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CONTAINER AND ENERGY STORAGE SYSTEM INCLUDING THE CONTAINER

Abstract

A container and an energy storage system including the container is to provided such that the container is not damaged by gas collected in the container when an event such as a fire or explosion occurs in the container and such that the container can be reused by discharging the gas to outside of the container. The container includes a container body providing an internal space and an opening through which gas can be discharged out of the internal space to outside of the container, a hatch that is configured to close the opening and move in a direction to open the opening when the pressure in the internal space is greater than the pressure outside the container body, and a connecting part that connects the container body and the hatch.

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Background/Summary

CROSS-REFERENCE TO RELATED APPLICATION

[0001] The present application claims priority to and the benefit of Korean Patent Application No. 10-2024-0023487, filed on Feb. 19, 2024, in the Korean Intellectual Property Office, the entire disclosure of which is incorporated herein by reference.

BACKGROUND

1. Field of the Invention

[0002] The present disclosure relates to a container and an energy storage system including the container.

2. Discussion of Related Art

[0003] Generally, an energy storage system (ESS) is an apparatus that stores surplus electricity or electricity produced using new and renewable energy. The energy storage system may include a sealed container and a plurality of battery modules accommodated in the container.

[0004] When an event such as a fire occurs in a battery module in the container of an EES, the pressure of a gas due to flammable materials in the container increases, which may cause the container to be damaged so that the container cannot be reused.

[0005] The aforementioned information disclosed in this background section is merely for enhancement of understanding of the background technology of the present disclosure, and therefore may contain information that does not constitute the related art.

SUMMARY OF THE INVENTION

[0006] The present disclosure is directed to providing a container that is not damaged by a gas collected in the container when an event, such as a fire or explosion, occurs in the container and can be reused by discharging gas to the outside of the container, and an energy storage system including the container.

[0007] These and other aspects and features of the present disclosure will be described in or will be apparent from the following description of some embodiments of the present disclosure.

[0008] According to an aspect of the present disclosure, there is provided a container including a container body providing an internal space and an opening through which gas can be discharged out of the internal space to outside of the container, a hatch that is configured to close the opening and move in a direction to open the opening when the pressure in the internal space is greater than a pressure outside the container body, and a connecting part that connects the container body and the hatch.

[0009] The connecting part may include a first connecting body supported by the container body, a second connecting body supported by the hatch, and a link part having a first side connected to the first connecting body and a second side connected to the second connecting body.

[0010] The link part may include a first link rod connected to the first connecting body, a second link rod connected to the second connecting body, and a hinge pin that connects the first link rod and the second link rod such that the first link rod and the second link rod are rotatable relative to each other.

[0011] The link part may further include a leaf spring that is interposed between the first link rod and the second link rod, with the hinge pin passing though the leaf spring.

[0012] The first connecting body may block the hatch to prevent the hatch from being inserted into the internal space of the container body through the opening.

[0013] The first connecting body may protrude from an inner side surface of the opening.

[0014] The connecting part may further include a third connecting body that connects the hatch and the second connecting body, and the second connecting body may be supported by the hatch through the third connecting body.

[0015] The connecting part may further include a buffer spring interposed between the hatch and the second connecting body.
[0016] The third connecting body may be fixed to the hatch, the third connecting body may include a guide part extending in one direction, the second connecting body may include an intervening part connected to the guide part, and as the intervening part moves in the one direction, a distance between the hatch and the second connecting body may change.
[0017] The container may further include a long hole formed in one of the first connecting body and the second connecting body, wherein the link part may include (i) a long hole coupling part fitted into the long hole and movable in a longitudinal direction of the long hole, and (ii) a link rod having a first side coupled to the other of the first connecting body and the second connecting body and a second side supporting the long hole coupling part.
[0018] The first side of the link rod may rotate with respect to the other of the first connecting body and second connecting body.
[0019] The one of the first connecting body and the second connecting body may include (i) a connecting body housing in which the long hole is formed and (ii) a pressing body that is accommodated in the connecting body housing and is in close contact with the long hole coupling part when the long hole coupling part moves in the longitudinal direction of the long hole.
[0020] The pressing body may include a plurality of grooves and the long hole coupling part may be configured to seat in the plurality of grooves, wherein, when the long hole coupling part seated in one groove among the plurality of the grooves moves in the longitudinal direction of the long hole, the long hole coupling part may move to another groove among the plurality of the grooves.
[0021] The long hole may extend in a direction intersecting the direction in which the hatch moves between a position at which the opening is opened and a position at which the opening is closed by the hatch, and the long hole may be formed in the second connecting body.
[0022] When the hatch moves in a direction opposite to a direction of gravity when closing the opening.
[0023] According to another aspect of the present disclosure, there is provided an energy storage system including a container including a container body providing an internal space and an opening through which gas can be discharged out of the internal space to outside of the container, a hatch that is configured to close the opening and move in a direction to open the opening when a pressure in the internal space is greater than a pressure outside the container body, and a connecting part that connects the container body and the hatch and one or more battery modules accommodated in the internal space.

Description

BRIEF DESCRIPTION OF THE DRAWINGS
[0024] The drawings attached to this specification illustrate some embodiments of the present disclosure, and further describe aspects and features of the present disclosure together with the detailed description of the present disclosure. However, the present disclosure should not be construed as being limited to the drawings.
[0025] FIG. **1** is a perspective view illustrating an energy storage system according to one embodiment of the present disclosure;
[0026] FIG. **2** is a cross-sectional view along line II-II of FIG. **1**, which illustrates a container according to a first embodiment of the present disclosure;
[0027] FIG. **3** is a cross-sectional view along line III-III of FIG. **2**;
[0028] FIG. **4** is a cross-sectional view illustrating a hatch which moves to open an opening of a container body in the container of FIG. **2**;
[0029] FIG. **5** is a cross-sectional view illustrating a container according to a second embodiment

of the present disclosure;
[0030] FIG. **6** is a cross-sectional view illustrating a hatch which initially moves in a direction in which an opening of a container body is opened in the container of FIG. **5**;
[0031] FIG. **7** is a cross-sectional view illustrating the hatch which moves to maximally open the opening of the container body in the container of FIG. **5**;
[0032] FIG. **8** is a cross-sectional view along line VIII-VIII of FIG. **7**;
[0033] FIG. **9** is a cross-sectional view illustrating a container according to a third embodiment of the present disclosure;
[0034] FIG. **10** is a cross-sectional view illustrating a hatch which moves to open an opening of a container body in the container of FIG. **9**;
[0035] FIG. **11** is a cross-sectional view along line XI-XI of FIG. **10**;
[0036] FIG. **12** is a cross-sectional view along line XII-XII of FIG. **11**; and
[0037] FIG. **13** is a cross-sectional view illustrating a container according to a fourth embodiment of the present disclosure.

