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Storage apparatus for vehicle and vehicle including the same

Abstract

Disclosed is a storage apparatus that includes a door, slidably coupled to a back panel of a vehicle. The storage apparatus includes a support structure, connected to the door, that can be unfolded or folded in conjunction with movement of the door and supports the door.

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Background/Summary

CROSS-REFERENCE TO RELATED APPLICATION

(1) This application claims the benefit under 35 USC § 119(a) of Korean Patent Application No. 10-2022-0160129, filed on Nov. 25, 2022, in the Korean Intellectual Property Office, the entire disclosure of which is incorporated herein by reference for all purposes.

BACKGROUND

1. Field

(2) The present invention relates to a storage apparatus for a vehicle and a vehicle including the same.

2. Description of Related Art

(3) Last mile delivery refers to a final process of delivering goods to consumers from, for example, shipping companies. This process is emerging as area in which companies seek to gain important competitive advantage. Accordingly, lightweight vehicles or small-sized vehicles modified to load goods in a region of a passenger seat, which is a seat next to a driver's seat of the vehicle, have been recently increasingly used by shipping companies.

SUMMARY

(4) This Summary is provided to introduce a selection of concepts in a simplified form that are further described below in the Detailed Description. This Summary is not intended to identify key features or essential features of the claimed subject matter, nor is it intended to be used as an aid in determining the scope of the claimed subject matter.

(5) In one general aspect, here is provided a storage apparatus that includes a door, slidably coupled to a back panel of a vehicle. The storage apparatus includes a support structure, which is connected to the door, that can be unfolded or folded in conjunction with movement of the door and supports the door.

(6) The support structure may include a first support panel and a second support panel. The first support panel and the second support panel may be configured to be unfolded to be disposed to intersect the door; and folded to be disposed parallel to the door, in conjunction with the movement of the door.

(7) The door is configured to be disposed at a first position parallel to the first support panel or the second support panel or the second support panel or a second position intersecting the first support panel or the second support panel.

(8) The first support panel may include a first sliding groove disposed in an outer surface of the first support panel, the second support panel may include a second sliding groove disposed in an outer surface of the second support panel and connected to the first sliding groove when the second support panel is disposed parallel to the first support panel, and the support structure includes a fixing block disposed in at least one of the first sliding groove or the second sliding groove.

(9) The first support panel and the second support panel may be movable in conjunction with the movement of the door to dispose the door at the first position or the second position in a state in which the fixing block is disposed in the first sliding groove, and maintain a state of being disposed parallel to each other to maintain a state of the door being disposed at the second position in a state in which the fixing block is disposed across the first sliding groove and the second sliding groove.

(10) The door may include an edge panel configured to rotatably support the first support panel of the support structure, a door panel rotatably coupled to the edge panel, and a guide block coupled to the edge panel and slidably disposed on the back panel of the vehicle.

(11) The support structure may include a hinge block coupled to the first support panel and the

second support panel to rotatably support the first support panel and the second support panel and a plurality of hinge pins including a first hinge pin connecting the edge panel of the door and the first support panel and second hinge pins connecting the first support panel and the hinge block and connecting the second support panel and the hinge block.
(12) The storage apparatus may include a cover board disposed at one side of each of the door and the support structure and covering the one side of each of the door and the support structure when the door is disposed at the second position, and a knob connecting the cover board and the edge panel of the door and allowing the cover board to move with the edge panel.
(13) The cover board may include a board body covering the one side of each of the door and the support structure, and a contact part, protruding from the board body, configured to come into contact with or be separated from the knob by a change in position of the edge panel of the door.
(14) The edge panel may include a rotating support protruding from a surface of the edge panel intersecting the back panel of the vehicle, and the door may include a link rotatably supported by the rotating support and a hook connected to the link, disposed to protrude from a surface of the edge panel facing the back panel of the vehicle, and moved in a direction from the edge panel toward the back panel of the vehicle in conjunction with movement of the link.
(15) In another general aspect, an here is provided a vehicle including a vehicle body including a back panel having a panel body and a protruding part protruding from the panel body toward a passenger room and a bottom panel connected to the back panel and a storage apparatus disposed in the passenger room and coupled to the back panel. The storage apparatus includes a door slidably coupled to the back panel and a support structure, connected to the door, configured to be unfolded or folded in conjunction with movement of the door and to support the door.
(16) The support structure may include a first support panel and a second support panel. The first support panel and the second support panel may be configured to be unfolded to intersect the door and folded to be disposed parallel to the door in conjunction with the movement of the door.
(17) The door may be configured to be disposed at a first a first position parallel to the first support panel or the second support panel, or a second position intersecting the first support panel or the second support panel.
(18) The door may include an edge panel configured to rotatably support the first support panel of the support structure, a door panel rotatably coupled to the edge panel, and a guide block coupled to the edge panel and slidably disposed on the back panel of the vehicle.
(19) The edge panel may include a rotating support protruding from a surface of the edge panel disposed to intersect the back panel, and the door may include a link rotatably supported by the rotating support and a hook connected to the link, disposed to protrude from a surface of the edge panel facing the back panel, and moved in a direction from the edge panel toward the back panel of the vehicle in conjunction with movement of the link.
(20) Other features and aspects will be apparent from the following detailed description, the drawings, and the claims.

