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(54) CONTROLLED PILL DISPENSING CONTAINER

(57) An upper case is provided with a stopper projection that extends downward between an outlet and a dispensing standby space, in a situation where a container body is closed. A lower case is provided with a pusher member that is positioned on a side opposed to the stopper projection with respect to the dispensing standby space, in a situation where the container body is closed, the pusher member being configured to, during an operation for opening the upper case, push a tablet located in the dispensing standby space toward the outlet. During the operation for opening the upper case, the

stopper projection is configured to get over a side surface of the tablet located in the dispensing standby space, and is configured to stop an outlet-side surface of a tablet succeeding to the tablet having been located in the dispensing standby space. A sensor unit is configured to detect passage of one tablet moving from the dispensing standby space to the outlet so as to detect occurrence of dispensing of the tablet. The detection result is recorded in a data recording unit.

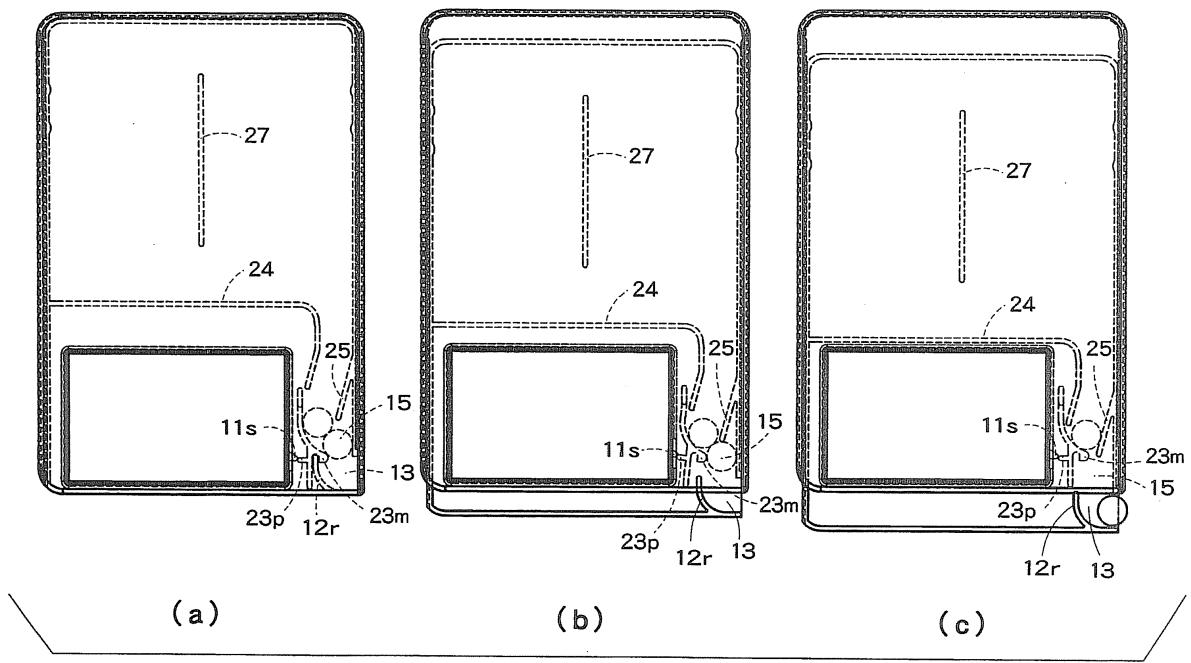


FIG. 3

Description**TECHNICAL FIELD**

[0001] The present invention relates to a tablet container capable of containing a plurality of tablets together.

BACKGROUND ART

[0002] Various tablets (the expression "tablets" includes capsules in this specification) are used as pharmaceutical products. Some tablets are commercially available in drug stores and other tablets are prescribed in hospitals or the like.

[0003] Expected medicinal effect of tablets prescribed in hospitals or the like can be obtained by obeying a dosing instruction (also hours between doses depending on a medicine type). However, recent surveys in Europe and in the United States show that the dose compliance rate is generally low, although it depends on a medicine type. The average dose compliance rate is about 50% even in developed countries such as Europe and the United states, and is 30% level in developing countries. Although there is no science-based data for Japan, the dose compliance rate in Japan is estimated as 40 to 50%.

[0004] In the medical site, to make a patient obey hours between doses is recognized as an emergent and important issue. However, there have been rarely effective measures therefor. There has been only a valid countermeasure, which is to improve a patient's consciousness by an informed consent.

[0005] Recently, a new attempt has started to improve a patient's compliance by enhancing a function of "PTP (Press-Through Package) packaging : independent tablet package". An achievement thereof could be confirmed in Europe and the United States, and sales promotion thereof has started in Japan. A typical example is a PTP card packaging (named adherence packaging (adherence has almost the same meaning as compliance)) manufactured by MWV Co. (USA). Some hundred million cases thereof were already actually sold in the US market.

[0006] In addition, there is a packaging (called "monitoring packaging") having a dose information recording function, which is formed by mounting an electronic device on the PTP packaging. Cypak Co. (Swed.), StraEnso Co. (Swed.), Confrerie Co. (Switz.) and so on actually develop such products. The monitoring packaging has a function for automatically recording a time when a medicine is dispensed. In addition, it is possible to provide the monitoring packaging with a function for informing a patient of a time when a medicine should be taken, a query function to a patient (effective in pain control) and so on.

[0007] JP2009-102064A is taken as a prior art document.

SUMMARY OF THE INVENTION

[0008] However, a packaging formed by improving the "PTP (Press-Through Package) Packaging", such as the adherence packaging by MWV Co., the monitoring packaging by Confrerie Co. and the like, is costly.

[0009] The present invention has been made in view of the above circumstances. The object of the present invention is to provide a tablet container capable of containing a plurality of tablets together, which is a tablet dispensing and managing container that can be manufactured at a relatively low cost and is capable of automatically managing information about dispensing of the tablets.

[0010] The present invention is a tablet dispensing and managing container including: an upper case and a lower case, the upper case and the lower case being configured to form a container body capable of containing a plurality of tablets together; a sensor unit configured to detect occurrence of dispensing of a tablet; a data recording unit configured to record a detection result by the sensor unit; and a battery for the data recording unit; wherein: when the upper case is slid with respect to the lower case, the container body is opened or closed; the lower case is provided with an outlet that is sized to allow only one tablet to be dispensed therefrom at a time, and with a dispensing standby space in communication with the outlet; the upper case is provided with a stopper projection that projects to between the outlet and the dispensing standby space, in a situation where the container body is closed; the lower case is provided with a pusher member that is positioned on a side opposed to the stopper projection with respect to the dispensing standby space, in a situation where the container body is closed, the pusher member being configured to, during an operation for opening the upper case, push a tablet located in the dispensing standby space toward the outlet; during the operation for opening the upper case, the stopper projection is configured to be deformed or displaced to get over a side surface of a tablet located in the dispensing standby space, and is configured to stop an outlet-side surface of a tablet succeeding to the tablet having been located in the dispensing standby space; and the sensor unit is configured to detect passage of one tablet moving from the dispensing standby space to the outlet so as to detect occurrence of dispensing of the tablet.

[0011] According to the present invention, since the tablet dispensing and managing container includes the sensor unit configured to detect occurrence of dispensing of a tablet, and the data recording unit configured to record a detection result by the sensor unit, information about dispensing of a tablet can be automatically managed. In addition, since the tablet dispensing and managing container has the container body capable of containing a plurality of tablets together, the tablet dispensing and managing container can be manufactured at a relatively low cost. In addition, it is easy to use the tablet dispensing and managing container repeatedly.

[0012] In addition, according to the present invention, during the operation for opening the upper case, the upper case or the stopper projection is configured to be flexibly deformed so that the stopper projection gets over a side surface of a tablet located in the dispensing standby space, and is configured to stop an outlet-side surface of a tablet succeeding to the tablet having been located in the dispensing standby space. Since the pusher member has been pushing the tablet located in the dispensing standby space toward the outlet, the tablet located in the dispensing standby space can be solely dispensed from the outlet by the pushing force.

[0013] Due to this tablet dispensing principle, the number of tablets dispensed by one operation for opening the upper case can be more reliably adjusted to be "one" each and every time. Thus, the information about dispensing of a tablet can be reliably used as information about taking of the tablet.

[0014] In addition, according to the tablet dispensing principle of the present invention, the outlet can be formed in a side surface of the case. Namely, a tablet can be dispensed from the side surface of the case, which is very advantageous in terms of convenience for a user.

[0015] The stopper projection is disposed to extend downward from the upper case. Alternatively, the stopper projection may be formed to include: a flexibly deformable part extending from the upper case; and a slidably movable part that is slidably movable in a direction where the slidably movable part pushes the flexibly deformable part. In this case, the flexibly deformable part and the slidably movable part may be constituted as discrete separate members which can be joined to each other, or may be constituted as one member connected at ends thereof or the like.

[0016] The sensor unit is configured to detect passage of a tablet by an electric connection between an electric conductor and an electric terminal, the electric conductor and the electric terminal being configured to be deformed or displaced by the passage of the tablet. In this case, the sensor unit can be packaged at a low cost and in a compact size. To be specific, it is possible to use a commercially available switch device which is not so expensive but has a high performance. In addition, since it is possible to employ a structure in which power is consumed only when the electric conductor and the electric terminal are electrically connected to each other, a power consumption of the battery can be restrained.