DETAILED DESCRIPTION OF EXEMPLARY EMBODIMENTS

[0038] Herein, some embodiments of the present disclosure will be described, in further detail, with reference to the accompanying drawings. The terms or words used in this specification and claims should not be construed as being limited to the usual or dictionary meaning and should be interpreted as meaning and concept consistent with the technical idea of the present disclosure based on the principle that the inventor can be his/her own lexicographer to appropriately define the concept of the term.
[0039] The embodiments described in this specification and the configurations shown in the drawings are provided as some example embodiments of the present disclosure and do not represent all of the technical ideas, aspects, and features of the present disclosure. Accordingly, it is to be understood that there may be various equivalents and modifications that may replace or modify the embodiments described herein at the time of filing this application.
[0040] It is to be understood that when an element or layer is referred to as being “on,” “connected to,” or “coupled to” another element or layer, it may be directly on, connected, or coupled to the other element or layer or one or more intervening elements or layers may also be present. When an element or layer is referred to as being “directly on,” “directly connected to,” or “directly coupled to” another element or layer, there are no intervening elements or layers present. For example, when a first element is described as being “coupled” or “connected” to a second element, the first element may be directly coupled or connected to the second element or the first element may be indirectly coupled or connected to the second element via one or more intervening elements.
[0041] In the figures, dimensions of the various elements, layers, etc. may be exaggerated for clarity of illustration. The same reference numerals designate the same or like elements. As used herein, the term “and/or” includes any and all combinations of one or more of the associated listed items. Further, the use of “may” when describing embodiments of the present disclosure relates to “one or more embodiments of the present disclosure.” Expressions, such as “at least one of” and “any one of,” when preceding a list of elements, modify the entire list of elements and do not modify the individual elements of the list. When phrases such as “at least one of A, B, and C,” “at least one of A, B, or C,” “at least one selected from a group of A, B, and C,” or “at least one selected from among A, B, and C” are used to designate a list of elements A, B, and C, the phrase may refer to any and all suitable combinations or a subset of A, B, and C, such as A, B, C, A and B, A and C, B and C, or A and B and C. As used herein, the terms “use,” “using,” and “used” may be considered synonymous with the terms “utilize,” “utilizing,” and “utilized,” respectively. As used herein, the terms “substantially,” “about,” and similar terms are used as terms of approximation and not as terms of degree, and are intended to account for the inherent variations in measured or calculated values that would be recognized by those of ordinary skill in the art.
[0042] It is to be understood that, although the terms “first,” “second,” “third,” etc. may be used

herein to describe various elements, components, regions, layers, and/or sections, these elements, components, regions, layers, and/or sections should not be limited by these terms. These terms are used to distinguish one element, component, region, layer, or section from another element, component, region, layer, or section. Thus, a first element, component, region, layer, or section discussed below could be termed a second element, component, region, layer, or section without departing from the teachings of example embodiments.

[0043] Spatially relative terms, such as “beneath,” “below,” “lower,” “above,” “upper,” and the like, may be used herein for ease of description to describe one element or feature's relationship to another element(s) or feature(s) as illustrated in the figures. It is to be understood that the spatially relative terms are intended to encompass different orientations of the device in use or operation in addition to the orientation depicted in the figures. For example, if the device in the figures is turned over, elements described as “below” or “beneath” other elements or features would then be oriented “above” or “over” the other elements or features. Thus, the term “below” may encompass both an orientation of above and below. The device may be otherwise oriented (e.g., rotated 90 degrees or at other orientations), and the spatially relative descriptors used herein should be interpreted accordingly.

[0044] The terminology used herein is for the purpose of describing embodiments of the present disclosure and is not intended to be limiting of the present disclosure. As used herein, the singular forms “a” and “an” are intended to include the plural forms as well, unless the context clearly indicates otherwise. It is to be further understood that the terms “includes,” “including,” “comprises,” and/or “comprising,” when used in this specification, 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.

[0045] Also, any numerical range disclosed and/or recited herein is intended to include all sub-ranges of the same numerical precision subsumed within the recited range. For example, a range of “1.0 to 10.0” is intended to include all subranges between (and including) the recited minimum value of 1.0 and the recited maximum value of 10.0, that is, having a minimum value equal to or greater than 1.0 and a maximum value equal to or less than 10.0, such as, for example, 2.4 to 7.6. Any maximum numerical limitation recited herein is intended to include all lower numerical limitations subsumed therein, and any minimum numerical limitation recited in this specification is intended to include all higher numerical limitations subsumed therein. Accordingly, Applicant reserves the right to amend this specification, including the claims, to expressly recite any sub-range subsumed within the ranges expressly recited herein.

[0046] References to two compared elements, features, etc. as being “the same” may mean that they are “substantially the same.” Thus, the phrase “substantially the same” may include a case having a deviation that is considered low in the art, for example, a deviation of 5% or less. In addition, when a certain parameter is referred to as being uniform in a given region, it may mean that it is uniform in terms of an average.

[0047] Throughout the specification, unless otherwise stated, each element may be singular or plural.

[0048] When an arbitrary element is referred to as being arranged (or located or positioned) on the “above (or below)” or “on (or under)” a component, it may mean that the arbitrary element is placed in contact with the upper (or lower) surface of the component and may also mean that another component may be interposed between the component and any arbitrary element arranged (or located or positioned) on (or under) the component.

[0049] In addition, it is to be understood that when an element is referred to as being “coupled,” “linked,” or “connected” to another element, the elements may be directly “coupled,” “linked,” or “connected” to each other, or one or more intervening elements may be present therebetween, through which the element may be “coupled,” “linked,” or “connected” to another element. In

addition, when a part is referred to as being “electrically coupled” to another part, the part may be directly electrically connected to another part or one or more intervening parts may be present therebetween such that the part and the another part are indirectly electrically connected to each other.

[0050] Throughout the specification, when “A and/or B” is stated, it means A, B, or A and B, unless otherwise stated. That is, “and/or” includes any or all combinations of a plurality of items enumerated. When “C to D” is stated, it means C or more and D or less, unless otherwise specified.

[0051] The terms used in the present specification are for describing embodiments of the present disclosure and are not intended to limit the present disclosure.

[0052] FIG. **1** is a perspective view illustrating an energy storage system according to one embodiment of the present disclosure, and FIG. **2** is a cross-sectional view along line II-II of FIG. **1**, which illustrates a container according to a first embodiment of the present disclosure. FIG. **3** is a cross-sectional view along line III-III of FIG. **2**, and FIG. **4** is a cross-sectional view illustrating a hatch that moves to open an opening of a container body in the container of FIG. **2**.

[0053] Referring to FIGS. **1** to **4**, an energy storage system **10** according to one embodiment of the present disclosure includes a container **100** and a plurality of battery modules **12**. The container **100** includes a container body **101**, a hatch **113**, and a connecting part **120**. An internal space **105** that accommodates a plurality of battery modules **12** is formed in the container body **101**.

[0054] The container body **101** may be formed in a substantially rectangular parallelepiped shape and have six walls each having a rectangular plate shape. However, the shape of the container body **101** illustrated in FIG. **1** is only exemplary, and the container of the present disclosure may include a container body having a different shape.

[0055] The battery modules **12** are accommodated in the internal space **105** of the container body **101**. Each of the battery modules **12** may include a module housing, a plurality of battery cells, and a battery management system (BMS) for managing a battery.

[0056] The battery cell may function as a unit structure that charges and discharges power in the energy storage system **10**. Depending on the shape of the battery, a circular type battery cell, a prismatic type battery cell, or a pouch type battery cell may be used. The plurality of battery cells may be connected to each other in series or parallel.