Description

BRIEF DESCRIPTION OF THE DRAWINGS
(1) FIG. **1** is a view illustrating a state in which a storage apparatus for a vehicle is installed on a back panel and a bottom panel according to one embodiment.
(2) FIG. **2** is a rear perspective view illustrating the storage apparatus for a vehicle.
(3) FIG. **3** is a view illustrating a state in which a door unit is disposed at a second position.
(4) FIG. **4** is a view illustrating a state in which a fixing block is disposed across a first sliding groove and a second sliding groove in a state in which the door unit is disposed at the second position.

(5) FIG. **5** is an exploded view illustrating an edge panel and a door panel of the door unit.
(6) FIG. **6** is an exploded view illustrating a first support panel, a second support panel, and a hinge block of the support unit.
(7) FIG. **7** is a cross-sectional view illustrating a state in which, by using a plurality of hinge pins, the edge panel and the first support panel are connected, and the edge panel and the first support panel, and the edge panel and the second support panel are connected.
(8) FIG. **8** is a view illustrating a state in which the hinge block is connected to each of the first support panel and the second support panel.
(9) FIGS. **9**A to **9**C are views illustrating states in which a link and a hook move while the door unit is disposed at the second position from a first position.
(10) FIG. **10** is a cross-sectional view illustrating a state in which a knob is in contact with a cover board.
(11) FIG. **11** is a view illustrating a state in which the cover board is moved by being pulled by the knob.
(12) FIG. **12** is a cross-sectional view illustrating a state in which the state in which the knob is in contact with the cover board is released.
(13) FIG. **13** is a view illustrating a door unit according to another embodiment.
(14) FIG. **14** is a view illustrating a state in which a screen covers one side of each of a door unit and a support unit.
(15) Throughout the drawings and the detailed description, unless otherwise described or provided, the same drawing reference numerals will be understood to refer to the same elements, features, and structures. The drawings may not be to scale, and the relative size, proportions, and depiction of elements in the drawings may be exaggerated for clarity, illustration, and convenience.

DETAILED DESCRIPTION

(16) The following detailed description is provided to assist the reader in gaining a comprehensive understanding of the methods, apparatuses, and/or systems described herein. However, various changes, modifications, and equivalents of the methods, apparatuses, and/or systems described herein will be apparent after an understanding of the disclosure of this application. For example, the sequences of operations described herein are merely examples, and are not limited to those set forth herein, but may be changed as will be apparent after an understanding of the disclosure of this application, with the exception of operations necessarily occurring in a certain order.
(17) The features described herein may be embodied in different forms and are not to be construed as being limited to the examples described herein. Rather, the examples described herein have been provided merely to illustrate some of the many possible ways of implementing the methods, apparatuses, and/or systems described herein that will be apparent after an understanding of the disclosure of this application.
(18) Advantages and features of the present disclosure and methods of achieving the advantages and features will be clear with reference to embodiments described in detail below together with the accompanying drawings. However, the present disclosure is not limited to the embodiments disclosed herein but will be implemented in various forms. The embodiments of the present disclosure are provided so that the present disclosure is adequately disclosed, and a person with ordinary skill in the art can fully understand the scope of the present disclosure. Meanwhile, the terms used in the present specification are for explaining the embodiments, not for limiting the present disclosure.
(19) Terms, such as first, second, A, B, (a), (b) or the like, may be used herein to describe components. Each of these terminologies is not used to define an essence, order or sequence of a corresponding component but used merely to distinguish the corresponding component from other component(s). For example, a first component may be referred to as a second component, and similarly the second component may also be referred to as the first component.
(20) Throughout the specification, when a component is described as being “connected to,” or

“coupled to” another component, it may be directly “connected to,” or “coupled to” the other component, or there may be one or more other components intervening therebetween. In contrast, when an element is described as being “directly connected to,” or “directly coupled to” another element, there can be no other elements intervening therebetween.

(21) The use of the term “up” or “upward” herein is meant to refer to a direction wherein a corresponding vehicle includes wheels on a lower portion of the vehicle compared to a roof of the vehicle in an upper portion of the vehicle.

(22) The singular forms “a”, “an”, and “the” are intended to include the plural forms as well, unless the context clearly indicates otherwise. It will be further understood that the terms “comprises/comprising” and/or “includes/including” when used herein, specify the presence of stated features, integers, steps, operations, elements, and/or components, but do not preclude the presence or addition of one or more other features, integers, steps, operations, elements, components and/or groups thereof.

