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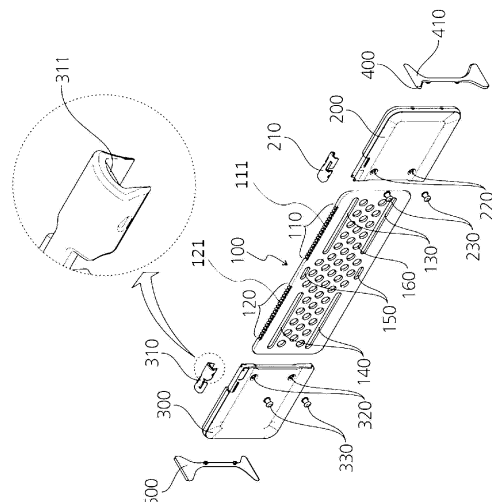
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(54) **PARTITION CAPABLE OF CONTROLLING LENGTH**

(57) There is provided a length-adjustable partition capable of being extended or contracted by including two or more panels and overlapping them and capable of freely being used in various sizes of containers by being supported by an inner wall surface of a container by using supporting members provided at both ends. The length-adjustable partition includes a first panel, a second panel that is overlapped with at least a part of the first panel and comes in slide contact with the first panel, a first rail that is formed at any one of the first panel and the second panel and includes a plurality of first gear teeth arranged in a direction parallel to a sliding movement direction of the first panel and the second panel, and a first stopper that is formed at the other one of the first panel and the second panel so as to correspond to the first rail and includes first fixing protrusions inserted into the first gear teeth and a first elastic portion that provides an elastic force to cause the first fixing protrusions to be inserted into the first gear teeth. A size of the first panel and the second panel is adjusted to adjust a length of the partition.

FIG. 2



Description**[Technical Field]**

5 **[0001]** The present invention relates to a partition, and more particularly, to a length-adjustable partition capable of being contracted or extended and capable of being attached and used in various sizes of containers.

[Background Art]

10 **[0002]** In general, many kinds of articles having various sizes are accommodated in a container. As an example of the container, there is a desk drawer used in an office or homes. A variety of articles such as pencils, used batteries, keys and coins are stored in the drawer. For this reason, the inside of the drawer is constantly messy and is difficult to organize.

15 **[0003]** Such a problem may similarly occur when different kinds of containers other than the desk drawer are used. Accordingly, in order to help to organize the container, partitions that divide an inner space of the container into spaces having appropriate sizes are provided and used in many cases.

20 **[0004]** However, when a frame having a standardized inner space is manufactured to correspond to a size of the container and the frame is inserted into the container as it is to use, the partitions that have been conventionally used are not effective for the space division and the inner space of the container is unnecessarily reduced due to the frame in many cases. Further, it is difficult for a user to partition the space according to the purpose of use.

25 **[0005]** In other cases, insertion frames are formed along an inner wall surface of the container at regular distances and a panel is put into any one of the insertion frames. By doing this, the inner space of the container is freely partitioned to a relatively some extent. However, since such a frame or panel is integrally formed in a process of manufacturing the container in most cases, different shapes of frames and panels need to be manufactured depending on container sizes. For this reason, there are problems that the frames and panels are not effective to be manufacture or used and positions of the panels are only changed at preset positions.

[Disclosure]

30 **[Technical Problem]**

35 **[0006]** An object of the present invention is to provide a length-adjustable partition capable of being contracted or extended, being supported by an inner wall surface of a container to independently serve as a partition without using other assistance mechanisms, and partitioning an inner space of the container at user' pleasure by being provided at a free position.

40 **[0007]** The technical problem of the present invention is not restricted to the aforementioned technical problem, and any other technical problems not mentioned so far will be clearly appreciated from the following description by those skilled in the art.

45 **[Technical Solution]**

50 **[0008]** In order to achieve the above object, an exemplary embodiment of the present invention provides a length-adjustable partition including a first panel; a second panel that is overlapped with at least a part of the first panel and comes in slide contact with the first panel; a first rail that is formed at any one of the first panel and the second panel and includes a plurality of first gear teeth arranged in a direction parallel to a sliding movement direction of the first panel and the second panel; and a first stopper that is formed at the other one of the first panel and the second panel so as to correspond to the first rail and includes first fixing protrusions inserted into the first gear teeth and a first elastic portion that provides an elastic force to cause the first fixing protrusions to be inserted into the first gear teeth. A size of the overlapped section of the first panel and the second panel is adjusted to adjust a length of the partition.

55 **[0009]** The length-adjustable partition may further include a third panel that is overlapped with at least a part of the first or second panel and comes in slide contact with the first panel or the second panel; a second rail that is formed at any one of the first or second panel and the third panel and includes a plurality of second gear teeth arranged in a direction parallel to the sliding movement direction of the first panel and the second panel; and a second stopper that is formed at any one of the first or second panel and the third panel so as to correspond to the second rail and includes second fixing protrusions inserted into the second gear teeth and a second elastic portion that provides an elastic force to cause the first fixing protrusions to be inserted to the second gear teeth.

60 **[0010]** The least a part of the first panel may be inserted into the second panel while coming in slide contact with the second panel to vary a size of an overlapped section with the second panel.

[0011] The least a part of the first panel may be inserted into the second panel while coming in slide contact with the second panel to vary a size of an overlapped section with the second panel, and the third panel may be inserted into the second panel while coming in slide contact with the second panel or any one of the first panel and the second panel may be inserted into the third panel while coming in slide contact with the third panel.

[0012] The length-adjustable partition may further include a first supporting member that is formed at any one of the first panel and the second panel and transmits an elastic force in a direction where the first panel and the second panel are contracted.

[0013] The first panel may be interposed between the second panel and the third panel, and the partition may further include a supporting member that is formed at any one of the second panel and the third panel and transmits an elastic force in a direction parallel to the sliding movement direction of the first panel and the second panel.

[0014] The supporting member may include a connection portion in which one side is fixed to at least one of the first panel and the second panel and that has elasticity; and extension portions that are connected to ends of the connection portion and are enlarged to have a width larger than that of the connection portion to support the first panel and the second panel.

[0015] The length-adjustable partition may further include a non-slip member that is formed on outer surfaces of the extension portions or is formed on outer surfaces of the connection portion and the extension portions to increase a frictional force of the outer surfaces.

[0016] At least one of the first fixing protrusion and the second protrusion may include a vertical portion having a surface perpendicular to the sliding movement direction of the first panel and the second panel and an inclined portion forming an inclined surface in cooperation with the vertical portion.

[0017] The length-adjustable partition may further include an air freshener member that is connected to at least one of the first panel and the second panel or at least one of the first panel, the second panel and the third panel and emits fragrance to the outside.

[0018] The length-adjustable partition may further include a guide hole that is formed through any one of the first panel and the second panel and extends in a direction parallel to the sliding movement direction of the first panel and the second panel; and a connecting member that passes through the guide hole to be connected to the other one of the first panel and the second panel and slides in a direction where the guide hole extends.

