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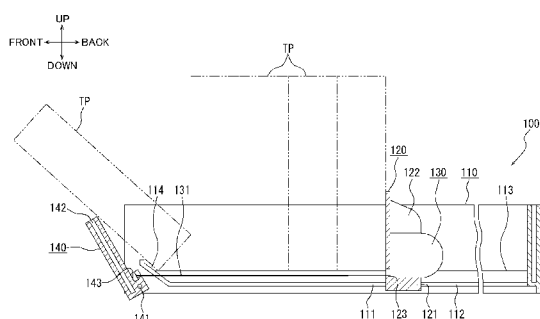
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[Continued on next page]

(54) Title: MAGAZINE UNIT

[Fig. 1]

FIG. 1



(57) Abstract: A magazine unit (100) includes a magazine main body (110) which accommodates a plurality of cigarette commodities (TP) in a state of being arranged in a front-back direction. The magazine unit (100) includes a push slider (120) which pushes the cigarette commodities (TP) frontward as being arranged slidably in the front-back direction at the magazine main body (110). The magazine unit (100) includes a wire reel (130) which urges the push slider (120) frontward with elastic force. The wire reel (130) includes a reel main body, a wire (a resin wire 131) accommodated in the reel main body to be capable of being pulled out from the reel main body, and an elastic member arranged in the reel main body to urge the wire in a direction to be accommodated in the reel main body with the elastic force. [Representative Drawings] Fig. 1



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Description

Title of Invention: MAGAZINE UNIT

Technical Field

[0001] The present invention relates to a magazine unit which accommodates a plurality of cigarette commodities in a state of being arranged in a front-back direction, and in particular, relates to a magazine unit in which a plurality of accommodated cigarette commodities is urged frontward.

Background Art

[0002] Cigarette commodities are currently displayed and sold in stores such as so-called convenience stores. The "cigarette commodity" mentioned here means not a cigarette which is actually smoked but a rectangular solid package which accommodates a plurality of cigarettes and a carton which accommodates a plurality of the packages.

[0003] The cigarette display system for displaying cigarette commodities includes a plurality of magazine units and a system frame, for example. The magazine unit is a tray formed of transparent colorless resin to have a box-like shape elongated in a front-back direction having a top face opened, for example.

[0004] The cigarette commodities in a state of upright and arranged in the front-back direction are accommodated in the magazine unit from the upper side. A push slider is attached to a bottom part of the magazine unit as being slidable in the front-back direction.

[0005] More specifically, an opening elongated in the front-back direction is formed at the bottom part of the magazine unit. Upward-protruded ribs are formed on both left and right sides of the opening. The push slider is attached to the pair of ribs and the opening as being slidable in the front-back direction.

[0006] Further, a wound plate spring to serve as an urging mechanism is attached at a back part of the push slider. One end of the plate spring is pulled out from a wound section of the plate spring which is arranged at the push slider and is attached to a front bottom part of the magazine unit.

[0007] Accordingly, the push slider slidable in the front-back direction is urged frontward with elastic force by the plate spring. Therefore, the plurality of cigarette commodities accommodated in the magazine unit is pushed to the frontmost part of the magazine unit by the push slider.

[0008] The system frame holds a plurality of magazine units arranged in the vertical and lateral directions. The system frame includes a plurality of guide rails and a single main frame. A pair of guide rails holds both sides of the magazine unit. For example, the main frame is formed into a cubic shape with metal bars. The plurality of guide

rails is fixed in pairs respectively to key points of the main frame.

[0009] In the abovementioned cigarette display system, for example, 20 magazine units are mounted in the system frame in an array of 4 rows and 5 columns. For example, about 10 to 13 pieces of cigarette commodities are accommodated in each of the magazine units.

[0010] A Cigarette commodity is formed in a rectangular solid shape in which a front face and a back face, two side faces, and a top face and a bottom face are different in size. Among the above, the front face and the back face have largest area while a brand name and the like are printed at least on the front face and the back face. In the above-mentioned cigarette display system, cigarette commodities are accommodated in an upright state in the transparent colorless magazine units and are displayed in a state that the front face or the back face of the cigarette commodity is located at the front side. Accordingly, for example, 20 types of cigarette commodities can be displayed while accommodating 10 pieces for each.

[0011] When selling a cigarette commodity, the cigarette commodity is required to be pulled out upward from the frontmost position of the magazine unit. When the cigarette commodity is pulled out, subsequent cigarette commodities accommodated in the magazine unit are pushed frontward by the push slider. Therefore, the magazine unit maintains the state of displaying the cigarette commodity at the frontmost position even after one cigarette commodity is pulled out therefrom.

[0012] When replenishing cigarette commodities in the cigarette display system, a magazine unit is detached from the system frame. Cigarette commodities are accommodated in the magazine unit, and the magazine unit having the cigarette commodities accommodated therein is mounted in the system frame. Accordingly, the cigarette commodities can be easily replenished in the magazine unit in a state that the magazine unit is detached from the system frame.

[0013] As described above, there has been disclosed a magazine unit which feeds commodities frontward by utilizing elastic force of a coil-shaped plate spring. In a typical magazine unit, a plate spring has been mounted to a back part of a push slider (Patent Literature 1) or a plate spring has been fixed to a front lower face of the magazine unit (Patent Literature 2). In either structure described above, a section of the plate spring exists to be extended between the front end part of the magazine unit and the push slider as being pulled out from a wound section of the plate spring to be in an exposed state.

Citation List

Patent Literature

[0014] [PTL 1] Japanese Laid-open Patent publication NO. 2000-060691

[PTL 2]Japanese Examined Utility Model publication NO. 07-36523

Summary of Invention

- [0015] Either magazine unit described above is structured to push the push slider by the thin plate spring which is spirally wound. Here, the section pulled out from the wound section of the plate spring exists as being extended between the front end part of the magazine unit and the push slider in an exposed state. Since the plate spring has a sharp edge part, it is required to take extra care for an operator such as a store salesperson when replenishing cigarette commodities. Accordingly, it has been difficult to quickly perform replenishing operation.
- [0016] Further, when cigarette commodities are replenished in the magazine unit, the plate spring is to be in a tensed state of being maximally tensed while the push slider is moved to the backmost part. When an object such as another magazine unit collides with the plate spring in such a tensed state, there has been a possibility that elastic restoring force is decreased owing to occurrence of bending and the like at the plate spring. That is, there has been a problem in durability with a plate spring of a typical magazine unit.
- [0017] To address the above issues, the present invention provides a magazine unit having excellent safety and durability.
- [0018] A magazine unit of the present invention includes a magazine main body which accommodates a plurality of cigarette commodities in a state of being arranged in a front-back direction; a push slider which pushes the cigarette commodities frontward as being arranged slidably in the front-back direction at the magazine main body; and a wire reel which urges the push slider frontward with elastic force as including a reel main body, a wire accommodated in the reel main body to be capable of being pulled out from the reel main body, and an elastic member arranged in the reel main body to urge the wire in a direction to be accommodated into the reel main body with the elastic force.
- [0019] Accordingly, in the magazine unit of the present invention, the plurality of cigarette commodities is accommodated in the magazine main body in a state of being arranged slidably in the front-back direction. The plurality of cigarette commodities accommodated as described above is pushed frontward by the push slider which is urged frontward by the wire reel. The wire reel includes the reel main body, the wire accommodated in the reel main body to be capable of being pulled out from the reel main body, and the elastic member arranged in the reel main body to urge the wire in the direction to be accommodated into the reel main body with the elastic force, and urges the push slider frontward with the elastic force. Accordingly, the plurality of cigarette commodities can be pushed frontward without any part of the spirally-wound plate

spring being in the exposed state as being pulled out from the wound section.

- [0020] In the magazine unit as described above, an opening through which the wire is pulled in and out may be formed in the reel main body, the wire may form a wound section as being wound circularly at the inside of the reel main body, a tangential direction at the wound section may coincide with a pulling-out direction of the wire from the reel main body, and the wire may be pulled out from the reel main body through the opening in a state of not being contacted to an edge part of the opening of the reel main body.
- [0021] In the magazine unit as described above, the wire reel may include a winding drum which winds the wire as being arranged rotatably in the reel main body, and the elastic member may urge the winding drum in a rotation direction of winding the wire.
- [0022] In the magazine unit as described above, the wire reel may be mounted to the push slider and the front end of the wire may be connected to the vicinity of the front end of the magazine main body.
- [0023] In the magazine unit as described above, the wire reel may be mounted to a back part of the push slider.
- [0024] In the magazine unit as described above, an opening through which the wire is pulled in and out may be formed in the reel main body, the wire may form a wound section as being wound circularly at the inside of the reel main body, a tangential direction at the wound section may coincide with a pulling-out direction of the wire from the reel main body, the wire may be pulled out from the reel main body through the opening in a state of not being contacted to an edge part of the opening of the reel main body, and the opening may be located at a lower part of the push slider.
- [0025] In the magazine unit as described above, a slope to displace the cigarette commodity upward may be formed at an inner front end of the magazine main body, and the wire may be inserted to the inside of the slope.
- [0026] In the magazine unit as described above, a left and right pair of protruded rail portions to support the cigarette commodities may be formed at an upper face of a bottom plate of the magazine main body, and the wire may be inserted to a gap between the left and right protruded rail portions.
- [0027] In the magazine unit as described above, the push slider may include a connecting portion which is connected to a bottom plate of the magazine main body as being slidable in the front-back direction and a pushing portion which pushes the cigarette commodities frontward as rising upward from the connecting portion, a locking portion may be formed at a back part of the bottom plate to set the push slider into a locked state in which frontward movement is restricted by engaging a section being slidably moved along an upper face of the bottom plate of the push slider, and a concave portion for finger clawing concaved backward may be formed at a lower part of a front face of the pushing portion.

- [0028] In the magazine unit as described above, the concave portion may be located at a front side from the front end part of the connecting portion.
- [0029] In the magazine unit as described above, a plurality of concave-convex shape repeated in the vertical direction may be formed in the concave portion.
- [0030] In the magazine unit as described above, the plurality of concave-convex shape may be a plurality of grooves respectively extended in the horizontal direction as being mutually apart in the vertical direction.
- [0031] In the magazine unit as described above, a cutout-shaped portion for finger clawing may be formed respectively at both side parts of a section above the concave portion at the pushing portion.
- [0032] In the magazine unit as described above, a contact member to be contacted to the cigarette commodity may be arranged respectively at both side parts of the front face of the pushing portion as being extended in the vertical direction and being formed of material having a larger friction coefficient than the front face.
- [0033] In the magazine unit as described above, protruded quantity of the contact member frontward from the front face of the pushing portion may be gradually increased toward a lower part of the contact member.
- [0034] In the magazine unit as described above, the contact member may be formed into a flat-plate shape being rectangular in a front view as being elongated in the vertical direction and being thin in the front-back direction, a concave portion for arrangement having a rectangular shape in a front view may be formed at the front face of the pushing portion as being elongated in the vertical direction to be gradually shallow toward a lower part of the concave portion, and the frontward-protruded quantity of the contact member may be gradually increased toward the lower part of the contact member by arranging the contact member at the concave portion for arrangement.
- [0035] Further, the components of the present invention are not necessarily independent entities. It is possible that a plurality of components may be formed as a single member, a single component may be formed as a plurality of members, a component may be a part of another component, and a part of a component may overlap a part of another component.
- [0036] According to the magazine unit of the present invention, a plurality of cigarette commodities is accommodated in the magazine main body in a state of being arranged in the front-back direction. The plurality of cigarette commodities accommodated as described above is pushed frontward by the push slider which is arranged at the magazine main body as being slidable in the front-back direction and which is urged frontward by the wire reel. The wire reel urges the push slider frontward with the elastic force as including the reel main body, the wire capable of being pulled out from the reel body, and the elastic member arranged in the reel main body to urge the wire

in the direction to be accommodated into the reel main body with the elastic force. Accordingly, the plurality of cigarette commodities can be pushed frontward without any part of the spirally-wound plate spring being in an exposed state as being pulled out from the wound section. Therefore, it is possible to provide a magazine unit having excellent safety and durability by utilizing such a wire reel.