[0017] Preferably, the data recording unit is a time logger configured to record a detection result by the sensor unit along with time data. In this case, time data about dispensing of a tablet can be automatically recorded.

[0018] In addition, preferably, the upper case and the lower case have a rectangular shape in plan view; the upper case is slidably moved with respect to the lower case in a longitudinal direction of the rectangular shape; and the outlet is formed near to a corner of the rectangular shape. This configuration is general as a tablet dispensing container, which is advantageous in terms of conven-

ience for a user. Further in this case, the lower case is preferably provided with a tablet guide rail that bypasses the pusher member so as to guide a tablet up to the dispensing standby space. When this structure is employed, since a smooth guide operation of tablets inside the container body is promoted, an operation (labor) for adjusting movement of tablets by shaking the container body or the like can be saved.

[0019] In addition, preferably, the lower case is provided with a rib that is upstanding toward the upper case and extends in the sliding direction. Alternatively, preferably, the upper case is provided with a rib that extends down to the lower case and extends in the sliding direction. In these cases, the upper case can be effectively prevented from being excessively deflected and deformed. Thus, a duration of life of the container can be elongated. In place of the rib, a plurality of discontinuous bosses, which provide the same function as that of the rib, may be disposed.

[0020] In addition, preferably, the upper case is provided with a CR mechanism configured to prevent that the upper case is slidably moved with respect to the lower case. The CR mechanism means a mechanism having a Child Resistance function (a function for preventing accidental ingestion by a child). In developed countries such as Europe and the United States, the use of such a mechanism is obliged by a legal stipulation.

[0021] As a concrete example, the CR mechanism includes: a claw part disposed on one of the upper case and the lower case, the claw part projecting toward the other of the upper case and the lower case; a claw receiving part disposed on the other of the upper case and the lower case, the claw receiving part being engageable with the claw part; and a resilient part connected to one of the claw part and the claw receiving part, the resilient part being deformable to move one of the claw part and the claw receiving part away from the other of the claw part and the claw receiving part, so that the claw part and the claw receiving part are disengaged from each other. When such a structure is employed, in a normal situation where the resilient part is not deformed, a sufficient CR function can be provided. On the other hand, when the resilient part is deformed, the CR function can be easily released.

BRIEF DESCRIPTION OF THE DRAWINGS

[0022]

Fig. 1 is a schematic perspective view showing a structure of a tablet dispensing and managing container in a first embodiment of the present invention; Fig. 2 is a schematic perspective view showing an opened condition of the tablet dispensing and managing container of Fig. 1; Fig. 3 is a schematic view for explaining a relationship between a movement of tablets brought about by a tablet dispensing operation (operation for open-

ing an upper case) of the tablet dispensing and managing container of Fig. 1 and a condition of a switch part;

Fig. 4 is a schematic plan view showing a structure of a time logger of the tablet dispensing and managing container of Fig. 1;

Fig. 5 is a schematic side view showing a structure of the time logger of Fig. 3;

Fig. 6 is a schematic perspective view showing a structure of the tablet dispensing and managing container in a second embodiment of the present invention;

Fig. 7 is a schematic perspective view showing an opened condition of the tablet dispensing and managing container of Fig. 5;

Fig. 8 is a schematic view for explaining a relationship between a movement of tablets brought about by a tablet dispensing operation (operation for opening an upper case) of the tablet dispensing and managing container of Fig. 5 and a connection condition of an electric wire;

Fig. 9 is a schematic perspective view showing a structure of the tablet dispensing and managing container in a third embodiment of the present invention; and

Fig. 10 is a longitudinal sectional view of the tablet dispensing and managing container of Fig. 9.

MODES FOR CARRYING OUT THE INVENTION

[0023] Embodiments of the present invention will be described in detail below with reference to the attached drawings.

[0024] Fig. 1 is a schematic perspective view showing a structure of a tablet dispensing and managing container in a first embodiment of the present invention, and Fig. 2 is a schematic perspective view showing an opened condition of the tablet dispensing and managing container of Fig. 1. As shown in Figs. 1 and 2, the tablet dispensing and managing container 10 in this embodiment includes an upper case 11 and a lower case 12 which are configured to slide with each other. The upper case 11 and the lower case 12 form a container body capable of containing a plurality of tablets together. When the upper case 11 is slid with respect to the lower case 12, the container body is opened or closed.

[0025] To be specific, as shown in Fig. 2, when the upper case 11 is slightly slid with respect to the lower case 12, an outlet 13 for dispensing a tablet is exposed. The outlet 13 is sized to allow only one tablet to be dispensed therefrom at a time.

[0026] As apparent from Figs. 1 and 2, the upper case 11 and the lower case 12 in this embodiment have a rectangular shape in plan view. The upper case 11 is configured to be slidably moved with respect to the lower case 12 in a longitudinal direction of the rectangular shape. The outlet 13 is formed near to a corner of the rectangular shape.

[0027] In this embodiment, a site in communication with the outlet 13 functions as a dispensing standby space 15. Namely, the lower case 12 has the dispensing standby space 15 in communication with the outlet 13.

5 On the other hand, the upper case 11 is provided with a stopper projection 23 which extends downward between the outlet 13 and the dispensing standby space 15, in a situation where the container body is closed.

[0028] The stopper projection 23 in this embodiment 10 has a tubular part 23c extending downward from the upper case 11, and a movable stopper part 23m extending from the tubular part 23c up to between the outlet 13 and the dispensing standby space 15. The tubular part 23c has an oblong (elongated circular) cross-section, and the 15 movable stopper part 23m has a substantially arcuate cross-section. During an operation for opening the upper case 11, the movable stopper part 23m is flexibly deformed to get over a side surface of a tablet located in the dispensing standby space 15, and then stops an outlet-side surface of a tablet succeeding to the tablet having 20 been located in the dispensing standby space 15. In other words, the movable stopper part 23m of the stopper projection 23 has such a deforming capability (resiliency). Figs. 3(a) to 3(c) are plan views showing how the stopper 25 projection 23 of the tablet dispensing and managing container 10 of Figs. 1 and 2 gets over a side surface of a tablet.

[0029] In addition, in this embodiment, an accommodation recess 11r in which an electronic device plate 21 30 can be accommodated is formed on an upper surface side of the upper case 11. The accommodation recess 11r is composed of a bottom surface and four sidewalls surrounding a perimeter of the electronic device plate 21. The electronic device plate 21 is fitted in the accommodation recess 11r.

[0030] The electronic device plate 21 has, on a side surface thereof, an exposed switch part 21s which is retracted when subjected to a pushing force. The switch part 21s passes through an opening window 11w formed 40 in the corresponding sidewall of the accommodation recess 11r of the upper case 11.

[0031] The stopper projection 23 in this embodiment 45 has a pushing part 23p which imposes a pushing force to the switch part 21s in conjunction with the flexible deformation of the movable stopper part 23m. On the other hand, in order to prevent, in a situation where the container body is closed, an erroneous operation caused by vibrations or the like of the pushing part 23p, the stopper projection 23 in this embodiment is provided with a depression 23r. In a situation where the container body is 50 closed, the depression 23r is engaged with an end portion of a tablet guide rail 12r having a substantially arcuate cross-section formed in the lower case 12 (see Figs. 1 and 3).

[0032] The lower case 12 is provided with a pusher member 25 that is positioned on a side opposed to the stopper projection 23 with respect to the dispensing standby space 15, in a situation where the container body

is closed. The pusher member 25 is configured to, during an operation for opening the upper case 11, push a tablet located in the dispensing standby space 15 toward the outlet 13. In more detail, during the operation for opening the upper case 11, the tablet located in the dispensing standby space 15 is firstly pushed in a direction away from the outlet 13 by the stopper projection 23. The pusher member 25 is provided in order to oppose the above (first) pushing force. That is to say, the pusher member 25 is configured to push the tablet located in the dispensing standby space 15 toward the outlet 13 against the above pushing force.

[0033] The pusher member 25 in this embodiment is formed like a linear wall. One end of the pusher member 25 is fixed on a sidewall of the lower case 12, and the other end is configured to push a tablet.

[0034] In addition, in this embodiment, the lower case 12 has a tablet guide rail 24 that bypasses the pusher member 25 so as to guide a tablet up to the dispensing standby space 15. The tablet guide rail 24 in this embodiment bends on a side distant from the pusher member 25 (the side that does not need a function for bypassing the pusher member 25) and extends in a width direction of the case so as to function as a stopper against the accommodation recess 11r of the upper case 11. In addition, in this embodiment, the pusher member 25 itself has a function as a guide rail for guiding a tablet to the dispensing standby space 15. Moreover, the lower case 12 has a rib 27 that is upstanding toward the upper case 11 and extends in the sliding direction.

[0035] The electronic device plate 21 further includes a circuit configured to detect (judge) dispensing (passage) of a tablet based on occurrence of a retracting action (action when pushed) of the switch part 21s, and a data recording unit for recording the detection result. In this embodiment, there is provided a time logger 30 configured to record a detection result about occurrence of dispensing of a tablet, along with time data. Fig. 4 is a schematic plan view showing a structure of the time logger 30 in this embodiment, and Fig. 5 is a schematic side view thereof.

