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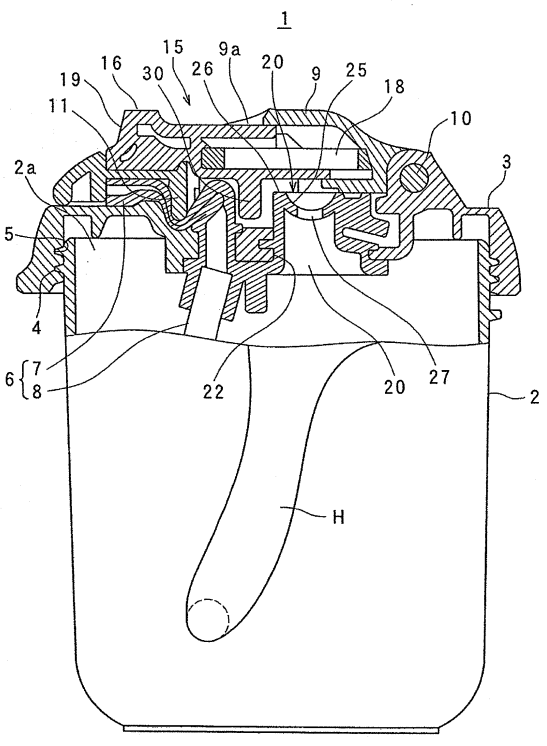
(54) BEVERAGE CONTAINER WITH STRAW

(57) A beverage container (1) with straw is provided with an open-close valve (20) which is capable of changing the state between a close state in which the inside and the outside of a container body (2A) are disconnected and an open state in which the inside and outside of the container are connected to each other and which is moved into the open state from the close state when the valve receives a pressing force and is returned from the open state to the close state when the pressing operation is released, and a transmission member (30) which transmits the motion of the lock member (16) toward a release position from a lock position as the pressing operation to the open-close valve (20), and which moves away from the open-close valve (20) so as to release the pressing operation to the open-close valve (20) when a straw cap (9) is in an open position.

FIG.1



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Description

Technical Field

[0001] The present invention relates to a beverage container with straw mounted for sucking beverage with straw.

Background Art

[0002] There has been well-known a beverage container with straw, which is assumed to be used by infants or the like. The beverage container is provided with a straw cap which can hide a straw in a folded state so that the straw being exposed outside when not in use is blocked. When the straw cap gets opened to use the straw, as the blocking of the straws is released, a user can drink beverage contained in the container using the straw.

[0003] However, when a warm beverage such as hot water with higher temperature than ambient air is contained in the container, the internal pressure of the sealed container is increased. Thus, when the straw cap is opened, simultaneously with the opening, the beverage may be spouted through the straw the blocking of which is released. Thus, the beverage container with straw is generally provided with an open-close valve in order to release the inner pressure outside the beverage container.

[0004] For example, as the beverage container with straw comprising the open-close valve, there has been known a beverage container in which a locking member holding the straw cap in a close state and a valve body of the open-close valve to open and close an air hole of the container are unified, and when lock of the straw cap is released by operation of the locking member, the air hole is opened by the valve body, whereby the inner pressure can be released (Patent Literature 1).

Citation List

Patent Literature

[0005] Patent Literature 1: Japanese Patent Application Laid-Open No. 2002-321741

Summary of Invention

Problems to be Solved by Invention

[0006] The beverage container of Patent Literature 1 can release the inner pressure by the operation of the locking member to release the lock of the straw cap. However, in order to close the air hole which has been once opened, it is necessary to operate the locking member again in such a state that the straw cap is opened. Namely, after the straw cap is opened to allow a user to drink a beverage, the user is required to operate the locking member in order to close the air hole. Thus, the operation of the locking member may be troublesome for the user. When the user forgets the operation of the locking member to be performed after the straw cap is opened, as the air hole remains opened, for example when the beverage container is used while being tilted, leakage of the beverage through the air hole may be induced.

[0007] In the beverage container of Patent Literature 1, after the inner pressure is released by releasing the lock of the straw cap, the air hole can be closed by operating the locking member again in such a state that the straw cap is opened. However, under circumstances in which external temperature is high as in the summer, when the air hole is left in a close state while the straw cap being opened as a use state, there is a problem that the beverage leaks through the straw by expansion of air in the container. In order to avoid such a problem, in a case of the beverage container of Patent Literature 1, it is necessary to perform the operation of opening the air hole by operating the lock member in a state that the straw cap is opened. After that, in a case that it is intended to cease the use of the straw by closing the straw cap, the operation to close the air hole using the lock member again is required. In this way, for using the beverage container of Patent Literature 1 without the leakage of beverage, the operation to the locking member may be troublesome for the user.

[0008] Thus, an object of the present invention is to provide a beverage container with straw which can prevent a user from feeling troublesome to the operations.

Solution to Problem

[0009] A first beverage container with straw as one aspect of the present invention includes a container body having an opening portion and a straw adaptor which is mounted to the container body so as to close the opening portion, in which a straw for sucking beverage in the container body is mounted to the straw adaptor, wherein the first beverage container includes a straw cap, a locking member, an open-close valve, and a transmission member. The straw cap is attached to the straw adaptor in a state of being operable between a close position where the straw is hidden and an open position where the straw is exposed. The locking member is operated between a lock position where the straw cap is locked at the close position and a release position where the lock is released. The open-close valve changes its own state between a close state in which an inside and an outside of the container body are disconnected and an open state in which the inside and the outside of the container body are connected to each other, in such a way as to transfer the state from the close state into the open state by receiving a predetermined operation, and when the predetermined operation is released, return the state to the close state from the open state. The transmission member transmits, as the predetermined operation to the open-close valve, an operation of the locking member from the lock position

toward the release position, and moves awya from the open-close valve so that the predetermined operation to the open-close valve is released in such a state that the straw cap is located at the open position.

[0010] According to the beverage container, the state of open-close valve is transferred from the close state into the open state by the operation of the locking member from the lock position toward the release position, and since the predetermined operation is released in such a state that the straw cap is located at the open position, the state of open-close valve is returned to the close state from the open state. Because of this, the inner pressure can be released by releasing the lock to the straw cap, and in addition, after the straw cap is opened, the state of the open-close valve is automatically transferred into the close state. Accordingly, when the straw cap is opened, a user can release the inner pressure without particular consciousness, and further, beverage leakage through the open-close valve can be prevented even if the operation of the locking member is not performed after the straw cap is opened. Thereby, it is possible to prevent a user from feeling troublesome to required operations at the moment of use.

[0011] The structure and material of the open-close valve are not limited specifically. For example, the open-close valve may have a valve body formed of an elastic material which is deformed when a pressing operation as the predetermined operation is performed by the transmission member. The valve body may be configured so as to transfer the state into the open state by the elastic deformation according to the pressing operation and return the state to the close state from the open state by elimination of the elastic deformation according to release of the pressing operation. According to this embodiment, even if the open-close valve is not constituted of a plurality of components, the state can be changed between the open state and the close state by utilizing the elastic deformation of the valve body formed of the elastic material. Therefore, the number of components can be easily reduced.

[0012] In this embodiment, the valve body may include a plate portion and a holding portion having a cylindrical shape which are unified, the plate portion partitioning the inside and the outside of the container body, the holding portion holding a periphery of the plate portion and receiving the pressing operation, and the plate portion may have a slit extending in a same direction as an operating direction of the pressing operation, and penetrating in a plate thickness direction. In this case, the slit is closed in such a state that an external force is not applied to the valve body, whereby the valve body is maintained in the close state. When the pressing operation is applied to the holding portion of the valve body, the plate portion is deformed by the pressing operation. Since the end-to-end distance of the slit is reduced by the deformation of the plate portion, the slit is opened to be transferred from the close state into the open state. In a case that such pressing operation is released, the elastic deformation of the valve body is eliminated, and the plate portion and the holding portion are returned to their original states. Thereby, the slit is closed and can be returned to the close state.

[0013] Although the plate portion may have any shape, the plate portion may be formed into a curved shape which is obtained by being formed convexly toward the inside of the container body. In this case, when such a pressure difference occurs that the pressure of the inside of the container body in a case that a boundary is the plate portion is higher than the atmospheric pressure, a force that deforms the plate portion in a direction that the slit is adhered firmly acts on the valve body. Accordingly, when such a pressure difference occurs that the inner pressure is higher than the atmospheric pressure, passage of fluid in a direction from the inside of the container body toward the outside is interrupted. Accordingly, if the valve body is held in the close state, the leakage of beverage from the container body to the outside thereof can be reliably prevented. Meanwhile, when such a pressure difference occurs that the pressure of the inside of the container body in a case that a boundary is the plate portion is lower than the atmospheric pressure, that is, when the inner pressure is a negative pressure, a force that deforms the plate portion in a direction that the slit is opened acts on the valve body. Thus, when such a pressure difference occurs that the inner pressure is lower than the atmospheric pressure, the passage of the fluid flowing in a direction from the outside of the container body toward the inside can be allowed. Accordingly, the inner pressure may become a negative pressure in the course of reduction of a beverage amount in the container body because of suction of beverage through the straw. However, even in this case, when the magnitude of the negative pressure exceeds the limit of opening of the slit, ambient air is taken into the container body through the valve body. Accordingly, since a user who sucks beverage using the straw is not required a lot of suction power, a burden on the user can be reduced.

[0014] When there is provided a valve body formed of an elastic material, the straw has a mouthpiece portion formed of a same material as the valve body, and the mouthpiece portion and the valve body may be unified. In this case, when the straw cap is closed, the mouthpiece portion can be easily elastically deformed. In addition, the number of components can be reduced since the mouthpiece portion and the valve body is unified.

[0015] In one embodiment of the first beverage container of the present invention, the straw cap may be rotatably attached to the straw adaptor through a support shaft, whereby the straw cap is moved between the close position and the open position, the straw cap may be provided with the locking member in such a state that the locking member is moved between the lock position and the release position, and the locking member may be provided with the transmission member in such a state that the transmission member is moved integrally with the locking member. According to this embodiment, the

locking member is moved from the lock position toward the release position, and then the straw cap is moved from the close position to the open position, whereby the locking member and the transmission member are moved together with the straw cap in a direction that they are moved away from the straw adaptor. Because of this, even if a special device is not provided in order to space the transmission member apart from the open-close valve, the transmission member can be easily spaced apart from the open-close valve by utilizing the motion of the straw cap from the close position to the open position.

[0016] A second beverage container with straw as another aspect of the present invention includes a container body having an opening portion and a straw adaptor mounted to the container body so as to close the opening portion, in which a straw for suctioning beverage in the container body is mounted to the straw adaptor. The beverage container with straw includes: a straw cap which is attached to the straw adaptor in such a state of being movable between a close position where the straw is hidden and an open position where the straw is exposed; an open-close valve which has a valve body formed of an elastic material that is elastically deformed when a pressing operation is performed, and is configured so that a state of the valve body transfers from a close state in which an inside and an outside of the container body are disconnected by elastic deformation according to the pressing operation into an open state in which the inside and the outside of the container body are connected to each other, and the state of the valve body is returned to the close state from the open state by elimination of the elastic deformation according to release of the pressing operation; an engaging portion which is provided to the straw adaptor or the straw cap so as to be adjacent to the valve body; and an operation member which is displaced between a first state in which the straw cap in a state of being located at the open position is engaged with the engaging portion, whereby the pressing operation is applied to the valve body and a second state in which the operation member connects to the straw cap in a course of motion of the straw cap from the open position to the close position to release an engagement with the engaging portion, whereby the pressing operation is released.