Brief Description of Drawings

[0037] The above and other objects, features and advantages will be more apparent from the following description of certain preferred embodiments and following drawings corresponding thereto.

[fig.1] This is a schematic vertically-sectioned side view illustrating an inner structure of a magazine unit according to a first embodiment as a front flap being in an opened state.

[fig.2] This is a schematic vertically-sectioned side view illustrating the inner structure of the magazine unit according to the first embodiment as the front flap being in a raised state.

[fig.3] This is a vertically-sectioned side view of respective components illustrating an assembling structure of the magazine unit according to the first embodiment.

[fig.4] This is a schematic plane view illustrating the structure of the magazine unit according to the first embodiment as the front flap being in the raised state.

[fig.5] This is a schematic vertically-sectioned side view illustrating an inner structure of a wire reel.

[fig.6] This is a view illustrating a push slider of a magazine unit according to a second embodiment. Fig. 6(A) is a front view, and Fig. 6(B) is a side view.

[fig.7] This is a view illustrating a push slider of a magazine unit according to a second embodiment. Fig. 7(A) is a sectional side view, Fig. 7(B) is a plane view, and Fig. 7(C) is a bottom view.

[fig.8] This is a schematic view illustrating a wire reel of the magazine unit according to the second embodiment. Fig. 8(A) is a side view and Fig. 8(B) is a sectional view along a line A-A of Fig. 8(A).

[fig.9] This is a plane view illustrating a back part of the magazine unit according to the second embodiment.

[fig.10] This is a side view illustrating the back part of the magazine unit according to the second embodiment.

[fig.11] This is a schematic sectional side view illustrating operation to lock the push slider of the magazine unit to the back part of the magazine unit according to the second embodiment. Fig. 11(A) illustrates a state that the push slider is not locked and Fig. 11(B) illustrates a state that the push slider is locked.

[fig.12] This is a schematic view illustrating difference of behavior of the push slider between a case that the push slider is urged by the wire reel (Fig. 12(A)) and a case that the push slider is urged by a plate spring which is wound into a whorled shape (Fig. 12(B)).

[fig.13] This is a plane view of a magazine unit according to a third embodiment.

Description of Embodiments

[0038] In the following, embodiments of the present invention will be described with reference to the drawings. Here, similar structural components have the same numeral in all drawings and description thereof will not be repeated. Further, the same name is used for the same part of the present embodiments as the abovementioned example in the related art and detailed description will not be repeated.

[0039] (First embodiment)

A magazine unit 100 of the present embodiment accommodates a plurality of cigarette commodities TP in a state of being arranged in a front-back direction. The cigarette commodities TP are formed in rectangular solid packages in which a plurality of paper-wrapped cigarettes is accommodated.

[0040] As illustrated in Figs. 1 to 4, the magazine unit 100 includes a magazine main body 110 which accommodates the plurality of cigarette commodities TP in a state of being arranged in the front-back direction, a push slider 120 which pushes the cigarette commodities TP frontward as being arranged slidably in the front-back direction at the magazine main body 110, and a wire reel 130 which urges the push slider 120 frontward. As illustrated in Fig. 5, the wire reel 130 includes a reel main body 132, a resin wire (a wire) 131 which is accommodated in the reel main body 132 to be capable of being pulled out from the reel main body 132, and a plate spring (an elastic member) 134 arranged in the reel main body 132 to urge the resin wire 131 in a direction to be accommodated into the reel main body 132 with elastic force. The wire reel 130 urges the push slider 120 frontward with the elastic force.

[0041] The reel main body 132 is a housing (a case) formed with an opening 135 through which the resin wire 131 is accommodated in and pulled out from the reel main body 132. The resin wire 131 forms a wound section as being wound circularly at the inside of the reel main body 132. A tangential direction at the wound section coincides with a pulling-out direction of the resin wire 131 from the reel main body 132. The resin wire 131 is to be pulled out from the reel main body 132 through the opening 135 and to be rewound into the reel main body 132 through the opening 135 in a state of not being contacted to an edge part of the opening 135 of the reel main body 132.

Here, the resin wire 131 may be in a non-contact state against the edge part of the opening 135 of the reel main body 132 regardless of a position of the wire reel 130 in

the front-back direction of the magazine unit 100. Alternatively, the resin wire 131 may be in a non-contact state against the edge part of the opening 135 of the reel main body 132 only when the wire reel 130 exists at a specific position in the front-back direction of the magazine unit 100.

[0042] The wire reel 130 is a member to apply frontward urging force to the push slider 120 as being connected to the push slider 120 and the magazine main body 110. The wire reel 130 may be mounted to either the magazine main body 110 or the push slider 120.

[0043] An attaching direction of the wire reel 130, that is, a direction (an elongated direction) of a support shaft 133 for the resin wire 131 at the inside of the wire reel 130, is not specifically limited. For example, the support shaft 133 is oriented in the vertical direction or the horizontal direction.

[0044] In the magazine unit 100 of the present embodiment, the wire reel 130 is mounted to the back part of the push slider 120 as illustrated in Figs. 1 and 2. The front end of the resin wire 131 is connected to the vicinity of the front end of the magazine main body 110 and the opening 135 is located at a lower part of the push slider 120. Then, the support shaft 133 is oriented in the horizontal direction.

[0045] The wire reel 130 of the magazine unit 100 of the present embodiment is an integrated component combining a slider urging mechanism which urges the push slider 120 frontward and a flap urging mechanism which raises the front flap 140 in a normal state by urging the front flap 140 backward. The wire reel 130 interlocks the push slider 120 and the front flap 140. The front end of the resin wire 131 is connected above an axially support position of the front flap 140.

[0046] As illustrated in Fig. 5, the wire reel 130 includes the support shaft 133 formed at the inner center of the reel main body 132 and a plate spring (a flat spiral spring) 134 which is accommodated in the reel main body 132. The plate spring 134 is wound around the support shaft 133 into a spiral shape (a whorled shape) having one end part thereof fixed to the support shaft 133. One end of the resin wire 131 is connected to the top end of the plate spring 134. The plate spring 134 has elastic force in a direction of being wound to the support shaft 133. The plate spring 134 urges the resin wire 131 in a direction to draw the resin wire 131 into the reel main body 132.

[0047] Further, a slope 114 which displaces the cigarette commodities TP upward is formed at the inner front end of the magazine main body 110. The resin wire 131 is inserted to the inside of the slope 114. A route of the resin wire 131 and an inclined face of the slope 114 intersect with each other and the slope 114 is formed in a shape so as not to interfere with the resin wire 131. For example, the slope 114 is formed with an opening (for example, the front end part of a later-mentioned opening 112) through which the resin wire 131 is passed.

[0048] More specifically, the magazine main body 110 and the front flap 140 are formed of

hard resin which is transparent and colorless. An opening 112 elongated in the front-back direction is formed at a bottom plate 111 of the magazine main body 110. The opening 112 penetrates the bottom plate 111 through two sides of the bottom plate 111.

[0049] A lower portion 121 of the push slider 120 is formed to have a front face being laid-H-shaped and is slidably engaged with an edge part of the abovementioned opening 112 of the magazine main body 110. A left and right pair of protruded rail portions 113 is formed at an upper face of the bottom plate 111 of the magazine main body 110 to smoothen slide motion of cigarette commodities TP.

[0050] A left and right pair of ribs 122 is formed at a back part of the push slider 120. The wire reel 130 is mounted between the left and right pair of ribs 122. The wire reel 130 incorporates a plate spring 134 (see Fig. 5) and accommodates the wire (the resin wire 131) capable of being pulled out from the reel main body 132 with elastic force in the reel main body 132.

[0051] The wire is a flexible string (a cord member). Material of the wire is not specifically limited. However, in view of safety, soft material which does not have elastic force substantially is preferable. In the present embodiment, a resin-made wire (the resin wire 131) is utilized.

[0052] The resin wire 131 is inserted to a through-hole 123 formed at a lower part of the push slider 120 and a gap between the left and right pair of protruded rail portions 113 of the magazine main body 110. The front end of the bottom plate 111 of the magazine main body 110 is formed as a slope 114 inclined as the front being upped. The resin wire 131 inserted to the slope 114 is connected to the engaging portion 143 at a back face of the front flap 140.

[0053] Accordingly, the resin wire 131 is not interfered with cigarette commodities TP supported by the protruded rail portions 113 and the resin wire 131 is also not interfered with the frontmost cigarette commodity TP which is displaced upward by the slope 114.

[0054] The front flap 140 has circular protrusions 141 formed bilaterally at the lower end thereof. The front flap 140 is axially supported by the magazine main body 110 at the protrusions 141 to be swingable to the magazine main body 110. Since the resin wire 131 is connected to the front flap 140 at an upper part from the protrusions 141, a moment load in a direction of pulling the upper end of the front flap 140 backward is applied to the front flap 140 by the wire reel 130. Accordingly, the front flap 140 is raised in the normal state.

[0055] The front flap 140 is maintained at a closed state as being raised to be approximately vertical by being abutted to the front end face of the slope 114. As described above, the front flap 140 is formed to be transparent and colorless and is formed with an upper-face-opened pocket 142 to which a price tag and the like can be inserted.

- [0056] With the structure as described above, in the magazine unit 100 of the present embodiment, a plurality of cigarette commodities TP is accommodated as being arranged in the front-back direction in the magazine main body 110 which is box-shaped having the upper and front faces opened, as illustrated in Figs. 1 and 2.
- [0057] The plurality of cigarette commodities TP is urged frontward by the push slider 120 being supported slidably in the front-back direction by the magazine main body 110 and being urged frontward by the wire reel 130. The front flap 140 is axially supported at the front face opening of the magazine main body 110 in the vicinity of the lower end of the front face opening as being swingable between the closed state to be approximately vertical and an opened state to be inclined frontward.
- [0058] As being urged by the wire reel 130 with elastic force to maintain the closed state, the front flap 140 is prevented from being in the opened state along with the cigarette commodities TP urged frontward.
- [0059] Accordingly, the frontmost cigarette commodity TP can be easily pulled out as the front flap 140 being in the opened state, and further, the subsequent frontmost cigarette commodity TP is maintained to be vertical as the front flap 140 becoming into the closed state rapidly after the cigarette commodity TP is pulled out.
- [0060] In the magazine unit 100 of the present embodiment, the plurality of cigarette commodities TP accommodated in the magazine main body 110 is supported at the inside of the magazine main body 110 as being slidable in the front-back direction and is pushed frontward by the push slider 120. This is because the push slider 120 is urged frontward by the resin wire 131 accommodated in the reel main body 132 to be capable of being pulled out from the reel main body 132 with elastic force of the wire reel 130.
- [0061] Accordingly, the plurality of cigarette commodities TP is pushed frontward without any part of the spirally-wound plate spring being in an exposed state as being pulled out from the wound section. The resin wire 131 of the present embodiment is a soft string having flexibility. A width dimension of the plate spring 134 is larger than an opening diameter of the opening 135, so that the plate spring 134 accommodated in the wire reel 130 is prevented from being pulled out from the wire reel 130. Accordingly, the magazine unit 100 having excellent safety and durability can be provided by utilizing the wire reel 130 as the present embodiment.
- [0062] Further, as illustrated in Fig. 5, the wire reel 130 includes the reel main body 132 formed with the opening 135 through which the resin wire 131 is pulled in and out. The resin wire 131 forms the wound section as being wound circularly at the inside of the reel main body 132. The tangential direction at the wound section coincides with the pulling-out direction of the resin wire 131 from the reel main body 132. The resin wire 131 is to be pulled out from the reel main body 132 through the opening 135 in the state of not being contacted to the edge part of the opening 135 at the reel main

body 132.