(23) FIG. **1** is a view illustrating a state in which a storage apparatus for a vehicle is installed on a back panel and a bottom panel according to one embodiment, and FIG. **2** is a rear perspective view illustrating the storage apparatus for a vehicle. FIG. **3** is a view illustrating a state in which a door unit (for example, a door) is disposed at a second position, and FIG. **4** is a view illustrating a state in which a fixing block is disposed across a first sliding groove and a second sliding groove in a state in which the door unit is disposed at the second position. FIG. **5** is an exploded view illustrating an edge panel and a door panel of the door unit, and FIG. **6** is an exploded view illustrating a first support panel, a second support panel, and a hinge block of the support unit (for example, support structure). FIG. **7** is a cross-sectional view illustrating a state in which, by using a plurality of hinge pins, the edge panel and the first support panel are connected, and the edge panel and the first support panel, and the edge panel and the second support panel are connected, and FIG. **8** is a view illustrating a state in which the hinge block is connected to each of the first support panel and the second support panel.

(24) Referring to FIG. **1**, a vehicle **1** according to one embodiment includes a back panel **110** including a panel body **112**, a guide rail **114** disposed in a longitudinal direction of the panel body **112**, and a protruding part **116** protruding from the panel body **112** toward a passenger room, a bottom panel **120** disposed to perpendicularly intersect the back panel **110**, and a storage apparatus **1000** for a vehicle disposed in a the passenger room and on the back panel **110** and the bottom panel **120**.

(25) The storage apparatus **1000** for a vehicle may include a door unit **1100** and a support unit **1200**.

(26) Referring to FIGS. **1** to **5**, the door unit **1100** may be slidably coupled to the back panel **110** of the vehicle **1**. The door unit **1100** may cover to open or close one side of a storage space S formed by the door unit **1100** and the support unit **1200**.

(27) The door unit **1100** may include an edge panel **1110**, a door panel **1120**, and a guide block **1130**.

(28) The edge panel **1110** may rotatably support a first support panel **1210**, which will be described below, of the support unit **1200**. The edge panel **1110** may be provided in a shape of which an inner portion is empty to accommodate the door panel **1120**. The edge panel **1110** may be coupled to the guide block **1130** and moved in conjunction with movement of the guide block **1130**. The edge panel **1110** may include a rotating support **1112**. The rotating support **1112** may protrude from a surface of the edge panel **1110** disposed to intersect the back panel **110**. The rotating support **1112** may support a link **1140** which will be described below.

(29) The door panel **1120** may be rotatably coupled to the edge panel **1110**. A hinge shaft **1122** having a cylindrical shape may be disposed in an end portion of the door panel **1120** to be rotatably supported by the edge panel **1110**. In addition, a handle **1124** may be disposed on the door panel **1120** as illustrated in FIGS. **1** to **5**. A user may move the door unit **1100** in a longitudinal direction

of the guide rail **114** of the back panel **110** using the handle **1124**,
(30) The guide block **1130** may be coupled to the edge panel **1110**. More specifically, as illustrated in FIG. **2**, the guide block **1130** may be disposed on a surface of the edge panel **1110** facing the back panel **110**. The guide block **1130** may be slidably coupled to the guide rail **114** of the back panel **110**. The guide block **1130** may be provided in a "c" shape to be coupled to the guide rail **114**.
(31) The guide block **1130** may move in the same direction as a direction in which the handle **1124** of the door panel **1120** moves. The edge panel **1110** and the first support panel **1210**, which will be described below, of the support unit **1200** may be moved with the guide block **1130** by movement of the guide block **1130**.
(32) Referring to FIGS. **1** to **8**, the support unit **1200** may be connected to the door unit **1100** to be unfolded or folded in conjunction with movement of the door unit **1100**. The support unit **1200** may support the door unit **1100**. The support unit **1200** may include the first support panel **1210**, a second support panel **1220**, a hinge block **1230**, a plurality of hinge pins **1240**, and a fixing block **1250**.
(33) The first support panel **1210** may be rotatably coupled to the edge panel **1110** of the door unit **1100**. The first support panel **1210** may have a length corresponding to a width of the edge panel **1110**. The first support panel **1210** may be disposed between the edge panel **1110** and the bottom panel **120**. The first support panel **1210** may include a first sliding groove **1212**. The first sliding groove **1212** may be disposed on an outer surface of the first support panel **1210**. In this case, the outer surface may refer to a surface exposed to a passenger who rides in the vehicle **1**.
(34) The second support panel **1220** may be rotatably connected to the hinge block **1230**. The second support panel **1220** may be disposed between the edge panel **1110** and the bottom panel **120**. The second support panel **1220** may be disposed to be spaced apart from the first support panel **1210** with the hinge block **1230** interposed therebetween. The second support panel **1220** may have a length corresponding to the length of the first support panel **1210**. The second support panel **1220** may move in conjunction with movement of the first support panel **1210**.
(35) The second support panel **1220** may include a second sliding groove **1222**. The second sliding groove **1222** may be disposed in an outer surface of the second support panel **1220**. The second sliding groove **1222** may be connected to the first sliding groove **1212** when the second support panel **1220** is disposed parallel to the first support panel **1210**. Conversely, the second sliding groove **1222** may be disposed to face the first sliding groove **1212** when the second support panel **1220** is disposed to face the first support panel **1210**.
(36) The first support panel **1210** and the second support panel **1220** may be unfolded to be disposed to intersect the door unit **1100** or folded to be disposed parallel to the door unit **1100** in conjunction with movement of the door unit **1100**.
(37) More specifically, when the first support panel **1210** and the second support panel **1220** are unfolded to be disposed to intersect the door unit **1100**, the second support panel **1220** may be supported by the bottom panel **120** and also disposed parallel to the first support panel **1210** in the longitudinal direction of the guide rail **114** of the back panel **110**. Accordingly, the first support panel **1210** and the second support panel **1220** may form the storage space S with the door unit **1100**.
(38) Conversely, when the first support panel **1210** and the second support panel **1220** are folded to be disposed parallel to the door unit **1100**, as illustrated in FIG. **1**, the door unit **1100** may be disposed parallel to the bottom panel **120** and supported by the first support panel **1210**. In addition, the door unit **1100** and the support unit **1200** may be disposed between the back panel **110** and a holding unit **1600** which will be described below. Accordingly, the door unit **1100** and the support unit **1200** disposed between the back panel **110** and the holding unit **1600**, which will be described below, can be prevented from shaking in a longitudinal direction of the bottom panel **120**.