[0017] According to the beverage container, since the valve body is formed of an elastic material, even if the open-close valve is not constituted of a plurality of components, the state can be changed between the open state and the close state by utilizing the elastic deformation of the valve body. Thereby, the number of components can be easily reduced. Further, according to the beverage container, the operation member is engaged with the engaging portion in such a state that the straw cap is located at the open position, whereby the pressing operation is applied to the valve body by the operation member. Because of this, the valve body is maintained in the open state as long as the operation member is engaged with the engaging portion. Accordingly, even if external temperature is raised while the straw cap is open, the inner pressure can be always released by the connection of the inside and the outside of the container body. Thereby, beverage leakage through the straw can be prevented. In a case that the straw cap is moved from the open position to the close position, the engagement between the operation member and the engaging portion is released in the course of the motion, and the pressing operation applied to the valve body is released. Thereby, the valve body is automatically returned to the close state. Because of this, it is possible to reliably prevent the straw cap from being located at the close position while the valve body remains in the open state. Accordingly, the leakage of beverage through the valve body at the moment of carrying the beverage container can be prevented only by closing the straw cap without user's particular consciousness. As mentioned above, since the amount of operations required to a user is reduced in comparison with the prior art, it is possible to prevent the user from feeling troublesome to operations.

[0018] The structure and material of the operation member are not limited especially. For example, the operation member may be formed of a same material as the valve body, and the valve body and the operating member may be unified. In this case, the valve body and the operating member are easily formed by a single process, and in addition, since this constitution can contribute to reduction in the number of components, the trouble for assembly can be saved.

[0019] In one aspect of the second beverage container of the present invention, the operation member may have a protrusion portion protruding an upside of the container body and facilitating a pull-up operation by a user, the operation member may get on the engaging portion by pulling up the protrusion portion, whereby the operation member is engaged with the engaging portion, and the protrusion portion may connect to the straw cap and may be pushed down in a course of the motion of the straw cap from the open position to the close position, whereby the engagement between the operation member and the engaging portion is released. According to this aspect, the protrusion portion which facilitates the pull-up by a user in order to engage the operation member with the engaging portion has a further function of releasing the engagement between the operation member and the engaging portion when the straw cap is closed. Because of this, this construction can contribute to the reduction in the number of components in comparison with a case where components for realizing the respective functions are separately prepared.

[0020] In one aspect of the second beverage container of the present invention, the valve body may include a plate portion and a holding portion having a cylindrical shape which are unified, the plate portion partitioning the inside and the outside of the container body, and the holding portion holding a periphery of the plate portion and receiving the pressing operation, and the plate por-

tion may have a slit extending in a same direction as an operating direction of the pressing operation, and penetrating in a plate thickness direction. In this case, the slit is closed in such a state that an external force is not applied to the valve body, whereby the valve body is maintained in the close state. When the pressing operation is applied to the holding portion of the valve body, the plate portion is deformed by the pressing operation. Since the end-to-end distance of the slit is reduced by the deformation of the plate portion, the slit is opened to be transferred from the close state into the open state. In a case that such pressing operation is released, the elastic deformation of the valve body is eliminated, and the plate portion and the holding portion are returned to their original states. Thereby, the slit is closed and can be returned to the close state.

Brief Description of Drawings

[0021]

Fig. 1 shows a side cross-sectional view obtained by cutting one part of a beverage container with straw according to one embodiment of the present invention.
Fig. 2 shows a plan view of the beverage container shown in Fig. 1.
Fig. 3A is an explanatory view obtained by enlarging a state of a valve body of an open-close valve as viewed from above, and the explanatory view shows a close state of the valve body.
Fig. 3B is an explanatory view obtained by enlarging the state of the valve body of the open-close valve as viewed from above, and the explanatory view shows an open state of the valve body.
Fig. 4A is a view showing a plan view of a state from start of operation to a locking member to release of meshing between the locking member and a restraining portion.
Fig. 4B is a side cross-sectional view of a state from the start of the operation to the locking member to the release of the meshing between the locking member and the restraining portion.
Fig. 5A is a plan view of a state in which the meshing between the locking member and the restraining portion is released.
Fig. 5B is a side cross-sectional view showing a state in which the meshing between the locking member and the restraining portion is released.
Fig. 6 is a side cross-sectional view showing a state in which a straw cap is opened to the open position side.
Fig. 7 is a partial side cross-sectional view showing a state in which holding of an open state of the open-close valve is released by an open state holding mechanism.
Fig. 8 is a partial side cross-sectional view showing a state in which the open state of the open-close valve is held by the open state holding mechanism.
Fig. 9 is a partial side cross-sectional view showing a state after the straw cap is operated to a close position from the state shown in Fig. 8.
Fig. 10 is an explanatory view schematically showing a first modification.
Fig. 11 is an explanatory view schematically showing a second modification.
Fig. 12 is an explanatory view schematically showing a third modification.
Fig. 13 is an explanatory view schematically showing a fourth modification.
Fig. 14 is an explanatory view schematically showing a fifth modification.
Fig. 15 is an explanatory view showing another embodiment of the open-close valve.

Description of Embodiments

[0022] Fig. 1 is a side cross-sectional view obtained by cutting a part of a beverage container with straw according to one embodiment of the present invention. Fig. 2 is a plan view of the beverage container shown in Fig. 1. As shown in Figs. 1 and 2, a beverage container with straw 1 (hereinafter referred to as the beverage container 1) includes a container body 2, which has an opening portion 2a and can hold beverage, and a straw adaptor 3 which is mounted to the container body 2 so as to close the opening portion 2a. The container body 2 has a predetermined shaped handle H formed integrally therewith for the purpose of facilitating a user to hold the beverage container 1. A male screw 4 is provided at the upper outer peripheral portion of the container body 2, and a female screw 5 meshing with the male screw 4 is provided at the inner peripheral portion of the straw adaptor 3. The straw adaptor 3 is mounted to the container body 2 by being screwed into the container body 2 in such a state that the screws 4 and 5 are meshed with each other. A straw 6 for sucking beverage contained in the container body 2 is mounted to the straw adaptor 3. The straw 6 is constituted by connecting a mouthpiece portion 7 having flexibility which is held in user's mouth and a main body 8 being contained in the container body 2 to each other. The mouthpiece portion 7 and the main body 8 are formed of different materials with each other. The mouthpiece portion 7 is formed of easily deformable silicone resin, and the main body 8 connected to the mouthpiece portion 7 is formed of plastic.

[0023] A straw cap 9 is attached to the straw adaptor 3 in such a state of being movable between a close position where the straw 6 is hidden (see, Fig. 1) and an open position where the straw 6 is exposed (see, Fig. 7). The straw cap 9 is rotatably attached to the straw adaptor 3 through a support shaft 10, whereby the straw cap 9 can be moved between the close position and the open position. The straw cap 9 is provided with a protrusion portion 11 for crushing to block the straw 6 folded at the close position, and the protrusion portion 11 protrudes

downward the beverage container 1 so that the straw 6 can be crushed when the straw cap 9 is located at the close position.

[0024] The beverage container 1 is provided with a locking mechanism 15 by which the straw cap 9 can be locked at the close position. The locking mechanism 15 includes a locking member 16, a restraining portion 17 (Fig. 2), and a return spring 18. The locking member 16 is attached to the straw cap 9 in such a state of being movable between a lock position (Figs. 1 and 2) where the straw cap 9 is locked at the close position and a release position (Figs. 5A and 5B) where the lock is released. The restraining portion 17 makes the locking member 16 and the straw adaptor 3 mesh with each other when the locking member 16 is located at the lock position. The return spring 18 biases the locking member 16 to the lock position side.

[0025] The locking member 16 can slide in a horizontal direction (left and right direction of Fig. 1) from the lock position to the release position. A portion of the locking member 16 is exposed through an opening portion 9a formed in the upper surface of the straw cap 9, and the exposed portion has an operation portion 19 which can be operated by a user. The restraining portion 17 is formed into a groove shape extending in the same direction as the operating direction of the locking member 16, and the length of the groove has such a length that the mesh between the locking member 16 and the straw adaptor 3 is released when the locking member 16 reaches the release position (see, Fig. 5A). The return spring 18 is formed of silicone resin, When the locking member 16 is operated up to the release position by a user and then disengaged, the lockingmember 16 can be returned to the lock position by an elastic force of the return spring 18.

[0026] In order to release the inner pressure outside, the beverage container 1 is provided with an open-close valve 20 which can change the state between a close state in which the inside and the outside of the container body 2 are disconnected and an open state in which the inside and the outside of the container body 2 are connected to each other. The open-close valve 20 includes a valve body 21 formed of an elastically deformable elastic material. The valve body 21 is mounted to the straw adaptor 3 in such a state of being adhered firmly to a penetrating hole 22 of the straw adaptor 3. In the beverage container 1, the valve body 21 is formed of silicone resin that is the same material as the mouthpiece portion 7 of the straw 6 and constituted integrally with the mouthpiece portion 7. Since the mouthpiece portion 7 and the valve body 21 are unified in the beverage container 1, this constitution can contribute to reduction in the number of components.

[0027] Figs. 3A and 3B are explanatory views obtained by enlarging a state of the valve body 21 as viewed from above. Fig.3A shows the close state of the valve body 21, and Fig.3B shows the open state of the valve body 21. As shown in Figs.3A and 3B, the valve body 21 is provided with a plate portion 25 partitioning the inside and the outside of the container body 2 and a cylindrical holding portion 26 holding the periphery of the plate portion 25. The plate portion 25 has a slit 27 penetrating through the plate portion 25 in the plate thickness direction. In Fig.3A, since the slit 27 is closed in a firmly adhered state because an external force is not applied to the valve body 21, the valve body 21 is maintained in the close state. As shown in Fig. 3B, when a pressing operation as a predetermined operation in the arrow direction is applied to the holding portion 26 of the valve body 21, the plate portion 25 is elastically deformed with the pressing operation. The slit 27 extends in the operating direction of the pressing operation. Because of this, an end-to-end distance X of the slit 27 is reduced in comparison with the close state of Fig. 3A by the elastic deformation of the plate portion 25. Thereby, the slit 27 is opened as illustrated to be transferred from the close state into the open state. In a case that the pressing operation is released, the elastic deformation of the valve body 21 is eliminated, and both the plate portion 25 and the holding portion 26 are returned to the original state. Thereby, the slit 27 is closed and can be returned to the close state of Fig. 3A.