[0057] One or more battery modules **12** may be provided. Hereinafter, although an example of the battery module **12** being provided as a plurality of battery modules **12** will be described, the battery module **12** is not limited thereto, and it is possible that the battery module **12** is provided in embodiments as a single battery module **12**.

[0058] The plurality of battery modules **12** may be arranged in a three-dimensional matrix in the internal space **105** of the container body **101**. For example, among the plurality of battery modules **12**, one or more thereof may be arranged in a first direction, one or more thereof may be arranged in a second direction perpendicular to the first direction, and one or more thereof may be arranged in a third direction perpendicular to the first direction and the second direction. The first direction may be perpendicular to the second direction and the third direction, and the second direction may be perpendicular to the third direction and the first direction. For example, the first direction may be a height direction of the container body **101**, the second direction may be a width direction of the container body **101**, and the third direction may be a longitudinal direction of the container body **101**.

[0059] The plurality of battery modules **12** may be accommodated in one or more rack frames (not shown) installed in the internal space **105** of the container body **101**. The number of battery modules **12** accommodated in each rack frame may be designed in different ways according to a volume of the internal space **105** and the like.

[0060] One or more openings **106** through which a gas is discharged out of the internal space **105** to outside of the container **100** may be formed in the container body **101**. For example, one or more openings **106** may be formed in a ceiling wall of the container body **101**.

[0061] A hatch **113** may close each of the openings **106**. When the pressure in the internal space **105** is greater than the pressure outside of the container body **101**, the hatch **113** moves in a direction in which the opening **106** is opened. The hatch **113** may be, for example, a plate-like member having a uniform thickness. A planar shape of the hatch **113** may correspond to a planar shape of an inner side surface **107** that defines the opening **106** formed in the container body **101**. The number of hatches **113** may correspond to the number of openings **106**.
[0062] The connecting part **120** connects the container body **101** and the hatch **113**. The connecting part **120** includes a first connecting body **121**, a second connecting body **130**, and a link part **170**. The first connecting body **121** may be supported by the container body **101**. The second connecting body **130** may be supported by the hatch **113**. One side of the link part **170** may be coupled to the first connecting body **121**, and the other side thereof may be coupled to the second connecting body **130**.
[0063] The first connecting body **121** may protrude from the inner side surface **107** which defines the opening **106**. For example, as illustrated in FIGS. **2** to **4**, the first connecting body **121** may have a shape that protrudes from the inner side surface **107** and may be fixedly supported on the inner side surface **107**. A plurality of first connecting bodies **121** may be provided. For example, when a planar shape of the inner side surface **107**, which defines the opening **106**, is quadrangular, four first connecting bodies **121** may be provided per one opening **106** so that one first connecting body **121** is disposed at each corner portion of the quadrangular inner side surface **107**.
[0064] The second connecting body **130** may be fixedly supported on an inner surface **115** of the hatch **113**. The inner surface **115** of the hatch **113** may be a side surface of the hatch **113** facing the internal space **105** of the container body **101**, and an outer surface **114** of the hatch **113** may be a side surface opposite to the inner surface **115**.
[0065] One second connecting body **130** may be provide between each pair of first connecting bodies **121**. In the container **100** illustrated in FIGS. **2** to **4**, one second connecting body **130** may be disposed between each pair of first connecting bodies **121** positioned at different coordinates in the second direction and positioned at the same coordinates in the third direction. Accordingly, one pair of second connecting bodies **130** may be provided per one opening **106**.
[0066] Each of the second connecting bodies **130** may be disposed at an intermediate position between the pair of first connecting bodies **121** that are spaced apart from each other in the second direction. However, the positions and number of second connecting bodies **130** illustrated in FIGS. **2** to **4** are exemplary, and the container of the present disclosure may also include second connecting bodies in a number that corresponds one-to-one to the first connecting bodies.
[0067] The link part **170** connects the first connecting body **121** and the second connecting body **130**. The number of link parts **170** may be the same as the number of first connecting bodies **121**. Each of the link parts **170** may include a first link rod **171**, a second link rod **175**, a first link pin **180**, a second link pin **182**, a hinge pin **184**, and a leaf spring **186**.
[0068] One end of the first link rod **171** in a longitudinal direction may be connected to the first connecting body **121** by the first link pin **180**. A gap **123** may be formed in the first connecting body **121**, with one end of the first link rod **171** being rotatably fitted into the gap **123**. A link pin through hole may also be formed in the first connecting body **121**, with the first link pin **180** extending in the through hole. The link pin through hole through which the first link pin **180** passes may be formed in the one end of the first link rod **171**.
[0069] In a state in which the one end of the first link rod **171** is fitted into the gap **123** of the first connecting body **121**, as the first link pin **180** passes through and is fastened to the link pin through hole of the first connecting body **121** and the link pin through hole of the first link rod **171**, the first link rod **171** is rotatably connected to the first connecting body **121**.
[0070] One end of the second link rod **175** in a longitudinal direction may be connected to the second connecting body **130** by the second link pin **182**. A gap **132** may be formed in the second connecting body **130**, with one end of the second link rod **175** being rotatably fitted in the gap **132**.

A link pin through hole may also be formed in the second connecting body **130**, with the second link pin **182** extending in the through hole. The link pin through hole through which the second link pin **182** passes may be formed in the one end of the second link rod **175**.

[0071] In a state in which the one end of the second link rod **175** is fitted into the gap **132** of the second connecting body **130**, as the second link pin **182** passes through and is fastened to the link pin through hole of the second connecting body **130** and the link pin through hole of the second link rod **175**, the second link rod **175** is rotatably connected to the second connecting body **130**.

[0072] The hinge pin **184** connects the other end of the first link rod **171** and the other end of the second link rod **175** to rotate relative to each other. A hinge pin through hole through which the hinge pin **184** passes may be formed in each of the other end of the first link rod **171** and the other end of the second link rod **175**. As the hinge pin **184** passes through and is fastened to the hinge pin through hole of the first link rod **171** and the hinge pin through hole of the second link rod **175**, the other end of the first link rod **171** and the other end of the second link rod **175** are connected to rotate relative to each other.

[0073] The leaf spring **186** may be interposed between the other end of the first link rod **171** and the other end of the second link rod **175**. The hinge pin **184** may pass through the leaf spring **186**. As the leaf spring **186** is in elastically close contact with the other end of the first link rod **171** and the other end of the second link rod **175**. Thus, when the first link rod **171** and the second link rod **175** rotate relative to each other, frictional resistance may increase. Accordingly, a case in which the opening **106** is opened or closed due to a malfunction of the hatch **113** when an event such as a fire does not occur in the container body **101** can be suppressed.

[0074] One link part **170** may be connected to one side of the second connecting body **130** in the second direction, and the other link part **170** may be connected to the other side of the second connecting body **130** in the second direction.

[0075] The hatch **113** may be connected to the container body **101** by the connecting part **120** and moved between a first position at which the hatch **113** closes the opening **106** and a second position at which the hatch **113** opens the opening **106**. The first connecting body **121** may block the hatch **113** to prevent the hatch **113** from being inserted into the internal space **105** of the container body **101** through the opening **106**. For example, as illustrated in FIGS. **2** and **3**, the hatch **113** may be supported by the plurality of first connecting bodies **121** at the first position at which the opening **106** is closed by the hatch **113**.