- [0063] Accordingly, the resin wire 131 can be smoothly pulled in and out through the opening 135 of the reel main body 132 and wearing of the resin wire 131 is reduced. Therefore, the wire reel 130 has excellent reliability and durability.
- [0064] Further, the reel main body 132 of the wire reel 130 is sandwiched by the left and right pair of ribs 122 at the back part of the push slider 120. Accordingly, since the reel main body 132 can be easily detached from and attached to a space between the pair of ribs 122, replacement of the wire reel 130 can be easily performed when the resin wire 131 is broken.
- [0065] In addition, as described above, the wire reel 130 is formed as an integrated component combining the mechanism to urge the push slider 120 frontward and the mechanism to urge the front flap 140 backward. Accordingly, since parts count of the magazine unit 100 can be reduced, excellent productivity of the magazine unit 100 can be obtained.
- [0066] Since the wire reel 130 is mounted to the back part of the push slider 120, the back part of the push slider 120 to be dead space can be effectively utilized. Further, the front end of the resin wire 131 is connected above the axial support position of the front flap 140. Accordingly, the front flap 140 can be into the raised state as being reliably urged backward with a simple structure.
- [0067] Further, since the left and right pair of protruded rail portions 113 is formed at the bottom plate 111 of the magazine main body 110 and the resin wire 131 is inserted to the gap therebetween, the resin wire 131 is prevented from being interfered with bottom faces of cigarette commodities TP which are supported by the protruded rail portions 113.
- [0068] Further, since the front end of the bottom plate 111 of the magazine main body 110 is formed as the slope 114 inclined as the front being upped, the frontmost cigarette commodity TP is to be displaced upward so that the frontmost cigarette commodity TP is easily pulled out.
- [0069] Further, since the resin wire 131 is inserted to the inside of the slope 114, the resin wire 131 is prevented from being interfered with the frontmost cigarette commodity TP. Since the front flap 140 is transparent and colorless and is formed with the upper-face-opened pocket 142, a price tag and the like can be inserted to the pocket 142.
- [0070] (Second embodiment)
- Figs. 6 and 7 are views illustrating a push slider 120 of a magazine unit 200 according to a second embodiment. Here, Fig. 6(A) is a front view, Fig. 6(B) is a side view, Fig. 7(A) is a sectional side view, Fig. 7(B) is a plane view, and Fig. 7(C) is a bottom view.

Fig. 8 is a schematic view of a wire reel 130 of the magazine unit 200. Here, Fig.

8(A) is a side view and Fig. 8(B) is a sectional view along a line A-A (being a sequential line) of Fig. 8(A).

Figs. 9 and 10 are views illustrating a back part of the magazine unit 200. Here, Fig. 9 is a plane view and Fig. 10 is a side view.

Fig. 11 is an explanatory sectional side view for operation of locking the slider 120 of the magazine unit 200 to the back part of the magazine unit 200. Here, Fig. 11(A) illustrates a state that the push slider 120 is not locked and Fig. 11(B) illustrates a state that the push slider 120 is locked.

[0071] The magazine unit 200 according to the present embodiment differs from the magazine unit 100 of the abovementioned first embodiment in points described in the following.

[0072] As illustrated in Figs. 6 and 7, the push slider 120 of the magazine unit 200 includes a connecting portion 320 which is connected to the bottom plate 111 as being slidable in the front-back direction, and a pushing portion 220 which pushes the cigarette commodities TP frontward as being arranged to rise from the front end of the connecting portion 320.

[0073] The connecting portion 320 includes a left and right pair of upper plate-shaped portions 321 which are arranged along the upper face of guide rails 16 (Fig. 9, to be described later) formed respectively at left and right edge parts of the opening 112 of the bottom plate 111, a lower plate-shaped portion 322 which is arranged along the lower face of the guide rails 16, and a left and right pair of vertical connecting portions 323 which connects the upper plate-shaped portion 321 and the lower plate-shaped portion 322.

As illustrated in Fig. 10, the connecting portion 320 is connected to the bottom plate 111 by holding the guide rails 16 as vertically sandwiching with the upper plate-shaped portion 321 and the lower plate-shaped portion 322. The vertical connecting portions 323 are arranged to vertically penetrate the opening 112.

In a state of being connected as described above, the connecting portion 320, eventually the entire push slider 120, is slidably movable frontward and backward relatively against the bottom plate 111 along the opening 112.

[0074] As illustrated in Figs. 9 and 10, an attaching-detaching opening 111c through which the push slider 120 is attached to and detached from the bottom plate 111 is formed in the bottom plate 111. The attaching-detaching opening 111c is formed continuously to opening 112 as being adjacent behind the opening 112. The attaching-detaching opening 111c is formed to have dimensions enabling the lower plate-shaped portion 322 of the connecting portion 320 to pass therethrough from the upper to the lower or from the lower to the upper.

When the push slider 120 is to be attached to the magazine main body 110, the

connecting portion 320 is moved frontward after the lower plate-shaped portion 322 of the connecting portion 320 is passed through the attaching-detaching opening 111c from the upper side to the lower side. In this manner, the connecting portion 320 is connected to the bottom plate 111. When the push slider 120 is to be detached from the magazine main body 110, operation reverse to the case of attaching is performed.

[0075] As illustrated in Figs. 6 and 7, for example, the pushing portion 220 includes a lower rising portion 221 which rises upward from the front end part of the connecting portion 320, a front protruding portion 222 which protrudes frontward (for example, toward an obliquely upper-front side) from the upper end part of the lower rising portion 221, and an upper rising portion 223 which rises upward from the top end part in the protruding direction of the front protruding portion 222.

A front face of the upper rising portion 223 is upright as being formed flat.

[0076] A concave portion 27 for finger clawing concaved backward is formed at a front face lower part of the pushing portion 220 (specifically, a front face lower part of the upper rising portion 223). The concave portion 27 is formed to have a shape which is fit to a finger pad. For example, the concave portion 27 is concaved gradually to be deep toward a center part in the vertical direction.

The push slider 120 can be moved backward by pushing the concave portion 27 from the front side of the magazine unit 200 or pulling the concave portion 27 from the back side of the magazine unit 200 with a finger.

A plurality of concave-convex shape repeated in the vertical direction is formed in the concave portion 27. Accordingly, friction in the vertical direction is enlarged.

A specific example of the plurality of concave-convex shape is a plurality of grooves 28 extended in the horizontal direction as being mutually apart in the vertical direction. Alternatively, it is also possible to form the concave portion 27 stepwise as being concaved gradually to be deep toward the center part in the vertical direction.

The concave portion 27 is located at the front side from the front end part of the connecting portion 320.

Here, an opening 29 penetrating the upper rising portion 223 in the front-back direction is formed respectively at both left and right side parts of the concave portion 27 to facilitate molding of the concave portion 27.

[0077] At the upper rising portion 223 of the pushing portion 220, a cutout-shaped portion 23 for finger clawing is formed respectively at both side parts of a section above the concave portion 27. The section of the upper rising portion 223 where the cutout-shaped portions 23 are formed is narrowed in a front view. Accordingly, the push slider 120 can be moved backward by pulling or pushing the push slider 120 backward as pinching the left and right cutout-shaped portions 23 with fingers.

[0078] Ribs 25 for finger clawing are formed as being vertically extended respectively at a

back part of an outer face of left and right reinforcing plates 22. Accordingly, the push slider 120 can be moved backward by pulling the push slider 120 backward as pinching the left and right ribs 25 with fingers.

[0079] A contact member 70 to be contacted to a cigarette commodity TP is arranged respectively at both side parts of a front face of the pushing portion 220 (specifically, a front face of the upper rising portion 223) as being formed of material having larger friction coefficient than that of the front face.

The contact member 70 is arranged respectively at the left and right of the concave portion 27.

[0080] For example, the entire push slider 120 is integrally formed of resin. Examples of material of the push slider 120 include polyoxymethylene polyacetal (POM) or the like.

For example, the contact member 70 is formed of silicon rubber, polyurethane, or other synthetic rubber which is softer than the material of the push slider 120.

[0081] The contact member 70 is arranged as being extended in the vertical direction.

Protruded quantity of the contact member 70 frontward from a front face of the upper rising portion 223 of the pushing portion 220 is gradually increased toward the lower part thereof.

The contact member 70 is formed into a flat-plate shape being rectangular in a front view as being elongated in the vertical direction and being thin in the front-back direction. A concave portion 225 for arrangement having a rectangular shape in a front view is formed at the front face of the upper rising portion 223 as being elongated in the vertical direction to be gradually shallow toward the lower part of the concave portion 225. Since the contact member 70 is arranged at the concave portion 225 for arrangement, the frontward-protruded quantity of the contact member 70 is gradually increased toward the lower part thereof. For example, the protruded quantities of the left and right contact members 70 are the same.

For example, the front face of the upper end part of the contact member 70 is flush with the front face of the upper rising portion 223.

[0082] Owing to arranging of the contact member 70, a contacting property of the push member 220 against the cigarette commodity TP is increased. Accordingly, the cigarette commodities TP can be securely pushed frontward as being stably supported from the back side by the push member 220.

[0083] Here, since the frontward-protruded quantity of the contact member 70 is lessened gradually toward the upper part, cigarette commodities TP can be smoothly loaded to an area at the front side of the pushing portion 220. In particular, since the front face at the upper end part of the contact member 70 is flush with the front face of the upper rising portion 223, the cigarette commodities TP are more unlikely to get stuck with

the upper end part of the contact member 70 at the time of loading the cigarette commodities TP. Here, since the frontward-protruded quantity of the contact member 70 is gradually increased toward the lower part thereof, the cigarette commodities TP can be securely pushed frontward.

In this manner, it is possible to combine easy loading of cigarette commodities TP and secure pushing of the cigarette commodities TP by the pushing portion 220.

[0084] In the push slider 120, a reel holding room 21 to hold the wire reel 130 is formed at a section being the upper face side of the lower plate-shaped portion 322 and the back face side of the pushing portion 220.

The push slider 120 includes the left and right pair of reinforcing plates 22 rising upward from the upper plate-shaped portion 321 and rising rearward from the pushing portion 220.

The left and right end parts of the reel holding room 21 are defined by the pair of reinforcing plates 22 and the lower end part of the reel holding room 21 is defined by the lower plate-shaped portion 322. The upper end part of the reel holding room 21 is defined by a holding room top plate 24 which is laid between the reinforcing plates 22.

The reel holding room 21 is formed into a concave shape opened backward.