[Effect of the Invention]

[0019] According to present invention, since at least one end of a length-adjustable partition is extended or contracted, the partition can be used by adjusting its length depending on various sizes of containers and can be fixed by itself without using other supporting mechanisms, other assistance mechanisms, or frames. Accordingly, it is possible to simply and freely partition a space and to change the space partition.

[Description of Drawings]

[0020]

Fig. 1 is a perspective view illustrating an external appearance of a length-adjustable partition according to an embodiment of the present invention.

Fig. 2 is an exploded perspective view of the partition of Fig. 1.

Fig. 3 is a front view illustrating one end of a first panel and a second panel of the partition of Fig. 1.

Fig. 4 is an operational diagram that simply illustrates an operation of a first stopper of Fig. 1.

Figs. 5A and 5B are schematic diagrams that simply illustrate operations of first gear teeth and first fixing protrusions included in the first stopper of Fig. 4.

Fig. 6 is a cross-sectional view taken along line A-A' of the partition of Fig. 1.

Fig. 7 is a longitudinal cross-sectional view illustrating a first supporting member, the one end of the first panel and the second panel of the partition of Fig. 1.

Figs. 8 and 9 are schematic diagrams that simply illustrate an example of using the partition of Fig. 1.

Fig. 10 is a schematic diagram that simply illustrates a length-adjustable partition according to another embodiment of the present invention.

[Description of Main Reference Numerals of Drawings]

1:	Length-adjustable partition	100:	First panel
110:	First rail	111:	First gear tooth
120:	Second rail	121:	Second gear tooth
130:	First guide hole	140:	Second guide hole
150:	Insertion groove	160:	Vent hole
200:	Second panel	210:	First stopper
211:	First fixing protrusion	211a:	Vertical portion
211b:	Inclined surface	212:	First elastic portion
220:	First connecting hole	230:	First connecting member
300:	Third panel	310:	Second stopper
311:	Second fixing protrusion	320:	Second connecting hole
330:	Second connecting member	400:	First supporting member
410:	Non-slip member	420:	Connection portion
430:	Extension portion	500:	Second supporting member
600:	Air freshener member	610:	Insertion protrusion

[Best Mode]

[0021] Merits and characteristics of the present invention, and methods for accomplishing them will become more apparent from the following embodiments taken in conjunction with the accompanying drawings. However, the present invention is not limited to the disclosed embodiments, but may be implemented in various manners. The embodiments are provided to complete the disclosure of the present invention and to allow those having ordinary skill in the art to understand the scope of the present invention. The present invention is defined by the category of the claims. The same reference numbers will be used throughout the drawings to refer to the same or like parts.

[0022] Hereinafter, preferred embodiments of the present invention will be described with reference to the accompanying drawings.

[0023] Figs. 1 and 2 are a perspective view illustrating an external appearance of a length-adjustable partition according to an embodiment of the present invention and an exploded perspective view of the partition of Fig. 1, respectively.

[0024] Referring to Figs. 1 and 2, the length-adjustable partition according to the embodiment of the present invention includes a panel set of a first panel 100, a second panel 200 and a third panel 300, a first supporting member 400, and a second supporting member 500.

[0025] The second panel 200 and the third panel 300 are respectively connected to a right end and a left end of the first panel 100 with the first panel 100 interposed therebetween. The second panel 200 and the third panel 300 come in contact with the first panel 100 to slide, and the second panel and the third panel slide toward a left side or a right side in a longitudinal direction. The second panel 200 and the third panel 300 are extended or shortened by being apart from the first panel 100 or are being close to the first panel 100. In this way, the entire length of the partition is adjusted.

[0026] The first panel 100 includes a first rail 110, a second rail 120, first guide holes 130, and second guide holes 140, and the first and second guide holes are parallel with the first and second rails. The first panel may further include insertion grooves 150 formed at one side of the first panel, and vent holes 160.

[0027] The first panel 100 has a rectangular plate shape having a length in a lateral direction larger than a length in a vertical direction. The first panel 100 includes the first rail 110 and the second rail 120 that are respectively formed at a right upper end and a left upper end, and the first rail 110 and the second rail 120 extend to be parallel to each other in a longitudinal direction of the first panel 100. First gear teeth 111 and second gear teeth 121 are respectively arranged in a line at the first rail 110 and the second rail 120.

[0028] The first rail 110 and the second rail 120 are a continuum of a plurality of first gear teeth 111 that are arranged adjacent to each other and a continuum of a plurality of second gear teeth 121 that are arranged adjacent to each other, respectively. That is, the first gear teeth 111 are arranged adjacent to each other to constitute the first rail 110, and the second teeth 121 are arranged adjacent to each other to constitute the second rail 120.

[0029] A first stopper 210 and a second stopper 310 move along the first rail 110 and the second rail 120. The first rail and the second rail guide the second panel 200 and the third panel 300 so as to allow the second and third panels to slide with the first panel 100 in the longitudinal direction, so that the second panel 200 and the third panel 300 are

extended or contracted from both ends of the first panel 100 on the same plane.

[0030] At this time, when first fixing protrusions formed at the first stopper 210 are inserted between the first gear teeth 111 formed at the first rail 110, a sliding contact between the first panel 100 and the second panel 200 is stopped. When second fixing protrusions formed at the second stopper 310 are inserted between the second gear teeth 121 formed at the second rail 120, a sliding contact between the first panel 100 and the third panel 300 is stopped. In this way, the contraction or extension of the second panel 200 and the third panel 300 is stopped to be fixed.

[0031] The first guide holes 130 are respectively positioned in an upper portion and a lower portion on the left side of the first panel 100, and the second guide holes 140 are respectively positioned in an upper portion and a lower portion on the right side of the first panel. The first and second guide holes are formed by forming spaces penetrating from a front surface of the first panel 100 toward a rear surface thereof and extending the penetrated spaces in a direction parallel to the first rail 110 and the second rail 120. First connecting members 230 and second connecting members 330 may be connected to the guide holes, and the first connecting members 230 and the second connecting members 330 can move in parallel with the first rail 110 and the second rail 120 along the inner spaces of the first guide holes 130 and the second guide holes 140.

[0032] The insertion grooves 150 may be formed by penetrating into one surface of the first panel 100 at positions where the first panel does not coming in contact with the second panel 200 or the third panel 300, or may be formed by penetrating from the front surface of the first panel toward the rear surface thereof. Other members such as an air freshener and the like may be inserted into the insertion grooves 150 formed in such a manner, and the insertion grooves may be used for various purposes for use.

[0033] The vent hole 160 exhibits an effect of enabling ventilation from the front surface of the first panel 100 toward the rear surface thereof by being formed through the first panel 100. Further, when the air freshener or the like is provided at one side of the partition, fragrances can move by passing through the partition via the vent holes 160. In order to improve ventilation properties, the vent holes 160 may be formed such that the plurality of vent holes is uniformly distributed at the entire first panel 100.

[0034] Similarly to the first panel 100, the second panel 200 and the third panel 300 are formed in rectangular plate shapes each having a length in the lateral direction larger than a length in the vertical direction. The second panel includes the first stopper 210 and first connecting holes 220, and the third panel includes the second stopper 310 and second connecting holes 320.