[0028] In order to connect such pressing operation applied to the valve body 21 of the open-close valve 20 with the operation of the locking member 16 of the locking mechanism 15 aforementioned, as shown in Fig. 1, the beverage container 1 is provided with a transmission member 30 transmitting to the open-close valve 20 as the pressing operation applied to the open-close valve 20, the motion of the locking member 16 from the lock position to the release position. The transmission member 30 is provided integrally with the locking member_ 21. Namely, the transmission member 30 can be moved integrally with the locking member 16.

[0029] Figs. 4A to 6 describe motion of each portion of the beverage container 1 from when the locking member 16 is operated on the release position side in the state of Figs. 1 and 2 until when the straw cap 9 is opened on the open position side. Figs.4A and 4B show a state from start of operation to the locking member 16 up to release of meshing between the locking member 16 and the restraining portion 17. Fig. 4A is a plan view of the state, and Fig. 4B is a side cross-sectional view of the state. Figs. 5A and 5B show a state in which the meshing between the locking member 16 and the restraining portion 17 is released. Fig. 5A is a plan view of the state, and Fig. 5B is a side cross-sectional view of the state. Fig. 6 is a side cross-sectional view showing a state in which the straw cap 9 is opened to the open position side.

[0030] In the state of Figs. 1 and 2 in which the locking member 16 is not operated, the transmission member 30 and the open-close valve 20 (the valve body 21) are separated from each other, and the valve body 21 is in the close state. In addition, the straw cap 9 is located at the close position and the straw 6 is blocked. Thereby, the container body 2 is sealed. As shown in Figs.4A and 4B,

the operation of the locking member 16 is started from that state, and the locking member 16 is slightly moved to the release position side, whereby the transmission member 30 is abutted against the holding portion 26 of the valve body 21, and the elastic deformation of the valve body 21 is started. Namely, the pressing operation applied to the valve body 21 is started by the transmission member 30, and the slit 27 starts to open. Thus, the air in the container body 2 starts to flow in the arrow direction through the valve body 21, and the inner pressure of the beverage container 1 starts to be reduced.

[0031] Subsequently, as shown in Figs. 5A and 5B, when the locking member 16 is moved to the release position, the mesh between the locking member 16 and the restraining portion 17 is released, and the lock of the straw cap 9 is released. In addition to this, the valve body 21 is further pressed in by the transmission member 30, and the deformation of the valve body 21 becomes maximum, so that the opening situation of the slit 27 becomes maximum. Consequently, the inner pressure of the beverage container 1 is completely released in such a state that the straw 6 is closed. As shown in Figs. 5A and 5B, since the restriction of the straw cap 9 is released while the locking member 16 is maintained at the release position, the straw cap 9 can be moved from the close position toward the open position.

[0032] As shown in Fig. 6, since the transmission member 30 moved along with the straw cap 9 is spaced apart from the valve body 21 with the motion of the straw cap 9 to the open position side, the pressing operation applied to the valve body 21 by the transmission member 30 is released. When the elastic deformation of the valve body 21 is eliminated by the release of the pressing operation, the valve body 21 is returned to the original state (see, Fig. 3A), and the valve body 21 is automatically returned to the close state. Then, the blocking of the straw 6 by the straw cap 9 is released by the motion of the straw cap 9 to the close position side, and the mouthpiece portion 7 of the straw 6 is in a state of extending straight, so that the straw 6 becomes usable.

[0033] According to the beverage container 1, the inner pressure can be reliably released in the course of opening the straw cap 9 to the open position side after the release of the lock of the straw cap 9 by the user. Further, since the open-close valve 20 is automatically returned to the close state when the straw cap 9 is opened to allow the use of the straw 6, the leakage of beverage through the open-close valve 20 at the moment of use can be prevented without any special operations which is performed to the open-close valve 20 by the user consciously. Accordingly, it is possible to prevent the user from feeling troublesome because of required operations at the moment of use. In the beverage container 1, since the transmission member 30 is provided in the locking member 16 in a state of being movable integrally with the locking member 16 of the straw cap 9, even if a special device is not provided in order to space, apart from the open-close valve 20 (valve body 21), the transmission member 30 in the midst of the pressing operation ongoing to the valve body 21, the transmission member 30 can be easily spaced apart from the open-close valve 20 by utilizing the motion of the straw cap 9 from the close position to the open position.

[0034] Different from a case that the open-close valve 20 is formed of plural parts, by utilizing the elastic deformation of the single valve body 21 formed of an elastic material, the open-close valve 20 of the beverage container 1 can change its own state between the open state and the close state. Thereby it is possible to reduce the number of parts of the open-close valve 20 easily. In addition, the open-close valve 20 has further features to be described hereinafter.

[0035] As shown in Figs. 1 and 6, for example, the open-close valve 20 is formed into a curved shape in such a way that the plate portion 25 of the valve body 21 is formed convexly toward the inside of the container body 2. More specifically, the open-close valve is formed into a spherical surface shape. Thus, when such a pressure difference occurs that the pressure of the inside of the container body 2 in a case that a boundary is the plate portion 25 is higher than the atmospheric pressure, a force that deforms the plate portion 25 in a direction that the slit 27 is adhered firmly acts on the valve body 21. Accordingly, when such a pressure difference occurs, passage of fluid in a direction from the inside of the container body 2 toward the outside is interrupted. Accordingly, if the valve body 21 is held in the close state, the leakage of beverage from the container body 2 to the outside thereof can be reliably prevented. Meanwhile, when such a pressure difference occurs that the pressure of the inner side of the container body 2 in a case that a boundary is the plate portion 25 is lower than the atmospheric pressure, that is, when the inner pressure is a negative pressure, a force that deforms the plate portion 25 in a direction that the slit 27 is opened acts on the valve body 21. Thus, when such a pressure difference occurs, the passage of fluid flowing in a direction from the outside of the container body 2 toward the inside can be allowed. Accordingly, the inner pressure may become a negative pressure in the course of reduction of a beverage amount in the container body 2 because of suction of beverage through the straw 6. However, even in this case, when the magnitude of the negative pressure exceeds the limit of opening of the slit 27, ambient air is taken into the container body 2 through the valve body 21. Thus, since a user who sucks beverage using the straw 6 is not required a lot of suction power, a burden on the user can be reduced.

[0036] The beverage container 1 is provided with an open state holding mechanism 40 which holds the open-close valve 20 in the open state in such a state that the straw cap 9 is located at the open position in order to prevent the beverage leakage through the straw 6 under circumstances in which external temperature is high as in the case of summer. Figs. 7 to 9 are explanatory views for describing functions of the open state holding mech-

anism 40. Fig. 7 is a partial side cross-sectional view showing a state in which holding of the open state of the open-close valve 20 is released by the open state holding mechanism 40. Fig. 8 is a partial side cross-sectional view showing a state in which the open state of the open-close valve 20 is held by the open state holding mechanism 40. Fig. 9 is a partial side cross-sectional view showing a state after the straw cap 9 is operated to the close position from the state shown in Fig.8.

[0037] As shown in Fig. 7, the open state holding mechanism 40 includes an engaging portion 41 provided in the straw adaptor 3 and an operation member 42 which can switch execution of the pressing operation applied to the valve body 21 and the release thereof by making an engagement with the engaging portion 41 and by releasing the engagement. The engaging portion 41 is provided so as to be adjacent to the valve body 21 and configured so as to protrude on a side of moving close to the valve body 21. The operation member 42 is provided to the outer periphery of the holding portion 26 so as to protrude in a direction of facing the engagingportion 41. The operation member 42 is formed of the same elastic material as the valve body 21 and provided integrally with the valve body 21. Since the valve body 21 and the operating member 42 are unified, they are easily formed by a single process, and, in addition, this constitution can contribute to reduction in the number of components. Thereby, the trouble for assembly can be saved. The operating member 42 has an abutting portion 42a as a protrusion portion which protrudes on the upper side of the container body 2 and can be abutted against the straw cap 9.

[0038] In Fig. 7, when a user moves leftward an upper left end portion of the cylindrical holding portion 26 in such a state that the straw cap 9 is located at the open position, the operation member 42 is lifted upward by its elasticity, and the operating member 42 gets on the engaging portion 41 to engage with the engaging portion 41 (Fig. 8). Since a base end portion of the operation member 42 is fixed to the outer periphery of the holding portion 26, when the operation member 42 is lifted upward, the holding portion 26 deformed so as to be tilted. Namely, the operation member 42 is engaged with the engaging portion 41, whereby the pressing operation is applied to the valve body 21, and, in addition, the operation is maintained. The state of Fig.8 corresponds to a first state according to the present invention. As apparently shown in Fig. 8, although the pressing operation is applied in a direction opposite to the operation by the transmission member 30, even by the pressing operation by the operation member 42, since the slit 27 extends in the operation direction, the slit 27 is opened in the similar way as in the case shown in Fig. 3B, and the valve body 21 moves into the open state. Since the valve body 21 is maintained in the open state as long as the operation member 42 is engaged with the engaging portion 41, even if external temperature rises while the straw cap 9 is open, by that the inner pressure can be always released by connecting the inside and the outside of the container body 2 to each other, it is possible to prevent beverage from leaking through the straw 6.

[0039] When the straw cap 9 is moved from the open position to the close position while the valve body 21 is maintained in the open state, as shown in Fig. 9, the abutting portion 42a of the operating member 42 contacts with the straw cap 9 to push the operating member 42 downward. Consequently, since the engagement between the operation member 42 and the engaging portion 41 is released, the pressing operation by the operation member 42 is released. The state of Fig. 9 corresponds to a second state according to the present invention. By the release of the pressing operation, the elastic deformation of the valve body 21 is eliminated so that the valve body 21 is returned to the original state. Thereby, the valve body 21 is returned from the open state to the close state, and the beverage container 1 is sealed. Namely, it is possible to reliably prevent the straw cap 9 from being located at the close position while the valve body 21 is in the open state.

[0040] Since the beverage container 1 includes the open state holding mechanism 40, after the valve body 21 is in the open state, only by closing the straw cap 9 without user' s particular consciousness, it is possible to prevent the leakage of beverage through the valve body 21 at the moment of carrying the beverage container. In the beverage container 1, since the amount of operations required to the user is reduced in comparison with the prior art, it is possible to prevent the user from feeling troublesome to operations. In the open state holding mechanism 40, although the engaging portion 41 is provided in the straw adaptor 3, the straw cap 9 may have the engaging portion 41. Namely, when the straw cap 9 is provided with the engaging portion 41 so that the engaging portion 41 is located at the same position as the position in Fig. 7, the straw cap 9 is moved to the close position side in such a state that the operation member 42 gets on the engaging portion 41, whereby the engaging portion 41 rotates and moves downward. Therefore, the engagement between the operation member 42 and the engaging portion 41 can be released.

[0041] The present invention is not limited to the above embodiment and may be practiced in various embodiments within a range of the scope of the invention. The locking member 16 is provided in the straw cap 9 and slides linearly as the motion. The transmission member 30 is provided to be movable integrally with the locking member 16. However, in the implementation of the beverage container of the present invention, the installation position of the locking member, the operation mode, the configuration of the transmission member, and so on can be modified arbitrarily. For example, the present invention can be practiced according to the first to fifth modifications shown in Figs. 10 to 14. In the descriptions of the following respective modifications, the components having similar functions to the components shown in Figs. 1 to 9 are assigned the same reference numerals,

and the descriptions will be omitted as long as there is not a special situation.