The wire reel 130 is attached to the reel holding room 21.

[0085] As illustrated in Fig. 8, the wire reel 130 includes a reel main body 132 having a thinly flattened shape in the left and right direction, a shaft portion 55 which is fixed at the center part of the reel main body 132 as the axial direction being the left and right direction, a cylinder-shaped winding drum 57 which winds the resin wire 131 as being arranged in the reel main body 132 rotatably about the axis of the shaft portion 55, the plate spring 134 which is arranged at the inside of the winding drum 57, the resin wire 131, and a clamp 52. Here, in Fig. 8(B), the resin wire 131, the plate spring 134 and the clamp 52 are not illustrated.

[0086] The plate spring 134 is spirally wound around the shaft portion 55 while one end thereof is fixed to shaft portion 55. The winding direction is clockwise in Fig. 8(A). The other end of the plate spring 134 is fixed to the winding drum 57.

The winding drum 57 includes a cylinder-shaped body portion 57a to which the resin wire 131 is wound, and flange portions 57b which are formed respectively at both left and right ends of the body portion 57a.

The resin wire 131 is wound around the body portion 57a of the winding drum 57 while one end thereof is fixed to the body portion 57a. The winding direction of the resin wire 131 is the same as the winding direction of the plate spring 134.

A section at the other end side of the resin wire 131 is pulled out to the outside of the reel main body 132 through the opening 135 formed in the reel main body 132.

[0087] The plate spring 134 urges the winding drum 57 with elastic force in a direction to

rotate the winding drum 57 in one direction (counterclockwise in Fig. 7(A) and 8(A)), that is, in a direction to pull the resin wire 131 into the reel main body 132 by winding the resin wire 131 to the body portion 57a of the winding drum 57. When the resin wire 131 is pulled out from the reel main body 132, the winding drum 57 is rotated in the opposite direction (clockwise in Fig. 7(A) and 8(A)) to the one direction against the elastic force of the plate spring 134.

[0088] The resin wire 131 is pulled out frontward from the push slider 120 out of the reel holding room 21 through the through-hole 123 (Figs. 6(A) and 7(A)) formed at the lower part of the front part of the push slider 120.

The clamp 52 is attached to the other end (the top end) of the resin wire 131.

The clamp 52 is fixed to the front flap 140 by engaged with the engaging portion 143 (Fig. 1) of the front flap 140. The engaging portion 143 is arranged at a front side of the opening 135 and the through-hole 123.

Accordingly, the wire reel 130 pulls (urges) the push slider 120 frontward with urging force of the plate spring 134.

Owing to the pulling force (urging force), the pushing portion 220 of the push slider 120 pushes a back face of a backmost cigarette commodity TP frontward.

When the frontmost cigarette commodity TP is pulled out from the magazine main body 110, the push slider 120 moves the rest of cigarette commodities TP frontward with urging force of the wire reel 130.

[0089] Here, lateral width (left and right width) of the body portion 57a, that is, opposing distance between the left and right flange portions 57b is set to be twice of the diameter of the resin wire 131 or larger. Since the resin wire 131 is wound so as to be aligned in the left and right direction when being wound to the body portion 57a, it is possible to suppress increase of a wound diameter of the resin wire 131. With the above, behavior of the push slider 120 can be stabilized as suppressing variation of the pulling direction of the push slider 120 due to the resin wire 131 corresponding to variation of wound quantity of the resin wire 131 around the body portion 57a (corresponding to variation of positions of the push slider 120 in the front-back direction).

In a case of structure that a section pulled out from a wound section of a plate spring exists as being extended between the front end part of a magazine unit and a push slider, there may be a fear that the pulling direction of the push slider 120 by the plate spring is considerably varied in accordance with variation of the wound diameter of the plate spring and that behavior of the push slider 120 becomes unstable.

[0090] At the bottom plate 111, left and right edge parts of the opening 112 respectively comprise the guide rails 16 which guide the push slider 120 when the push slider 120 is moved in the front-back direction.

Each guide rail 16 is formed to include a protruded rail portion 17 extended in the

front-back direction as rising upward from the upper face of the bottom plate 111.

[0091] Further, the protruded rail portions 113 are formed respectively at the outer side of the guide rails 16. Height (a vertical dimension) of the protruded rail portion 113 is larger than that of the protruded rail portion 17 of the guide rail 16. Accordingly, the top point of the protruded rail portion 113 is arranged at a vertically higher position than that of the protruded rail portion 17.

The cigarette commodities TP are supported by the left and right pair of protruded rail portions 113.

[0092] Here, the resin wire 131 exists as being extended in the front-back direction at a lower position than the lower end of the cigarette commodities TP supported on the protruded rail portions 113. Accordingly, the cigarette commodities TP supported by the protruded rail portions 113 and the resin wire 131 are prevented from being mutually interfered.

[0093] The magazine main body 110 includes a plurality of blade-shaped protrusions 19 protruding downward from the lower end part thereof. For example, the protrusions 19 are arranged in pair as being mutually apart in the front-back direction respectively at the right end part and the left end part of the magazine main body 110. For example, the protrusions 19 are engaged with positioning grooves and the like formed at a bottom plate of a system frame of a cigarette display system in which the magazine unit 100 is accommodated.

[0094] Here, a lock mechanism to be described in the following enables to set the push slider 120 in a locked state against the magazine main body 110 at the back part of the magazine main body 110 so as to restrict proceeding of the push slider 120.

[0095] The lock mechanism includes a locking portion 111b formed respectively at left and right edge parts of the back end part of the opening 112 in the bottom plate 111. The locking portion 111b is a stepped face formed at the upper face of the bottom plate 111. A section of the upper face of the bottom plate 111 being at the front side from the locking portion 111b is higher than a section being at the back side from the locking portion 111b.

The push slider 120 can be in the locked state at the back part of the magazine main body 110 (Fig. 11(B)) by engaging front end faces 321a of the left and right pair of upper plate-shaped portions 321 respectively with the left and right locking portions 111b as moving the push slider 120 backward against urging by the wire reel 130. That is, the locking portions 111b are formed at the back part of the bottom plate 111 to set the push slider 120 into the locked state in which frontward movement thereof is restricted by engaging the upper plate-shaped portions 321 being slidably moved along the upper face of the bottom plate 111 with the locking portions 111b.

[0096] A section of the bottom plate 111 being back side from the locking portions 111b is

formed to include thin portions 111a of which thickness in the vertical direction is thinner than that of sections therearound. Accordingly, the locking portion 111b being the stepped face is formed at a front end position of the thin portion 111a. Here, the locking portion 111b includes a back end face of the protruded rail portion 17.

[0097] For accommodating cigarette commodities TP to the magazine main body 110, the push slider 120 is moved toward the back part of the magazine main body 110 and a space between the push slider 120 and the front flap 140 is expanded, and then, the cigarette commodities TP are accommodated to the space.

When the push slider 120 is in the locked state against the back part of the magazine main body 110, cigarette commodities TP can be accommodated to the magazine main body 110 even without restricting proceeding of the push slider 120 by hand.

[0098] Fig. 12(B) is a schematic view illustrating behavior of the push slider 120 in a case that the push slider 120 is urged frontward by a spiral-shaped plate spring 534 not by the wire reel 130.

In Fig. 12(B), the shaft 55 is attached to the reinforcing plate 22. The plate spring 534 is spirally wound around the shaft portion 55 having one end part thereof fixed to the shaft portion 55. The other end of the plate spring 534 is fixed to the front end part of the magazine unit. That is, a section of the plate spring 534 exists to be extended between the front end part of the magazine unit and the push slider 120 as being pulled out from a wound section of the plate spring 534 to be in an exposed state.

[0099] With the structure of Fig. 12(B), the plate spring 534 has elastic force in a direction of rewinding the pulled-out section pulled out from the wound section to the wound section. Accordingly, as indicated by an arrow B in Fig. 12(B), the plate spring 534 applies force to the push slider 120 in a direction to incline the push slider 120 frontward.

Accordingly, with the structure of Fig. 12(B), the front end face 321a of the upper plate-shaped portion 321 is easily locked to the locking portion 111b with natural operation to move the push slider 120 to the back part of the magazine main body 110.

[0100] On the other hand, in a case of the magazine unit 200 according to the present embodiment, the push slider 120 is urged frontward by the wire reel 130. In this case, the plate spring 134 rotates (counterclockwise in Fig. 12(A)) the winding drum 57 not inclining the pushing slider 120 frontward with elastic force. Then, the winding drum 57 pulls the resin wire 131 backward approximately straightly.

Accordingly, as illustrated by an arrow C in Fig. 12(A), the push slider 120 is urged approximately dead ahead by the wire reel 130.

Here, there may be a case that the front end face 321a of the upper plate-shaped portion 321 is more unlikely to be locked to the locking portion 111b when the push slider 120 is moved to the back part of the magazine main body 110.

[0101] Thus, it is considered that occurrence of phenomenon that the push slider 120 is more unlikely to be in a locked state against the magazine main body 110 at the back part of the magazine main body 110 is a typical subject for a structure utilizing the wire reel 130 for urging the push slider 120 frontward.

[0102] In this regard, in the present embodiment, the concave portion 27 for finger clawing is formed at the front face of the upper rising portion 223. Accordingly, the push slider 120 can be moved toward the backward by pushing the concave portion 27 from the front side or pulling the concave portion 27 from the back side with a finger.

Since the concave portion 27 is located at the lower part of the upper rising portion 223, the push slider 120 can be into the locked state as being inclined frontward easily with pushing operation with a finger or pulling operation with a finger against the concave portion 27.

In particular, the push slider 120 can be into the locked state more easily by applying downward force to the concave portion 27 at the time when the front end face 321a of the upper plate-shaped portion 321 is moved backward to arrive at the position of the locking portion 111b.

In particular, since the concave portion 27 is concaved backward, the downward force can be easily applied to the concave portion 27 at the time when the lower part of the concave portion 27 is pushed or pulled with fingers.

Since the concave-convex shape to enlarge friction in the vertical direction compared to friction in the horizontal direction is formed in the concave portion 27, the downward force can be effectively transmitted to the concave portion 27.

Since the concave portion 27 is located at the front side from the front end part of the connecting portion 320, the push slider 120 can be easily inclined frontward by applying small downward force to the concave portion 27.

[0103] Here, at the pushing portion 220, the cutout-shaped portion 23 for finger clawing is formed respectively at both side parts of the section above the concave portion 27. Therefore, for example, it is also possible to move the push slider 120 backward by clawing the cutout-shaped portion 23 with fingers until the front end face 321a of the upper plate-shaped portion 321 arrives at the position of the locking portion 111b, and subsequently, to perform operation to incline the push slider 120 frontward by pushing or pulling the concave portion 27 with a finger.

Further, the ribs 25 for finger clawing are formed respectively at the back part of the outer face of the left and right reinforcing plates 22. Therefore, for example, it is also possible to move the push slider 120 backward by clawing the ribs 25 with fingers until the front end face 321a of the upper plate-shaped portion 321 arrives at the position of the locking portion 111b, and subsequently, to perform operation to incline the push slider 120 frontward by pushing or pulling the concave portion 27 with a

finger.

[0104] In addition to obtaining similar effects to the first embodiment, according to the second embodiment as described above, the push slider 120 can be into the locked state as being inclined easily with pushing operation with a finger or pulling operation with a finger against the concave portion 27 owing to that the concave portion 27 for finger clawing concaved backward is formed at the front lower part of the pushing portion 220 of the push slider 120.

