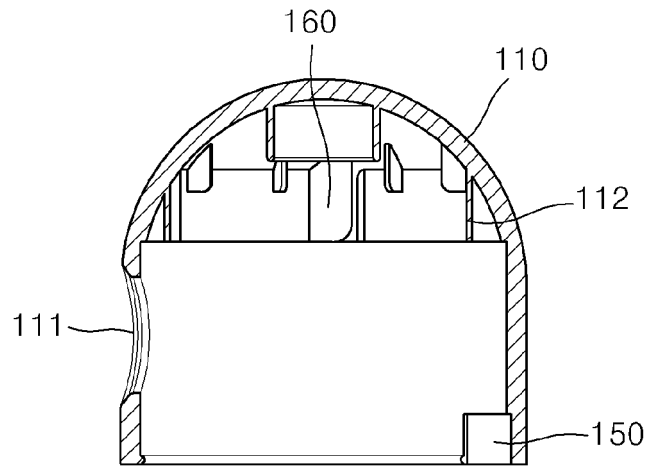
【FIG. 6a】



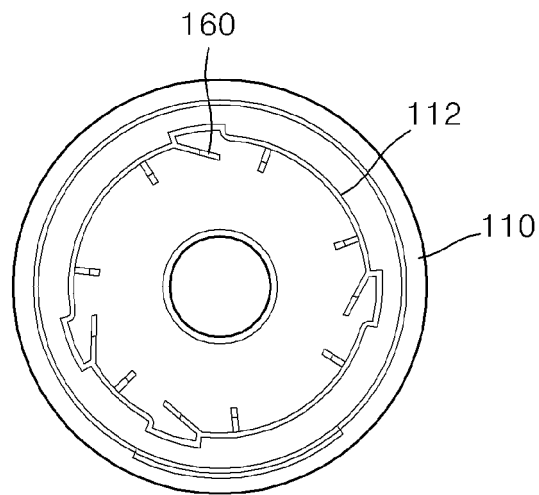
【FIG. 6b】



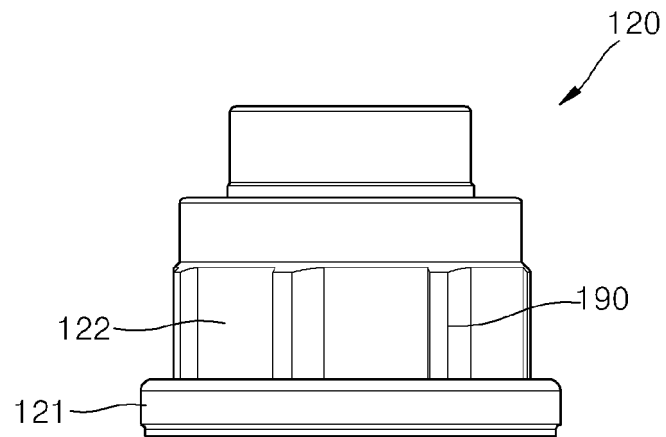
【FIG. 7a】



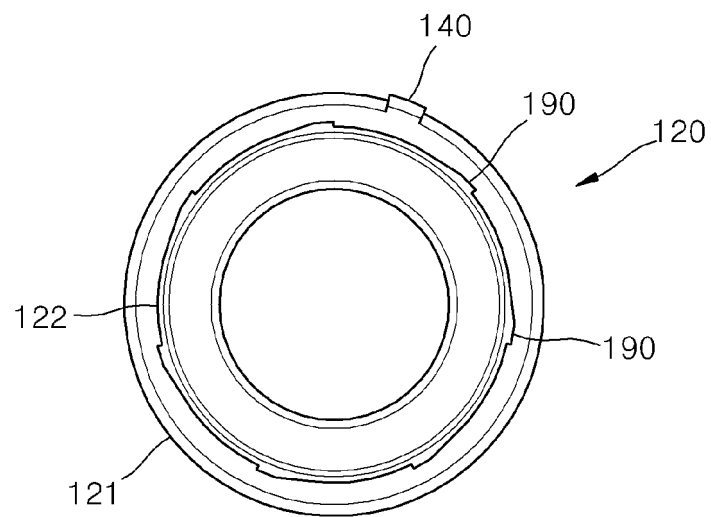
【FIG. 7b】



【FIG. 8a】



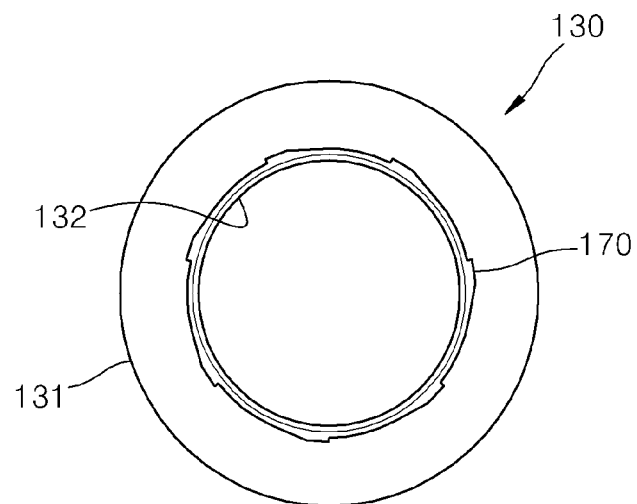
【FIG. 8b】



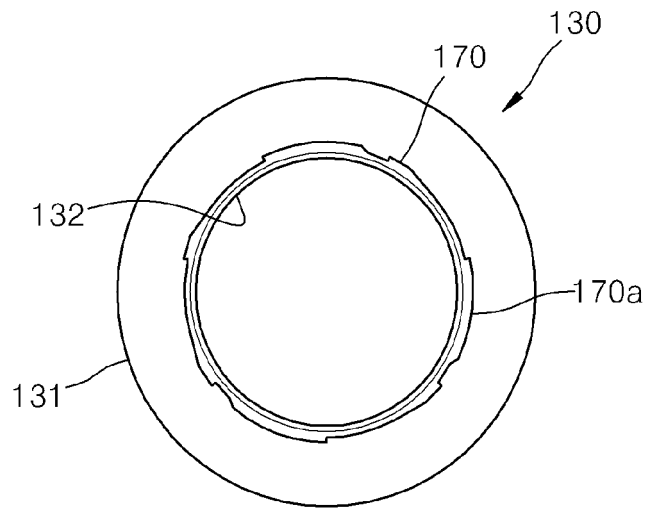
【FIG. 9a】



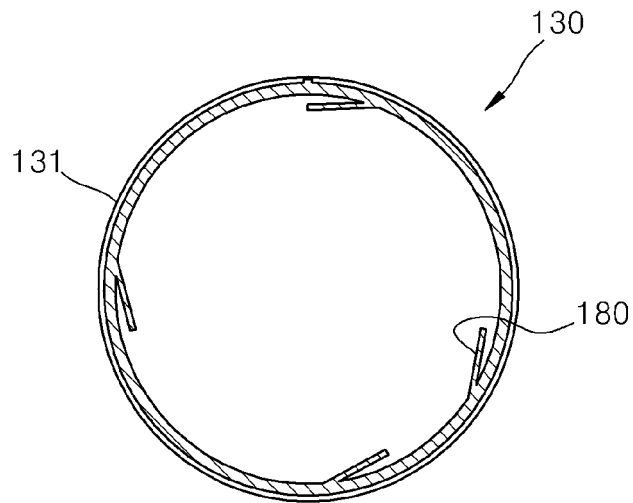
【FIG. 9b】



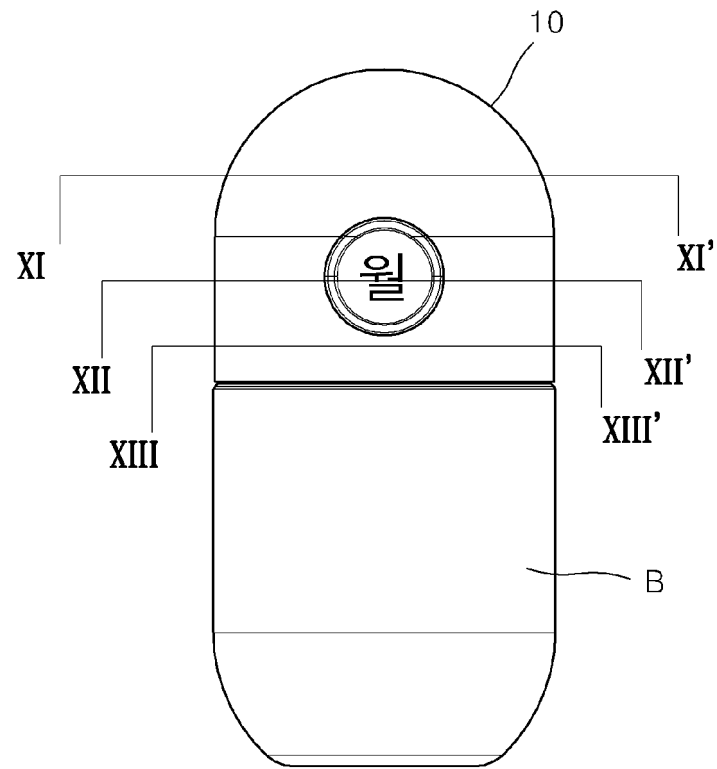
【FIG. 9c】



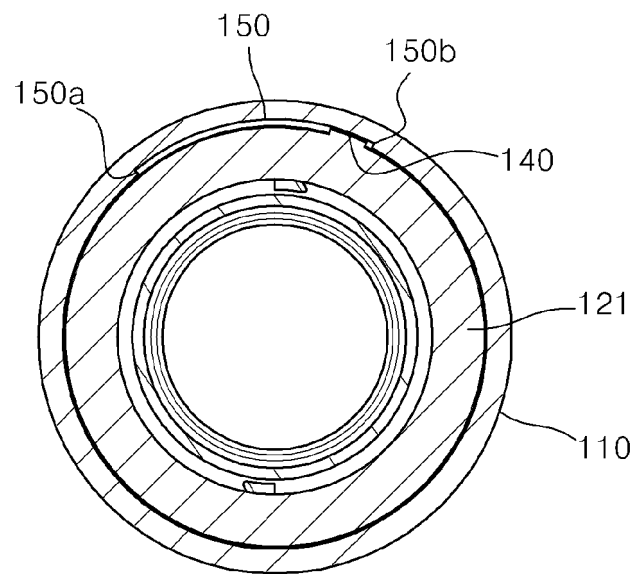
【FIG. 9d】



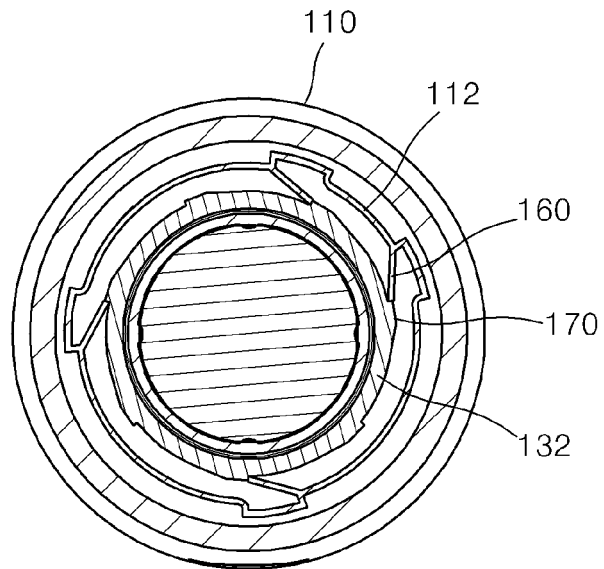
【FIG. 10】



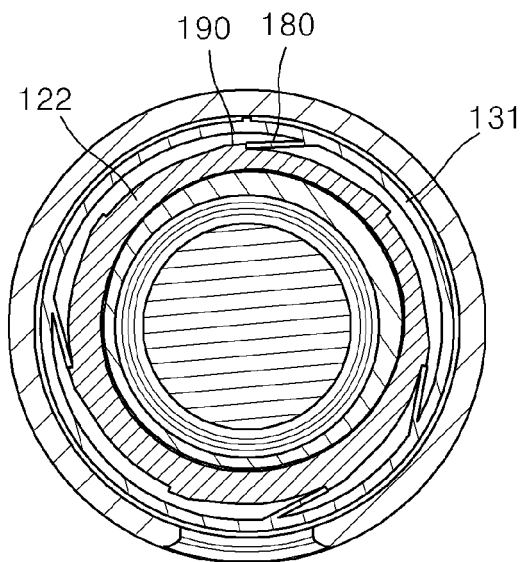
【FIG. 11】



【FIG. 12】



【FIG. 13】



INTERNATIONAL SEARCH REPORT

International application No.

PCT/KR2012/011196

A. CLASSIFICATION OF SUBJECT MATTER <i>A61J 7/04(2006.01)i, A61J 1/14(2006.01)i, A61J 1/18(2006.01)i, B65D 51/24(2006.01)i</i> According to International Patent Classification (IPC) or to both national classification and IPC		