[0076] When the hatch **113** is positioned at the first position, an event such as a fire in the battery module **12** accommodated in the internal space **105** may occur, causing a flaming material and a gas to accumulate in the internal space **105**. Accordingly, when the pressure of the gas in the internal space **105** becomes greater than the pressure outside the container body **101**, the hatch **113** may be moved to the second position such that the opening **106** is opened. As illustrated in FIG. **4**, when the hatch **113** moves to the second position, an angle between the first link rod **171** and the second link rod **175** may become greater than when the hatch **113** is positioned at the first position.

[0077] When the hatch **113** is moved to the second position to open the opening **106**, the gas and flaming material in the internal space **105** can be discharged to outside of the container body **101** through the opening **106**, thereby causing the pressure in the internal space **105** to decrease. Thus, an increase in temperature is suppressed, and a major accident, such as an explosion of the container **100**, can be prevented. In addition, since the container body **101**, the hatch **113**, and the connecting part **120** are not damaged, the container **100** can be reused, and thus the maintenance and operation costs of the energy storage system can be reduced.

[0078] In the embodiment of the container **100** illustrated in FIGS. **2** to **4**, when the hatch **113** moves in a direction opposite to the direction of gravity from the first position at which the opening **106** is closed, the opening **106** may be opened. In FIGS. **2** to **4**, it is illustrated that a direction in which the inner surface **115** of the hatch **113** faces is the direction of gravity and a direction in which the outer surface **114** of the hatch **113** faces is a direction opposite to the direction of gravity.

[0079] Since the temperature of the flaming material and gas generated due to a fire has a characteristic of rising above room temperature, when the hatch **113** moves in the direction opposite to the direction of gravity to open the opening **106**, the flaming material and gas may be smoothly discharged to outside of the container body **101** through the opened opening **106**. Accordingly, breakage and damage to the container **100** due to the internal fire can be prevented.
[0080] FIG. **5** is a cross-sectional view illustrating a container according to a second embodiment of the present disclosure, and FIG. **6** is a cross-sectional view illustrating a hatch which initially moves in a direction in which an opening of a container body is opened in the container of FIG. **5**. FIG. **7** is a cross-sectional view illustrating the hatch which moves to maximally open the opening of the container body in the container of FIG. **5**, and FIG. **8** is a cross-sectional view along line VIII-VIII of FIG. **7**. Referring to FIGS. **1** and **5** to **8**, a container **200** according to the second embodiment of the present disclosure may be provided in the energy storage system **10** of FIG. **1** as an alternative to the container **100** according to the first embodiment of the present disclosure illustrated in FIGS. **2** to **4**.
[0081] The container **200** includes a container body **201**, a hatch **213**, and a connecting part **220**. An internal space **105** that accommodates a plurality of battery modules **12** is formed in the container body **201**.
[0082] An opening **206** through which a gas is discharged out of the internal space **105** to outside of the container **200** may be formed in the container body **201**. For example, one or a plurality of openings **206** may be formed in a ceiling wall of the container body **201**.
[0083] The hatch **213** closes the opening **206**. When the pressure in the internal space **105** is greater than the pressure outside of the container body **201**, the hatch **213** moves in a direction in which the opening **206** is opened. The hatch **213** may be, for example, a plate-like member having a uniform thickness. A planar shape of the hatch **213** may be a shape corresponding to a planar shape of an inner side surface **207** that defines the opening **206** formed in the container body **201**. The number of hatches **213** may correspond to the number of openings **206**.
[0084] The connecting part **220** connects the container body **201** and the hatch **213**. The connecting part **220** includes a first connecting body **221**, a second connecting body **230**, a third connecting body **240**, a buffer spring **245**, and a link part **270**.
[0085] The first connecting body **221** may be supported by the container body **201**. The first connecting body **221** may protrude from the inner side surface **207** that defines the opening **206**. For example, as illustrated in FIGS. **5** to **8**, the first connecting body **221** may have a shape that protrudes from the inner side surface **207** and may be fixedly supported by the inner side surface **207**. A plurality of first connecting bodies **221** may be provided. When a planar shape of the inner side surface **207**, which defines the opening **206**, is quadrangular, four first connecting bodies **221** may be provided per one opening **206** so that one first connecting body **221** is disposed at each corner portion of the quadrangular inner side surface **207**.
[0086] The second connecting body **230** may be supported by the hatch **213**. The third connecting body **240** connects the hatch **213** and the second connecting body **230**. Accordingly, the second connecting body **230** is supported by the hatch **213** through the third connecting body **240**.
[0087] The third connecting body **240** may be fixed to the hatch **213**. For example, one end of the third connecting body **240** may be fixedly supported on an inner surface **215** of the hatch **213** in a first direction. The inner surface **215** of the hatch **213** may be a side surface of the hatch **213** facing the internal space **105** of the container body **201**, and an outer surface **214** of the hatch **213** may be a side surface opposite to the inner surface **215**.
[0088] The other end of the third connecting body **240** may overlap the second connecting body **230** in the first direction. The third connecting body **240** may include a pair of plate-like members spaced apart from each other in a third direction. The second connecting body **230** may be disposed between the pair of plate-like members.
[0089] The buffer spring **245** is interposed between the hatch **213** and the second connecting body

230. The buffer spring **245** may be disposed between the pair of plate-like members of the third connecting body **240**. The buffer spring **245** may be, for example, a coil spring.
[0090] One end of the buffer spring **245** may be in fixed contact with hatch **213** in the first direction, and the other end of the buffer spring **245** in the first direction may be in fixed contact with the second connecting body **230**. A plurality of buffer springs **245** may be provided and spaced apart from each other.
[0091] The third connecting body **240** may include a guide part **243** extending in one direction, and the second connecting body **230** may include an intervening part **234** connected to the guide part **243**. As the intervening part **234** moves in a longitudinal direction of the guide part **243**, a distance between the hatch **213** and the second connecting body may change.
[0092] The guide part **243** may include a long hole formed in the third connecting body **240**, with the long hole extending in the first direction. The intervening part **234** may include a protrusion that protrudes from the second connecting body **230** and is fitted into the long hole of the guide part **243** to be moveable in a longitudinal direction of the long hole of the guide part **243**.
[0093] One second connecting body **230** may be provided between each pair of first connecting bodies **221**. For example, in the container **200** illustrated in FIGS. **5** to **8**, one second connecting body **230** may be disposed between each pair of first connecting bodies **221**, which are positioned at different coordinates in a second direction and positioned at the same coordinates in the third direction. Accordingly, one pair of second connecting bodies **230** may be provided per one opening **206**.
[0094] Each of the second connecting bodies **230** may be disposed at an intermediate position between the pair of first connecting bodies **221** that are spaced apart from each other in the second direction. However, the positions and number of second connecting bodies **230** illustrated in FIGS. **5** to **8** are exemplary, and the container of the present disclosure may also include the second connecting bodies **230** in a number that corresponds one-to-one to the first connecting bodies **221**.
[0095] The link part **270** connects the first connecting body **221** and the second connecting body **230**. One end of the link part **270** may be coupled to the first connecting body **221**, and the other end of the link part **270** may be coupled to the second connecting body **230**. The number of link parts **270** may be the same as the number of first connecting bodies **221**. Each of the link parts **270** may include a first link rod **271**, a second link rod **275**, a first link pin **280**, a second link pin **282**, a hinge pin **284**, and a leaf spring **286**.
[0096] One end of the first link rod **271** in a longitudinal direction may be connected to the first connecting body **221** by the first link pin **280**. A gap **223** may be formed in the first connecting body **221**, with one end of the first link rod **271** being rotatably fitted into the gap **223**. A link pin through hole may be formed in the first connecting body **221**, with the first link pin **280** extending in the through hole. The link pin through hole through which the first link pin **280** passes may be formed in the one end of the first link rod **271**.
[0097] In a state in which the one end of the first link rod **271** is fitted into the gap **223** of the first connecting body **221**, as the first link pin **280** passes through and is fastened to the link pin through hole of the first connecting body **221** and the link pin through hole of the first link rod **271**, the first link rod **271** is rotatably connected to the first connecting body **221**.
[0098] One end of the second link rod **275** in a longitudinal direction may be connected to the second connecting body **230** by the second link pin **282**. A gap may be formed in the second connecting body **230**, with one end of the second link rod **275** being rotatably fitted into the gap. A link pin through hole may also be formed in the second connecting body **230**, with the second link pin **282** extending in the through hole. The link pin through hole through which the second link pin **282** passes may be formed in the one end of the second link rod **275**.
[0099] In a state in which the one end of the second link rod **275** is fitted into the gap of the second connecting body **230**, as the second link pin **282** passes through and is fastened to the link pin through hole of the second connecting body **230** and the link pin through hole of the second link