[0105] (Third embodiment)

Fig. 13 is a plane view of a magazine unit 300 according to a third embodiment.

[0106] A magazine unit 300 according to the present embodiment is formed with a plurality (for example, three) of openings 112 as being mutually in parallel at a bottom plate 111 of a magazine main body 110. Then, the push slider 120 is attached respectively to an edge part of each opening 112. That is, in a case of the present embodiment, a plurality (for example, three) of push sliders 120 is arranged so that movement directions thereof are in parallel. Further, the wire reel 130 is separately arranged as corresponding to each push slider 120. The push slider 120 and the wire reel 130 have the structure of the first embodiment or the second embodiment.

[0107] The magazine unit 300 according to the present embodiment is for accommodating cigarette cartons 60, for example. In Fig. 13, the cartons 60 are indicated by dash-dot lines.

The carton 60 accommodates a plurality (normally, ten) of rectangular solid packages each accommodating a plurality of paper-wrapped cigarettes. Here, it is also possible that the magazine unit 300 accommodates parcels.

Lateral width of an inner space of the magazine main body 110 corresponds to a longitudinal dimension of the cartons 60. The cartons 60 are accommodated in the magazine main body 110 so that the longitudinal direction thereof is oriented to the left and right direction of the magazine unit 300.

[0108] The respective push sliders 120 are movable frontward and backward as being mutually independent.

The pushing portions 220 of the plurality of push sliders 120 cooperatively push a back face of a backmost carton 60 frontward.

[0109] According to the third embodiment as described above, similar effects to the first embodiment or the second embodiment can be obtained.

Further, the plurality of push sliders 120 is arranged at the magazine main body 110 and the wire reel 130 is respectively arranged as corresponding to each push slider 120. Accordingly, it is possible to push the cartons 60 frontward with urging force combining urging forces of the plurality of wire reels 130. Therefore, compared to a case each number of the push slider 120 and the wire reel 130 is one, the force to push

the cartons 60 frontward can be sufficiently ensured and the plurality of push sliders 120 can push cartons 60 with laterally well-balanced force. Accordingly, it is possible to suppress lateral asymmetric nature of behavior of the cartons 60 and the cartons 60 can be orderly aligned in the magazine main body 110.

[0110] Here, not limited to the present embodiments, the present invention allows various modifications without departing from the scope thereof. For example, the above embodiments exemplify that the front flap 140 can be reliably urged backward with a simple structure by connecting the front end of the resin wire 131 above the axial support position of the front flap 140.

[0111] However, it is also possible to support the front flap 140 by a rotation shaft (not illustrated) not by the protrusions 141, to wind the resin wire 131 around the rotation shaft from the upper side to the front side, and to fix the top end of the resin wire 131 to the rotation shaft or to a section of the front flap 140 at a lower side from the rotation shaft. According to such a structure, the front flap 140 can be urged backward, as well.

[0112] This application claims priority based on Japanese patent application NO. 2011-063358 filed on March 22, 2011 and Japanese patent application NO. 2011-195310 filed on September 7, 2011 and entire disclosure thereof is incorporated herein.

Claims

- [Claim 1] A magazine unit, comprising:
a magazine main body which accommodates a plurality of cigarette commodities in a state of being arranged in a front-back direction;
a push slider which pushes the cigarette commodities frontward as being arranged slidably in the front-back direction at the magazine main body; and
a wire reel which urges the push slider frontward with elastic force as including a reel main body, a wire accommodated in the reel main body to be capable of being pulled out from the reel main body, and an elastic member arranged in the reel main body to urge the wire in a direction to be accommodated into the reel main body with the elastic force.
- [Claim 2] The magazine unit according to claim 1,
wherein an opening through which the wire is pulled in and out is formed in the reel main body;
the wire forms a wound section as being wound circularly at the inside of the reel main body;
a tangential direction at the wound section coincides with a pulling-out direction of the wire from the reel main body; and
the wire is to be pulled out from the reel main body through the opening in a state of not being contacted to an edge part of the opening of the reel main body.
- [Claim 3] The magazine unit according to claim 1 or 2,
wherein the wire reel includes a winding drum which winds the wire as being arranged rotatably in the reel main body; and
the elastic member urges the winding drum in a rotation direction of winding the wire.
- [Claim 4] The magazine unit according to any one of claims 1 to 3,
wherein the wire reel is mounted to the push slider and the front end of the wire is connected to the vicinity of the front end of the magazine main body.
- [Claim 5] The magazine unit according to claim 4,
wherein the wire reel is mounted to a back part of the push slider.
- [Claim 6] The magazine unit according to claim 5,
wherein an opening through which the wire is pulled in and out is formed in the reel main body;

the wire forms a wound section as being wound circularly at the inside of the reel main body;
a tangential direction at the wound section coincides with a pulling-out direction of the wire from the reel main body;
the wire is to be pulled out from the reel main body through the opening in a state of not being contacted to an edge part of the opening of the reel main body; and
the opening is located at a lower part of the push slider.

[Claim 7] The magazine unit according to any one of claims 1 to 6,
a slope to displace the cigarette commodity upward is formed at an inner front end of the magazine main body; and
the wire is inserted to the inside of the slope.

[Claim 8] The magazine unit according to any one of claims 1 to 7,
wherein a left and right pair of protruded rail portions to support the cigarette commodities is formed at an upper face of a bottom plate of the magazine main body; and
the wire is inserted to a gap between the left and right protruded rail portions.

[Claim 9] The magazine unit according to any one of claims 1 to 8,
wherein the push slider includes a connecting portion which is connected to a bottom plate of the magazine main body as being slidable in the front-back direction, and a pushing portion which pushes the cigarette commodities frontward as rising upward from the connecting portion;
a locking portion is formed at a back part of the bottom plate to set the push slider into a locked state in which frontward movement is restricted by engaging a section being slidably moved along an upper face of the bottom plate of the push slider; and
a concave portion for finger clawing concaved backward is formed at a lower part of a front face of the pushing portion.

[Claim 10] The magazine unit according to claim 9,
wherein the concave portion is located at a front side from the front end part of the connecting portion.

[Claim 11] The magazine unit according to claim 9 or claim 10,
wherein a plurality of concave-convex shape repeated in the vertical direction is formed in the concave portion.

[Claim 12] The magazine unit according to claim 11,
wherein the plurality of concave-convex shape is a plurality of grooves

respectively extended in the horizontal direction as being mutually apart in the vertical direction

[Claim 13] The magazine unit according to any one of claims 9 to 12, wherein a cutout-shaped portion for finger clawing is formed respectively at both side parts of a section above the concave portion at the pushing portion.

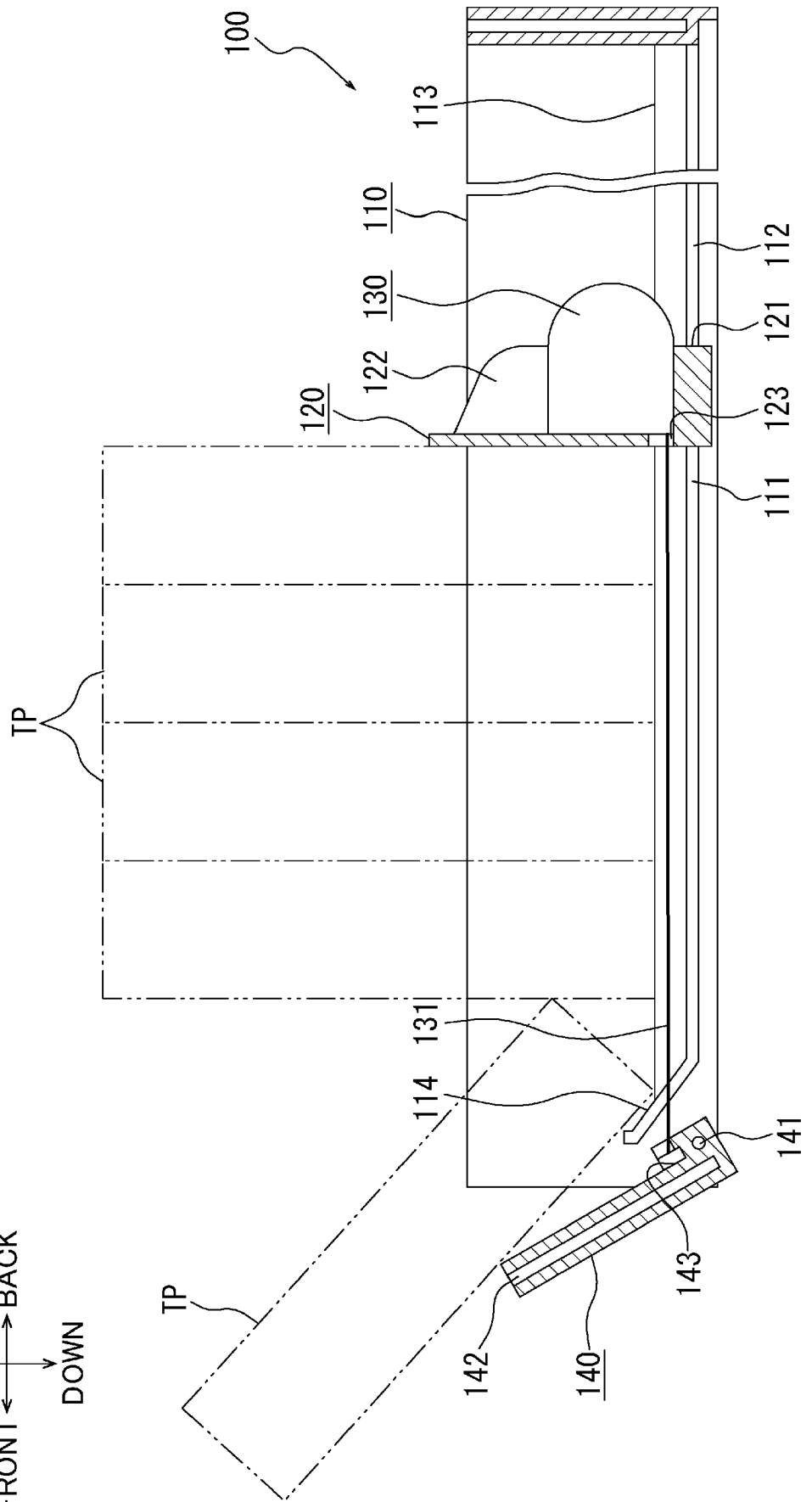
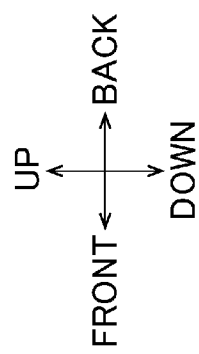
[Claim 14] The magazine unit according to any one of claims 9 to 13, wherein a contact member to be contacted to the cigarette commodity is arranged respectively at both side parts of the front face of the pushing portion as being extended in the vertical direction and being formed of material having a larger friction coefficient than the front face.

[Claim 15] The magazine unit according to claim 14, wherein protruded quantity of the contact member frontward from the front face of the pushing portion is gradually increased toward a lower part of the contact member.

[Claim 16] The magazine unit according to claim 15, wherein the contact member is formed into a flat-plate shape being rectangular in a front view as being elongated in the vertical direction and being thin in the front-back direction; a concave portion for arrangement having a rectangular shape in a front view is formed at the front face of the pushing portion as being elongated in the vertical direction to be gradually shallow toward a lower part of the concave portion; and the frontward-protruded quantity of the contact member is gradually increased toward the lower part of the contact member by arranging the contact member at the concave portion for arrangement.