[0035] The second panel 200 and the third panel 300 have the rectangular plate shapes, and are hollow inside. Thus, the right end of the first panel 100 is inserted through a left end of the second panel 200, and the left end of the first panel 100 is inserted through a right end of the third panel 300.

[0036] At this time, since a right end of the second panel 200 and a left end of the third panel 300, through which the first panel 100 is not inserted, are blocked, the first panel 100 can be prevented from passing through the second panel 200 or the third panel 300.

[0037] The second panel 200 and the third panel 300 surround the both ends of the first panel 100. Furthermore, since inner surfaces of the second panel 200 and the third panel 300 come in slide contact with the right and left ends of the first panel 100, the second panel 200 and the third panel 300 can be extended from the first panel 100 or can be contracted toward the first panel.

[0038] Here, the expressions that A and B slide, A slides with B, or A comes in slide contact with B mean that A and B each include at least one contact surface and A and B are separated from each other or are closed to each other while the respective contact surfaces come in contact with each other and sliding with each other.

[0039] The second panel 200 and the third panel 300 have the first stopper 210 and the second stopper 310, respectively.

[0040] As described above, the first rail 110 is formed at the right upper end of the first panel 100, and the second rail 120 is formed at the left upper end of the first panel. When the second panel 200 surrounds the right end of the first panel 100, the first stopper 210 is provided at a position where the second panel comes in contact with the first rail 110 so as to correspond to the first rail. When the third panel 300 surrounds the left end of the first panel 100, the second stopper 310 is provided at a position where the third panel comes in contact with the second rail 120 so as to correspond to the second rail.

[0041] For example, when the first rail 110 and the second rail 120 are formed along an edge of the right upper end and an edge of the left upper end of the first panel 100, the first stopper 210 may be formed at an edge of a left upper portion of the second panel 200, and the second stopper 310 may be provided at an edge of a right upper portion of the third panel 300.

[0042] Accordingly, when the second panel 200 comes in slide contact with the first panel 100 to be extended or contracted, the first stopper 210 comes in contact with the first rail 110 to move along the first rail 110, and when the third panel 300 comes in slide contact with the first panel 100 to be extended or contracted, the second stopper 310 comes in contact with the second rail 120 to move along the second rail 120.

[0043] In this way, when the rails and the stoppers come in contact with each other, the gear teeth formed at the rails

and the fixing protrusions formed at the insides of the stoppers can be inserted into each other or can slide. The rails and the stoppers will be explained below in more detail.

[0044] Since the second panel 200 and the third panel 300 have the first connecting holes 220 and the second connecting holes 320 on one sides, respectively, the first connecting members 230 and the second connecting members 330 can be connected thereto.

[0045] As described above, the first guide holes 130 and the second guide holes 140 are formed at the upper and lower portions on the left side of the first panel 100 in parallel with the rails, respectively. When the second panel 200 surrounds the right end of the first panel 100, the first connecting holes 220 are overlapped with the first guided holes 130, and when the third panel 300 surrounds the left end of the first panel 100, the second connecting holes 320 are overlapped with the second guide holes 140.

[0046] In this case, the connecting holes are not completely overlapped with the entire guide holes, and when the second panel 200 and the third panel 300 slide with the first panel 100, the connecting holes is overlapped with any points on the guide holes while moving along the guide holes extending in a direction parallel to a sliding direction.

[0047] For example, the first connecting holes 220 and the second connecting holes 320 may be formed as circular holes each having the same diameter as a length of a transversal cross-sectional inner section of the guide hole.

[0048] The first connecting member 230 and the second connecting member 330 pass through the first guide holes 130 and the second guide holes 140 at any points on the first guide holes 130 and the second guide holes 140 through the first connecting holes 220 and the second connecting holes 320 to be connected to the second panel 200 and the third panel 300.

[0049] Unless the connecting members are unconnected, the second panel 200 and the third panel 300 are extended from the first panel 100 but are not completely separated therefrom. Moreover, the first connecting members 230 and the second connecting members 330 guide sliding motions of the second panel 200 and the third panel 300 while moving along the first guide holes 130 and the second guide holes 140. The first connecting members 230 and the second connecting members 330 may be formed as screws or rivets in which head portions of diameters larger than those of the first connecting holes 220 and the second connecting holes 320 are formed on one sides thereof.

[0050] The motion of the guide holes and the connecting members and the sliding motions between the panels will be described below in more detail.

[0051] Hereinafter, operations of the stoppers and the rails and operations of the guide holes and the connecting members will be explained in more detail with reference to Figs. 3 to 5B.

[0052] The second rail 120 and the second stopper 310, and the second guide holes 140 and the second connecting members 330, which come in contact with each other or are connected to each other at the right upper end of the first panel 100, are symmetrical to the first rail 110 and the first stopper 210, and the first guide holes 130 and the first connecting members 230, which are arranged at the right upper end of the first panel 100 in their shapes and configurations, and their operations are basically the same.

[0053] Accordingly, since the other one can be inferred from one, the first rail 110, the first stopper 210, the first guide holes 130 and the first connecting members 230 will be described in order to avoid the redundant descriptions thereof.

[0054] Fig. 3 is a front view illustrating one end of the first panel and the second panel of the partition of Fig. 1, Fig. 4 is an operational diagram that simply illustrates an operation of the first stopper of Fig. 1, and Figs. 5A and 5B are schematic diagrams that simply illustrate operations of the first gear teeth and the first fixing protrusions included in the first stopper of Fig. 4.

[0055] Referring to Fig. 3, the first guide holes 130 are formed to extend in the longitudinal direction of the first panel 100 in parallel with the first rail 110.

[0056] The first guide holes 130 extend so as not to completely penetrate the first panel 100. The first guide holes extend from a position separated at a certain distance from a center of the first panel 100 toward the right side of the first panel 100 up to a position separated at a certain distance from the right end of the first panel 100.

[0057] As a result, the first guide holes 130 are parallel to the first rail 110 but may be shorter in extension lengths than a formation length of the first rail 110.

[0058] Accordingly, when the first connecting members 230 that are connected by passing through the first guide holes 130 move along the first guide holes 130 as described above, the movements of the first connecting members 130 are stopped at both ends of the first guide holes 130, and the sliding of the second panel 200 connected to the first connecting members 230 is also stopped.

[0059] In such a configuration, even though the second panel 200 is contracted, the contraction of the second panel is stopped at end points of the first guide holes 130, and even when the second panel 200 is fully contracted, a part of the first panel 100 can be exposed to the outside. The insertion grooves 150 may be formed at the exposed part of the first panel 100.

[0060] In addition, even when the second panel 200 is extended, since the extension of the first connecting members 230 is stopped at end points of the first guide holes 130, it is possible to prevent the second panel 200 from being excessively extended and separated from the first panel 100. Therefore, it is possible to appropriately form the extension

lengths of the guide holes in light of the above.

[0061] The first guide holes 130 extend in parallel with the first rail 110, and one or more first guide holes may be formed. The one or more first guide holes are parallel to each other, are separated to each other at an appropriate distance so as not to be adjacent to each other, and are continuously arranged at upper and lower ends of the first panel 100. In such a configuration, it is possible to further stabilize the sliding between the two panels.