[0036] As shown in Figs. 4 and 5, the time logger 30 in this embodiment includes: a body unit 31 which is an IC chip with a timer; a battery 32 for electrically driving the body unit 31; an antenna 33 for transmitting and receiving a signal; an input terminal connection unit 34; and a start-up button 35 for starting up the battery. The time logger 30 in this embodiment further includes a protection substrate 36 for protecting the body unit 31 and the antenna 33, and for adjusting a play (thickness) for an operation of the start-up button 35. It is possible to employ a structure in which an insulation tape, in place of the start-up button 35, is disposed in the circuit and a user pulls it out therefrom.

[0037] Next, an operation of the tablet dispensing and managing container 10 in this embodiment is described.

[0038] Firstly, immediately before the tablet dispensing and managing container 10 is handed to a patient in a

hospital or the like, how to use the tablet dispensing and managing container 10 and functions of the tablet dispensing and managing container 10 are explained to the patient. After the patient's understanding has been confirmed, the start-up button 35 is pushed or the insulation tape is pulled out, so that the time logger 30 is turned on. The patient brings such a tablet dispensing and managing container 10 to home.

[0039] As shown in Figs. 1 and 2, since the tablet dispensing and managing container 10 in this embodiment is flat and not bulky, it is easy to carry the same. Then, tablets are dispensed one by one from the tablet dispensing and managing container 10 each and every predetermined and informed time at which a tablet should be dispensed, so that the tablets are taken one by one by the patient.

[0040] In order that the tablets are dispensed one by one from the tablet dispensing and managing container 10, the tablet dispensing and managing container 10 is held by the patient in such a manner that the outlet 13 of the lower case 12 is located below. At this time, one tablet reaches the dispensing standby space 15 by the tablet guide function of the tablet guide rail 24 and the pusher member 25, and a succeeding tablet follows the former tablet (see Fig. 3(a)). In Figs. 3(a) to 3(c), only the two tablets are illustrated for facilitating understanding. The tablet having reached the dispensing standby space 15 is stopped by the stopper projection 23 (see Fig. 3(a)).

[0041] Then, an operation for opening the upper case 11 is carried out. Namely, the upper case 11 is slightly slid with respect to the lower case 12 (see Fig. 3(b)). At this time, the tablet located in the dispensing standby space 15 is pushed by the stopper projection 23 in a direction away from the outlet 13. However, the pusher member 25 is provided in order to oppose the above pushing force. That is to say, the pusher member 25 pushes the tablet located in the dispensing standby space 15 toward the outlet 13 against the above pushing force. Thus, the tablet located in the dispensing standby space 15 is immobile for a while.

[0042] Instead, the movable stopper part 23m of the stopper projection 23 is deflected for its deforming capability, and is going to get over a side surface of the tablet located in the dispensing standby space 15. Then, at an instance when the movable stopper part 23m of the stopper projection 23 is detached from an end surface on the side of the outlet 13 of the tablet located in the dispensing standby space 15, that is to say, at an instance when the tablet stopping function is released, the tablet runs off toward the outlet 13 by the pushing force given by the pusher member 25. On the other hand, the movable stopper part 23m of the stopper projection 23 stops an outlet-side surface of the tablet succeeding to the tablet having been located in the dispensing standby space 15. Fig. 3(c) shows this situation.

[0043] Thereafter, the user returns the upper case 11, which has been slid with respect to the lower case 12, to the original position.

[0044] During the above series of tablet dispensing operations, the condition of the switch part 21s (conductive condition / electric connection condition) varies. Namely, in the condition of Fig. 3(a), the switch part 21s is not retracted, and in the condition of Fig. 3(b), the switch part 21s is subjected to the pushing force from the pushing part 23b so as to be retracted.

[0045] To be more specific, in the condition of Fig. 3(b), in conjunction with the resilient deformation of the movable stopper part 23m of the stopper projection 23, the pushing part 23p of the stopper projection 23 is displaced in a direction where the pushing part 23p pushes the switch part 21s. Thus, the switch part 21s is retracted. By detecting the retracting action (action when pushed), occurrence of dispensing (passage) of a tablet can be detected.

[0046] In this embodiment, the time logger 30 disposed on the electronic device plate 21 records a detection result about occurrence of dispensing of a tablet, along with time data. An electric operation of the time logger 30 is offered by power supplied from the battery 32. Thus, the battery 32 is preferably chargeable or replaceable.

[0047] As described above, the user can properly dispense only one tablet merely by (1) holding the tablet dispensing and managing container 10 such that the outlet 13 is located below, and (2) sliding the upper case 11.

[0048] In particular, according to this embodiment, since the outlet 13 is formed on a side surface of the lower case 12, a tablet can be dispensed from the side surface of the tablet dispensing and managing container 10. This is very advantageous in terms of convenience for a user.

[0049] In addition, according to this embodiment, the upper case 11 and the lower case 12 have a rectangular shape in plan view, the upper case 11 is slidably moved with respect to the lower case 12 in a longitudinal direction of the rectangular shape, and the outlet 13 is formed near to a corner of the rectangular shape. Thus, the tablet dispensing and managing container 10 has a general shape as a tablet dispensing container, which is convenient to a user.

[0050] Further, according to this embodiment, since the lower case 12 is provided with the tablet guide rail 24 that bypasses the pusher member 25 so as to guide a tablet up to the dispensing standby space 15, a smooth guide operation of tablets inside the container body is promoted. Thus, an operation (labor) for adjusting movement of tablets by shaking the container body or the like can be saved.

[0051] Moreover, according to this embodiment, since the pusher member 25 itself also has a function for guiding a tablet, the smooth guide operation of tablets inside the container body is further promoted.

[0052] In addition, according to this embodiment, since the lower case 12 has the rib 27 that is upstanding toward the upper case 11 and extends in the sliding direction, the upper case 11 can be effectively prevented from being excessively deflected and deformed. Thus, a duration

of life of the container can be elongated.

[0053] In addition, according to this embodiment, the accommodation recess 11r, which is formed to be recessed from the upper case 11 toward the lower case 12, functions as a stopper against the tablet guide rail 24 of the lower case 12. Thus, it can be prevented that the upper case 11 is excessively slid with respect to the lower case 12 so that tablets therein are scattered.

[0054] In addition, during the above series of tablet dispensing operations, a detection result about occurrence of dispensing of a tablet can be automatically recorded along with time data, without needing any operation or intension of a patient. Thus, when a tablet is dispensed, i.e., when a tablet is taken by a patient can be automatically obtained.

[0055] At the next time of visit of a patient, the hospital recovers the tablet dispensing and managing container 10 from the patient. The record of the time logger 30 is read out on a PC by a dedicated reader. Thus, the record of the time logger 30 can be effectively used for a subsequent dose instruction and a decision on an effective treatment method.

[0056] Two types of usage of the tablet dispensing and managing container 10 can be considered. One is a case in which the tablet dispensing and managing container 10 is supplied as a medicinal product to a hospital, and the other is a case in which the tablet dispensing and managing container 10 is supplied as a refill container. The former is used only once, and the latter is repeatedly used within a battery life span by loading it with medicines in a hospital and handing it to a patient. In the case of the latter refill container, the record of the time logger 30 is reset, and the start-up button 35 is pushed again so that the time logger 30 is turned off. Then, according to need, the inside of the container body of the tablet dispensing and managing container 10 is cleaned. Thereafter, the tablet dispensing and managing container 10 can be repeatedly used for the same tablet prescription or another tablet prescription.

[0057] Next, Fig. 6 is a schematic perspective view showing a structure of the tablet dispensing and managing container in a second embodiment of the present invention, and Fig. 7 is a schematic perspective view showing an opened condition of the tablet dispensing and managing container of Fig. 6. As shown in Figs. 6 and 7, the tablet dispensing and managing container 210 in this embodiment also includes an upper case 211 and a lower case 212 which are configured to slide with each other. The upper case 211 and the lower case 212 form a container body capable of containing a plurality of tablets together. When the upper case 211 is slid with respect to the lower case 212, the container body is opened or closed.

[0058] Also in this embodiment, similarly to the first embodiment, when the upper case 211 is slightly slid with respect to the lower case 212, an outlet 213 for dispensing a tablet is exposed. The outlet 213 is sized to allow only one tablet to be dispensed therefrom at a time.

[0059] Similarly to the first embodiment, the uppercase 211 and the lower case 212 have a rectangular shape in plan view. The upper case 211 is slidably moved with respect to the lower case 212 in a longitudinal direction of the rectangular shape. The outlet 213 is formed near to a corner of the rectangular shape.

[0060] In addition, similarly to the first embodiment, a site in communication with the outlet 213 functions as a dispensing standby space 215. Namely, the lower case 212 has the dispensing standby space 215 in communication with the outlet 213. On the other hand, the upper case 211 is provided with a stopper projection 223 that projects to between the outlet 213 and the dispensing standby space 215, in a situation where the container body is closed.

[0061] As shown in Fig. 6, the stopper projection 223 in this embodiment includes a wire fixing part 232f fixed on the upper case 211, a flexibly deformable wire 223m extending from the wire fixing part 232f, and a slidably movable part 223s that is slidably movable in a direction where the slidably movable part 223s pushes the flexibly deformable wire 223m. One end side of the slidably movable part 223s projects to between the outlet 213 and the dispensing standby space 215, in a situation where the container body is closed.