(39) In addition, the door unit **1100** may be disposed at a first position P**1** at which the door unit **1100** is disposed parallel to the first support panel **1210** or the second support panel **1220** or at a second position P**2** at which the door unit **1100** is disposed to intersect the first support panel **1210** or the second support panel **1220**.
(40) More specifically, the door unit **1100** may be disposed at the first position P**1** as illustrated in FIG. **1**, and the guide block **1130** of the door panel **1120** may be moved along the guide rail **114** of the back panel **110** so that the door unit **1100** may be disposed at the second position P**2** as illustrated in FIG. **3**. When the door unit **1100** is disposed at the second position P**2**, the door unit **1100** and the support unit **1200** may form the storage space S. When the door unit **1100** is disposed at the second position P**2**, and the storage space S is formed, the user may pull the handle **1124** of the door panel **1120** to open the storage space S. As described above, since the door unit **1100** of the vehicle **1** may be freely disposed to form or not to form the storage space S, spatial utilization inside the vehicle **1** can be improved.
(41) As illustrated in FIGS. **6** to **8**, the hinge block **1230** may be coupled to the first support panel **1210** and the second support panel **1220** to rotatably support the first support panel **1210** and the second support panel **1220**.
(42) In a state in which the hinge block **1230** is coupled to the first support panel **1210** and the second support panel **1220**, the hinge block **1230** may be disposed to be colinear with the outer surface of the first support panel **1210** and the outer surface of the second support panel **1220** as illustrated in FIG. **3**. In addition, as illustrated in FIG. **8**, the hinge block **1230** may further protrude toward the storage space S formed by the door unit **1100** and the support unit **1200** from the storage apparatus **1000** for a vehicle in a direction toward the back panel **110** than an inner surface of the first support panel **1210** and an inner surface of the second support panel **1220**. Accordingly, a part of the hinge block **1230** may be disposed to overlap a part of the inner surface of the first support panel **1210** and a part of the inner surface of the second support panel **1220**.
(43) Accordingly, when the first support panel **1210** and the second support panel **1220** are rotated about the hinge block **1230**, the hinge block **1230** may prevent the first support panel **1210** and the second support panel **1220** from being bent and folded outward from the edge panel **1110** on the contrary that the first support panel **1210** and the second support panel **1220** are bent and folded toward the storage space S. Accordingly, a phenomenon in which the first support panel **1210** and the second support panel **1220** collide with the holding unit **1600**, which will be described below, can be prevented.
(44) The plurality of hinge pins **1240** may allow smooth rotation of the support unit **1200**. The plurality of hinge pins **1240** may include a first hinge pin **1242** and second hinge pins **1244**.
(45) As illustrated in FIG. **7**, the first hinge pin **1242** may connect the edge panel **1110** of the door unit **1100** and the first support panel **1210**. The first hinge pin **1242** may pass through the edge panel **1110** and the first support panel **1210** to connect the edge panel **1110** and the first support panel **1210**. The first hinge pin **1242** may be rotated with the first support panel **1210** while connected to the edge panel **1110**. The first hinge pin **1242** may be provided in a cylindrical shape but is not limited thereto.
(46) The second hinge pins **1244** may connect the first support panel **1210** and the hinge block **1230** and connect the second support panel **1220** and the hinge block **1230**. Each of the second hinge pins **1244** may have a length corresponding to the length of the first support panel **1210** or the second support panel **1220**. The second hinge pin **1244** may be provided in a cylindrical shape but is not limited thereto. The second hinge pin **1244** may be provided as a plurality of second hinge pins **1244**. The plurality of second hinge pins **1244** may be disposed to be spaced apart from each other in a direction from the first support panel **1210** toward the second support panel **1220**. The second hinge pin **1244** may be rotated with the first support panel **1210** or the second support panel **1220** while connected to the hinge block **1230**.
(47) The fixing block **1250** may be disposed in at least one of the first sliding groove **1212** of the