[Fig. 1]

FIG. 1



[Fig. 2]

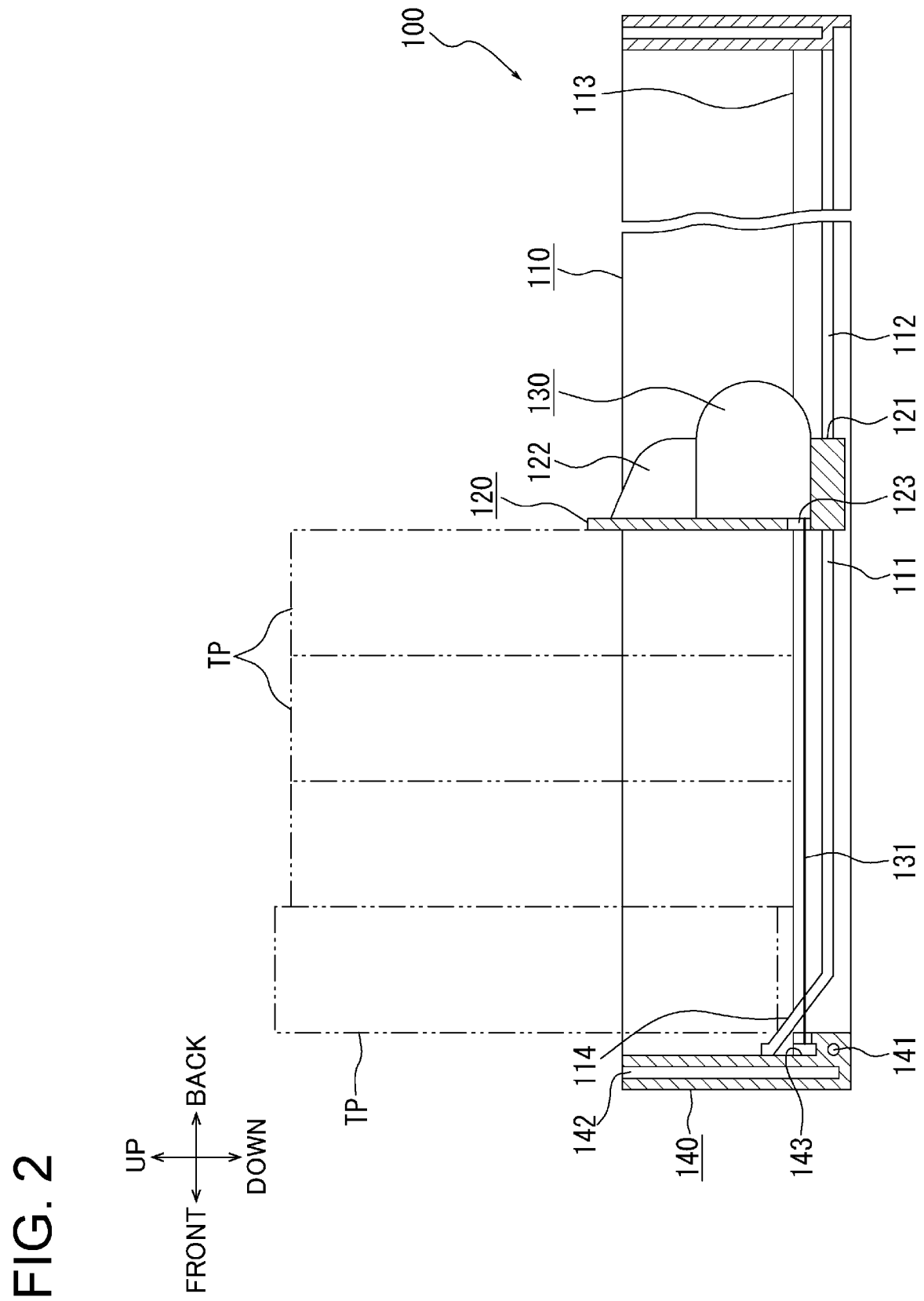
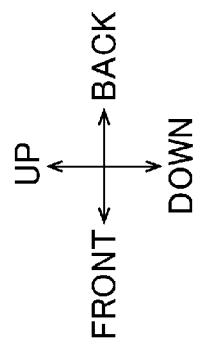
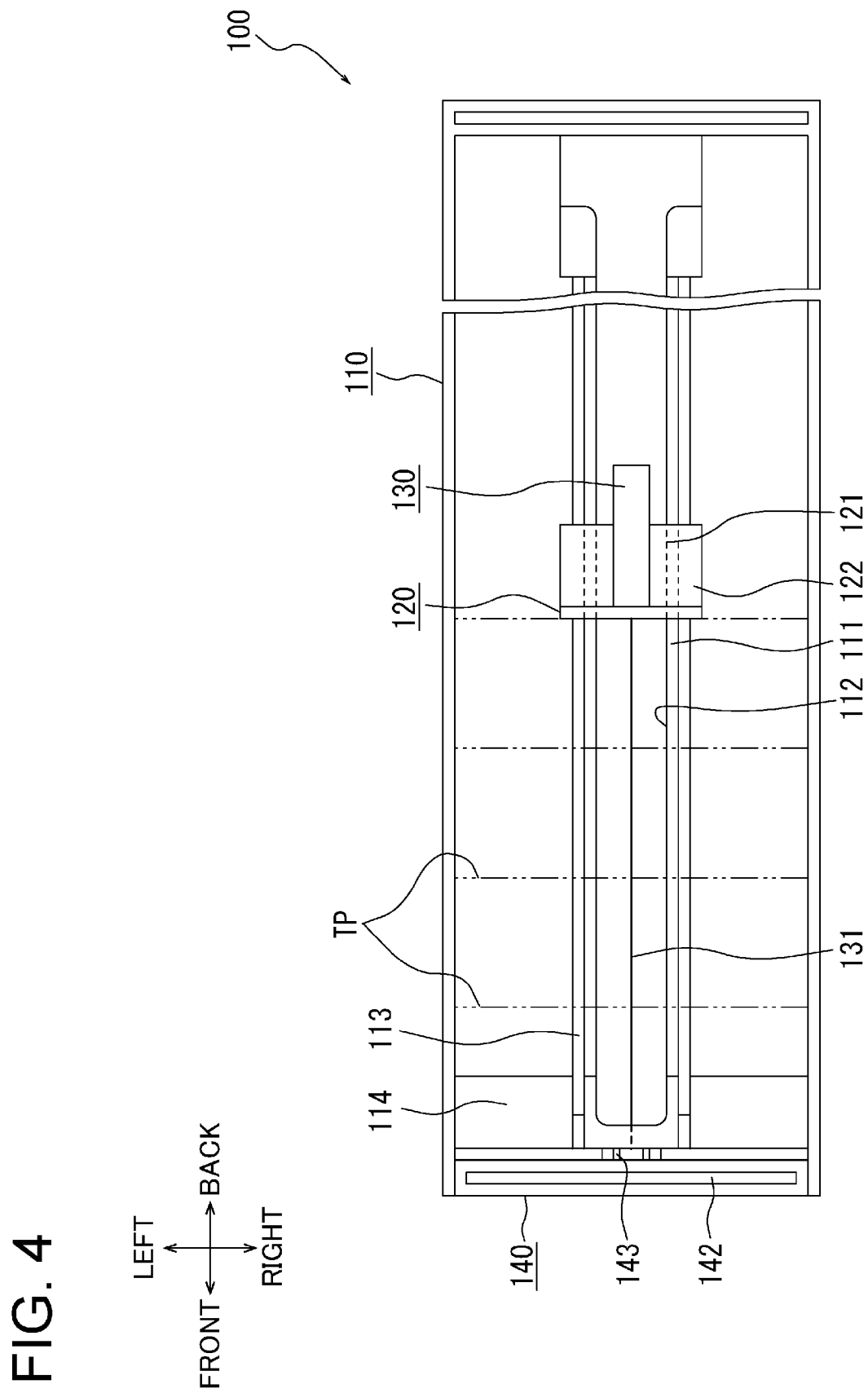


FIG. 3

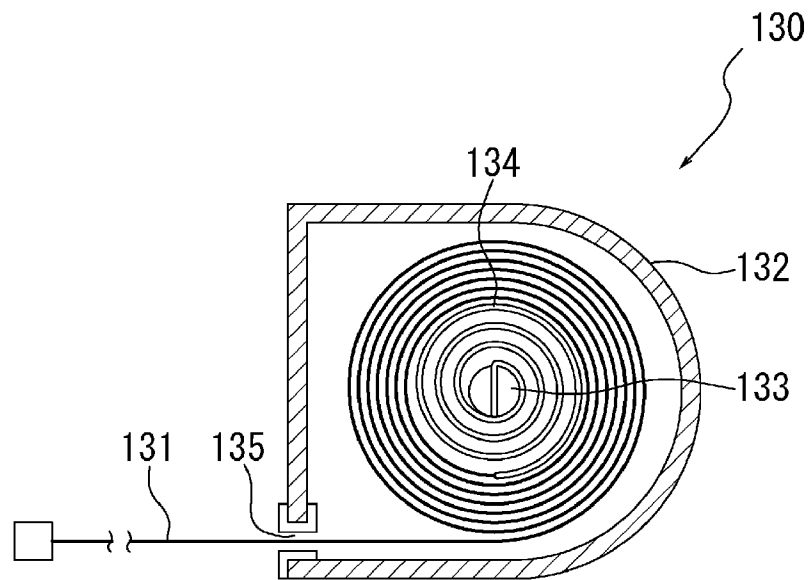


[Fig. 4]



[Fig. 5]

FIG. 5



[Fig. 6]