[0062] The slidably movable direction of the slidably movable part 223 is restricted by a guide rail 211g formed on the upper case 211 and a low wall part 224e provided on the lower case 212. During an operation for opening the upper case 211, the slidably movable part 223s is subjected to a force from a tablet located in the dispensing standby space 215, so that the slidably movable part 223s is slid while it flexibly deforms the flexibly deformable wire 223m. Thus, the slidably movable part 223s gets over a side surface of the tablet located in the dispensing standby space 215, and then stops an outlet-side surface of a tablet succeeding to the tablet having been located in the dispensing standby space 215. In other words, the flexibly deformable wire 223m of the stopper projection 223 has such a deforming capability (resiliency). Figs. 8(a) to 8(c) are plan views showing how the stopper projection 223 of the tablet dispensing and managing container 210 of Figs. 6 and 7 gets over a side surface of a tablet.

[0063] In addition, in this embodiment, an accommodation recess 211r in which an electronic device plate 221 can be accommodated is formed on an upper surface side of the upper case 211. The accommodation recess 211r is composed of a bottom surface and four sidewalls surrounding a perimeter of the electronic device plate 221. The electronic device plate 221 is fitted in the accommodation recess 211r.

[0064] In addition, as shown in Fig. 6, the wire fixing part 223f of the stopper projection 223 is fixed on the upper case 211 adjacently to the corresponding sidewall of the accommodation recess 211r. Two conductive wires AW and BW extend from the wire fixing part 223f to the electronic device plate 221 through an opening

window 211w formed in the bottom surface of the accommodation recess 211r. The conductive wire AW is electrically connected to the flexibly deformable wire 223m, and the conductive wire BW is electrically connected to a switch wire 221s. When the flexibly deformable wire 223m is flexibly deformed, the switch wire 221s is brought into contact with the flexibly deformable wire 223 so as to be electrically connected thereto.

[0065] The lower case 212 is provided with a pusher member 225 that is positioned on a side opposed to the stopper projection 223 with respect to the dispensing standby space 215, in a situation where the container body is closed. The pusher member 225 is configured to, during an operation of the upper case 211, push a tablet located in the dispensing standby space 215. In more detail, during the operation for opening the upper case 211, the tablet located in the dispensing standby space 15 is firstly pushed in a direction away from the outlet 213 by the stopper projection 223. The pusher member 225 is provided in order to oppose the above (first) pushing force. That is to say, the pusher member 225 is configured to push the tablet located in the dispensing standby space 215 toward the outlet 213 against the above pushing force.

[0066] The pusher member 225 in this embodiment is formed like a linear wall. One end of the pusher member 225 is fixed on a sidewall of the lower case 212, and the other end is configured to push a tablet.

[0067] In addition, in this embodiment, the lower case 212 has a tablet guide rail 224 that bypasses the pusher member 225 so as to guide a tablet up to the dispensing standby space 215. The tablet guide rail 224 in this embodiment bends on a side distant from the pusher member 225 (the side that does not need a function of bypassing the pusher member 225) and extends in a width direction of the case so as to function as a stopper against the accommodation recess 211r of the upper case 211. In addition, on the side of the pusher member 225, the tablet guide rail 224 in this embodiment is continuous to a low wall part 224e having a reduced height, and is further continuous to a tablet guide rail 212r having a substantially arcuate cross-section.

[0068] In addition, in this embodiment, the pusher member 225 itself has a function as a guide rail for guiding a tablet up to the dispensing standby space 215. Moreover, the lower case 212 has a rib 227 that is upstanding toward the upper case 211 and extends in the sliding direction.

[0069] The electronic device plate 221 further includes a circuit configured to detect (judge) dispensing (passage) of a tablet based on occurrence of electric connection between the flexibly deformable wire 223m and the switch wire 221s, and a data recording unit for recording the detection result. Also in this embodiment, similarly to the first embodiment, there is provided a time logger 30 configured to record a detection result about occurrence of dispensing of a tablet, along with time data.

[0070] Next, an operation of the tablet dispensing and

managing container 210 in this embodiment is described.

[0071] Similarly to the first embodiment, in order that the tablets are dispensed one by one from the tablet dispensing and managing container 210, the tablet dispensing and managing container 210 is held by a patient in such a manner that the outlet 213 of the lower case 212 is located below. At this time, one tablet reaches the dispensing standby space 215 by the tablet guide function of the tablet guide rail 224 and the pusher member 225, and a succeeding tablet follows the former tablet (see Fig 8(a)). In Figs. 8(a) to 8(c), only the two tablets are illustrated for facilitating understanding. The tablet having reached the dispensing standby space 215 is stopped by the stopper projection 223 (see Fig. 8(a)).

[0072] Then, an operation for opening the upper case 211 is carried out. Namely, the upper case 211 is slightly slid with respect to the lower case 212 (see Fig. 8(b)). At this time, the tablet located in the dispensing standby space 215 is pushed by the slidably movable part 223s of the stopper projection 223 in a direction away from the outlet 213. However, the pusher member 225 is provided in order to oppose the above pushing force. That is to say, the pusher member 225 pushes the tablet located in the dispensing standby space 215 toward the outlet 213 against the above pushing force. Thus, the tablet in the dispensing standby space 215 is immobile for a while.

[0073] Instead, the flexibly movable wire 223m in contact with the slidably movable part 223s of the stopper projection 223 is deflected for its deforming capability, so that the slidably movable part 223s is going to get over a side surface of the tablet located in the dispensing standby space 215. Then, at an instance when the slidably movable part 223s of the stopper projection 223 is detached from an end surface on the side of the outlet 223 of the tablet located in the dispensing standby space 215, that is to say, at an instance when the tablet stopping function is released, the tablet runs off toward the outlet 213 by the pushing force given by the pusher member 225. On the other hand, since the deformed flexibly deformable wire 223m is returned to the original position, the slidably movable part 223s of the stopper projection 223 stops an outlet-side surface of the tablet succeeding to the tablet having been located in the dispensing standby space 215. Fig. 8(c) shows this situation.

[0074] Thereafter, the user returns the upper case 211, which has been slid with respect to the lower case 212, to the original position.

[0075] During the above series of tablet dispensing operations, the conductive condition (electric connection condition) between the flexibly deformable wire 223m and the switch wire 221s varies. Namely, in the condition of Fig. 8(a), the flexibly deformable wire 223m and the switch wire 221s are not electrically connected to each other, but in the condition of Fig. 8(b), the flexibly deformable wire 223m and the switch wire 221s are electrically connected to each other.

[0076] Also in this embodiment, the time logger 30 disposed on the electronic device plate 221 records a de-

tection result about occurrence of dispensing of a tablet, along with time data. An electric operation of the time logger 30 is offered by power supplied from the battery 32. Thus, the battery 32 is preferably chargeable or replaceable.

[0077] As described above, also according to this embodiment, substantially the same effect as that of the first embodiment can be obtained. Namely, the user can properly dispense only one tablet merely by (1) holding the tablet dispensing and managing container 210 such that the outlet 213 is located below, and (2) sliding the upper case 211. In particular, also according to this embodiment, since the outlet 213 is formed on a side surface of the lower case 212, a tablet can be dispensed from the side surface of the tablet dispensing and managing container 210. This is very advantageous in terms of convenience for a user.

[0078] In addition, also according to this embodiment, the upper case 211 and the lower case 212 have a rectangular shape in plan view. The upper case 211 is slidably moved with respect to the lower case 212 in a longitudinal direction of the rectangular shape. The outlet 213 is formed near to a corner of the rectangular shape. Thus, the tablet dispensing and managing container 210 has a general shape as a tablet dispensing container, which is convenient to a user.

[0079] Further, also according to this embodiment, since the lower case 212 is provided with the tablet guide rail 224 that bypasses the pusher member 225 so as to guide a tablet up to the dispensing standby space 215, a smooth guide operation of tablets inside the container body is promoted. Thus, an operation (labor) for adjusting movement of tablets by shaking the container body or the like can be saved.

[0080] Moreover, also according to this embodiment, since the pusher member 225 itself also has a function for guiding a tablet, the smooth guide operation of tablets inside the container body is further promoted.

[0081] In addition, also according to this embodiment, since the lower case 212 has the rib 227 that is upstanding toward the upper case 211 and extends in the sliding direction, the upper case 211 can be effectively prevented from being excessively deflected and deformed. Thus, a duration of life of the container can be elongated.

[0082] In addition, also according to this embodiment, the accommodation recess 211r, which is formed to be recessed from the upper case 211 toward the lower case 212, functions as a stopper against the tablet guide rail 224 of the lower case 212. Thus, it can be prevented that the upper case 211 is excessively slid with respect to the lower case 212 so that tablets therein are scattered.

[0083] In addition, during the above series of tablet dispensing operations, a detection result about occurrence of dispensing of a tablet can be automatically recorded along with time data, without needing any operation or intension of a patient. Thus, when a tablet is dispensed, i.e., when a tablet is taken by a patient can be automatically obtained.

[0084] Next, Fig. 9 is a schematic perspective view showing a structure of the tablet dispensing and managing container in a third embodiment of the present invention, and Fig. 10 is a longitudinal sectional view of the tablet dispensing and managing container of Fig. 9. As shown in Figs. 9 and 10, the tablet dispensing and managing container 310 in this embodiment is provided with, in place of the rib 27, a substantially annular rib 327 which differs from the rib 27 in arrangement and shape. In addition, a CR mechanism 330 is disposed near to the substantially annular rib 327.