first support panel **1210** or the second sliding groove **1222** of the second support panel **1220**. The fixing block **1250** may have a length corresponding to a length of the first sliding groove **1212** or the second sliding groove **1222** as illustrated in FIGS. **3** and **4**.

(48) The first support panel **1210** and the second support panel **1220** may move in conjunction with movement of the door unit **1100** so that the door unit **1100** is disposed at the first position P**1** or the second position P**2** in a state in which the fixing block **1250** is disposed in the first sliding groove **1212**. As illustrated in FIG. **3**, when the fixing block **1250** is disposed only in the first sliding groove **1212**, the first support panel **1210** and the second support panel **1220** may be folded to face each other with respect to the hinge block **1230**.

(49) Conversely, in a state in which the fixing block **1250** is disposed across the first sliding groove **1212** and the second sliding groove **1222**, the first support panel **1210** and the second support panel **1220** may maintain a state of being disposed parallel to each other to maintain a state in which the door unit **1100** is disposed at the second position P**2**. As illustrated in FIG. **4**, when the fixing block **1250** is disposed across the first sliding groove **1212** and the second sliding groove **1222**, the first support panel **1210** and the second support panel **1220** may be prevented from being folded toward the storage space S by the fixing block **1250**. Accordingly, since the fixing block **1250** maintains an unfolded state of the first support panel **1210** and the second support panel **1220**, the storage space S can be stably maintained.

(50) Although not illustrated in the drawings, magnets having S poles and N poles may be installed in the fixing block **1250**. The magnets may be disposed on one end portion and the other end portion of the fixing block **1250** in a longitudinal direction thereof. Magnets which have poles disposed opposite to the poles of the magnets embedded in the fixing block **1250** when the fixing block **1250** is in contact with each of the edge panel **1110** and the second support panel **1220**, may be embedded in the edge panel **1110** and the second support panel **1220**.

(51) Accordingly, when the fixing block **1250** is disposed in the first sliding groove **1212**, a state in which the fixing block **1250** is disposed in the first sliding groove **1212** can be stably maintained due to a property that the poles of the magnets embedded in the fixing block **1250** and the edge panel **1110** are to be in contact with each other. Conversely, when the fixing block **1250** is disposed across the first sliding groove **1212** and the second sliding groove **1222**, due to a property that the poles of the magnets embedded in the fixing block **1250** and the second sliding groove **1222** are to be in contact with each other, the fixing block **1250** may be disposed across the first sliding groove **1212** and the second sliding groove **1222**, and a state in which the fixing block **1250** is in contact with the second support panel **1220** can be stably maintained.

(52) In addition, although not illustrated in the drawings, the edge panel **1110** or the second support panel **1220** may be formed of an iron material to which the magnets embedded in the fixing block **1250** may stick.

(53) Hereinafter, a structure for maintaining the state in which the door unit **1100** is disposed at the second position P**2** using the link **1140** and a hook **1150** will be described.

(54) FIGS. **9**A to **9**C are views illustrating states in which the link and the hook move while the door unit is disposed at the second position from the first position.

(55) Referring to FIGS. **1** to **9**B, the door unit **1100** of the storage apparatus **1000** for a vehicle may include the link **1140** and the hook **1150**.

(56) The link **1140** may be rotatably supported by the rotating support **1112** of the edge panel **1110**. The link **1140** may protrude outward from an inner side of the edge panel **1110**.

(57) The hook **1150** may be rotatably connected to the link **1140** and disposed to protrude from a surface of the edge panel **1110** facing the back panel **110** of the vehicle body **100**. The hook **1150** may move in a direction from the edge panel **1110** toward the back panel **110** of the vehicle **1** in conjunction with movement of the link **1140**.

(58) A first slit groove **1114** and a second slit groove **1116** may be formed in the edge panel **1110**. The first slit groove **1114** may be formed in the surface of the edge panel facing the back panel **110**

of the vehicle body **100**, and the second slit groove **1116** may be formed in a surface of the edge panel **1110** facing a ceiling panel (not shown) of the vehicle body **100**. The first slit groove **1114** and the second slit groove **1116** may be connected to each other as illustrated in FIGS. **9**A to **9**C. The hook **1150** may be movably disposed in the first slit groove **1114**, and the link **1140** may be movably disposed in the second slit groove **1116**.