B. FIELDS SEARCHED Minimum documentation searched (classification system followed by classification symbols) A61J 7/04; B65D 83/04; A61J 1/03; G09F 9/40; B65D 25/20; B65D 51/24; G09F 7/10 Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched Korean Utility models and applications for Utility models: IPC as above Japanese Utility models and applications for Utility models: IPC as above Electronic data base consulted during the international search (name of data base and, where practicable, search terms used) eKOMPASS (KIPO internal) & Keywords: medicine bottle, lid, cap, indication, days, date, day of the week, rotation, projection, elasticity, insertion		
C. DOCUMENTS CONSIDERED TO BE RELEVANT		
Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X A	KR 10-2009-0052299 A (KIM, SUNG JOO) 25 May 2009 See claims 1, 2, abstract, figures 1, 2.	1,2,8 3-7,9-15
A	US 2008-0128381 A1 (NICHOLAS H. RAMOUNDOS) 05 June 2008 See claim 1, abstract, figures 2, 5.	1-15
A	KR 10-2010-0055870 A (SEO, JAE HA et al.) 27 May 2010 See paragraph <22>, abstract, figures 1-4c.	1-15
A	JP 2004-184953 A (MASAMOTO TAMOTSU) 02 July 2004 See claim 1, abstract, figures 1, 6.	1-15
A	US 2008-0060969 A1 (KEVIN MCNEELY) 13 March 2008 See claims 1, 2, abstract, figures 2, 5.	1-15
☐ Further documents are listed in the continuation of Box C. ☒ See patent family annex.		
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Date of the actual completion of the international search 25 MARCH 2013 (25.03.2013)		Date of mailing of the international search report 26 MARCH 2013 (26.03.2013)
Name and mailing address of the ISA/KR  Korean Intellectual Property Office Government Complex-Daejeon, 189 Seonsa-ro, Daejeon 302-701, Republic of Korea Facsimile No. 82-42-472-7140		Authorized officer Telephone No.

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Information on patent family members

International application No.

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