[0085] In this embodiment, the other structure is substantially the same as the first embodiment described with reference to Figs. 1 to 5. In Figs. 9 and 10, a structure corresponding to a structure of the first embodiment is shown by the same reference number, and detailed description thereof is omitted.

[0086] The CR mechanism 330 in this embodiment includes: a claw part 331 disposed on an upper case 11 to project toward a lower case 12; a claw receiving part 332 disposed on the lower case 12 so as to be engaged with the claw part 331; resilient parts 333a and 333b connected to the claw part 331, the resilient parts 333a and 333b being deformable to move the claw part 331 away from the claw receiving part 332 so that the claw part 331 and the claw receiving part 332 are disengaged from each other; and a pushing part 334 configured to deform the resilient parts 333a and 333b in the above manner. The pushing part 334 is located between the claw part 331 and the resilient parts 333a and 333b. The claw part 331 is supported on the upper case 11 through the pushing part 334 and the resilient parts 333a and 333b.

[0087] When the pushing part 334 is pushed toward the lower case 12, the resilient parts 333a and 333b are deformed so that the claw part 331 and the claw receiving part 332 are disengaged from each other. On the other hand, when the pushing force to the pushing part 334 is removed, the resilient parts 333a and 333b are returned to the original shapes so that the claw part 331 and the claw receiving part 332 can be again engaged with each other.

[0088] According to this embodiment, in addition to the effect obtained by the first embodiment, a CR function given by the CR mechanism 330 can be obtained. Namely, in the normal condition where the resilient parts 333a and 333b are not deformed, the sufficient CR function can be provided. On the other hand, when the resilient parts 333a and 333b are deformed by the pushing action to the pushing part 334, the CR function can be easily released.

[0089] Although, in this embodiment, the upper case 11 is provided with the claw part 331 and the lower case 12 is provided with the claw receiving part 332, the reverse configuration is possible. Namely, the lower case 12 may be provided with the claw part and the upper case 11 may be provided with the claw receiving part. In addition, in this embodiment, the resilient parts 333a and 333b are connected to the claw part 331 and are deform-

able to move the claw part 331 away from the claw receiving part 332 so that the claw part 331 and the claw receiving part 332 are disengaged from each other. However, instead thereof, the resilient parts may be connected to the claw receiving part, and may be deformable to move the claw receiving part away from the claw part so that the claw receiving part and the claw part are disengaged from each other.

[0090] Further, the structure for deforming the resilient parts 333a and 333b is not limited to the pushing part 334. For example, there may be used a "tab-like" projection to which an operator can exert a pulling-up force or a rotating force.

[0091]

10	Tablet dispensing container
11	Uppercase
11r	Accommodation recess
11w	Opening window
12	Lower case
12r	Tablet guide rail
13	Outlet
15	Dispensing standby space
21	Electronic device plate
23	Stopper projection
23c	Tubular part
23m	Movable stopper part
23p	Pushing part
23r	Depression
24	Tablet guide rail
25	Pusher member
27	Rib
210	Tablet dispensing container
211	Upper case
211g	Guide rail
211r	Accommodation recess
211w	Opening window
212	Lower case
212r	Tablet guide rail
213	Outlet
215	Dispensing standby space
221	Electronic device plate
221s	Switch wire
223	Stopper projection
223f	Wire fixing part
223s	Slidably movable part
223m	Flexibly deformable wire
224	Tablet guide rail
224e	Low wall part
225	Pusher member
227	Rib
310	Tablet dispensing container
327	Rib
330	CR mechanism
331	Claw part
332	Claw receiving part
333a, 333b	Resilient part
334	Pushing part

Claims

1. A tablet dispensing and managing container comprising:

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an upper case and a lower case, the upper case and the lower case being configured to form a container body capable of containing a plurality of tablets together;

a sensor unit configured to detect occurrence of dispensing of a tablet;

a data recording unit configured to record a detection result by the sensor unit; and

a battery for the data recording unit;

wherein:

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when the upper case is slid with respect to the lower case, the container body is opened or closed;

the lower case is provided with an outlet that is sized to allow only one tablet to be dispensed therefrom at a time, and with a dispensing standby space in communication with the outlet;

the upper case is provided with a stopper projection that projects to between the outlet and the dispensing standby space, in a situation where the container body is closed;

the lower case is provided with a pusher member that is positioned on a side opposed to the stopper projection with respect to the dispensing standby space, in a situation where the container body is closed, the pusher member being configured to, during an operation for opening the upper case, push a tablet located in the dispensing standby space toward the outlet;

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during the operation for opening the upper case, the stopper projection is configured to be deformed or displaced to get over a side surface of a tablet located in the dispensing standby space, and is configured to stop an outlet-side surface of a tablet succeeding to the tablet having been located in the dispensing standby space; and

the sensor unit is configured to detect passage of one tablet moving from the dispensing standby space to the outlet so as to detect occurrence of dispensing of the tablet.

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2. The tablet dispensing and managing container according to claim 1, wherein the stopper projection is disposed to extend downward from the upper case.

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3. The tablet dispensing and managing container according to claim 1, wherein

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the stopper projection includes:

a flexibly deformable part extending from the upper case; and

a slidably movable part that is slidably movable in a direction where the slidably movable part pushes the flexibly deformable part.

4. The tablet dispensing and managing container according to any one of claims 1 to 3, wherein the sensor unit is configured to detect passage of a tablet by an electric connection between an electric conductor and an electric terminal, the electric conductor and the electric terminal being configured to be deformed or displaced by the passage of the tablet.

5. The tablet dispensing and managing container according to any one of claims 1 to 4, wherein the data recording unit is a time logger configured to record a detection result by the sensor unit along with time data.

6. The tablet dispensing and managing container according to any one of claims 1 to 5, wherein:

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the upper case and the lower case have a rectangular shape in plan view;

the upper case is slidably moved with respect to the lower case in a longitudinal direction of the rectangular shape; and

the outlet is formed near to a corner of the rectangular shape.

7. The tablet dispensing and managing container according to claim 6, wherein the lower case is provided with a tablet guide rail that bypasses the pusher member so as to guide a tablet up to the dispensing standby space.

8. The tablet dispensing and managing container according to any one of claims 1 to 7, wherein the upper case is provided with a CRSF mechanism configured to prevent that the upper case is slidably moved with respect to the lower case.

9. The tablet dispensing and managing container according to claim 8, wherein the CRSF mechanism includes:

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a claw part disposed on one of the upper case and the lower case, the claw part projecting toward the other of the upper case and the lower case;

a claw receiving part disposed on the other of the upper case and the lower case, the claw receiving part being engageable with the claw part; and

a resilient part connected to one of the claw part and the claw receiving part, the resilient part being deformable to move one of the claw part and the claw receiving part away from the other of the claw part and the claw receiving part, so that the claw part and the claw receiving part are disengaged from each other. 5

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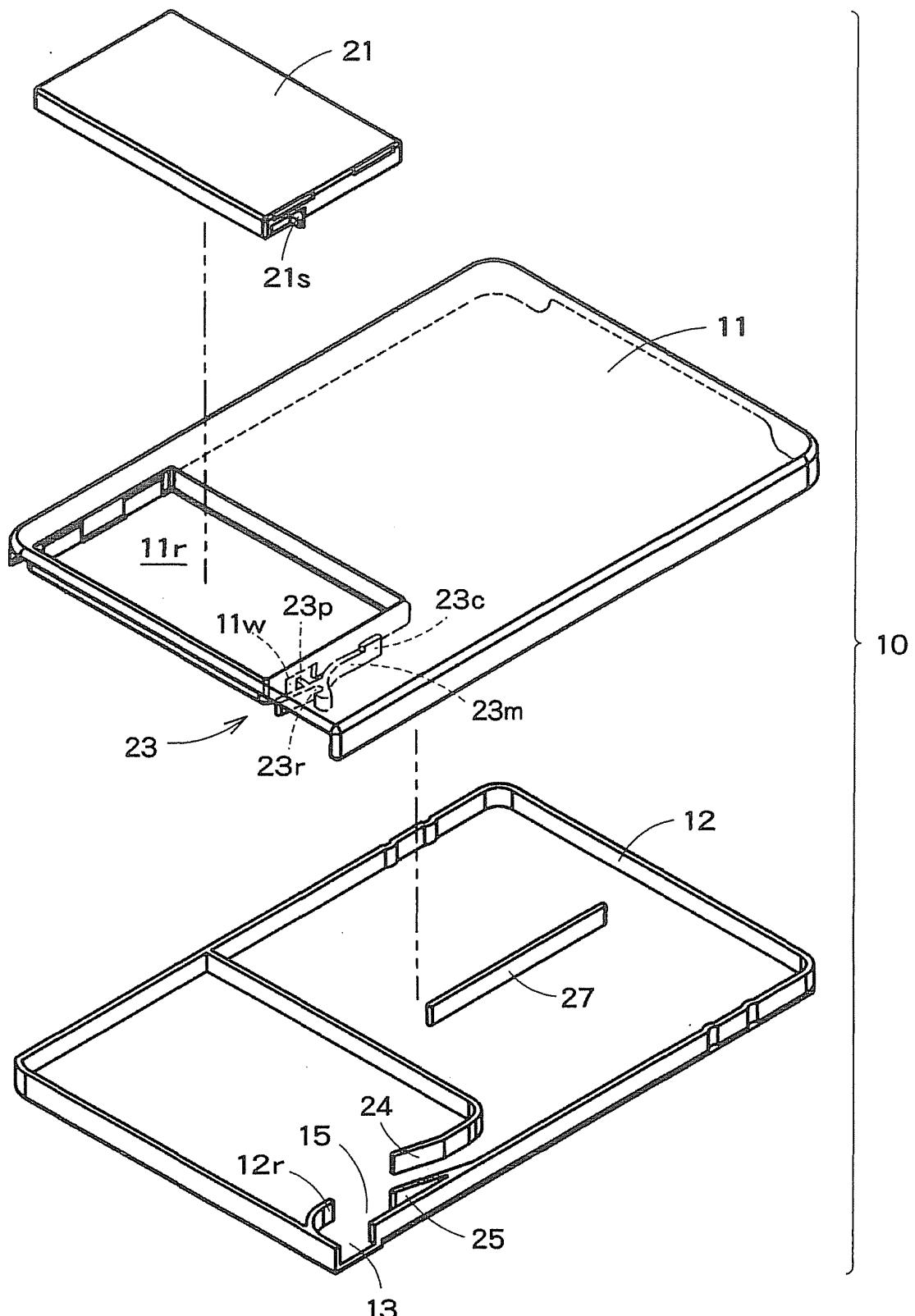