(59) As illustrated in FIGS. **1** and **9**A, in the state in which the door unit **1100** is disposed at the first position P**1**, the hook **1150** is disposed under the protruding part **116** of the back panel **110** in FIG. **9**A. In this case, a part of the protruding part **116** and a part of the hook **1150** may be disposed to overlap in FIG. **9**A.

(60) When the door unit **1100** moves upward in this state, as illustrated in FIG. **9**B, the hook **1150** is pressed by the protruding part **116** and is moved in a direction (for example, an intersecting direction) different from a direction in which the door unit **1100** moves. More specifically, the hook **1150** moves toward an inner portion of the first slit groove **1114**. When the hook **1150** moves toward the inner portion of the first slit groove **1114**, the link **1140** connected to the hook **1150** rotates in conjunction with movement of the hook **1150**. Since the hook **1150** is connected to the link **1140**, when the hook **1150** is pressed by the protruding part **116**, the link **1140** may suppress movement of the hook **1150** in reverse to not allow the hook **1150** to move further outward from the inner portion the first slit groove **1114**.

(61) When the hook **1150** moves to the inner portion of the first slit groove **1114** so that the protruding part **116** of the back panel **110** and the hook **1150** are disposed to be misaligned with each other without overlapping each other, the door unit **1100** may move upward further in the same direction as a direction in which the door unit **1100** has moved upward. When the door unit **1100** continuously moves upward so that the hook **1150** is disposed above the protruding part **116** as illustrated in FIG. **9**C, the hook **1150** may move toward the back panel **110** outward from the inner portion of the first slit groove **1114**. In this case, the link **1140** may rotate in conjunction with movement of the hook **1150**.

(62) When the hook **1150** moves further toward the back panel **110** outward from the inner portion of the first slit groove **1114** so that the part of the protruding part **116** of the back panel **110** and the part of the hook **1150** are disposed to overlap as illustrated in FIG. **9**C, the door unit **1100** may be disposed at the second position P**2**. When the door unit **1100** is disposed at the second position P**2**, the hook **1150** may be supported by the protruding part **116**. When the hook **1150** is supported by the protruding part **116**, the state in which the door unit **1100** is disposed at the second position P**2** can be stably maintained.

(63) In addition, when the hook **1150** is supported by the protruding part **116** of the back panel **110** so that the door unit **1100** is disposed at the second position P**2**, the first support panel **1210** and the second support panel **1220** may be unfolded to be disposed parallel to each other, and thus the door unit **1100** and the support unit **1200** may form the storage space S. In addition, when the hook **1150** is supported by the protruding part **116** of the back panel **110**, movement of the door unit **1100** is suppressed, and thus a state in which the storage space S is formed can be stably maintained.

(64) Hereinafter, a structure covering one side of each of the door unit **1100** and the support unit **1200** will be described.

(65) FIG. **10** is a cross-sectional view illustrating a state in which a knob is in contact with a cover board, FIG. **11** is a view illustrating a state in which the cover board is moved by being pulled by the knob, and FIG. **12** is a cross-sectional view illustrating a state in which the state in which the knob is in contact with the cover board is released.

(66) Referring to FIGS. **1** to **12**, the storage apparatus **1000** for a vehicle may include a knob **1300**, a cover board **1400**, and a console **1500**.

(67) The knob **1300** may be movably coupled to the edge panel **1110** of the door unit **1100**. The knob **1300** may connect the edge panel **1110** and the cover board **1400** so that the cover board **1400** is moved with the edge panel **1110**. A third slit groove **1118**, in which the knob is movably