[0042] Fig. 10 is an explanatory view schematically showing the first modification. As illustrated, a beverage container 1A according to the first modification is provided with a locking mechanism 15A for locking a straw cap 9A, and the lockingmechanism 15A has a locking member 16A attached to a straw adaptor 3A in a state of being slidably movable between a lock position and a release position shown in Fig. 10. The locking mechanism 15A has a restraining portion 17A meshing the locking member 16A and the straw cap 9A with each other at the moment when the locking member 16A is located at the lock position and a return spring 18A biasing the locking member 16A toward the lock position. In the locking member 16A, a transmission member 30A configured to protrude on the lower side of the locking member 16A is provided integrally with the locking member 16A. Accordingly, in the beverage container 1A, when the locking member 16A is moved in the arrow direction to reach the release position, the transmission member 30A can elastically deform a valve body 21 of an open-close valve 20. The locking member 16A is moved to the release position, whereby the restriction of the straw cap 9A is released. Because of that, the straw cap 9A can be moved to the open position side. Since the locking member 16A is returned to the illustrated position by the return spring 18A while the straw cap 9A is located at the open position, the transmission member 30A is spaced apart from the open-close valve 20. Thereby, since the pressing operation applied to the valve body 21 of the open-close valve 20 by the transmission member 30A is released, the open-close valve 20 can be automatically returned to the close state from the open state.

[0043] Fig. 11 is an explanatory view schematically showing the second modification. As illustrated, a beverage container 1B according to the second modification is provided with a locking mechanism 15B for locking a straw cap 9B, and the lockingmechanism 15B has a locking member 16B attached to a straw adaptor 3B in a state of being rotatably movable between a lock position and a release position as shown in Fig. 11. The locking mechanism 15B is provided with a restraining portion 17B meshing the locking member 16B and the straw cap 9B with each other at the moment when the locking member 16B is located at the lock position and a return spring 18B biasing the locking member 16B toward the lock position side. In the locking member 16B, a transmission member 30B extending downward from the rotation-central portion of the locking member 16B is provided integrally with the locking member 16B. Accordingly, in the beverage container 1B, when the locking member 16B is rotated in the arrow direction to reach the release position, the transmissionmember 30B can elastically deform a valve body 21 of an open-close valve 20. The locking member 16B is moved to the release position, whereby since the restriction of the straw cap 9B is released, the straw cap 9B can be moved to the open position side. Since the locking member 16B is returned to the illustrated position by the return spring 18B while the straw cap 9B is located at the open position, the transmission member 30B is spaced apart from the open-close valve 20. Thereby, since the pressing operation applied to the valve body 21 of the open-close valve 20 by the transmission member 30B is released, the open-close valve 20 can be automatically returned to the close state from the open state.

[0044] Fig. 12 is an explanatory view schematically showing the third modification. As illustrated, a beverage container 1C according to the third modification is provided with a locking mechanism 15C for locking a straw cap 9C, and the lockingmechanism 15C has a locking member 16C attached to the straw cap 9C in a state of being rotatably movable between a lock position and a release position shown in Fig. 12. The locking mechanism 15C is provided with a restraining portion 17C meshing the locking member 16C and a straw adaptor 3C with each other at the moment when the locking member 16C is located at the lock position and a return spring 18C biasing the locking member 16C toward the lock position side. In the locking member 16C, a transmission member 30C extending downward from the rotation-central portion of the locking member 16C is provided integrally with the locking member 16C. Accordingly, in the beverage container 1C, when the locking member 16C is rotated in the arrow direction to reach the release position, the transmissionmember 30C can elastically deform a valve body 21 of an open-close valve 20. The locking member 16C is moved to the release position, whereby since the restriction of the straw cap 9C is released, the straw cap 9C can be moved to the open position side. Since the locking member 16C is returned to the original position by the return spring 18C while the straw cap 9C is located at the open position, the transmissionmember 30C is spaced apart from the open-close valve 20. Consequently, since the pressing operation applied to the valve body 21 of the open-close valve 20 by the transmission member 30C is released, the open-close valve 20 can be automatically returned from to the close state the open state.

[0045] Fig. 13 is an explanatory view schematically showing the fourth modification. This drawing shows a state as viewed from above. A beverage container 1D according to the fourth modification is provided with a locking mechanism 15D for locking a straw cap 9D, and a rotational axis line direction of a locking member 16D of the locking mechanism 15D is different from that in the second and third modifications. Namely, in the locking member 16D, the rotational axis line direction is set in the vertical direction of the beverage container 1D, and the locking member 16D is attached to a straw adaptor 3D in a state of being rotatably movable between a lock position and a release position shown in Fig. 13. The locking mechanism 15D includes a restraining portion 17D meshing the locking member 16D and the straw cap 9D with each other at the moment when the locking mem-

ber 16D is located at the lock position and a return spring 18D biasing the locking member 16D toward the lock position. In the locking member 16D, a transmission member 30D extending rightward from the rotation-central portion of the locking member 16D is provided integrally with the locking member 16D. Accordingly, in the beverage container 1D, when the locking member 16D rotates in the arrow direction to reach the release position, the transmission member 30D can elastically deform a valve body 21 of an open-close valve 20. The locking member 16D is moved to the release position, whereby since the restriction of the straw cap 9D is released, the straw cap 9D can be moved to the open position side. Since the locking member 16D is returned to the illustrated position by the return spring 18D while the straw cap 9D is located at the open position, the transmission member 30D is spaced apart from the open-close valve 20. Consequently, since the pressing operation applied to the valve body 21 of the open-close valve 20 by the transmissionmember 30D is released, the open-close valve 20 can be automatically returned to the close state from the open state. In this modification, such a modification can be made that the locking member 16D is provided on the straw cap 9D side.

[0046] Fig. 14 is an explanatory view schematically showing the fifth modification. As illustrated, a beverage container 1E according to the fifth modification is provided with a locking mechanism 15E for locking a straw cap 9E, and the lockingmechanism 15E has a locking member 16E attached to a straw adaptor 3E in a state of being slidably movable between a lock position and a release position shown in Fig. 14. The locking mechanism 15E comprises a restraining portion 17E meshing the locking member 16E and the straw cap 9E with each other when the locking member 16E is located at the lock position and a return spring 18E biasing the locking member 16E toward the lockposition. In an open-close valve 20E, a valve body 21E extends long from the straw adaptor 3E unlike the above modifications and is attached to the locking member 16E to be movable integrally with the locking member 16E. The straw adaptor 8E is provided with a transmission member 30E protruding upward so as to be adjacent to the valve body 21E. Accordingly, in the beverage container 1E, when the locking member 16E is moved in the arrow direction to reach the release position, the valve body 21E is moved with the locking member 16E and abutted against the transmitting member 30E. Thereby, the pressing operation is applied to the valve body 21E by the transmission member 30E, so that the valve body 21E is elastically deformed. The locking member 16E is moved to the release position, whereby since the restriction of the straw cap 9E is released, the straw cap 9E can be moved to the open position. Since while the straw cap 9C is located at the open position, the locking member 16E is moved by the return spring 18E, or the locking member 16E is moved upward along with the straw cap 9E, whereby the transmission member 30E is spaced apart from the open-close valve 20E. Consequently, since the pressing operation applied to the valve body 21E by the transmission member 30E is released, the open-close valve 20E can be automatically returned to the close state from the open state.

[0047] Each of the open-close valves according to the embodiment shown in Figs. 1 to 9 and the modifications shown in Figs. 10 to 14 has a valve body formed of an elastic material, and the state is changed between the close state and the open state by utilizing the elastic deformation of the valve body. However, the present invention can be practiced by an open-close valve having a structure shown in Fig. 15. Fig. 15 is an explanatory view showing another embodiment of the open-close valve. An open-close valve 50 shown in Fig. 15 includes a partition plate 51 partitioning inside and outside of a container body 2, a movable valve body 52 provided in a state of being movable in the horizontal direction of Fig. 5 while being adhered firmly to the partition plate 51, a return spring 53 biasing the movable valve body 52 toward an illustrated position, and a stopper 54 limiting the movement of the movable valve body 52. The partition plate 51 has at its center a penetrating hole 51a having such a size that the penetrating hole 51a can be closed by the movable valve body 52. The movable valve body 52 has a penetrating hole 52a larger than the penetrating hole 51a of the partition plate 51.

[0048] In the illustrated state, the position of the penetrating hole 51a of the partition plate 51 and the position of the penetrating hole 52a of the movable valve body 52 deviate from each other, and the penetrating hole 51a of the partition plate 51 is closed by the movable valve body 52. Thus, the open-close valve 50 is in a close state in which the inside and the outside of the container body 2 are disconnected. When the movable valve body 52 is subjected to the pressing operation in the arrow direction in the illustrated state, the positions of the penetrating holes 51a and 52a coincide with each other. Because of this, the inside and the outside of the container body 2 are connected to each other, and the state is transferred from the close state into the open state. When the pressing operation applied to the movable valve body 52 is released in the open state, the movable valve body 52 is returned to the illustrated position by the return spring 53. Because of this, the open-close valve 50 can be automatically returned to the close state from the open state with the release of the pressing operation.

[0049] Even if each of the open-close valves according to the embodiment shown in Figs. 1 to 9 and the respective modifications shown in Figs. 10 to 14 is replaced with the open-close valve 50 shown in Fig. 15, the pressing operation as a predetermined operation can be applied to the open-close valve 50 by the transmission member. Thus, a beverage container utilizing the open-close valve 50 functions equal to the beverage containers of the above embodiment and modifications.

[0050] A predetermined operation applied to the open-close valve is suitably determined according to the configuration of the open-close valve. Accordingly, for ex-

ample, in a case of an open-close valve the state of which is transferred from the close state into the open state by pulling some kind of member, the pulling operation corresponds to the predetermined operation. Alternatively, in a case of an open-close valve the state of which is transferred from the close state into the open state by rotating some kind of member, the rotating operation corresponds to the predetermined operation.

[0051] In a case that a valve body which can change the state thereof between the close state and the open state by utilizing elastic deformation is used, a valve body having a structure different from the valve body of the illustrated embodiment may be used. The operation member may not be provided integrally with the valve body and the present invention can be realized by using the operation member as a component separate from the valve body so as to be moved independently from the valve body.

Claims

1. A beverage container with straw including a container body having an opening portion and a straw adaptor which is mounted to the container body so as to close the opening portion, in which a straw for sucking beverage in the container body is mounted to the straw adaptor, wherein
the beverage container includes:

a straw cap which is attached to the straw adaptor in a state of being operable between a close position where the straw is hidden and an open position where the straw is exposed;
a locking member which is operated between a lock position where the straw cap is locked at the close position and a release position where the lock is released;
an open-close valve which changes its own state between a close state in which an inside and an outside of the container body are disconnected and an open state in which the inside and the outside of the container body are connected to each other, in such a way as to transfer the state from the close state into the open state by receiving a predetermined operation, and when the predetermined operation is released, return the state to the close state from the open state; and
a transmission member which transmits, as the predetermined operation to the open-close valve, an operation of the locking member from the lock position toward the release position, and moves away from the open-close valve so that the predetermined operation to the open-close valve is released in such a state that the straw cap is located at the open position.