FIG. 6A

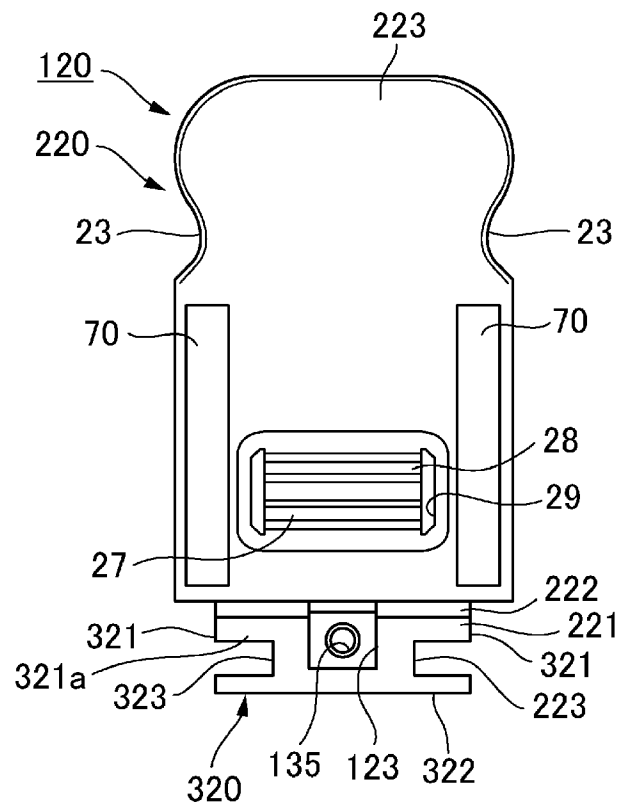
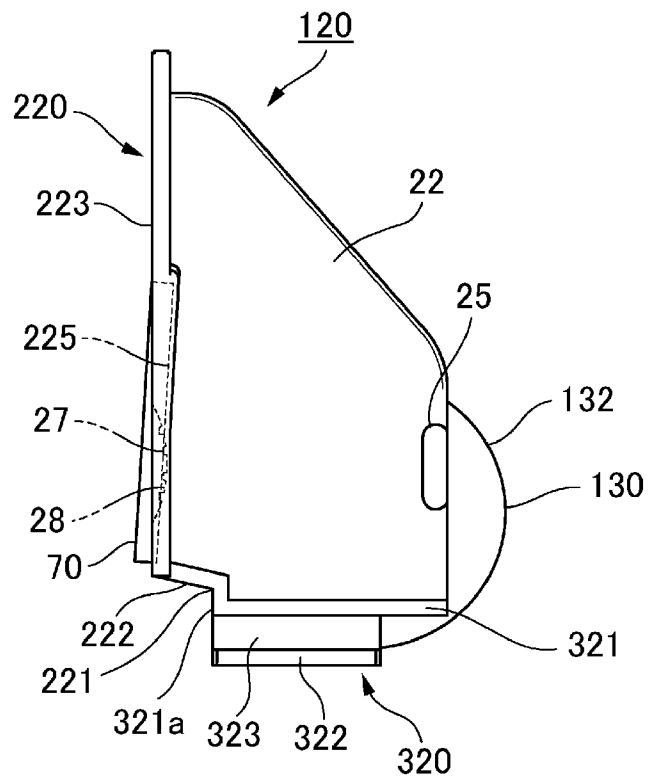


FIG. 6B



[Fig. 7]

FIG. 7A

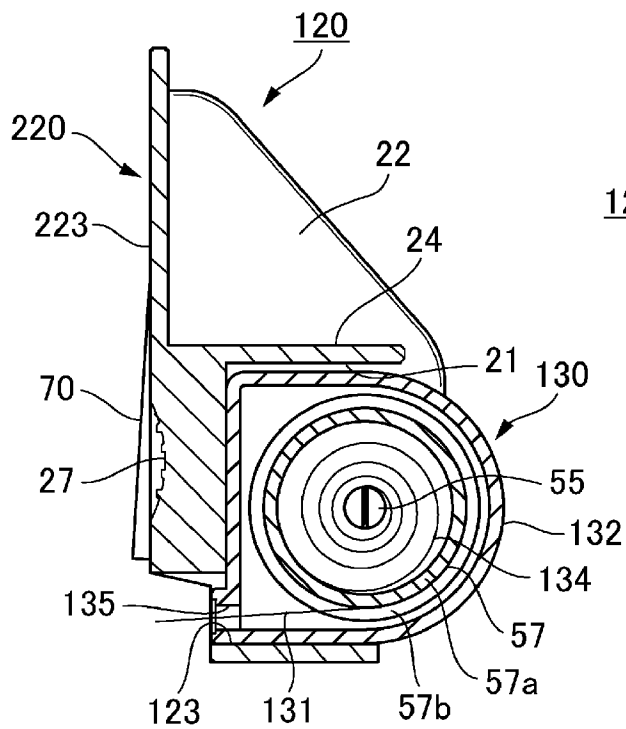


FIG. 7B

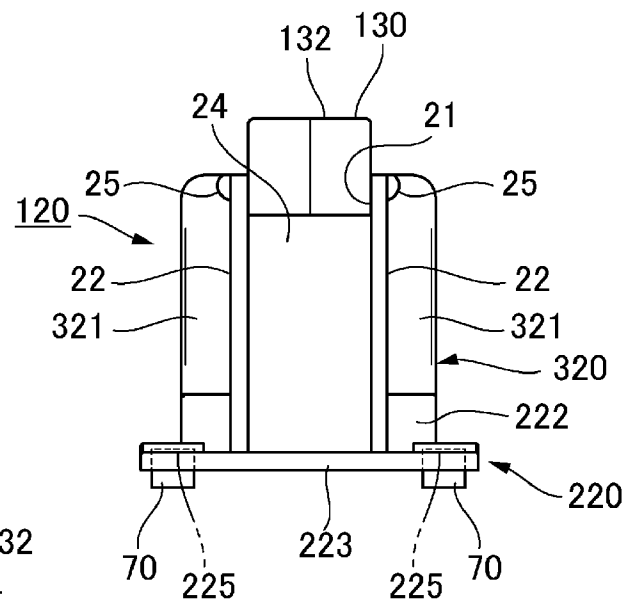


FIG. 7C

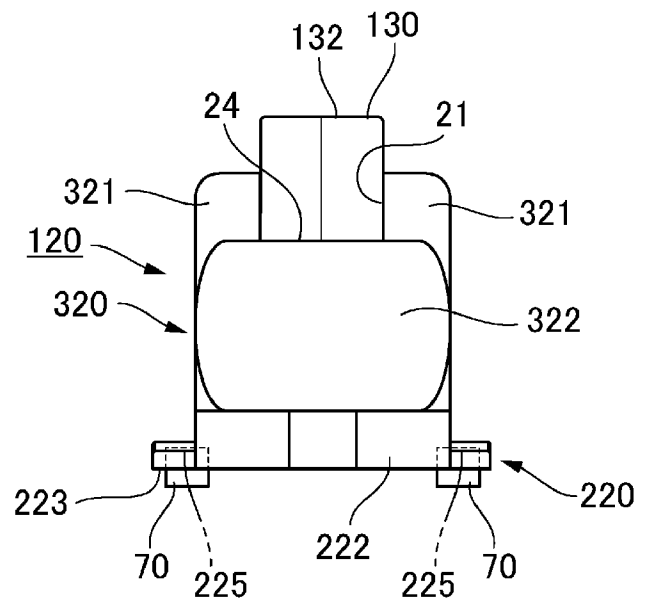


FIG. 8A



FIG. 8B

Fig. 9

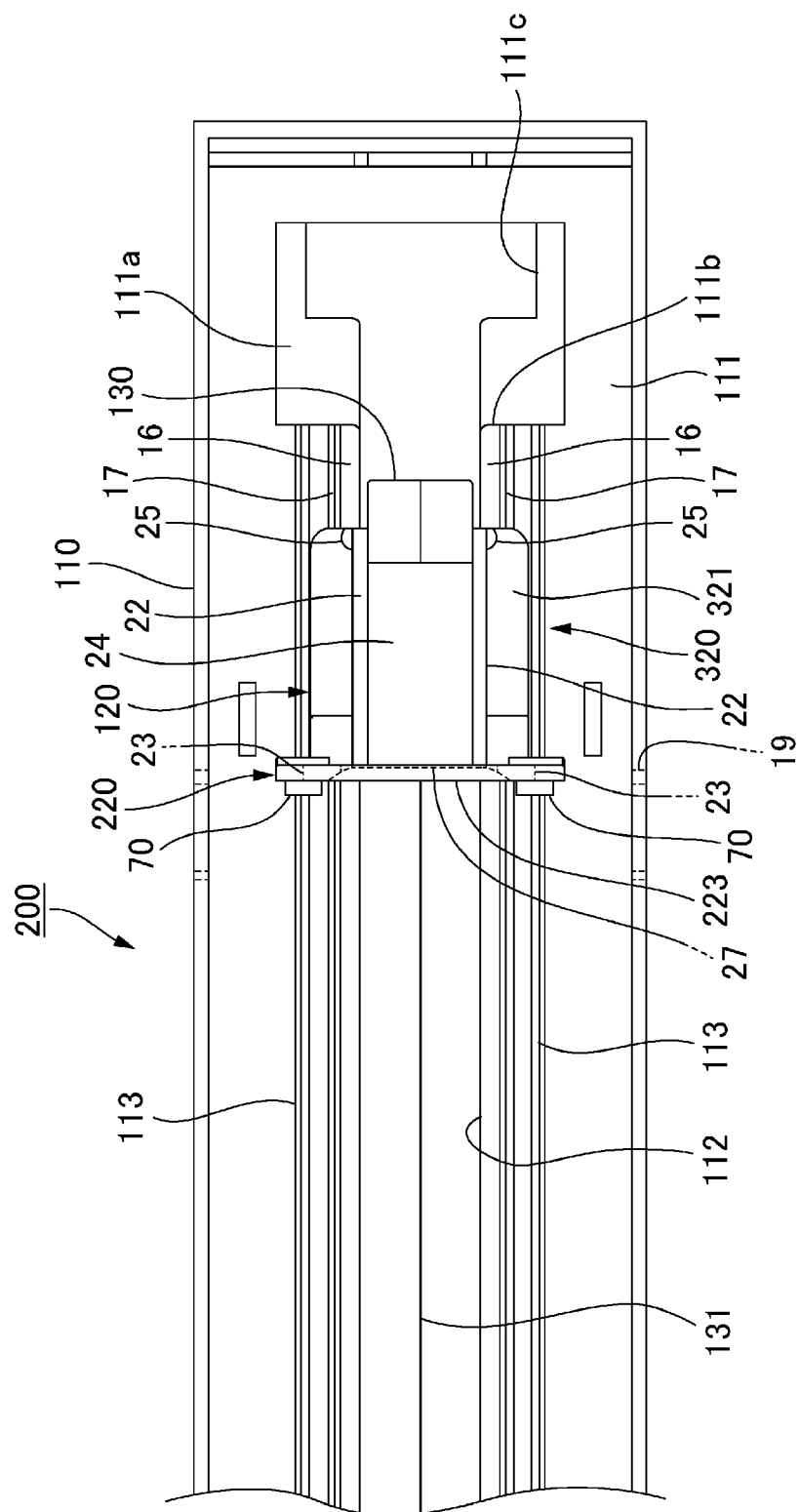
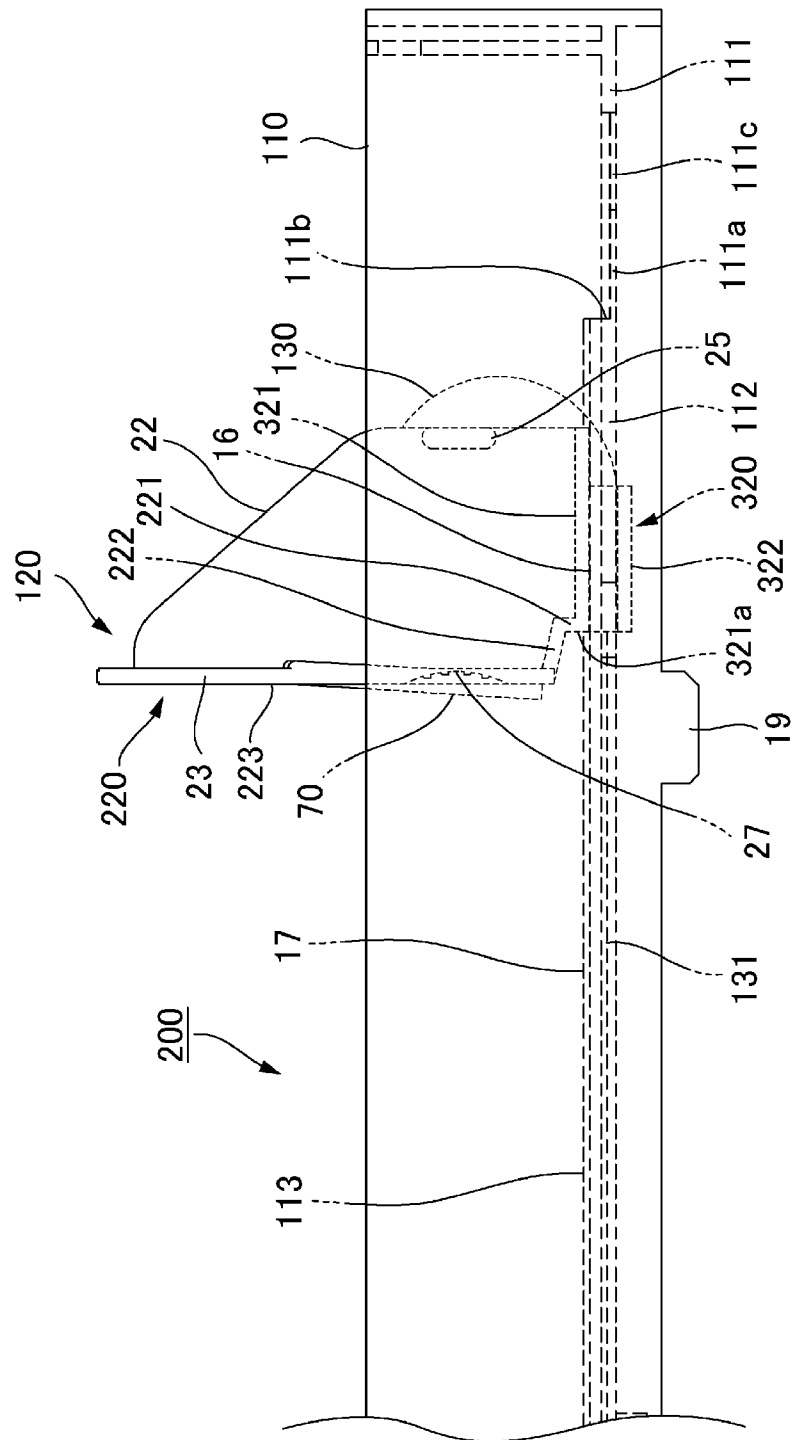