accommodated, may be disposed in the edge panel **1110**. The third slit groove **1118** may be disposed as a plurality of third slit grooves **1118** which are spaced apart from each other in the edge panel **1110**. The knob **1300** may be provided as a plurality of knobs **1300** which are disposed so that each of the plurality of knobs **1300** is disposed in one of the plurality of third slit grooves **1118**.
(68) The cover board **1400** may be disposed at one side of each of the door unit **1100** and the support unit **1200**. The cover board **1400** may cover one side of each of the door unit **1100** and the support unit **1200** when the door unit **1100** is disposed at the second position P**2**.
(69) The cover board **1400** may include a board body **1410** and a contact part **1420**. More specifically, the board body **1410** may cover a portion of the storage space S formed by the door unit **1100** disposed at the second position P**2** and the support unit **1200**.
(70) The board body **1410** may be slidably coupled to the console **1500**. The board body **1410** may cover one side of each of the door unit **1100** and the support unit **1200**. The contact part **1420** may protrude from the board body **1410**. The contact part **1420** may come into contact with or be separated from the knob **1300** by a change in position of the edge panel **1110**.
(71) The console **1500** may slidably support the cover board **1400**. A groove for slidably accommodating the cover board **1400** may be formed in the console **1500**. The console **1500** may cover a portion of the storage space S formed by the door unit **1100** and the support unit **1200**.
(72) As illustrated in FIG. **1**, in the state in which the door unit **1100** is disposed at the first position P**1**, the knob **1300** is disposed under the cover board **1400** while coupled to the edge panel **1110**. In this state, the knob **1300** is not in contact with the contact part **1420** of the cover board **1400**.
(73) When the door unit **1100** begins to move upward in this state, the knob **1300** may move upward from a lower side of the cover board **1400** with the edge panel **1110**. As illustrated in FIG. **10**, the door unit **1100** may move upward so that the knob **1300** comes into contact with the contact part **1420** of the cover board **1400**. When the door unit **1100** continues to move upward in this state, the cover board **1400** may be moved by the knob **1300** in the same direction as a direction in which the door unit **1100** moves.
(74) When the door unit **1100** is moved upward and disposed at the second position P**2**, a portion of the storage space S which is not covered by the console **1500** may be covered by the cover board **1400** as illustrated in FIG. **11**. Accordingly, a phenomenon, in which goods stored in the storage space S escape through the portion of the storage space S which is not covered by the console **1500**, can be prevented.
(75) As illustrated in FIG. **12**, when the knob **1300** slidably moves inward from the outside of the third slit groove **1118**, a state in which the knob **1300** is in contact with the contact part **1420** of the cover board **1400** may be released. When the contact state between the knob **1300** and the cover board **1400** is released, the cover board **1400** may enter a state of being slidable on the console **1500**. In the state in which the cover board **1400** is slidable on the console **1500**, when the cover board **1400** is moved so that a space between the door unit **1100** and the console **1500** is exposed, the user may pull goods stored in the storage space S out through the exposed space.
(76) Since the knob **1300** of the storage apparatus **1000** for a vehicle may be moved to open or close one side of the storage space S by manipulation of the user, user's storage utilization can be improved due to the knob **1300**.
(77) Hereinafter, the holding unit **1600** will be described.
(78) Referring to FIGS. **1**, **3**, and **4**, the storage apparatus **1000** for a vehicle may include the holding unit **1600**. The holding unit **1600** may be disposed at one side of each of the door unit **1100** and the support unit **1200**. The holding unit **1600** may include a rail, a rail block, and a holder which is coupled to the rail block and on which goods may be disposed. Goods which are not stored in the storage space S, a convenience apparatus such as a humidifier, a dehumidifier, or a refrigerator, or the like, may be disposed on the holding unit **1600**. Although not illustrated in the drawings, a connector through which power is supplied to the convenience apparatus or the convenience apparatus is charged may be installed on the holding unit **1600**.

(79) Hereinafter, a door unit **1100** according to another embodiment and a screen **1700** will be described.
(80) FIG. **13** is a view illustrating a door unit according to another embodiment, and FIG. **14** is a view illustrating a state in which a screen covers one side of each of the door unit and a support unit.
(81) Referring to FIG. **13**, a hinge shaft **1122** of a door panel **1120** of a door unit **1100** may also be formed on a surface of the door panel **1120** disposed parallel to a back panel **110** of a vehicle body **100**. Accordingly, the door panel **1120** may rotate in a direction toward the back panel **110** of the vehicle body **100** while coupled to an edge panel **1110**. Accordingly, a phenomenon in which a body of a user sitting on a driver's seat moves from a driver's seat region A**1** toward a storage region A**2** can be prevented. Accordingly, ease of opening and closing the door panel **1120** of the user can be improved.
(82) Referring to FIG. **14**, a storage apparatus **1000** for a vehicle may further include the screen **1700**. The screen **1700** may cover an open space between a console **1500** and the door unit **1100**. The screen **1700** may include a mesh having a grid shape. The screen **1700** may be attached to the edge panel **1110** using a magnet. A phenomenon in which goods escape through the open space between the console **1500** and the door unit **1100** can be prevented by the screen **1700**.
(83) According to one embodiment, in a storage apparatus for a vehicle, since damage to goods loaded in a region of a passenger seat is prevented, delivery reliability can be improved.
(84) Examples of the present disclosure are directed to providing a storage apparatus for a vehicle and reducing a risk of a driver's accident by eliminating interference of a driver's sight toward a passenger seat (for example, associated with the storage apparatus).
(85) Examples of the present disclosure are directed to improving user convenience by providing a storage apparatus for a vehicle installed in a region of a passenger seat in which goods can be easily stored.
(86) Last mile delivery vehicle includes the removal of a seat disposed in the region of a passenger seat to maximize the loading space. Aspects of the present disclosure provide an apparatus which prevents damage to goods loaded in the region of the passenger seat and also does not interfere with a driver's sight.
(87) A number of embodiments have been described above. Nevertheless, it will be understood that various modifications may be made. For example, suitable results may be achieved if the described techniques are performed in a different order and/or if components in a described system, architecture, device, or circuit are combined in a different manner and/or replaced or supplemented by other components or their equivalents. Accordingly, other implementations are within the scope of the following claims
(88) While this disclosure includes specific examples, it will be apparent after an understanding of the disclosure of this application that various changes in form and details may be made in these examples without departing from the spirit and scope of the claims and their equivalents. The examples described herein are to be considered in a descriptive sense only, and not for purposes of limitation. Descriptions of features or aspects in each example are to be considered as being applicable to similar features or aspects in other examples. Suitable results may be achieved if the described techniques are performed in a different order, and/or if components in a described system, architecture, device, or circuit are combined in a different manner, and/or replaced or supplemented by other components or their equivalents. Therefore, the scope of the disclosure is defined not by the detailed description, but by the claims and their equivalents, and all variations within the scope of the claims and their equivalents are to be construed as being included in the disclosure.