2. The beverage container with straw according to claim 1, wherein
the open-close valve has a valve body formed of an elastic material which is deformed when a pressing operation as the predetermined operation is performed by the transmission member, and the valve body is configured so as to transfer the state into the open state by elastic deformation according to the pressing operation and return the state to the close state from the open state by elimination of the elastic deformation according to release of the pressing operation.

3. The beverage container with straw according to claim 2, wherein
the valve body includes a plate portion and a holding portion having a cylindrical shape which are unified, the plate portion partitioning the inside and the outside of the container body, the holding portion holding a periphery of the plate portion and receiving the pressing operation, and
the plate portion has a slit extending in a same direction as an operating direction of the pressing operation, and penetrating in a plate thickness direction.

4. The beverage container with straw according to claim 3, wherein the plate portion is formed into a curved shape which is obtained by being formed convexly toward the inside of the container body.

5. The beverage container with straw according to claim 2, wherein
the straw has a mouthpiece portion formed of a same material as the valve body, and the mouthpiece portion and the valve body are unified.

6. The beverage container with straw according to any one of claims 1 to 5, wherein
the straw cap is rotatably attached to the straw adaptor through a support shaft, whereby the straw cap is moved between the close position and the open position,
the straw cap is provided with the locking member in such a state that the locking member is moved between the lock position and the release position, and
the lockingmember is provided with the transmissionmember in such a state that the transmission member is moved integrally with the locking member.

7. A beverage container with straw including a container body having an opening portion and a straw adaptor mounted to the container body so as to close the opening portion, in which a straw for suctioning beverage in the container body is mounted to the straw adaptor, wherein

the beverage container with straw includes:

a straw cap which is attached to the straw adaptor in such a state of being movable between a close position where the straw is hidden and an open position where the straw is exposed;
an open-close valve which has a valve body formed of an elastic material that is elastically deformed when a pressing operation is performed, and is configured so that a state of the valve body transfers from a close state in which an inside and an outside of the container body are disconnected by elastic deformation according to the pressing operation into an open state in which the inside and the outside of the container body are connected to each other, and the state of the valve body is returned to the close state from the open state by elimination of the elastic deformation according to release of the pressing operation;
an engaging portion which is provided to the straw adaptor or the straw cap in such a way as to be adjacent to the valve body; and
an operation member which is displaced between a first state in which the straw cap in a state of being located at the open position is engaged with the engaging portion, whereby the pressing operation is applied to the valve body and a second state in which the operation member connects to the straw cap in a course of motion of the straw cap from the open position to the close position to release an engagement with the engaging portion, whereby the pressing operation is released.

8. The beverage container with straw according to claim 7, wherein
the operation member is formed of a same material as the valve body, and the valve body and the operating member are unified.

9. The beverage container with straw according to claim 7 or 8, wherein
the operation member has a protrusion portion protruding an upside of the container body and facilitating a pull-up operation by a user,
the operation member gets on the engaging portion by pulling up the protrusion portion, whereby the operation member is engaged with the engaging portion, and
the protrusion portion connects to the straw cap and is pushed down in a course of the motion of the straw cap from the open position to the close position, whereby the engagement between the operation member and the engaging portion is released.

10. The beverage container with straw according to claim 7, wherein
the valve body includes a plate portion and a holding portion having a cylindrical shape which are unified, the plate portion partitioning the inside and the outside of the container body, and the holding portion holding a periphery of the plate portion and receiving the pressing operation, and
the plate portion has a slit extending in a same direction as an operating direction of the pressing operation, and penetrating in a plate thickness direction.

FIG.1

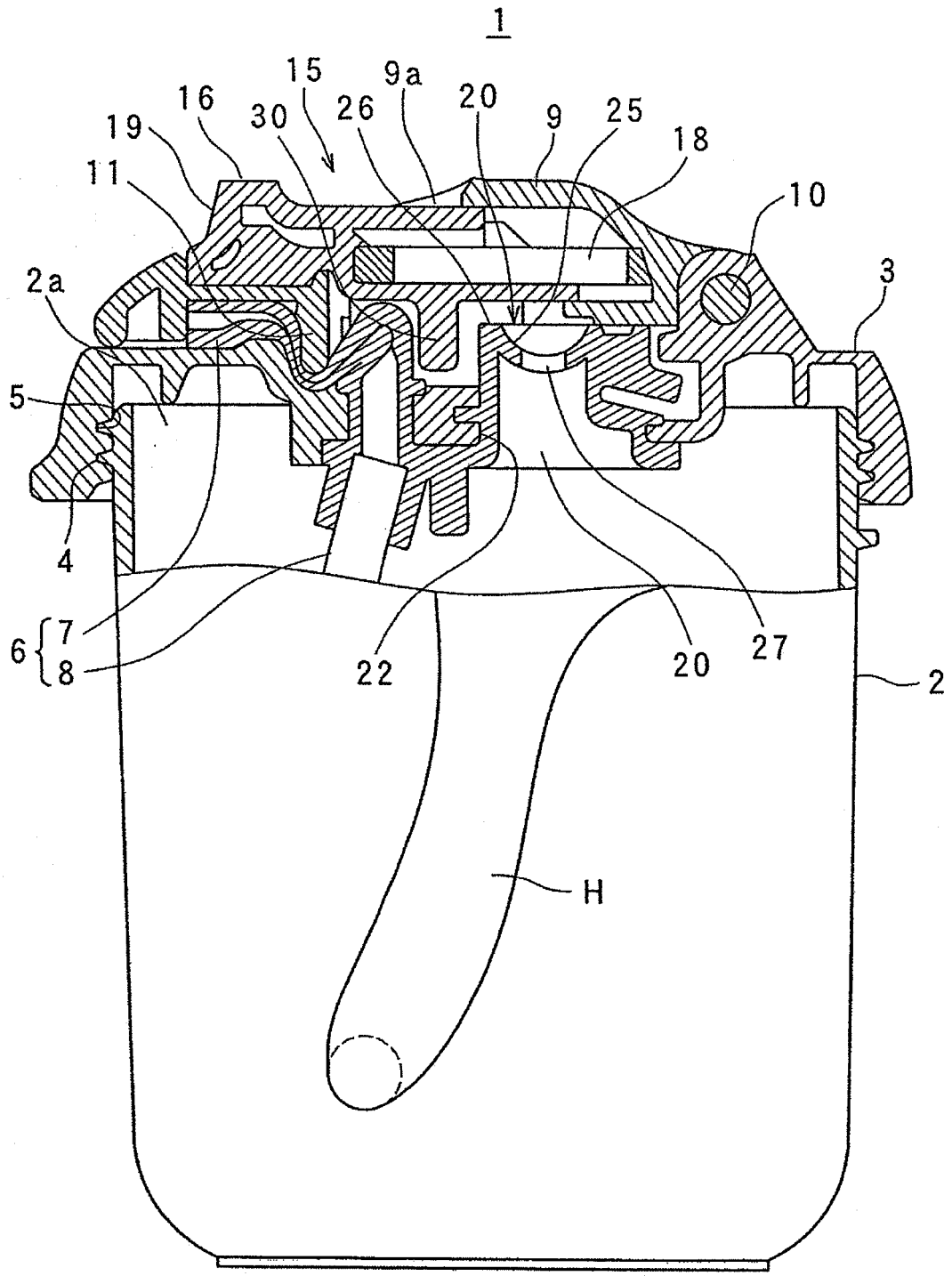

FIG.2

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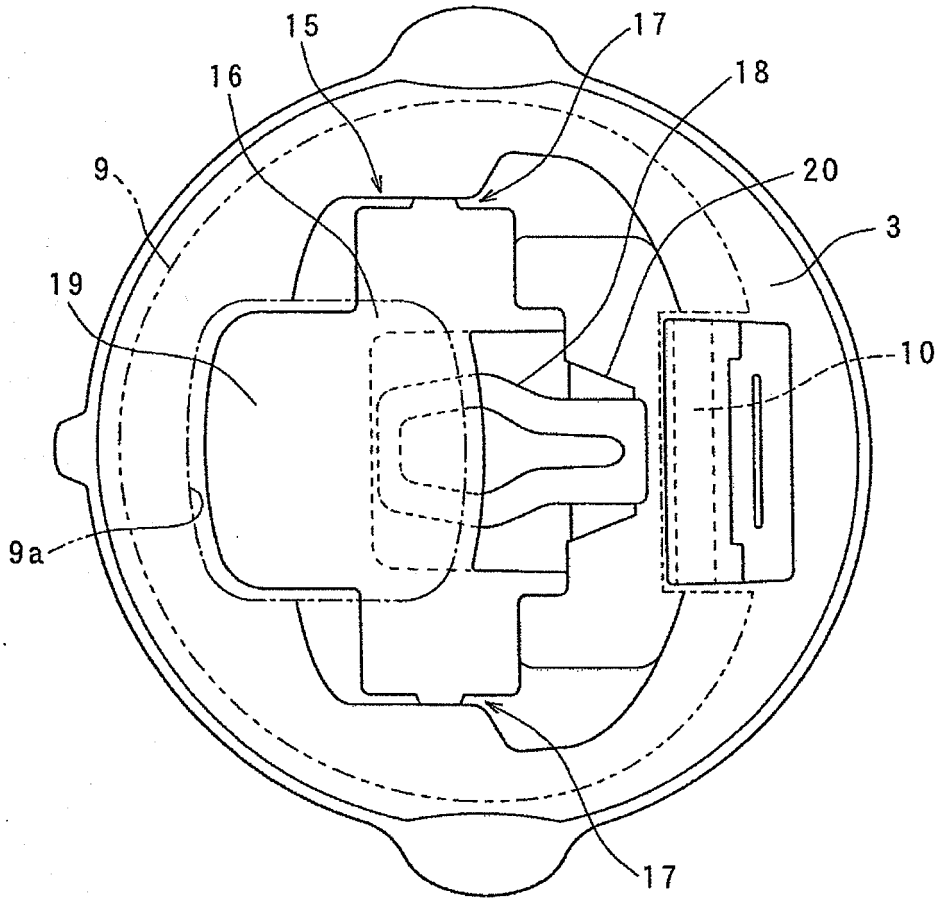