rod **275**, the second link rod **275** is rotatably connected to the second connecting body **230**.
[0100] The hinge pin **284** connects the other end of the first link rod **271** and the other end of the second link rod **275** to rotate relative to each other. A hinge pin through hole through which the hinge pin **284** passes may be formed in each of the other end of the first link rod **271** and the other end of the second link rod **275**. As the hinge pin **284** passes through and is fastened to the hinge pin through hole of the first link rod **271** and the hinge pin through hole of the second link rod **275**, the other end of the first link rod **271** and the other end of the second link rod **275** are rotatable relative to each other.
[0101] The leaf spring **286** may be interposed between the other end of the first link rod **271** and the other end of the second link rod **275**. The hinge pin **284** may pass through the leaf spring **286**. As the leaf spring **286** is in elastically close contact with the other end of the first link rod **271** and the other end of the second link rod **275**, when the first link rod **271** and the second link rod **275** rotate relative to each other, frictional resistance may increase. Thus, a case in which the opening **206** is opened or closed due to a malfunction of the hatch **213** when an event such as a fire does not occur in the container body **201** can be prevented.
[0102] One link part **270** may be connected to one side of the second connecting body **230** in the second direction, and the other link part **270** may be connected to the other side of the second connecting body **230** in the second direction.
[0103] The hatch **213** may be connected to the container body **201** by the connecting part **220** and moved between a first position at which the hatch **213** closes the opening **206** and a second position at which the hatch **213** opens the opening **206**. The first connecting body **221** may block the hatch **213** to prevent the hatch **213** from being inserted into the internal space **105** of the container body **201** through the opening **206**. For example, as illustrated in FIG. **5**, the hatch **213** may be supported by the plurality of first connecting bodies **221** at the first position at which the opening **206** is closed. When the hatch **213** is positioned at the first position, a shape of the buffer spring **245** may be elastically compressed or may be a neutral shape that is not elastically expanded. When the buffer spring **245** has the neutral shape, the protrusion of the intervening part **234** may be positioned at one side in the long hole of the guide part **243** in the first direction. When the buffer spring **245** has the neutral shape, a distance between the hatch **213** and the second connecting body **230** may be a neutral distance.
[0104] When the hatch **213** is positioned at the first position, an event such as a fire in the battery module **12** accommodated in the internal space **105** may occur, causing a flaming material and a gas to accumulate in the internal space **105**. When the pressure of the gas in the internal space **105** becomes greater than the pressure outside the container body **201**, the hatch **213** is pushed by the pressure in the internal space **105** and moved in a direction opposite to a direction toward the internal space **105**. As illustrated in FIG. **6**, the link part **270** may not move and the buffer spring **245** may expand despite the hatch **213** moving to an intermediate position between the first position at which the opening **206** is closed and the second position at which the opening **206** is maximally opened. Accordingly, a distance between the hatch **213** and the second connecting body **230** may increase. In this case, the protrusion of the intervening part **234** may be positioned at the other side in the long hole of the guide part **243** in the first direction, and the distance between the hatch **213** and the second connecting body **230** may increase.
[0105] When the pressure in the internal space becomes greater due to the flaming material and gas, the hatch **213** may move from the intermediate position of FIG. **6** to the second position of FIGS. **7** and **8** to open the opening **206**. When the hatch **213** moves to the second position, the third connecting body **240** fixed to the hatch **213** moves along with the hatch **213**, the protrusion of the intervening part **234** is blocked by an end of the guide part **243** in the first direction, and the second connecting body **230** moves in the same direction as a movement direction of the third connecting body **240**. As illustrated in FIG. **7**, when the hatch **213** moves to the second position, an angle between the first link rod **271** and the second link rod **275** may become greater than when the hatch