FIG. 1

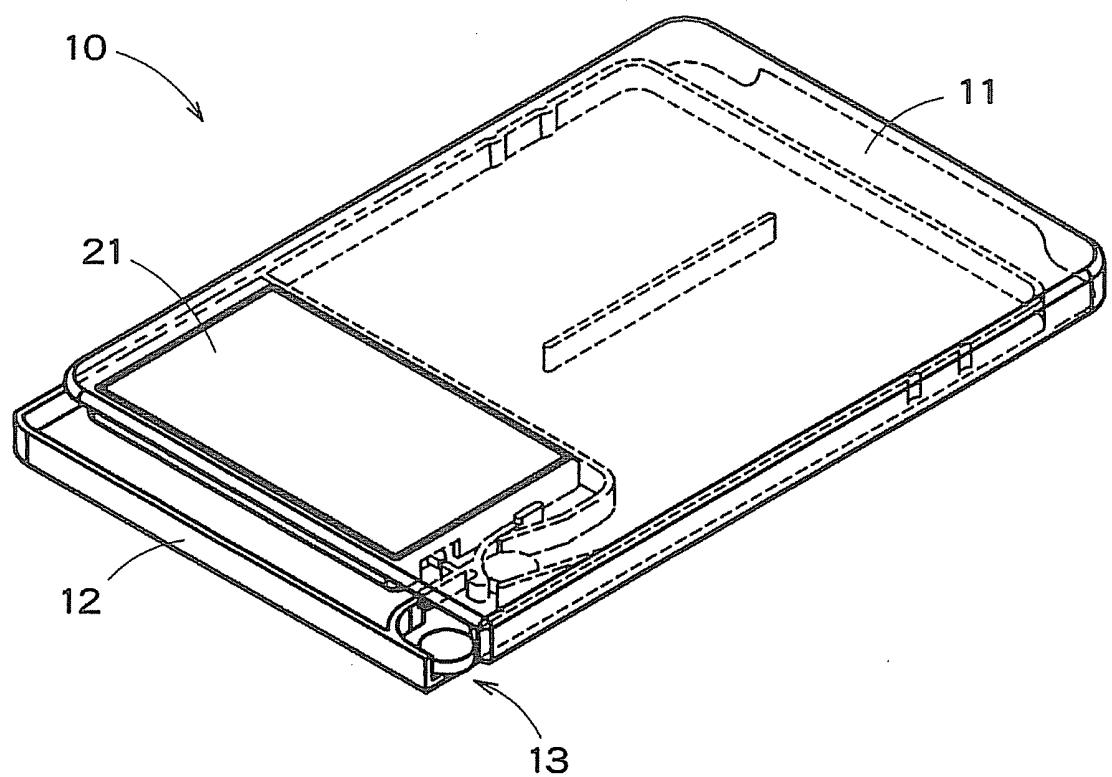


FIG. 2

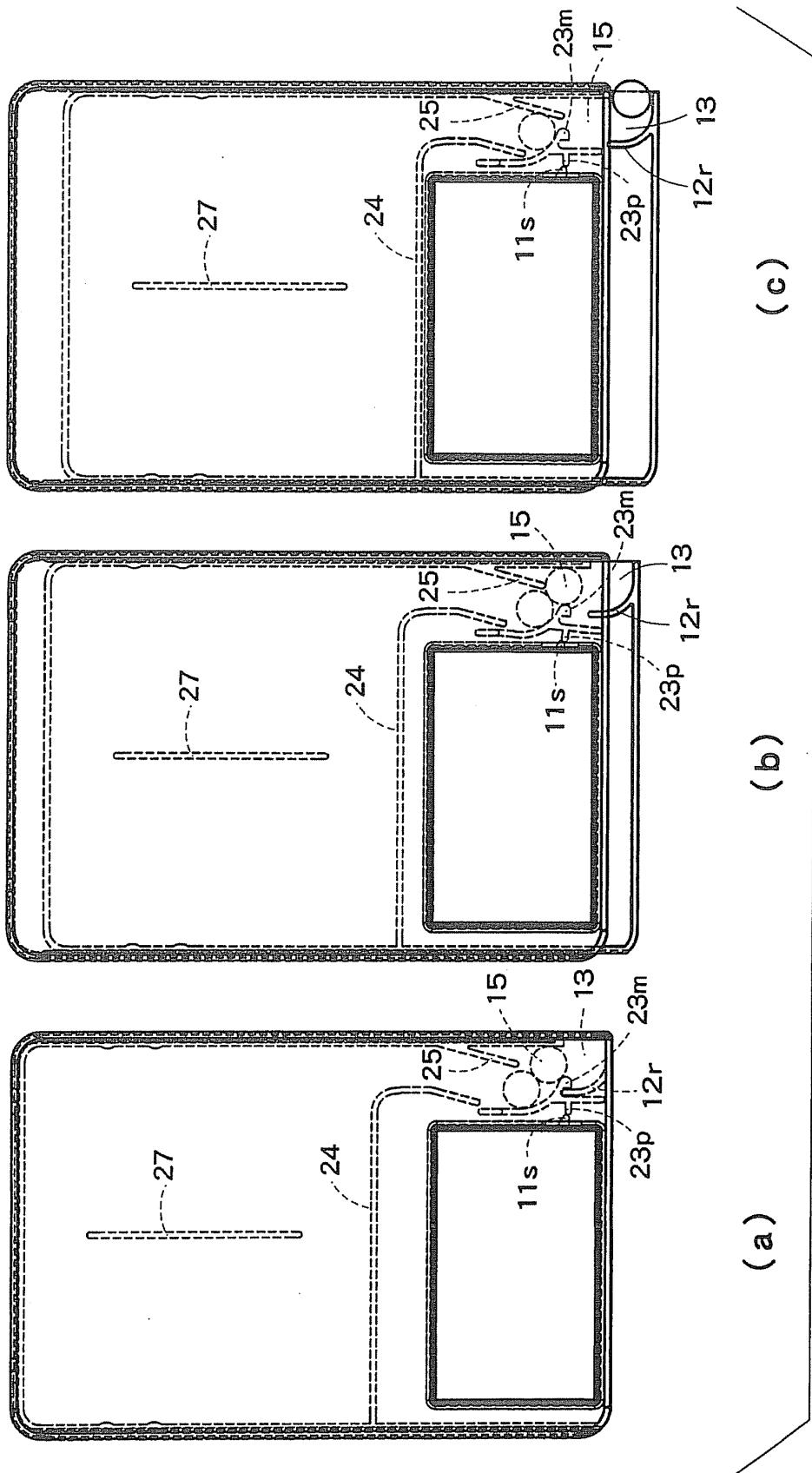


FIG. 3

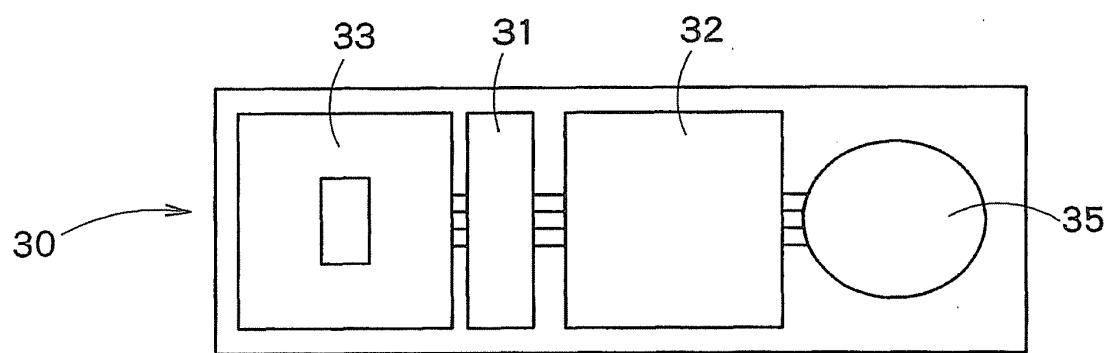


FIG. 4

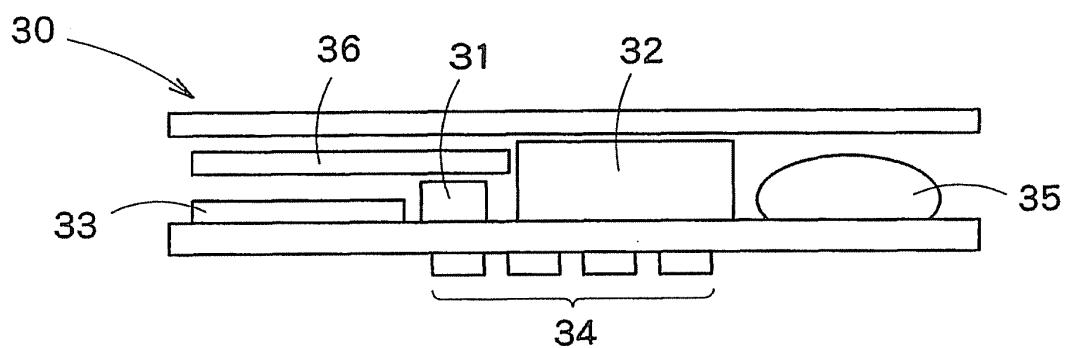


FIG. 5

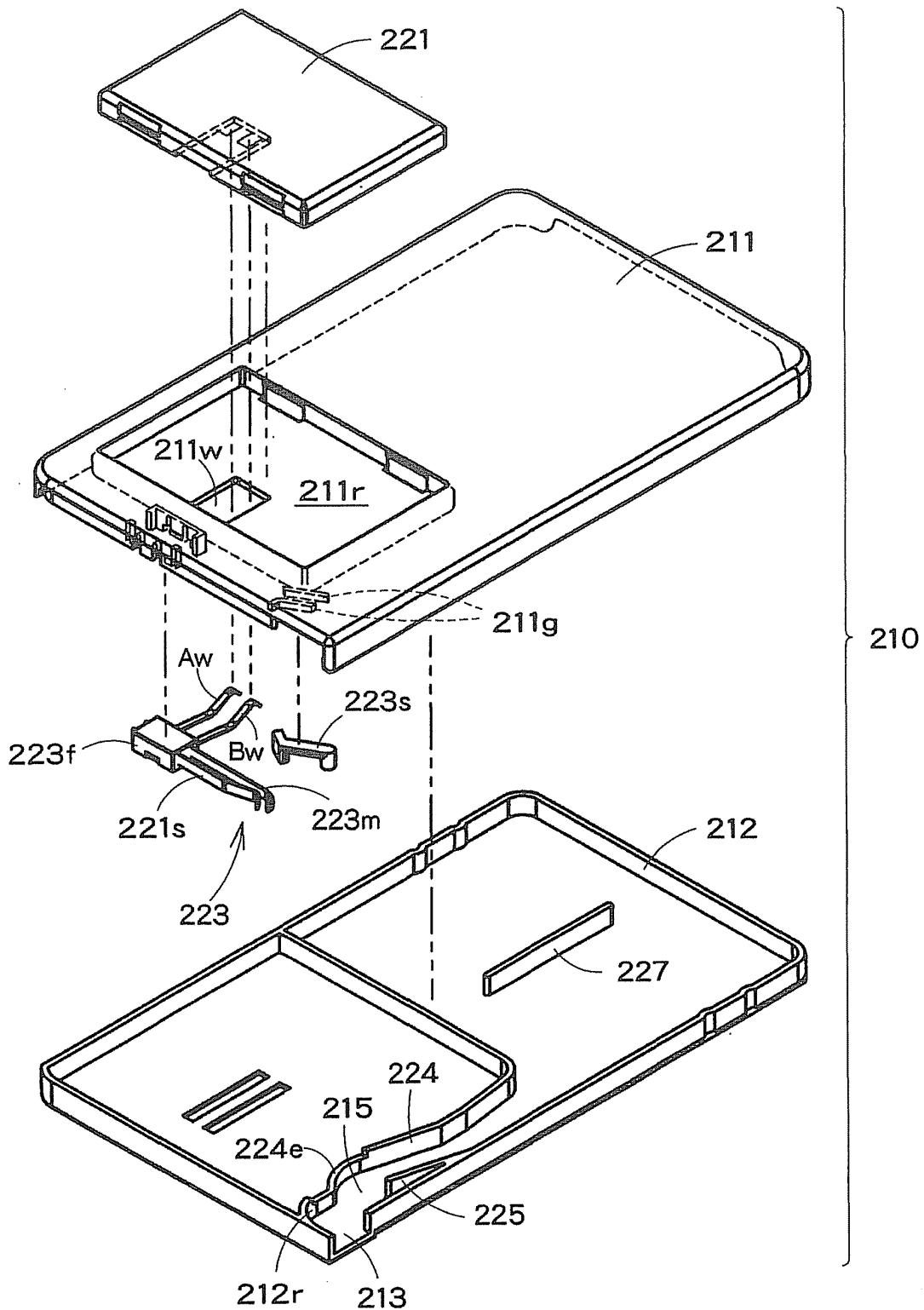


FIG. 6

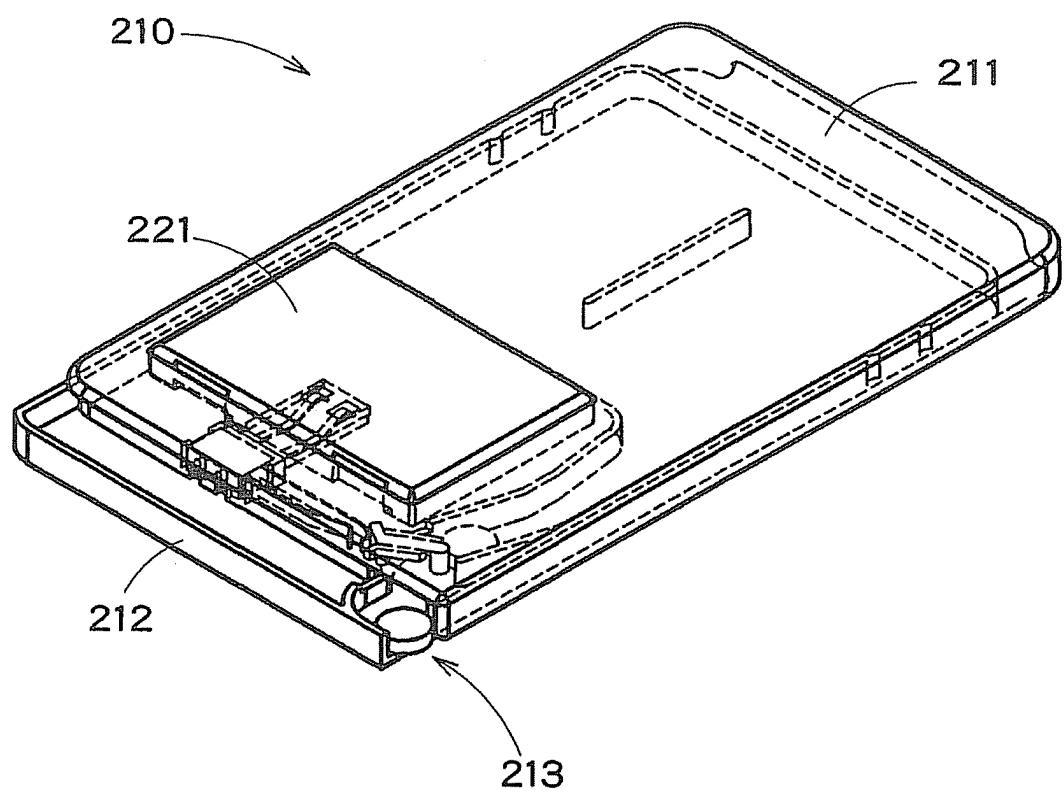


FIG. 7

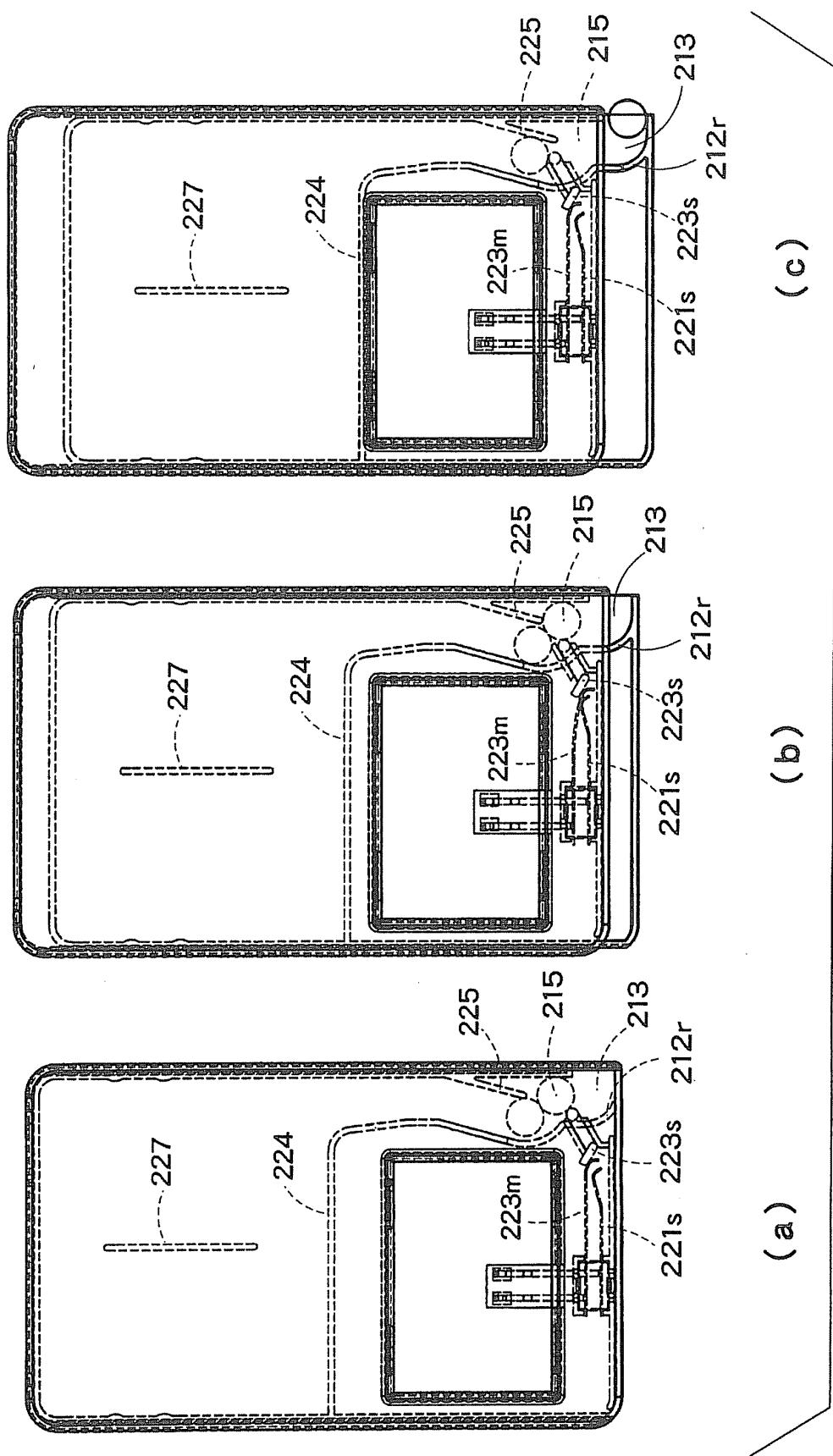


FIG. 8

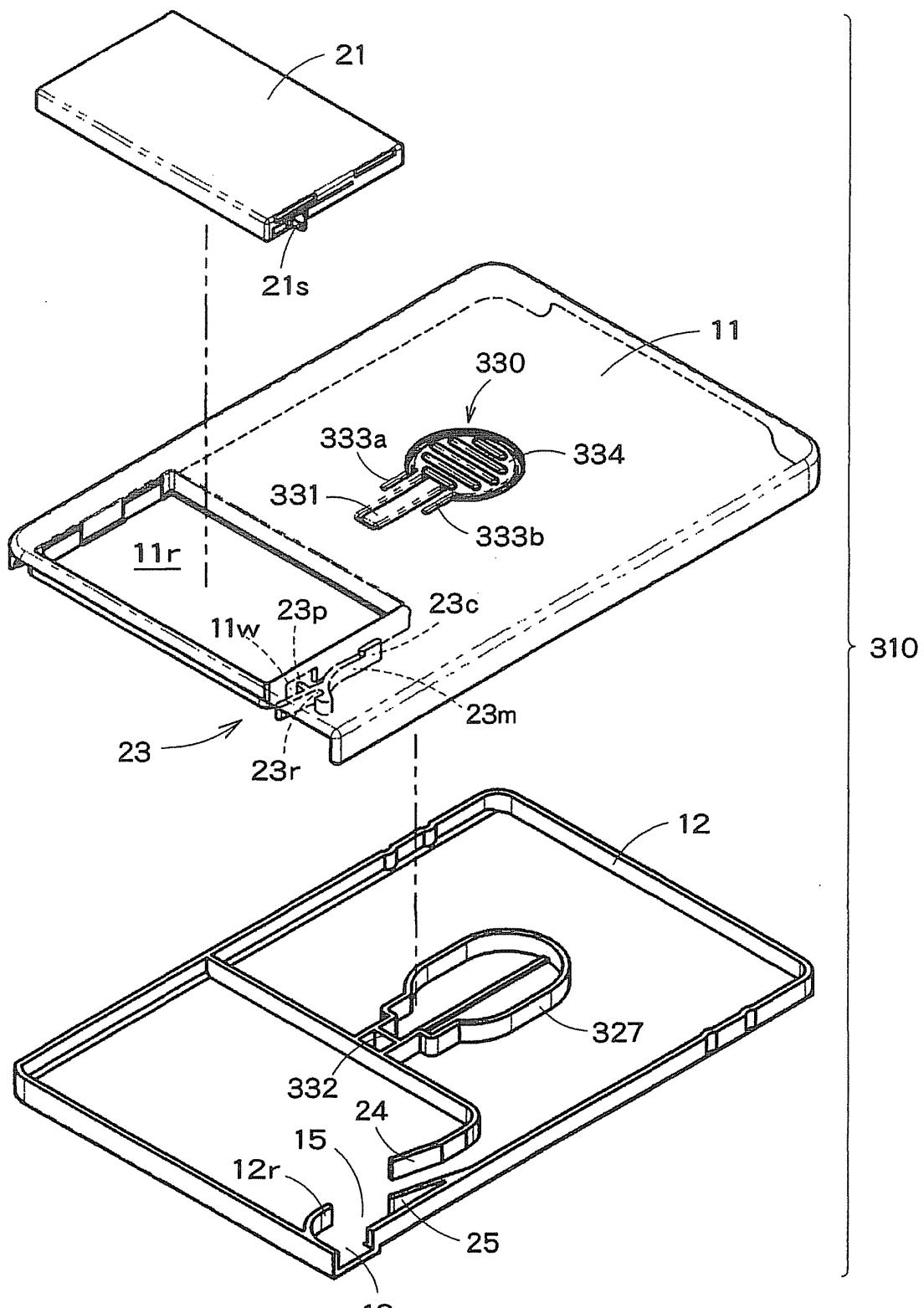


FIG. 9

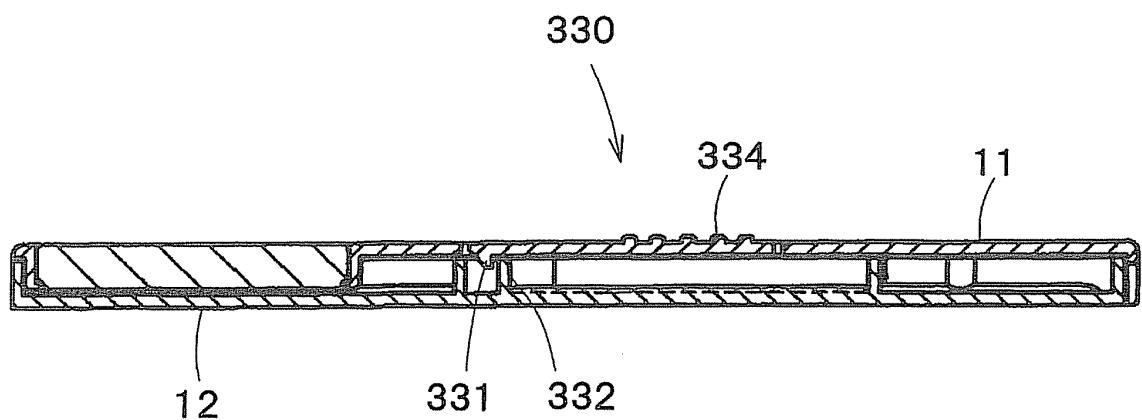


FIG. 10

INTERNATIONAL SEARCH REPORT

International application No.

PCT/JP2013/064290

5 A. CLASSIFICATION OF SUBJECT MATTER
 B65D83/04 (2006.01) i, A61J1/03 (2006.01) i, A61J7/02 (2006.01) i

According to International Patent Classification (IPC) or to both national classification and IPC