FIG.3A

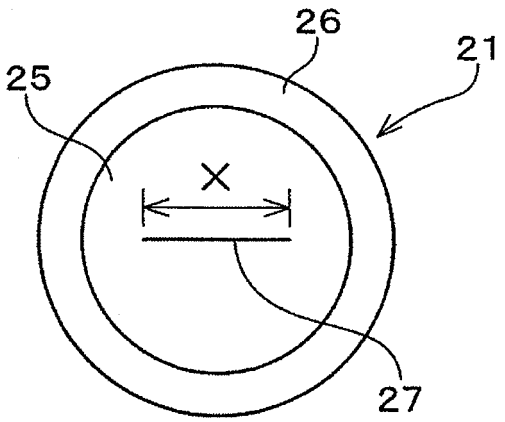

FIG.3B

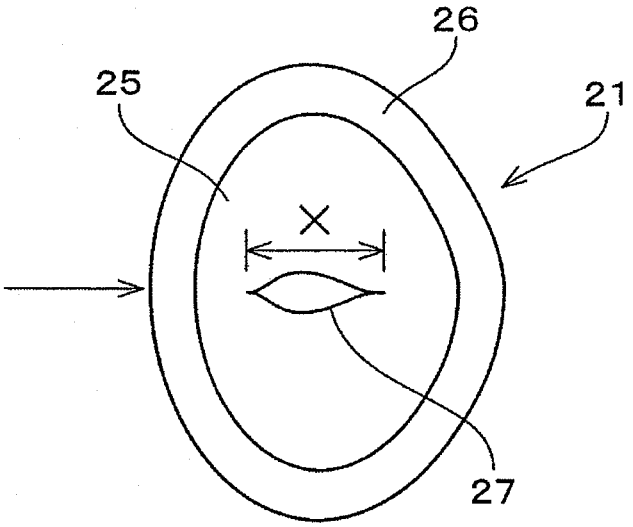

FIG.4A

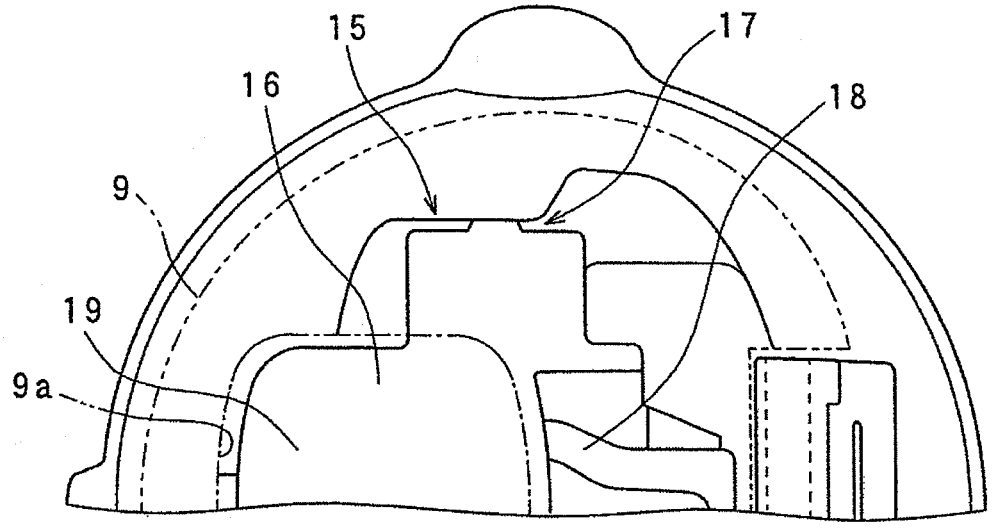

FIG.4B

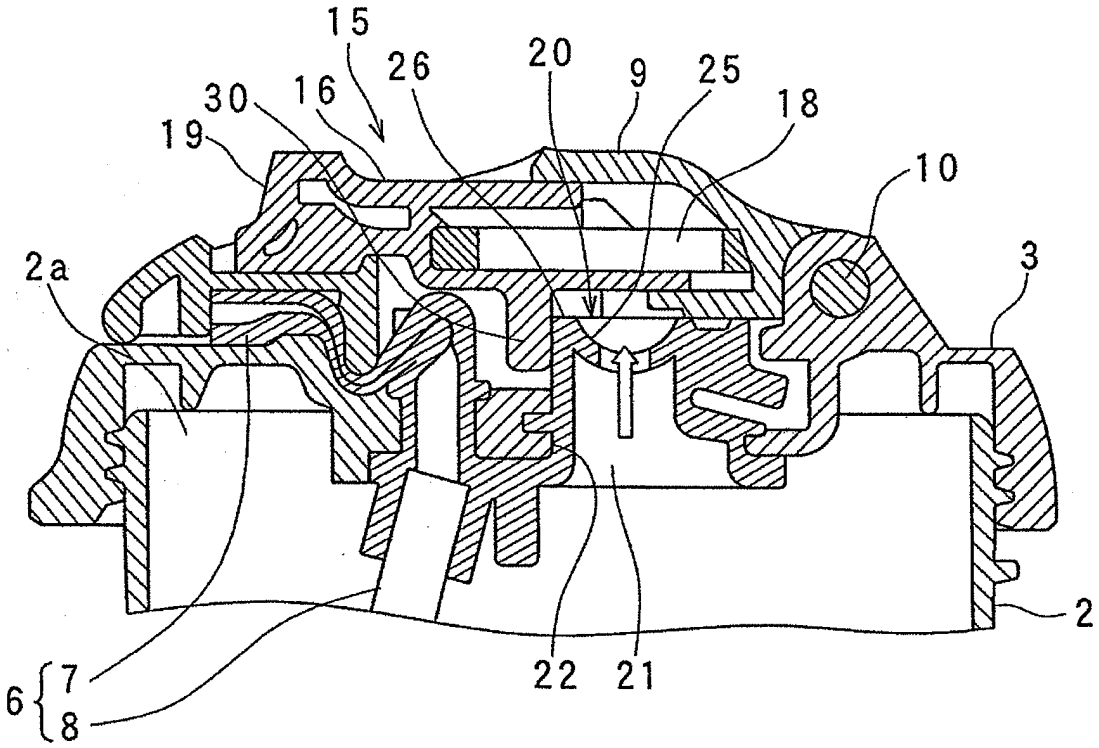

FIG.5A

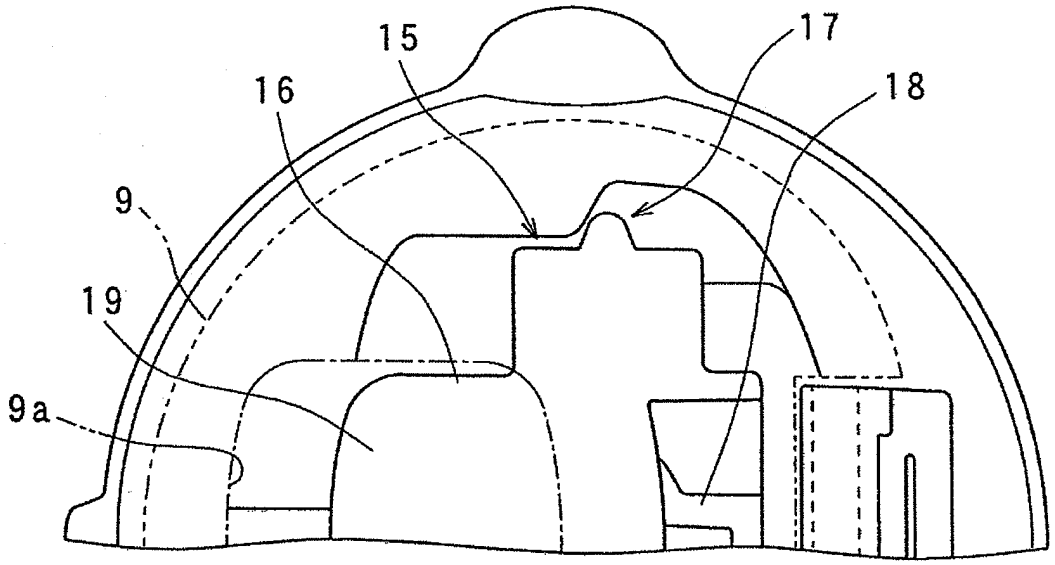

FIG.5B

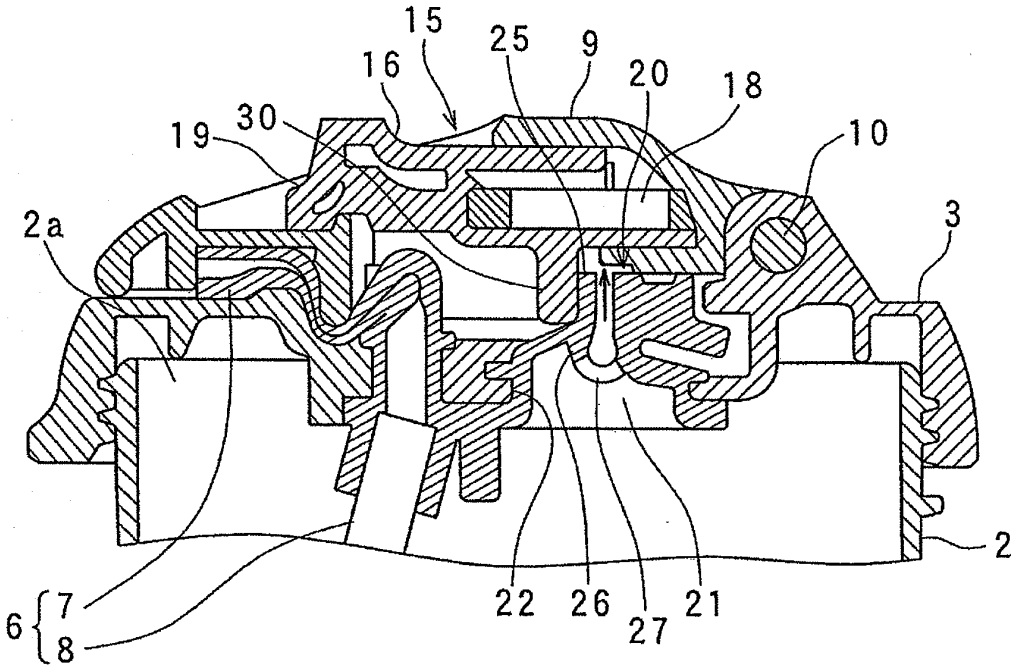
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FIG.6

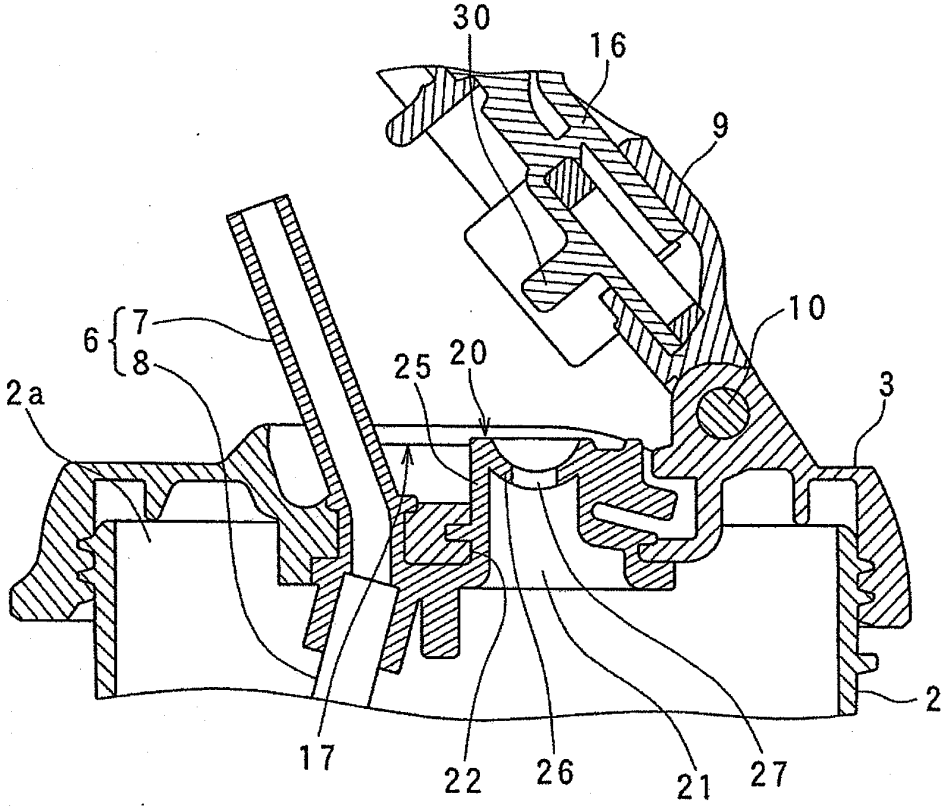
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FIG.7