213 is positioned at the first position.
[0106] When the opening **206** is opened, the gas and flaming material in the internal space **105** are discharged to outside of the container body **201** through the opening **206**, causing the pressure of the internal space **105** to decrease. Thus, an increase in temperature is suppressed and a major accident, such as an explosion of the container **200**, can be prevented. In addition, since the container body **201**, the hatch **213**, and the connecting part **220** are not damaged, the container **200** can be reused, and, thus, the maintenance and operation costs of the energy storage system can be reduced.
[0107] While the hatch **213** moves from the position shown in FIG. **5** to the position shown in FIG. **6**, a shock applied to the hatch **213** is suppressed by a buffering action of the buffer spring **245**. In addition, while the hatch **213** moves from the position shown in FIG. **5** to the position shown in FIG. **6**, the link part **270** may not move. Accordingly, breakage or damage to the hatch **213**, the second connecting body **230**, and the link part **270** can be prevented.
[0108] In a state in which the hatch **213** is not supported on the first connecting body **221** and is spaced apart therefrom, when a shock is applied to the hatch **213** by an external force, since the buffer spring **245** elastically expands or contracts to absorb the shock, the shock is not transferred to the second connecting body **230** and link part **270**. Thus, breakage and damage to the second connecting body **230** and the link part **270** can be prevented.
[0109] In the case of the container **200** illustrated in FIGS. **5** to **8**, when the hatch **213** moves from the first position at which the opening **206** is closed in a direction opposite to the direction of gravity, the opening **206** may be opened. In FIGS. **5** to **8**, it is illustrated that a direction in which the inner surface **215** of the hatch **213** faces is the direction of gravity and a direction in which the outer surface **214** of the hatch **213** faces is a direction opposite to the direction of gravity.
[0110] As the temperature of the flaming material and gas generated due to a fire have a characteristic of rising above room temperature, when the hatch **213** moves in the direction opposite to the direction of gravity to open the opening **206**, the flaming material and gas may be smoothly discharged to outside of the container body **201** through the opened opening **206**. Accordingly, breakage and damage to the container **200** due to the internal fire can be prevented.
[0111] FIG. **9** is a cross-sectional view illustrating a container according to a third embodiment of the present disclosure, and FIG. **10** is a cross-sectional view illustrating a hatch which moves to open an opening of a container body in the container of FIG. **9**. FIG. **11** is a cross-sectional view along line XI-XI of FIG. **10**, and FIG. **12** is a cross-sectional view along line XII-XII of FIG. **11**.
[0112] Referring to FIGS. **1** and **9** to **12**, a container **300** according to the third embodiment of the present disclosure may be provided in the energy storage system **10** of FIG. **1** as an alternative to the container **100** according to the first embodiment of the present disclosure illustrated in FIGS. **2** to **4**.
[0113] The container **300** includes a container body **301**, a hatch **313**, and a connecting part **320**. An internal space **105** that accommodates a plurality of battery modules **12** is formed in the container body **301**.
[0114] An opening **306** through which a gas can be discharged out of the internal space **105** to outside of the container **300** may be formed in the container body **301**. For example, one or a plurality of openings **306** may be formed in a ceiling wall of the container body **301**.
[0115] The hatch **313** closes the opening **306**. When the pressure in the internal space **105** is greater than pressure outside the container body **301**, the hatch **313** moves in a direction in which the opening **306** is opened. The hatch **313** may be, for example, a plate-like member having a uniform thickness. A planar shape of the hatch **313** may correspond to a planar shape of an inner side surface **307** that defines the opening **306** formed in the container body **301**. The number of hatches **313** may correspond to the number of openings **306**.
[0116] The connecting part **320** connects the container body **301** and the hatch **313**. The connecting part **320** includes a first connecting body **321**, a second connecting body **330**, and a link part **370**.

[0117] The first connecting body **321** may be supported by the container body **301**. The first connecting body **321** may protrude from the inner side surface **307** that defines the opening **306**. For example, as illustrated in FIGS. **9** to **11**, the first connecting body **321** may have a shape that protrudes from the inner side surface **307** and may be fixedly supported on the inner side surface **307**. A plurality of first connecting bodies **321** may be provided. For example, when a planar shape of the inner side surface **307**, which defines the opening **306**, is quadrangular, four first connecting bodies **321** may be provided per one opening **306** so that one first connecting body **321** is disposed at each corner portion of the quadrangular inner side surface **307**.

[0118] The second connecting body **330** may be supported by the hatch **313**. The second connecting body **330** may be fixedly supported on an inner surface **315** of the hatch **313**. The inner surface **315** of the hatch **313** may be a side surface of the hatch **313** facing the internal space **305** of the container body **301**, and an outer surface **314** of the hatch **313** may be a side surface opposite to the inner surface **315**.

[0119] One second connecting body **330** may be provided between each pair of first connecting bodies **321**. For example, in the container **300** illustrated in FIGS. **9** to **11**, one second connecting body **330** is disposed between each pair of first connecting bodies **321** that are positioned at different coordinates in a second direction and positioned at the same coordinates in a third direction. Accordingly, one pair of second connecting bodies **330** may be provided per one opening **306**.

[0120] Each of the second connecting bodies **330** may be disposed at an intermediate position between the pair of first connecting bodies **321** that are spaced apart from each other in the second direction. However, the positions and number of second connecting bodies **330** illustrated in FIGS. **9** to **11** are exemplary, and the container of the present disclosure may also include second connecting bodies in a number that corresponds one-to-one to the first connecting bodies.

[0121] The second connecting body **330** may include a connecting body housing **331**. A long hole **334** may be formed in the connecting body housing **331**. The long hole **334** may extend in a direction intersecting a direction in which the hatch **313** moves between a second position at which the opening **306** is opened and a first position at which the opening **306** is closed by the hatch **313**. For example, if the direction in which the hatch **313** moves between the first position and the second position is a first direction, then the long hole **334** may extend in a second direction perpendicular to the first direction.

[0122] The connecting body housing **331** may extend in the second direction in which the long hole **334** extends. The connecting body housing **331** may be fixedly supported on the inner surface **315** of the hatch **313**.

[0123] The link part **370** may include a link rod **371**, a link pin **380**, and a long hole coupling part **373**. One end of the link rod **371** in a longitudinal direction may be connected to the first connecting body **321** by the link pin **380**. A gap **323** may be formed in the first connecting body **321**, with one end of the link rod **371** being rotatably fitted into the gap **323**. A link pin through hole may also be formed in the first connecting body **321**, with the link pin **380** extending in the through hole. The link pin through hole through which the link pin **380** passes may be formed in the one end of the link rod **371**.

[0124] In a state in which the one end of the link rod **371** is fitted into the gap **323** of the first connecting body **321**, as the link pin **380** passes through and is fastened to the link pin through hole of the first connecting body **321** and the link pin through hole of the link rod **371**, the link rod **371** is rotatably connected to the first connecting body **321**. The other end of the link rod **371** in the longitudinal direction may be connected to the second connecting body **330** by the long hole coupling part **373**. The long hole coupling part **373** may be fitted into the long hole **334** and be movable in a longitudinal direction of the long hole **334**. The long hole coupling part **373** may include a pin that protrudes from the other end of the link rod **371** to be fitted into the long hole **334** and has one side in a longitudinal direction coupled to the other end of the link rod **371**.