[0062] The first stopper 210 is provided at one side of the upper end of the second panel 200 to surround the first rail 110, and the first rail 110 is formed along the right upper end of the first panel 100 to come in contact with the inside of the first stopper 210 under the first stopper 210. At this time, the first fixing protrusions 211 formed at the inside of the first stopper 210 come in contact with the first gear teeth 111 arranged in parallel with the first rail 110.

[0063] Referring to Fig. 4, the first fixing protrusions 211 protrude downward from the inside of the first stopper 210. A vertical portion 211a having a surface perpendicular to a direction where the first rail 110 extends, that is, a direction where the second panel 200 slides with the first panel 100 is formed at one side of the first fixing protrude, and an inclined portion 211b is formed having a inclined surface at a side opposite to the one side.

[0064] The vertical portion 211 a and the inclined portion 211b are formed such that the vertical surface of the vertical portion 211 a faces a direction where the second panel 200 is contracted and the inclined surface of the inclined portion 211b faces a direction where the second panel is extended. Further, the inclined portion 211b and the vertical portion 211a are integrally formed such that as the inclined portion is directed downward along the inclined surface, the vertical portion gradually approaches the vertical portion 211 a, and the inclined portion meets the vertical portion at a lower end of the first protrusion 211 to form a sharp angle.

[0065] The inclined portion 211b is not formed as an inclined plane in which an inclined angle of the inclined surface is constant, but may be formed as a gentle curved surface in which the inclined angle gradually changes toward the lower end from an upper end of the first fixing protrusion 211.

[0066] The first gear teeth 111 are arranged in a line at the first rail 110 and are formed to protrude upward from the bottom. That is, the first gear teeth 111 may repeatedly protrude in a regular pattern such as sawteeth, and the fixing protrusions 211 may be inserted between the first gear teeth.

[0067] The first gear teeth 111 may be formed such that a left portion and a right portion protrude to be symmetrical with each other, and deep recessed grooves may be formed between the gear teeth. Furthermore, an upper portion of the first gear tooth may be formed as an inclined surface that is gently inclined.

[0068] When the first fixing protrusions 211 come in contact with the first gear teeth 111, the sharp-angled lower ends of the fixing protrusions 211 are inserted between the gear teeth, and when extension lengths of the first fixing protrusions 211 increase, the sharp-angled ends of the first fixing protrusions may be more deeply inserted into the grooves formed between the gear teeth.

[0069] Meanwhile, since the first stopper 210 has a first elastic portion 212 that extends toward one side, the first stopper transmits an elastic force to a direction perpendicular to the direction where the second panel 200 slides with the first panel 100.

[0070] The first elastic portion 212 horizontally extends from one end of the first stopper 210 where the first fixing protrusions 211 are formed and is bonded to the second panel 200 at a position where the extending is ended. The extended portion of the first elastic portion 212 has elasticity to be able to transmit the elastic force to the first fixing protrusions 211.

[0071] At this time, the first elastic portion 212 may be made from plastic or a material including polyurethane resin, and the entire first stopper 210 including the first elastic portion 212 may be made from such a material so as to have elasticity.

[0072] In this case, the first fixing protrusions 211 may be made from a material have a relatively stiffness. The first elastic portion 212 and the second panel 200 may be bonded using an adhesive, or may be connected using a screw or a rivet.

[0073] Due to the elasticity transmitted from the first elastic portion 212 and a restoring force produced by the elasticity, the first fixing protrusions 211 can elastically move up and down a horizontal plane formed by the extension of the first rail 110, and thus the first fixing protrusions may come in close contact with the first gear teeth 111 or may be inserted between the first gear teeth 111.

[0074] Moreover, when an external force is exerted to the first stopper 210 to lift, the first fixing protrusions 211 can be completely separated from the first rail 110, and when the external force is removed from the first stopper, the first fixing protrusions 211 can come in close contact with the first rail 110.

[0075] Since the first fixing protrusions 211 have the vertical portions 211 a and the inclined portions 211 b and the first elastic portion 212 transmits the elasticity to the first fixing protrusions 211, the first fixing protrusions 211 can come in contact with the first gear teeth 111 to be fixed thereto or can come in contact with the first gear teeth 111 to slide.

[0076] Referring to Fig. 5A, while the first fixing protrusions 211 are fully inserted between the first gear teeth 111, the vertical portion 211a and the inclined portion 211b of the first fixing protrusion 211 come in contact with the first gear teeth 111 that respectively face the vertical portion and the inclined portion.

[0077] When an external force is exerted to the first panel 100 and the second panel 200 to contract the panels, the first panel and the second panel are moved in opposite directions to each other, and the external force transmitted to the first stopper 210 from the second panel 200 allows the vertical portion 211a of the first fixing protrusion 211 to come in close contact with the first gear tooth 111 facing the vertical portion.

[0078] Meanwhile, since the first panel 100 that tries to move in the opposite direction of the second panel 200 brings the first gear teeth 111 in close contact with the vertical portions 211a facing the first gear teeth, the vertical portions 211a are supported by the protruded portions of the gear teeth facing the vertical portions and are not moved.

[0079] Accordingly, the first fixing protrusions 211 are engaged with the first gear teeth 111 to be fixed thereto, so that the first panel 100 and the second panel 200 do not slide. At this time, by forming a contact surface of the gear tooth with the vertical portion 211a as a vertical surface parallel to the vertical portion 211a, it is possible to increase a contact area between the vertical portion and the gear tooth.

[0080] Referring to Fig. 5B, when the external force is exerted to the first panel 100 and the second panel 200 to extend the panels, the first panel and the second panel are moved in the opposite directions to each other, and the external force transmitted from the second panel 200 acts on the inclined portion 211b of the first fixing protrusion 211 and allows the inclined portion 211b to come in close contact with the first gear tooth 111 facing the inclined portion.

[0081] In this case, the first panel 100 that tries to move in the opposite direction of the second panel 200 transmits the external force to the first gear tooth 111 facing the inclined portion 211b to push out the external force toward the inclined portion 211b, and the inclined portion 211b changes a direction of the external force by the inclined surface to allow the first fixing protrusion 211 to be lifted upward.

[0082] By doing this, the first fixing protrusion 211 is moved to an opposite side of the first gear tooth 111 in while coming in contact with the first gear tooth 111 along the top surface of the first gear tooth 111 and is then restored to the original position by the restoring force after moving.

[0083] In this case, by forming an inclined surface or a gentle curved surface on the top surface of the first gear tooth 111 coming in contact with the inclined surface 211b, the first fixing protrusions 211 can be more easily moved.

[0084] That is, when the external force is exerted to the first panel 100 and the second panel 200 in the contraction direction, the first fixing protrusions 211 and the first gear teeth 111 are engaged with each other to be fixed, and when the external force is exerted to the first panel and the second panel in the extension direction, the first fixing protrusions 211 come in contact with the first gear teeth 111 to elastically move the first gear teeth 111 up and down, so that the first panel and the second panel can slide.