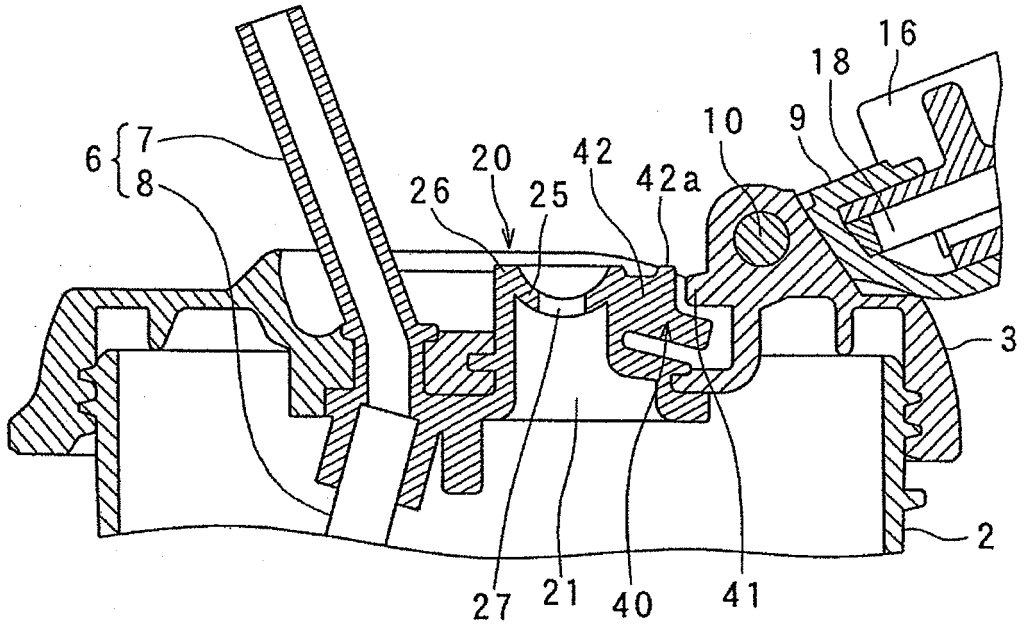
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FIG.8

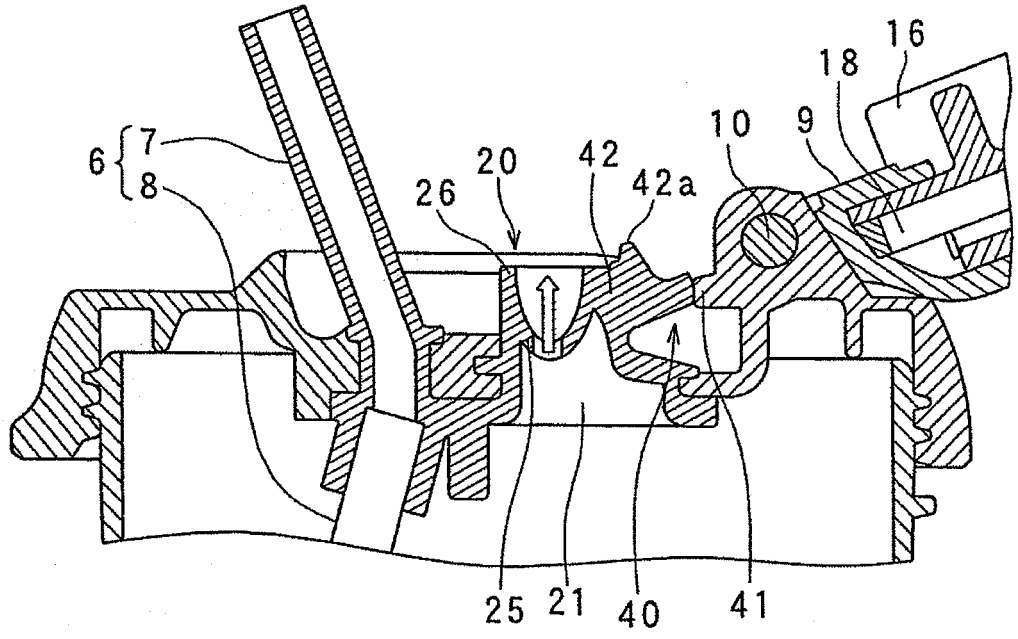
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FIG.9

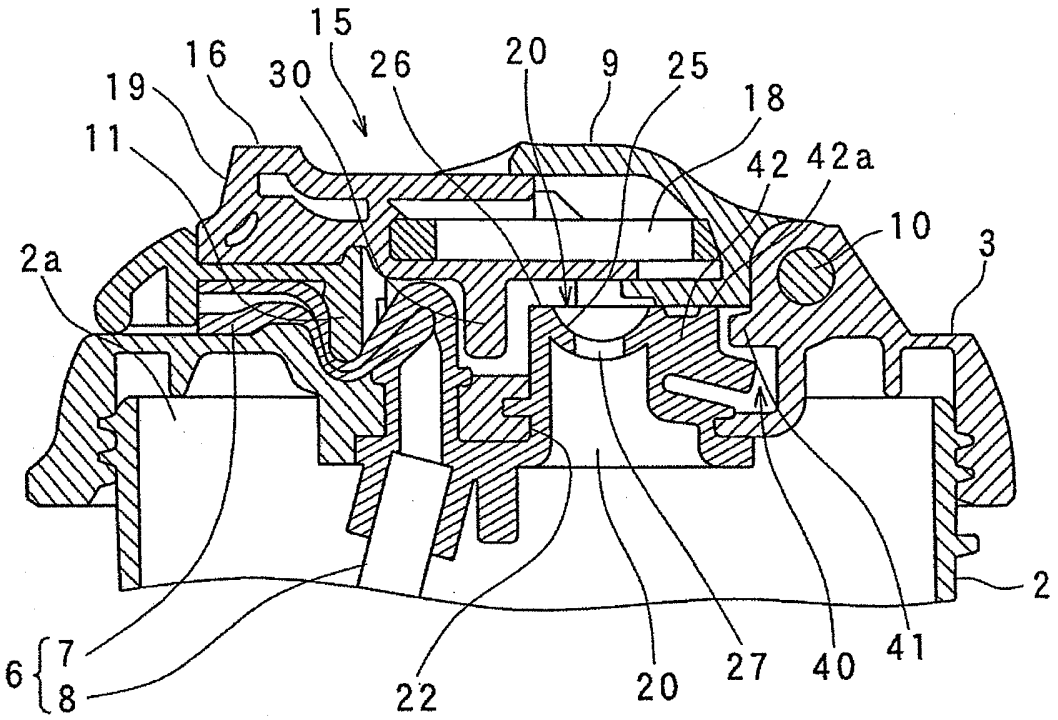
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FIG.10

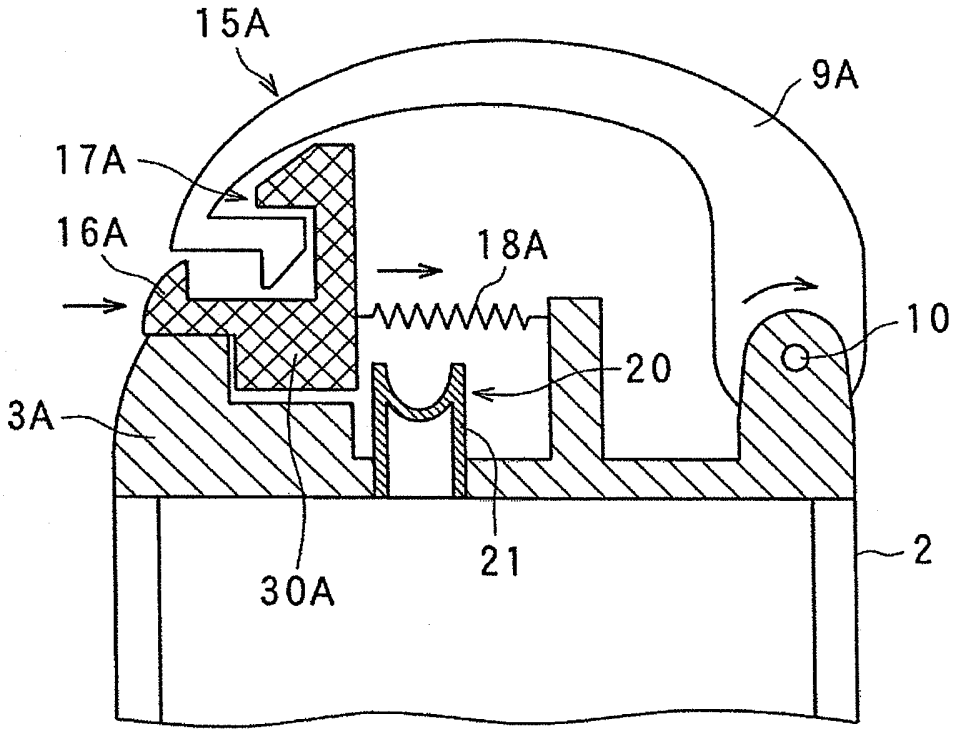
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FIG.11