FIG. 10



[Fig. 12]

FIG. 12A

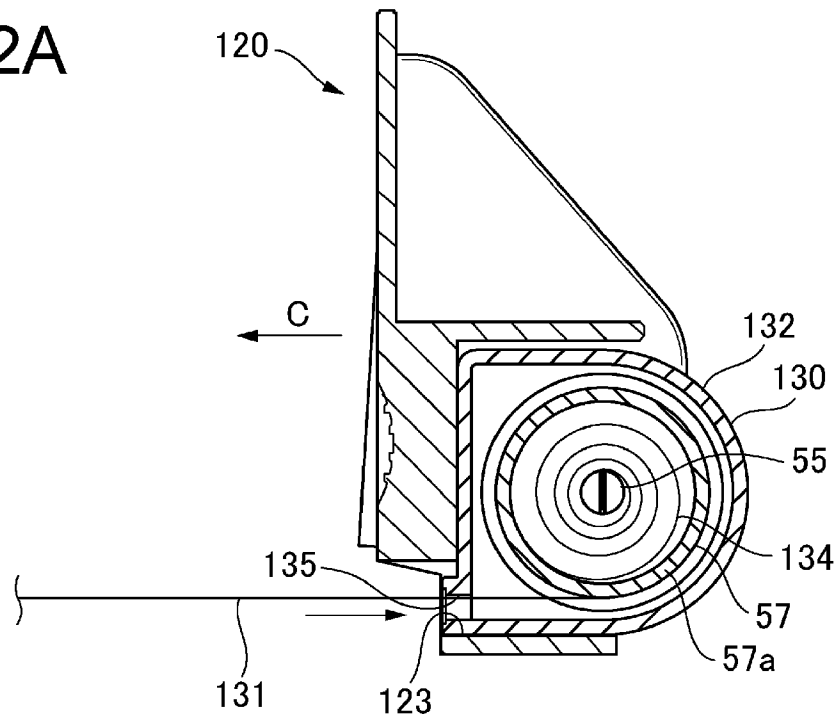


FIG. 12B

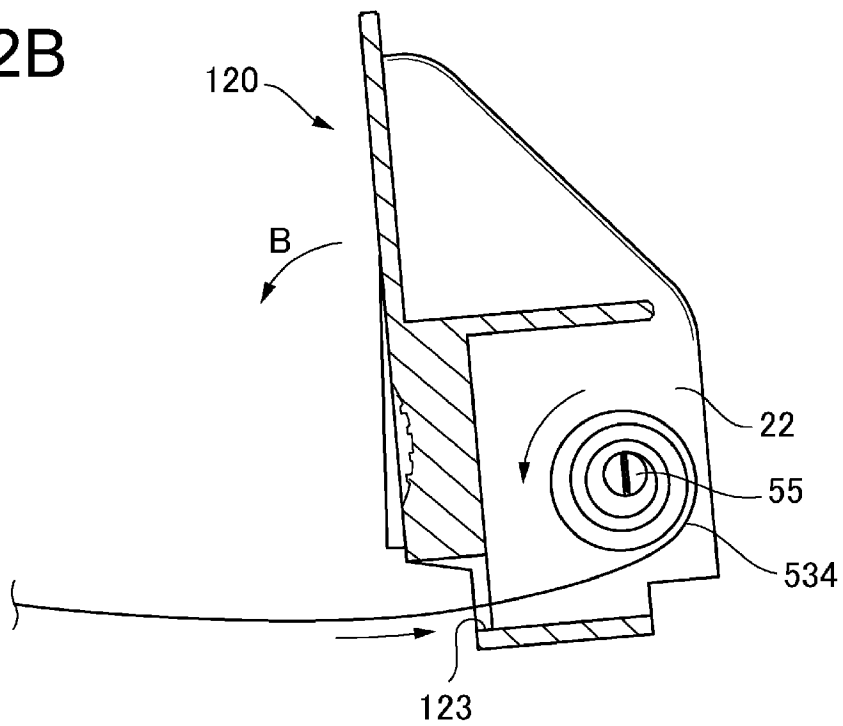
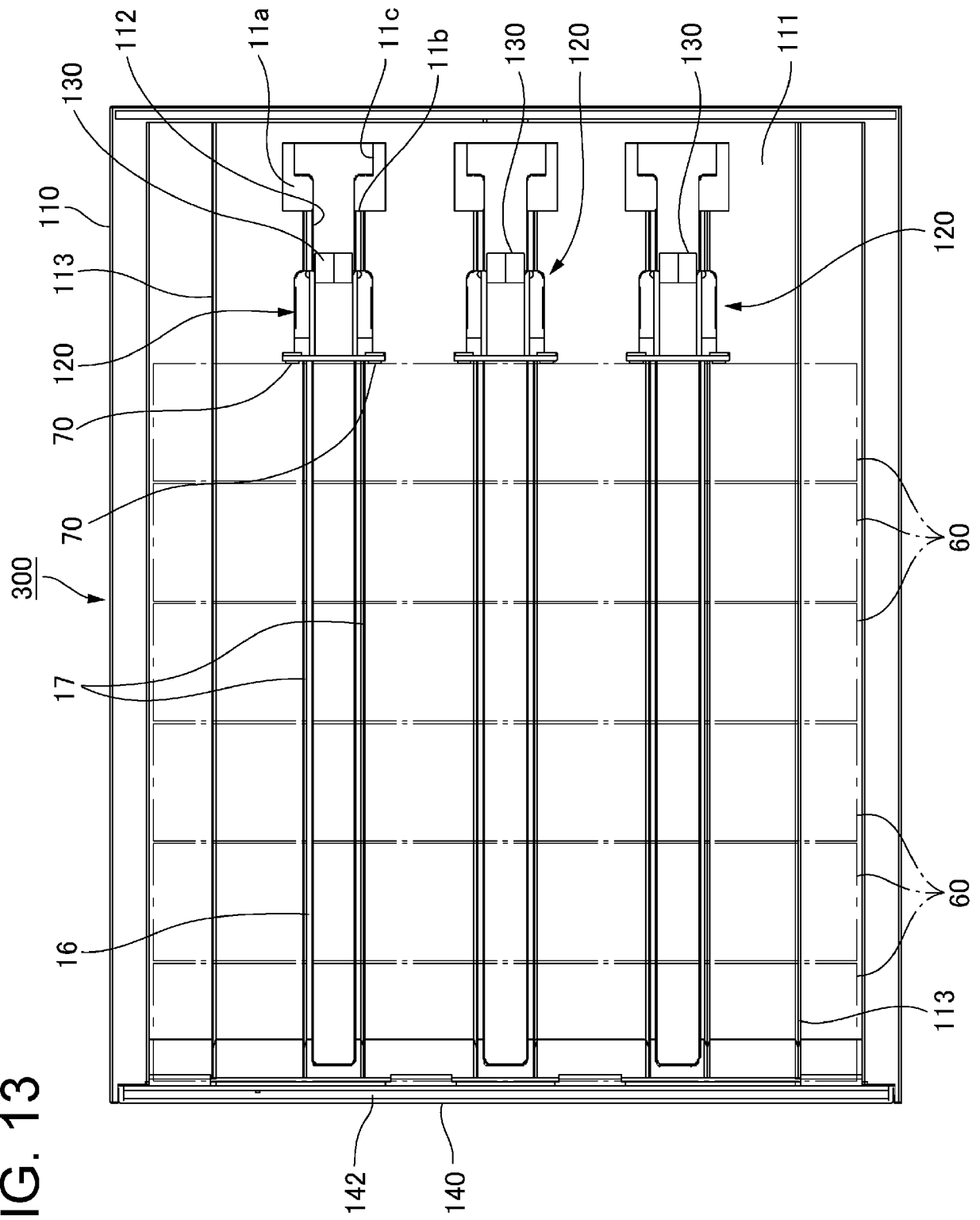


FIG. 13



INTERNATIONAL SEARCH REPORT

International application No

PCT/JP2012/001888

A. CLASSIFICATION OF SUBJECT MATTER
 INV. A47F1/12
 ADD.

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)
 A47F

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

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

EPO-Internal, WPI Data

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	FR 1 596 559 A (CARON) 22 June 1970 (1970-06-22) figures 1, 2	1-7
X	US 6 752 277 B1 (SEMPLINER) 22 June 2004 (2004-06-22) figures 1-14	1-6,8
X	EP 1 864 597 A1 (SYNCO SPA) 12 December 2007 (2007-12-12) figures 1-10	1,2,4-6, 8-10,13
X	EP 1 579 789 A1 (KESSEBOEHMER KG) 28 September 2005 (2005-09-28) figures 1-12	1-6,8
X	NL 106 617 C (SOFIMÉ TAL) 17 June 1963 (1963-06-17) figures 1, 2	1-7



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See patent family annex.

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Date of the actual completion of the international search

28 June 2012

Date of mailing of the international search report

04/07/2012

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INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No

PCT/JP2012/001888

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
FR 1596559	A	22-06-1970	NONE
US 6752277	B1	22-06-2004	NONE
EP 1864597	A1	12-12-2007	AT 428332 T 15-05-2009 EP 1864597 A1 12-12-2007
EP 1579789	A1	28-09-2005	DE 202004004764 U1 01-09-2005 EP 1579789 A1 28-09-2005
NL 106617	C	17-06-1963	NONE