[0085] Accordingly, when a force is applied to the first panel 100 and the second panel 200 from the outside, the first panel and the second panel are merely extended but are not contracted. In order to contract the panels, it is required that the first stopper 210 is lifted over the first rail 110 and the engagement of the first fixing protrusions 211 and the first gear teeth 111 are removed. To achieve this, in order to hold the first stopper 210, both ends of the first stopper may be formed to be slightly retracted inward.

[0086] After the first stopper 210 is lifted up to contract the panels by a desired length, when the first stopper 210 is put down, the first stopper 210 is restored to the original position by the elasticity, and thus the first fixing protrusions 211 are inserted between the first gear teeth 111 again.

[0087] The first protrusions 211 and the first gear teeth 111 are not engaged with each other when the first panel 100 and the second panel 200 are extended, whereas the first protrusions and the first gear teeth are engaged with each other to be fixed due to the vertical portions 211a formed at the first fixing protrusions 211 and the inclined portions 211b formed on the opposite side when the first and second panels are extended. Accordingly, when positions of the vertical portion 211a and the inclined portion 211b are changed each other, the first protrusions and the first gear teeth are engaged with each other to be fixed when the first panel 100 and the second panel 200 are extended, whereas the first protrusions and the first gear teeth are not engaged with each other when the first and second panels are extended.

[0088] Accordingly, in the case of the third panel 300, since the left side of the first panel 100 is extended, at the time of the extension or the contraction, the third panel sides with the first panel 100 in the opposite direction of the second panel 200 that is extended toward the right side of the first panel 100. Therefore, a vertical portion and an inclined portion of a second fixing protrusion 311 need to be formed in a reverse manner to the first fixing protrusion 211.

[0089] Although the guide holes, the connecting members, the stopper, and the rail have been described in connection with the first panel 100 and the second panel 200. Hereinafter, a method of using the partition and the supporting members and will be described.

[0090] The first supporting member 400 and the second supporting member 500 are provided at the both ends of a length-adjustable partition 1. The second supporting member 500 has the same shape and function as those of the first supporting member 400, and thus the first supporting member 400 will be described in order to avoid the redundant descriptions thereof.

[0091] Fig. 6 is a cross-sectional view taken along line A-A' of the partition of Fig. 1, and Fig. 7 is a longitudinal cross-sectional view illustrating the first supporting member, the one end of the first panel and the second panel.

[0092] Referring to Fig. 6, the first supporting member 400 has extension portions 430 formed by largely enlarging

both ends of the first supporting member. As shown in the drawing, since a surface of the extension portion 430 perpendicular to the longitudinal direction of the partition is enlarged to have a width than that of a cross section of the second panel 200, when the partition is vertically stood, the supporting member comes in contact with an inner wall surface of a container partition at a wide area to be able to support the partition.

[0093] In addition, the first panel 100, the second panel 200, and the third panel 300 may be formed such that the upper ends and the lower ends thereof have thicknesses thicker than the centers thereof in cross section view. Accordingly, due to the extension portions 430, the first supporting member 400 and the second supporting member 500 have shapes in which upper and lower portions thereof are slightly enlarged. As a result, when the supporting members are vertically stood, the supporting members can be further stabilized.

[0094] Referring to Fig. 7, the first supporting member 400 has a connection portion 420 between the extension portions 430 formed at the both ends. The connection portion 420 is connected to the right end of the second panel 200 and connects the extension portions 430 to maintain the entire shape of the first supporting member 400. The first supporting member 400 is bent at a certain angle, and the entire shape of the first supporting member is an arch shape.

[0095] At this time, the extension portions 430 serve as leg portions of the arch to support the first supporting member 400 and transmit a supporting force to the connection portion 420.

[0096] Accordingly, when the extension portions 430 support the inner wall surface of the container, the connection portion 420 can apply to the second panel 200 while elastically moving in a direction parallel to the sliding direction of the second panel 200. At this time, the connection portion 420 may be made from a material having elasticity, such as a metal material, and may be integrally formed with the extension portions 430.

[0097] The connection portion 420 pushes the end of the second panel 200 by the supporting force transmitted from the first supporting member 420 to the connection portion 420, and thus the second panel 200 is contracted in the direction of the first panel 100.

[0098] However, unless the first stopper 210 is lifted up to remove the engagement of the first fixing protrusions 211 and the first gear teeth 111, since the first panel 100 and the second panel 200 are not contracted, the first panel 100 and the second panel 200 are pushed in the contraction direction of the second panel 200 as a whole.

[0099] Here, the second supporting member 500 provided at the left end of the partition transmits a supporting force in an opposite direction to the first supporting member.

[0100] While the second supporting member 500 is supported by another inner wall surface of the container and transmits the supporting force to the third panel 300 to allow the first panel 100 and the third panel 300 to be contracted, the third panel 300 and the first panel 100 also are not contracted by the stopper 310, and thus the first and third panels are pushed in the contraction direction of the third panel 300.

[0101] As stated above, the contraction direction of the second panel 200 is opposite the contraction direction of the third panel 300. Accordingly, the supporting forces transmitted in the opposite direction from the first supporting member 400 and the second supporting member 500 are balanced within the panel set of the first panel 100, the second panel 200 and the third panel 300, and the partition is supported between the one wall surface and the other wall surface of the container to be stably fixed.

[0102] Further, a first non-slip member 410 and a second not-slip member 410 may be formed at outer surfaces of the first supporting member 400 and the second supporting member 500, respectively. The non-slip members may be made from a natural rubber material or a synthetic rubber material. The non-slip members may be separately connected to the supporting members or may be coated on the outer surfaces of the first supporting member 400 and the second supporting member 500.

[0103] Due to frictions between the first non-slip member 410 and the inner wall surface of the container and between the second non-slip member 410 and the inner wall surface, since the supporting members are not separated from or do not slide down initial positions thereof, the stability of the partition can be enhanced.

[0104] Figs. 8 and 9 are schematic diagrams that simply illustrate an example of using the partition of Fig. 1.

[0105] The length-adjustable partition 1 can be used in various sizes of containers of different standards.

[0106] Referring to Figs. 8 and 9, the length-adjustable partition 1 is contracted to be fixed to a small-sized container or is extended to be fixed to a large-sized container, and can be fixed to any container within a length range where the first supporting member 400 and the second supporting member 500 reach both surfaces of the container.

[0107] Although the drawings show only a direction horizontal to one wall surface of the container, the partition may be fixed in a diagonal direction within the container as long as the first supporting member 400 and the second supporting member 500 are supported. In this case, the supporting members may be supported at different angles by being slightly deformed on the left or right side depending on an angle of the wall surface.

[0108] Furthermore, the partition may be provided plural in number at the inside of the container to partition the inside of the container into two or more regions.

[0109] Hereinafter, a length-adjustable partition according to another embodiment of the present invention will be explained with reference to Fig. 10.

[0110] Fig. 10 is a schematic diagram that simply illustrates the length-adjustable partition according to the another

embodiment of the present invention.

[0111] The length-adjustable partition according to the another embodiment of the present invention further includes an air freshener member 600.