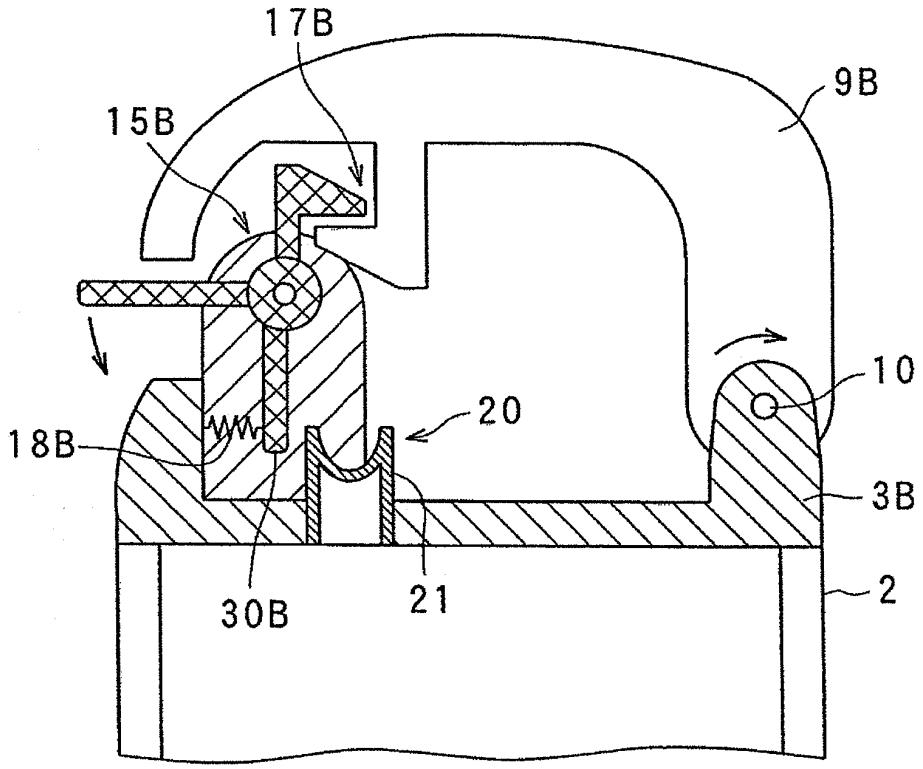


FIG.12

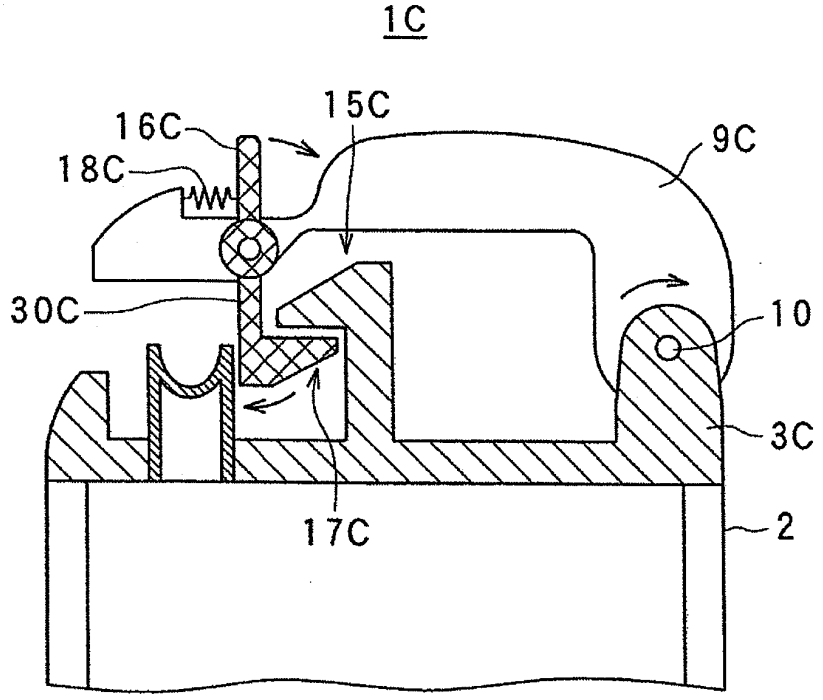
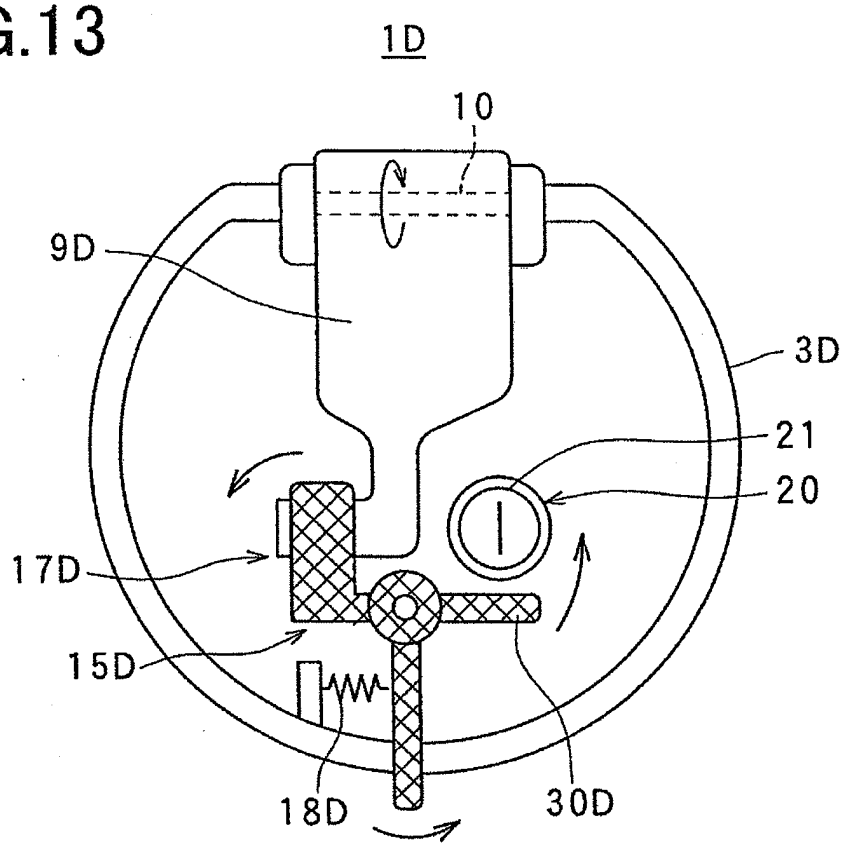


FIG.13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9D
3D
21
20
17D
15D
18D
30D

FIG.14

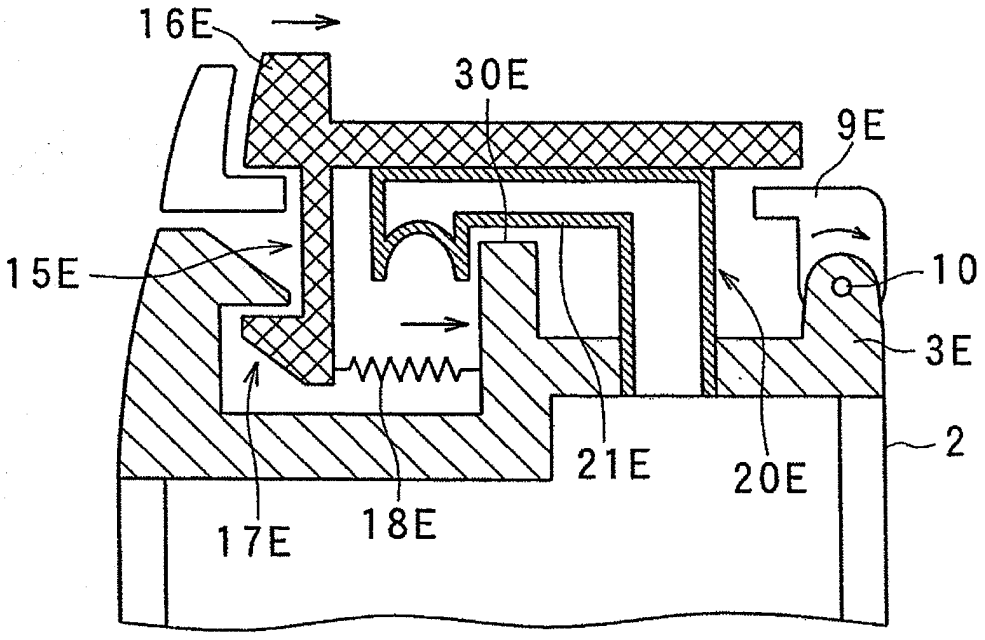
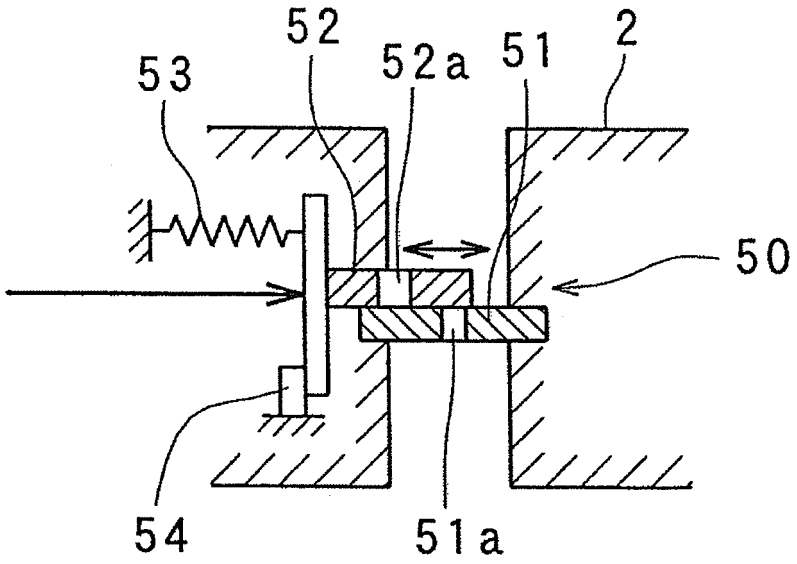

1E
16E
30E
9E
15E
10
3E
2
21E
20E
17E
18E

FIG.15



INTERNATIONAL SEARCH REPORT

International application No.
PCT/JP2010/065539

A. CLASSIFICATION OF SUBJECT MATTER
B65D51/24(2006.01)i, *B65D25/20*(2006.01)i, *B65D47/08*(2006.01)i, *B65D51/16*(2006.01)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)
B65D51/24, B65D25/20, B65D47/08, B65D51/16

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 1996-2010
Kokai Jitsuyo Shinan Koho 1971-2010 Toroku Jitsuyo Shinan Koho 1994-2010

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

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	JP 2006-335464 A (Pigeon Corp.), 14 December 2006 (14.12.2006), paragraphs [0028] to [0035]; fig. 6 to 8 (Family: none)	1-10
A	JP 2004-42982 A (Richell Corp.), 12 February 2004 (12.02.2004), claims 1 to 4; fig. 5, 8, 11 (Family: none)	1-10

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

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"&" document member of the same patent family

Date of the actual completion of the international search	Date of mailing of the international search report
30 September, 2010 (30.09.10)	19 October, 2010 (19.10.10)
Name and mailing address of the ISA/ Japanese Patent Office Facsimile No.	Authorized officer Telephone No.

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INTERNATIONAL SEARCH REPORT

International application No.
PCT/JP2010/065539

C (Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	Microfilm of the specification and drawings annexed to the request of Japanese Utility Model Application No. 51923/1986(Laid-open No. 161828/1987) (Zojirushi Corp.), 14 October 1987 (14.10.1987), fig. 1 to 4 (Family: none)	1-10
A	JP 2002-321741 A (Combi Corp.), 05 November 2002 (05.11.2002), fig. 7 to 10 & US 7097065 B2 & EP 1252842 A2	1-10

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REFERENCES CITED IN THE DESCRIPTION

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Patent documents cited in the description

- JP 2002321741 A **[0005]**