[0125] The second connecting body **330** may further include a pressing body **340** and a spring **338**. The pressing body **340** and the spring **338** are accommodated in the connecting body housing **331**. The pressing body **340** may be elastically supported and be in close contact with the long hole coupling part **373** to increase frictional resistance when the long hole coupling part **373** moves in the longitudinal direction of the long hole **334**.
[0126] With the configuration of the third embodiment, in a case in which the opening **306** is opened or closed due to a malfunction of the hatch **313** when an event such as a fire does not occur in the container body **301** can be prevented.
[0127] The pressing body **340** may extend in the same direction as the longitudinal direction of the long hole **334**. A plurality of grooves **344** in which the long hole coupling part **373** may be seated are formed in one side surface of the pressing body **340** facing the long hole coupling part **373**. The plurality of grooves **344** may be arranged in a row in the longitudinal direction of the long hole **334**. A plurality of protruding protrusions may be formed in the pressing body **340** to separate pairs of adjacent grooves **344**. Since the plurality of grooves **344** and the plurality of protrusions are alternately disposed, for example, as a wave pattern or sawtooth pattern formed on one side surface of the pressing body **340**. In a state in which the long hole coupling part **373** is seated in one groove **344** among the plurality of grooves **344**, when the hatch **313** moves, the long hole coupling part **373** may move in the longitudinal direction of the long hole **334**. In this way, the long hole coupling part **373** moving in the longitudinal direction of the long hole **334** may be seated in grooves **344** among the plurality of grooves **344**.
[0128] The spring **338** elastically presses the pressing body **340** in a direction such that the pressing body **340** is in close contact with the long hole coupling part **373**. The spring **338** may be a coil spring. One side of the spring **338** may be in close contact with a spring support surface **341** opposite to one side surface of the pressing body **340** in which the plurality of grooves **344** are formed, and the other side of the spring **338** may be in close contact with the connecting body housing **331**. A plurality of springs **338** may be provided, and the plurality of springs **338** may be spaced apart from each other in the longitudinal direction of the long hole **334**.
[0129] One link part **370** may be connected to one side of the second connecting body **330** in the second direction, and a second link part **370** may be connected to the other side of the second connecting body **330** in the second direction. Accordingly, the long hole **334** into which the long hole coupling part **373** is fitted may be formed at each of one side and the other side of the connecting body housing **331** in the second direction. That is, two long holes **334** may be provided.
[0130] The hatch **313** may be connected to the container body **301** by the connecting part **320** and moved between the first position at which the opening **306** is closed by the hatch **313** and the second position at which the opening **306** is opened. The first connecting body **321** may block the hatch **313** to prevent the hatch **313** from being inserted into the internal space **105** of the container body **301** through the opening **306**. For example, as illustrated in FIG. **9**, the hatch **313** may be supported on the plurality of first connecting bodies **321** at the first position at which the opening **306** is closed.
[0131] When the hatch **313** is positioned at the first position, an event such as a fire in the battery module **12** accommodated in the internal space **105** may occur, causing a flaming material and a gas to accumulate in the internal space **105**. Accordingly, when the pressure of the gas in the internal space **105** becomes greater than the pressure outside the container body **301**, the hatch **313** may move to the second position at which the opening **306** is opened.
[0132] As illustrated in FIGS. **10** and **12**, when the hatch **313** is pressed outward by the pressure in the internal space **105** of the container body **301**, the long hole coupling part **373** moves in the long hole **334** toward an end of the long hole **334** in a longitudinal direction of the second connecting body **330** and is seated in another groove **344**. Accordingly, the hatch **313** may move from the first position to the second position. When the hatch **313** moves from the first position to the second position, the link rod **371** may be inclined at a greater angle with respect to the second direction

than when the hatch **313** is positioned at the first position.
[0133] When the hatch **313** moves to the second position to open the opening **306**, the gas and flaming material in the internal space **105** can be discharged to outside of the container body **301** through the opening **306**, causing the pressure of the internal space **105** to decrease. Thus, an increase in temperature is suppressed, and a major accident, such as an explosion of the container **300** may be prevented. In addition, since the container body **301**, the hatch **313**, and the connecting part **320** are not damaged, the container **300** can be reused, and, thus, the maintenance and operation costs of the energy storage system can be reduced.
[0134] In the case of the container **300** illustrated in FIGS. **9** to **11**, when the hatch **313** moves from the first position at which the opening **306** is closed in a direction opposite to the direction of gravity, the opening **306** is opened. In FIGS. **9** to **11**, it is illustrated that a direction in which the inner surface **315** of the hatch **313** faces is the direction of gravity and a direction in which the outer surface **314** of the hatch **313** faces is a direction opposite to the direction of gravity.
[0135] Since the temperature of the flaming material and gas generated due to a fire have a characteristic of rising above room temperature, when the hatch **313** moves in the direction opposite to the direction of gravity to open the opening **306**, the flaming material and gas may be smoothly discharged toe outside of the container body **301** through the opened opening **306**. Accordingly, breakage and damage to the container **300** due to the internal fire can be prevented more reliably.
[0136] FIG. **13** is a cross-sectional view illustrating a container according to a fourth embodiment of the present disclosure. Referring to FIGS. **1** and **13**, a container **400** according to the fourth embodiment of the present disclosure may be provided in the energy storage system **10** of FIG. **1** as an alternative to the container **100** according to the first embodiment of the present disclosure illustrated in FIGS. **2** to **4**.
[0137] The container **400** includes a container body **401**, a hatch **413**, and a connecting part **420**. An internal space **105** that accommodates a plurality of battery modules **12** is formed in the container body **401**.
[0138] An opening through which a gas is discharged out of the internal space **105** to the outside of the container **400** may be formed in the container body **401**. For example, one or a plurality of openings may be formed in a ceiling wall of the container body **401**.
[0139] The hatch **413** closes the opening. When the pressure in the internal space **105** is greater than that the pressure outside the container body **401**, the hatch **413** moves in a direction in which the opening is opened. The hatch **113** may be, for example, a plate-like member having a uniform thickness. A planar shape of the hatch **413** may correspond to a planar shape of an inner side surface **407** that defines the opening formed in the container body **401**. The number of hatches **413** may correspond to the number of openings.
[0140] The connecting part **420** connects the container body **401** and the hatch **413**. The connecting part **420** includes a first connecting body **421**, a second connecting body **430**, and a link part **470**.
[0141] The first connecting body **421** may be supported by the container body **401**. The first connecting body **421** may protrude from the inner side surface **407** that defines the opening. As illustrated in FIG. **13**, the first connecting body **421** may have a shape that protrudes from the inner side surface **407** and may be fixedly supported on the inner side surface **407**. A plurality of first connecting bodies **421** may be provided. For example, when a planar shape of the inner side surface **407**, which defines the opening, is quadrangular, four first connecting bodies **421** may be provided per one opening so that one first connecting body **421** is disposed at each corner portion of the quadrangular inner side surface **407**.
[0142] A long hole **423** may be formed in the first connecting body **421**. The long hole **423** may have a uniform width and extend in the same direction as a direction that the hatch **413** moves between a second position at which the opening is opened and a first position at which the opening is closed. In FIG. **13**, a state in which the hatch **413** is positioned at the first position is illustrated

by solid lines, and a state in which the hatch **413** is positioned at the second position is illustrated by two-dot chain lines.

[0143] The direction in which the hatch **413** moves between the first position and the second position and a direction in which the long hole **423** extends may be a first direction. The first connecting body **421** may extend in the first direction in which the long hole **423** also extends.

[0144] The second connecting body **430** may be supported by the hatch **413**. For example, the second connecting body **430** may be fixedly supported on an inner surface **415** of the hatch **413**. The inner surface **415** of the hatch **413** may be a side surface of the hatch **413** facing the internal space **105** of the container body **401**, and an outer surface **414** of the hatch **413** may be a side surface opposite to the inner surface **415**.

[0145] One second connecting body **430** may be provided between each pair of first connecting bodies **421**. For example, in the container **400** illustrated in FIG. **13**, one second connecting body **430** is disposed between each pair of first connecting bodies **421** that are positioned at different coordinates in a second direction and positioned at the same coordinates in a third direction.

[0146] Each of the second connecting bodies **430** may be disposed at an intermediate position between the pair of first connecting bodies **421** that are spaced apart from each other in the second direction. However, the positions and number of second connecting bodies **430** illustrated in FIG. **13** are exemplary, and the container of the present disclosure may also include the second connecting bodies in a number that corresponds one-to-one to the first connecting bodies.