[0112] The air freshener member 600 includes an air freshener for emitting fragrance provided on one surface and insertion protrusions 610 formed on the other surface. Thus, the air freshener member can be connected to the insertion grooves 150 formed at the center of the first panel 100. The air freshener may be integrally formed with the air freshener member 600, may be embedded in the one surface of the air freshener member 600, or may be accommodated in an accommodating portion that penetrates into the one surface of the air freshener member 600.

[0113] A plurality of vent holes is formed on one-side surface of the air freshener member 600, and air that has passed through vent holes 160 directly passes through the air freshener member 600, so that a ventilation effect and an air freshening effect can be improved.

[0114] Referring to Fig. 10, the insertion protrusions 610 protrude from the other surface of the air freshener member 600 toward a direction perpendicular to the other surface. The protruded ends are bent toward one side to come in close contact with the inner surfaces of the insertion grooves 150. Alternatively, the protruded ends pass through the insertion groove 150 and are hooked with the opposite side of the insertion groove to be fixed thereto.

[0115] The insertion protrusions 610 are inserted into the insertion grooves 150 to be fixed thereto, when a pressure is applied to cause the insertion protrusions to move in a direction opposite to the bent direction of the protruded ends, the protruded ends are separated from the inner surfaces of the insertion grooves 150 or the hooking to the insertion grooves 150 is released, so that the fixing of the insertion protrusions 610 is released.

[0116] Accordingly, the air freshener member 600 is connected to the first panel 100, but may be detachably connected thereto. Thus, the air freshener member may be connected to the partition and used depending on a taste of a user, or may be replaced with a new air freshener member 600 and used when the air freshener is used up or the user wants to use another fragrance.

[0117] Although the embodiments of the present invention have been described with reference to the accompanying drawings, it will be apparent to those skilled in the art that other specific embodiments can be implemented without changing the technical scope or essential features of the present invention. Accordingly, the embodiments described above are merely illustrative examples in all aspects, and the present invention is not limited to the embodiments.

[Industrial Applicability]

[0118] According to present invention, since at least one end of a length-adjustable partition is extended or contracted, the partition can be used by adjusting its length depending on various sizes of containers and can be fixed by itself without using other supporting mechanisms, other assistance mechanisms, or frames.

Claims

1. A length-adjustable partition, comprising:

a first panel;
a second panel that is overlapped with at least a part of the first panel and comes in slide contact with the first panel;
a first rail that is formed at any one of the first panel and the second panel and includes a plurality of first gear teeth arranged in a direction parallel to a sliding movement direction of the first panel and the second panel; and
a first stopper that is formed at the other one of the first panel and the second panel so as to correspond to the first rail and includes first fixing protrusions inserted into the first gear teeth and a first elastic portion that provides an elastic force to cause the first fixing protrusions to be inserted into the first gear teeth,
wherein a size of the overlapped section of the first panel and the second panel is adjusted to adjust a length of the partition.

2. The length-adjustable partition according to claim 1, further comprising:

a third panel that is overlapped with at least a part of the first or second panel and comes in slide contact with the first panel or the second panel;
a second rail that is formed at any one of the first or second panel and the third panel and includes a plurality of second gear teeth arranged in a direction parallel to the sliding movement direction of the first panel and the second panel; and
a second stopper that is formed at any one of the first or second panel and the third panel so as to correspond to the second rail and includes second fixing protrusions inserted into the second gear teeth and a second

elastic portion that provides an elastic force to cause the first fixing protrusions to be inserted to the second gear teeth.

3. The length-adjustable partition according to claim 1 or 2, wherein the least a part of the first panel is inserted into the second panel while coming in slide contact with the second panel to vary a size of an overlapped section with the second panel.

4. The length-adjustable partition according to claim 2, wherein the least a part of the first panel is inserted into the second panel while coming in slide contact with the second panel to vary a size of an overlapped section with the second panel, and the third panel is inserted into the second panel while coming in slide contact with the second panel or any one of the first panel and the second panel is inserted into the third panel while coming in slide contact with the third panel.

5. The length-adjustable partition according to claim 1, further comprising:

a first supporting member that is formed at any one of the first panel and the second panel and transmits an elastic force in a direction where the first panel and the second panel are contracted.

6. The length-adjustable partition according to claim 2, wherein the first panel is interposed between the second panel and the third panel, and the partition further includes a supporting member that is formed at any one of the second panel and the third panel and transmits an elastic force in a direction parallel to the sliding movement direction of the first panel and the second panel.

7. The length-adjustable partition according to claim 5 or 6 wherein the supporting member includes:

a connection portion in which one side is fixed to at least one of the first panel and the second panel and that has elasticity; and

extension portions that are connected to ends of the connection portion and are enlarged to have a width larger than that of the connection portion to support the first panel and the second panel.

8. The length-adjustable partition according to claim 7, further comprising:

a non-slip member that is formed on outer surfaces of the extension portions or is formed on outer surfaces of the connection portion and the extension portions to increase a frictional force of the outer surfaces.

9. The length-adjustable partition according to claim 1 or 2, wherein at least one of the first fixing protrusion and the second protrusion includes a vertical portion having a surface perpendicular to the sliding movement direction of the first panel and the second panel and an inclined portion forming an inclined surface in cooperation with the vertical portion.

10. The length-adjustable partition according to claim 1 or 2, further comprising:

an air freshener member that is connected to at least one of the first panel and the second panel or at least one of the first panel, the second panel and the third panel and emits fragrance to the outside.

11. The length-adjustable partition according to claim 1, further comprising:

a guide hole that is formed through any one of the first panel and the second panel and extends in a direction parallel to the sliding movement direction of the first panel and the second panel; and a connecting member that passes through the guide hole to be connected to the other one of the first panel and the second panel and slides in a direction where the guide hole extends.