10 B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
 B65D83/04, A61J1/03, A61J7/02

15 Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched
 Jitsuyo Shinan Koho 1922-1996 Jitsuyo Shinan Toroku Koho 1996-2013
 Kokai Jitsuyo Shinan Koho 1971-2013 Toroku Jitsuyo Shinan Koho 1994-2013

20 Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

25 C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y A	JP 2010-143610 A (Nanshin Chemical Industries Co., Ltd.), 01 July 2010 (01.07.2010), paragraphs [0033], [0036]; fig. 1 to 4 (Family: none)	1-8 9
Y	JP 2004-188186 A (Kabushiki Kaisha Kokusai Iyakuhin Rinsho Kaihatsu Kenkyusho), 08 July 2004 (08.07.2004), paragraphs [0057], [0063]; fig. 4 (Family: none)	1-8
Y	JP 2003-221067 A (Toppan Printing Co., Ltd.), 05 August 2003 (05.08.2003), paragraph [0014] (Family: none)	8

40 Further documents are listed in the continuation of Box C. See patent family annex.

* Special categories of cited documents:	
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"Y"	document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art
"&"	document member of the same patent family

50 Date of the actual completion of the international search
 08 August, 2013 (08.08.13) Date of mailing of the international search report
 20 August, 2013 (20.08.13)55 Name and mailing address of the ISA/
 Japanese Patent Office Authorized officer

Facsimile No. Telephone No.

Form PCT/ISA/210 (second sheet) (July 2009)

REFERENCES CITED IN THE DESCRIPTION

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