[0147] The link part **470** may include a link rod **471**, a link pin **482**, and a long hole coupling part **473**. One end of the link rod **471** in a longitudinal direction may be connected to the first connecting body **421** by the long hole coupling part **473**. The long hole coupling part **473** may be fitted into the long hole **423** to be moveable in a longitudinal direction of the long hole **423**. The long hole coupling part **473** may include a pin that is fitted into the long hole **423** and has one side in a longitudinal direction coupled to the one end of the link rod **471**. The other end of the link rod **471** in the longitudinal direction may be connected to the second connecting body **430** by the link pin **482**. The other end of the link rod **471** may be rotatably connected to the second connecting body **430**.

[0148] One link part **470** may be connected to one side of the second connecting body **430** in the second direction, and the other link part **470** may be connected to the other side of the second connecting body **430** in the second direction.

[0149] The hatch **413** may be connected to the container body **401** by the connecting part **420** and moved between the first position at which the opening is closed and the second position at which the opening is opened. The first connecting body **421** may block the hatch **413** to prevent the hatch **113** from being inserted into the internal space **105** of the container body **401** through the opening. For example, as illustrated by solid lines in FIG. **13**, the hatch **413** may be supported on the plurality of first connecting bodies **421** at the first position at which the opening is closed by the hatch **413**.

[0150] When the hatch **413** is positioned at the first position, an event such as a fire in the battery module **12** accommodated in the internal space **105** may occur, causing a flaming material and a gas to accumulate in the internal space **105**. When the pressure of the gas in the internal space **105** becomes greater than the pressure outside the container body **401**, the hatch **413** may move to the second position at which the opening is opened.

[0151] When the hatch **413** is positioned at the first position, the long hole coupling part **473** is positioned at one end of the long hole **423** in the longitudinal direction, and when the hatch **413** moves to the second position, the long hole coupling part **473** moves along with the hatch **413** in the longitudinal direction of the long hole **423** and is positioned at the other end of the long hole **423**.

[0152] When the hatch **413** moves to the second position to open the opening, gas and flaming material in the internal space **105** may be discharged to outside of the container body **401** through

the opening, causing the pressure of the internal space **105** to decrease. Thus, an increase in temperature is suppressed and a major accident such as an explosion of the container **200** can be prevented. In addition, since the container body **401**, the hatch **413**, and the connecting part **420** are not damaged, the container **4100** can be reused, and thus the maintenance and operation costs of the energy storage system can be reduced.

[0153] In the case of the container **400** illustrated in FIG. **13**, when the hatch **413** moves from the first position at which the opening is closed in a direction opposite to the direction of gravity, the opening may be opened. In FIG. **13**, it is illustrated that a direction in which the inner surface **415** of the hatch **413** faces is the direction of gravity and a direction in which the outer surface **414** of the hatch **413** faces is a direction opposite to the direction of gravity.

[0154] Since the temperature of the flaming material and gas generated due to a fire have a characteristic of rising above room temperature, when the hatch **413** moves in the direction opposite to the direction of gravity to open the opening, the flaming material and gas may be smoothly discharged to outside of the container body **401** through the opened opening. Accordingly, breakage and damage to the container **400** due to the internal fire can be prevented reliably.

[0155] According to an embodiment of the present disclosure, when a gas is collected in a container in which a battery module is accommodated due to an event such as a fire or explosion in the battery module, a hatch is moved apart from a container body by the pressure of the gas, an opening in the container body is opened, and, in this case, a connecting part that connects the hatch and the container body is not damaged. Accordingly, the container can be reused, and, thus, the maintenance and operation costs of an energy storage system can be reduced.

[0156] However, the effects that can be achieved through the present disclosure are not limited to the above-mentioned effects, and other technical effects that are not mentioned will be clearly understood by those skilled in the art from the description of the invention described below.

[0157] The present disclosure has been described with regard to a limited number of embodiments and drawings, but the present disclosure is not limited thereto and it is obvious to those skilled in the art that various modifications and changes may be made thereto within the technical spirit of the present disclosure and the equivalent scope of the appended claims.

Claims

1. A container comprising: a container body providing an internal space and an opening through which gas can be discharged out of the internal space to outside of the container; a hatch that is configured to close the opening and move in a direction to open the opening when a pressure in the internal space is greater than a pressure outside the container body; and a connecting part that connects the container body and the hatch.

2. The container as recited in claim 1, wherein the connecting part includes: a first connecting body supported by the container body; a second connecting body supported by the hatch; and a link part having a first side connected to the first connecting body and a second side connected to the second connecting body.

3. The container as recited in claim 2, wherein the link part includes: a first link rod connected to the first connecting body; a second link rod connected to the second connecting body; and a hinge pin that connects the first link rod and the second link rod such that the first link rod and the second link rod are rotatable relative to each other.

4. The container as recited in claim 3, wherein the link part further includes a leaf spring that is interposed between the first link rod and the second link rod, with the hinge pin passing though the leaf spring.

5. The container as recited in claim 2, wherein the first connecting body blocks the hatch such that the hatch cannot be inserted into the internal space of the container body through the opening.

6. The container as recited in claim 5, wherein the first connecting body protrudes from an inner side surface of the opening.
7. The container as recited in claim 2, wherein the connecting part further includes a third connecting body that connects the hatch and the second connecting body, and wherein the second connecting body is supported by the hatch through the third connecting body.
8. The container as recited in claim 7, wherein the connecting part further includes a buffer spring interposed between the hatch and the second connecting body.
9. The container as recited in claim 7, wherein the third connecting body is fixed to the hatch, the third connecting body includes a guide part extending in one direction, the second connecting body includes an intervening part connected to the guide part, and, wherein, as the intervening part moves in the one direction, a distance between the hatch and the second connecting body changes.
10. The container as recited in claim 2, further comprising a long hole formed in one of the first connecting body and the second connecting body, wherein the link part includes (i) a long hole coupling part fitted into the long hole and movable in a longitudinal direction of the long hole, and (ii) a link rod having a first side coupled to the other of the first connecting body and the second connecting body and a second side supporting the long hole coupling part.
11. The container as recited in claim 10, wherein the first side of the link rod rotates with respect to the other of the first connecting body and the second connecting body.
12. The container as recited in claim 10, wherein the one of the first connecting body and the second connecting body includes (i) a connecting body housing in which the long hole is formed; and (ii) a pressing body that is accommodated in the connecting body housing and is in close contact with the long hole coupling part when the long hole coupling part moves in the longitudinal direction of the long hole.
13. The container as recited in claim 12, wherein the pressing body includes a plurality of grooves, and the long hole coupling part is configured to seat in the plurality of grooves, and wherein, when the long hole coupling part seated in one groove among the plurality of the grooves moves in the longitudinal direction of the long hole, the long hole coupling part moves to another groove among the plurality of the grooves.
14. The container as recited in claim 10, wherein the long hole extends in a direction intersecting a direction in which the hatch moves between a position at which the opening is opened and a position at which the opening is closed by the hatch, and wherein the long hole is formed in the second connecting body.
15. The container as recited in claim 1, wherein, when the hatch moves in a direction opposite to a direction of gravity when closing the opening.
16. An energy storage system comprising: a container including: a container body providing an internal space and an opening through which gas can be discharged out of the internal space to outside of the container, a hatch that is configured to close the opening and move in a direction to open the opening when a pressure in the internal space is greater than a pressure outside the container body, and a connecting part that connects the container body and the hatch; and one or more battery modules accommodated in the internal space.