Claims

1. A storage apparatus, comprising: a door, slidably coupled to a back panel of a vehicle; and a support structure, connected to the door, the support structure being configured to be unfolded or folded in conjunction with movement of the door, and to support the door, wherein the support structure comprises: a first support panel; and a second support panel, and wherein the first support panel and the second support panel are configured to be: unfolded to intersect the door; and folded to be disposed parallel to the door in conjunction with the movement of the door.
2. The storage apparatus of claim 1, wherein the door is configured to be disposed at: a first position parallel to at least one of the first support panel or the second support panel; or a second position intersecting at least one of the first support panel or the second support panel.
3. The storage apparatus of claim 2, wherein the first support panel includes a first sliding groove disposed in an outer surface of the first support panel; wherein the second support panel includes a second sliding groove disposed in an outer surface of the second support panel and connected to the first sliding groove when the second support panel is disposed parallel to the first support panel; and wherein the support structure includes a fixing block disposed in at least one of the first sliding groove or the second sliding groove.
4. The storage apparatus of claim 3, wherein the first support panel and the second support panel are configured to move in conjunction with the movement of the door to position the door at the first position or the second position when the fixing block is disposed in the first sliding groove, and wherein the first support panel and the second support panel are maintained in a parallel configuration to retain the door at the second position when the fixing block is disposed across both the first sliding groove and the second sliding groove.
5. The storage apparatus of claim 3, wherein the door comprises: an edge panel configured to rotatably support the first support panel of the support structure; a door panel rotatably coupled to the edge panel; and a guide block coupled to the edge panel and slidably disposed on the back panel of the vehicle.
6. The storage apparatus of claim 5, wherein the support structure comprises: a hinge block coupled to the first support panel and the second support panel, the hinge block configured to rotatably support the first support panel and the second support panel; and a plurality of hinge pins, including: a first hinge pin coupling the edge panel of the door to the first support panel; and second hinge pins coupling the first support panel to the hinge block and coupling the second support panel to the hinge block.
7. The storage apparatus of claim 6, comprising: a cover board disposed on one side of each of the door and the support structure, the cover board configured to cover the one side of each of the door and the support structure when the door is in the second position; and a knob coupling the cover board to the edge panel of the door, the knob configured to allow the cover board to move with the edge panel.
8. The storage apparatus of claim 7, wherein the cover board comprises: a board body configured to cover the one side of each of the door and the support structure; and a contact part protruding from the board body, the contact part configured to come into contact with, or be separated from, the knob based on a change in position of the edge panel of the door.
9. The storage apparatus of claim 7, wherein the edge panel comprises a rotating support protruding from a surface of the edge panel that intersects the back panel of the vehicle; and wherein the door comprises: a link rotatably supported by the rotating support; and a hook connected to the link, the hook protruding from a surface of the edge panel facing the back panel of the vehicle and configured to move from the edge panel toward the back panel of the vehicle in conjunction with movement of the link.
10. A vehicle comprising: a vehicle body including: a back panel having a panel body and a protruding part extending from the panel body toward a passenger room; and a bottom panel connected to the back panel; and a storage apparatus disposed in the passenger room and coupled to

the back panel, wherein the storage apparatus comprises: a door slidably coupled to the back panel; and a support structure, connected to the door and configured to be unfolded or folded in conjunction with movement of the door and to support the door.

11. The vehicle of claim 10, wherein the support structure comprises a first support panel and a second support panel, the first and second support panels being configured to: be unfolded to intersect the door; and be folded to be disposed parallel to the door, in conjunction with the movement of the door.

12. The vehicle of claim 11, wherein the door is configured to be disposed in: a first position in which the door is parallel to the first support panel or the second support panel; or a second position in which the door intersects the first support panel or the second support panel.

13. The vehicle of claim 12, wherein the door comprises: an edge panel configured to rotatably support the first support panel of the support structure; a door panel rotatably coupled to the edge panel; and a guide block coupled to the edge panel and slidably disposed on the back panel of the vehicle.

14. The vehicle of claim 13, wherein the edge panel comprises a rotating support protruding from a surface of the edge panel that intersects the back panel; and wherein the door comprises: a link rotatably supported by the rotating support; and a hook connected to the link, the hook protruding from a surface of the edge panel facing the back panel and configured to move from the edge panel toward the back panel of the vehicle in conjunction with movement of the link.