FIG. 1

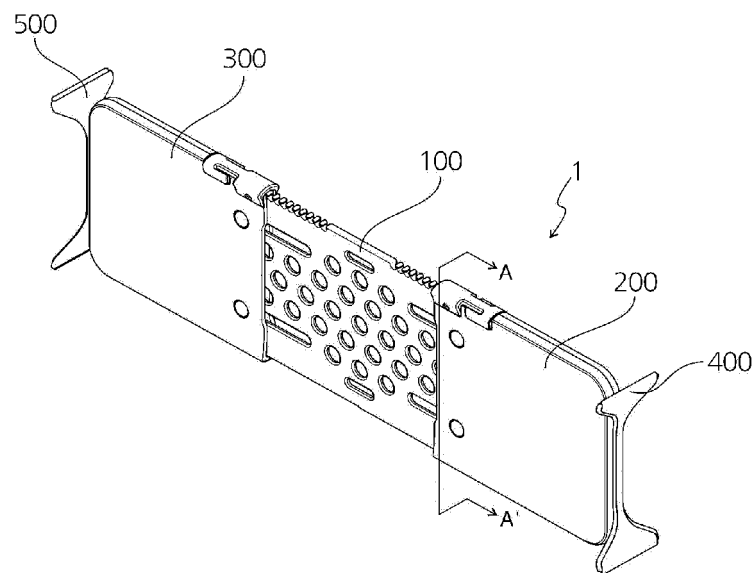


FIG. 2

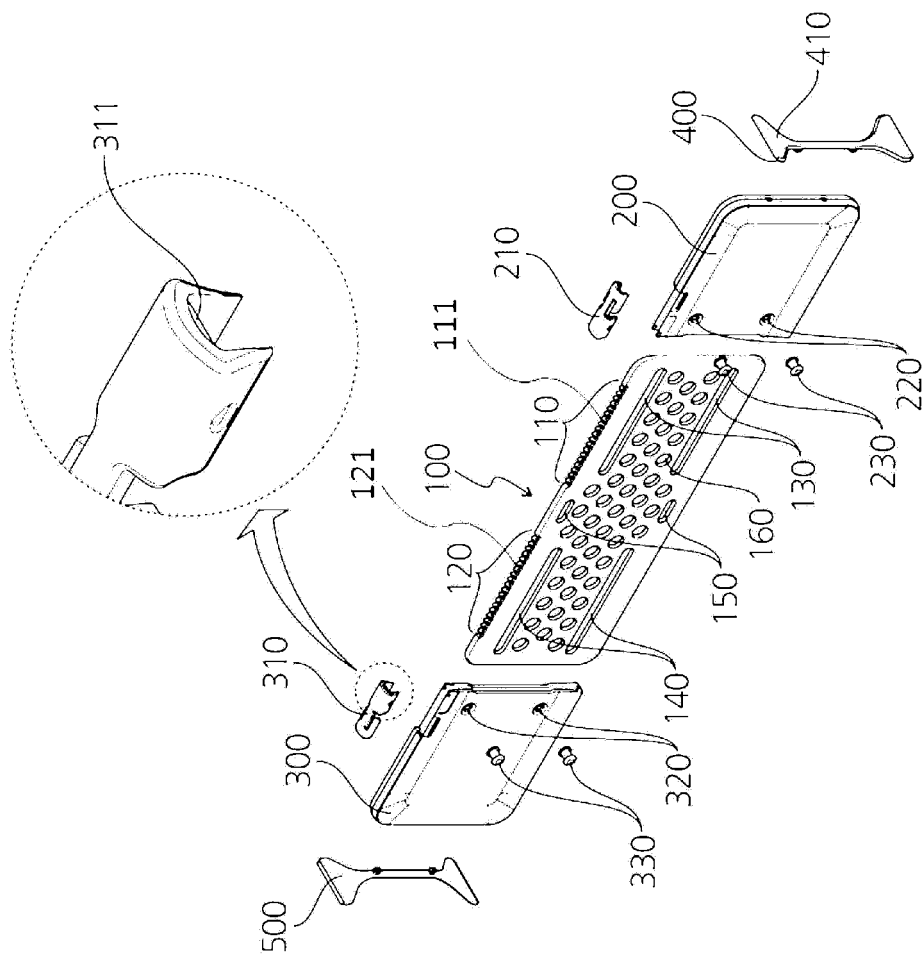


FIG. 3

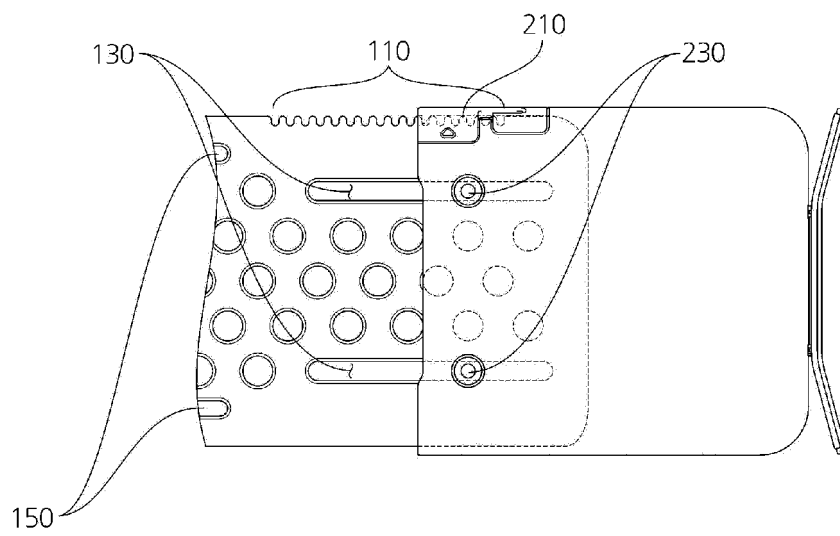


FIG. 4

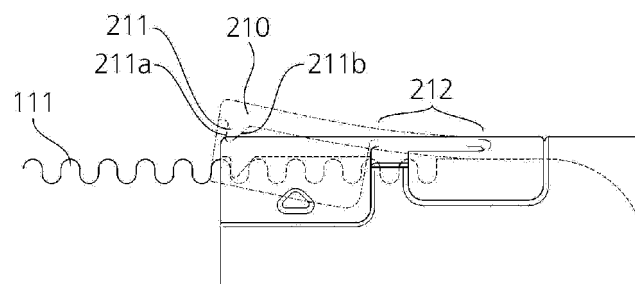


FIG. 5A

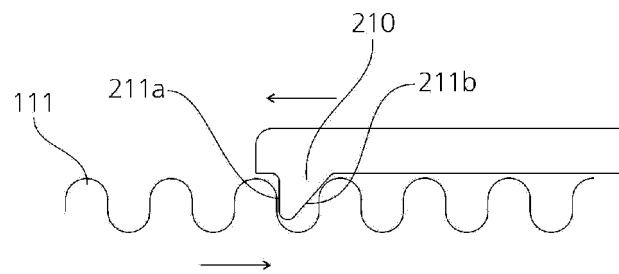


FIG. 5B

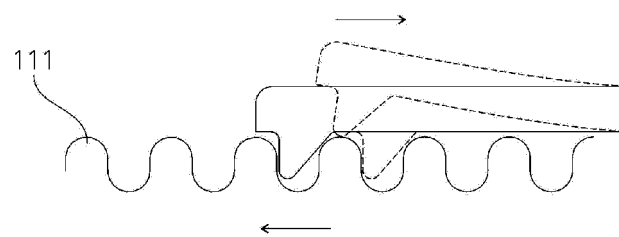


FIG. 6

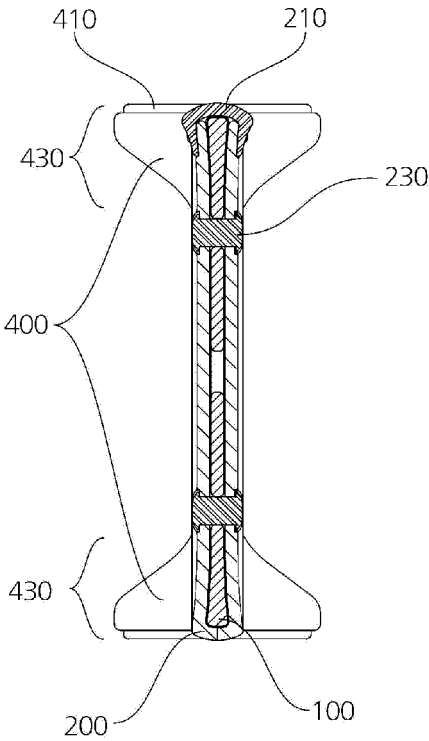


FIG. 7

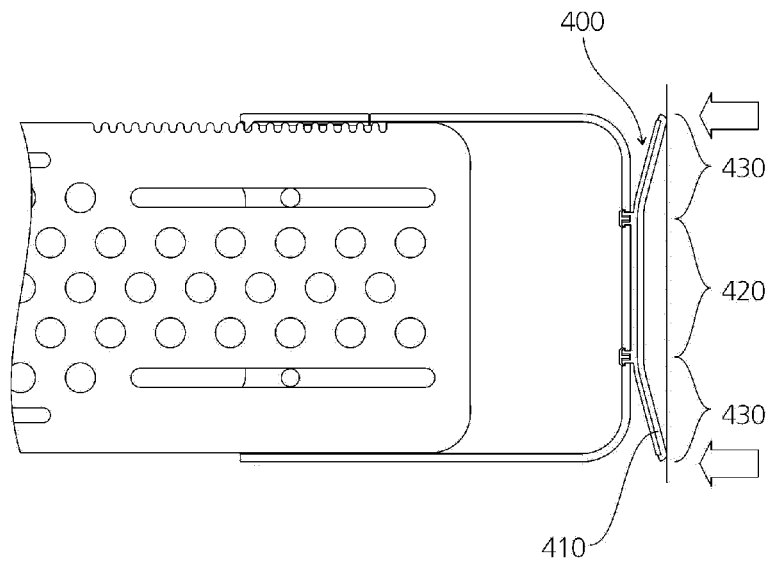


FIG. 8

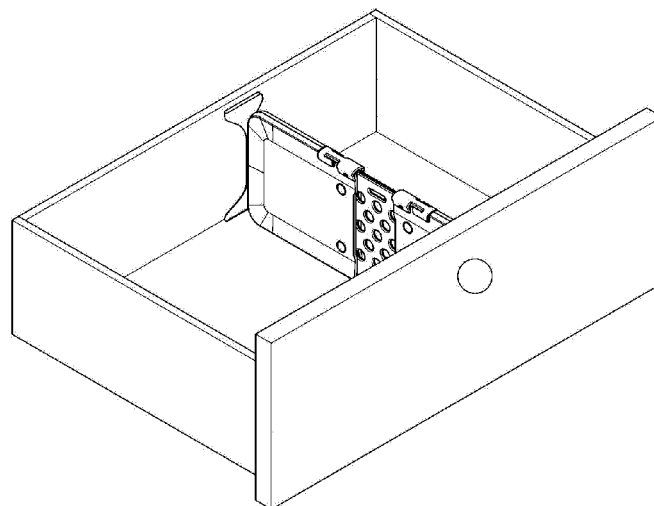


FIG. 9

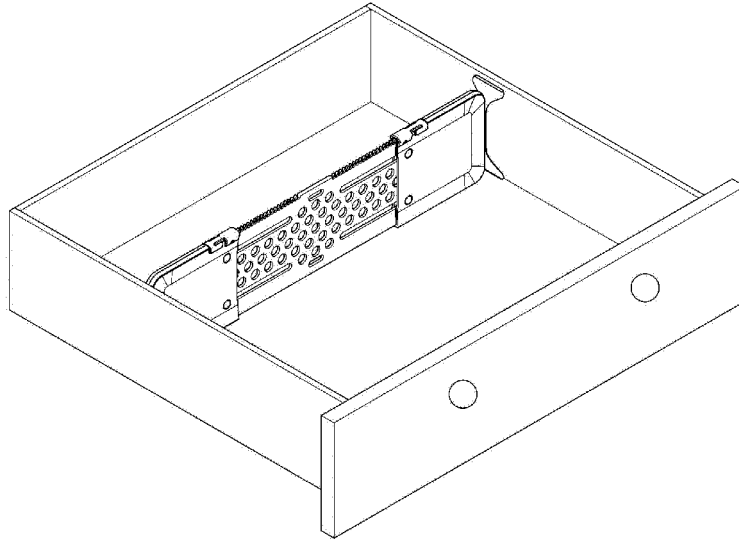
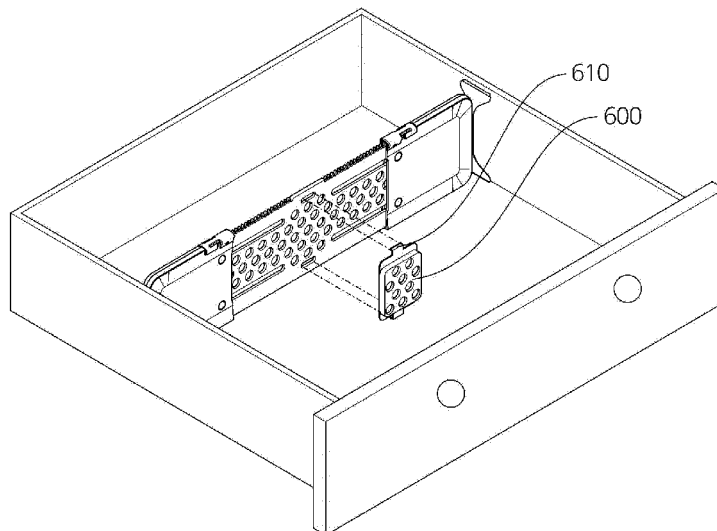


FIG. 10



INTERNATIONAL SEARCH REPORT

International application No.

PCT/KR2011/004829**A. CLASSIFICATION OF SUBJECT MATTER****A47B 88/20(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)

A47B 88/20; A47B 88/04

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

Korean Utility models and applications for Utility models: IPC as above

Japanese Utility models and applications for Utility models: IPC as above

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

eKOMPASS (KIPO internal) & Keywords: parting board(parting board), length(length), adjust(adjust), drawer (drawer), stopper (stopper)

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	JP 2003-230445 A (CHO PURA KOGYO KK) 19 August 2003 See claim 1 and figures 1-3.	1-11
A	KR 20-0363445 Y1 (PARK, SEUNG BU) 02 October 2004 See claims 1-3 and figures 1-3.	1-11
A	KR 20-0181584 Y1 (YU, KE CHUN) 15 May 2000 See claims 1-3 and figures 5-7.	1-11
A	JP 2003-250647 A (TAKARA STANDARD CO., LTD.) 09 September 2003 See paragraph 22 and figures 6-7.	1-11

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

* Special categories of cited documents:

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"&" document member of the same patent family

Date of the actual completion of the international search

17 FEBRUARY 2012 (17.02.2012)

Date of mailing of the international search report

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Name and mailing address of the ISA/KR

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Authorized officer

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INTERNATIONAL SEARCH REPORT
Information on patent family members

International application No.
PCT/KR2011/004829

Patent document cited in search report	Publication date	Patent family member	Publication date
JP 2003-230445 A	19.08.2003	NONE	
KR 20-0363445 Y1	02.10.2004	NONE	
KR 20-0181584 Y1	15.05.2000	NONE	
JP 2003-250647 A	09.09.2003	NONE	

Form PCT/ISA/210 (patent family annex) (July 2009)