US 20130206753A1

(19) **United States**

(12) **Patent Application Publication**

(10) **Pub. No.: US 2013/0206753 A1**

(43) **Pub. Date: Aug. 15, 2013**

ZHANG et al.

(54) **LIQUID CONTAINER AND COMPONENTS THEREOF**

(76) Inventors: **Mi ZHANG**, (US); **Meng HE**, (US); **Xuanguo LIU**, (US); **Mingshe WANG**, (US); **Zhenzhen ZHOU**, (US); **Zheng QIN**, (US)

(21) Appl. No.: **13/459,405**

(22) Filed: **Apr. 30, 2012**

(30) **Foreign Application Priority Data**

Feb. 15, 2012 (CN) CN2012100346890

Publication Classification

(51) **Int. Cl.**

B65D 88/52 (2006.01)

B65D 88/54 (2006.01)

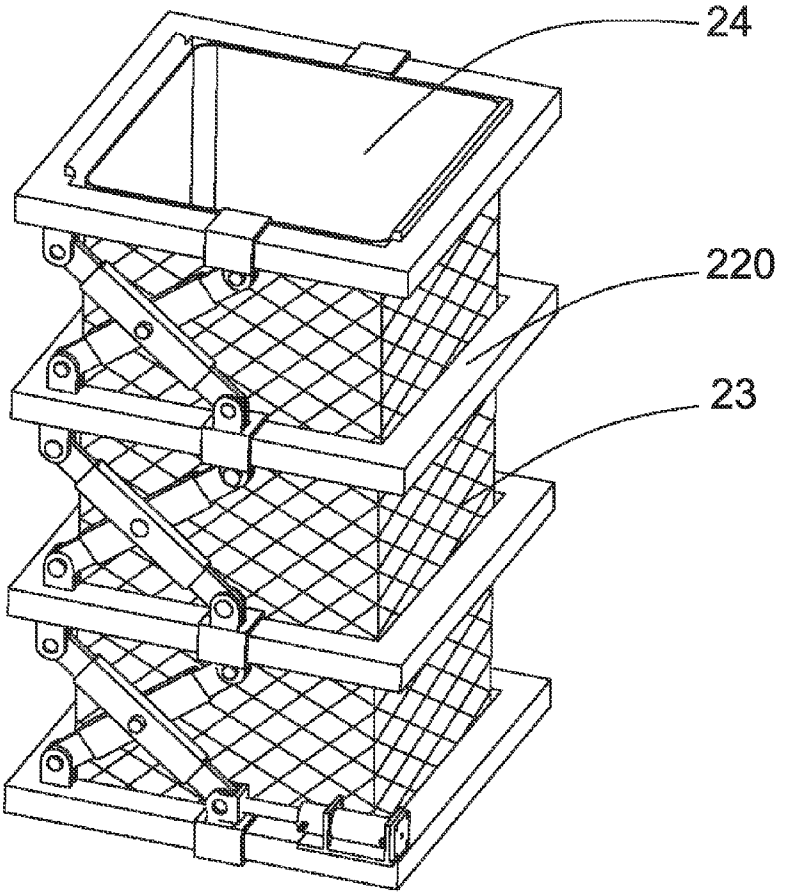
(52) **U.S. Cl.**

USPC ..... **220/9.2**; 220/23.83; 137/561 R

(57) **ABSTRACT**

A liquid container is provided. The liquid container includes a foldable support structure, and a capsule connected to the foldable support structure and configurable for storing a liquid. The foldable support structure includes a first frame and a second frame having substantially the same shape as the first frame and stacked above the first frame. The foldable support structure also includes a foldable supporting mechanism disposed between the first frame and the second frame and connecting the first frame and the second frame. The foldable support structure is moveable between a closed position in which the first and second frames are positioned substantially next to each other, and an open position in which the first and second frames are separated and support the capsule disposed in a space defined therebetween.

200



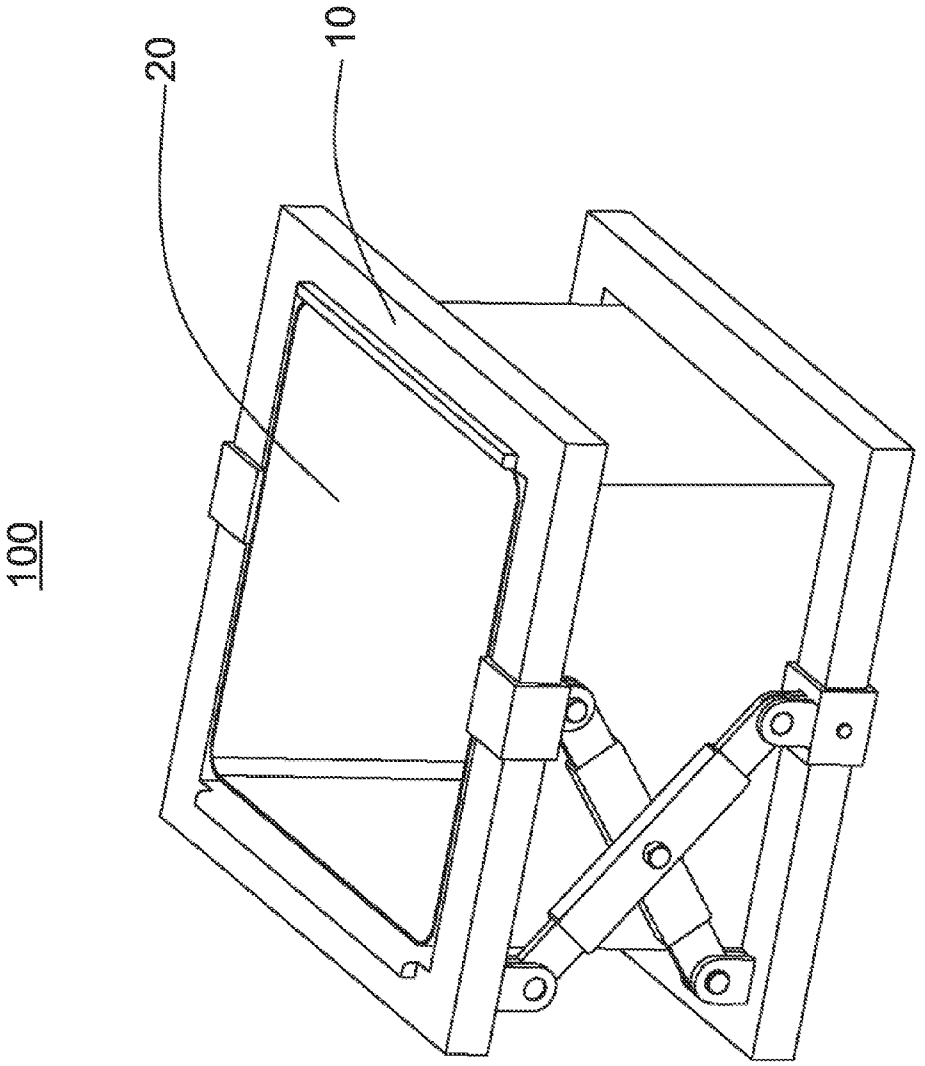


Fig. 1

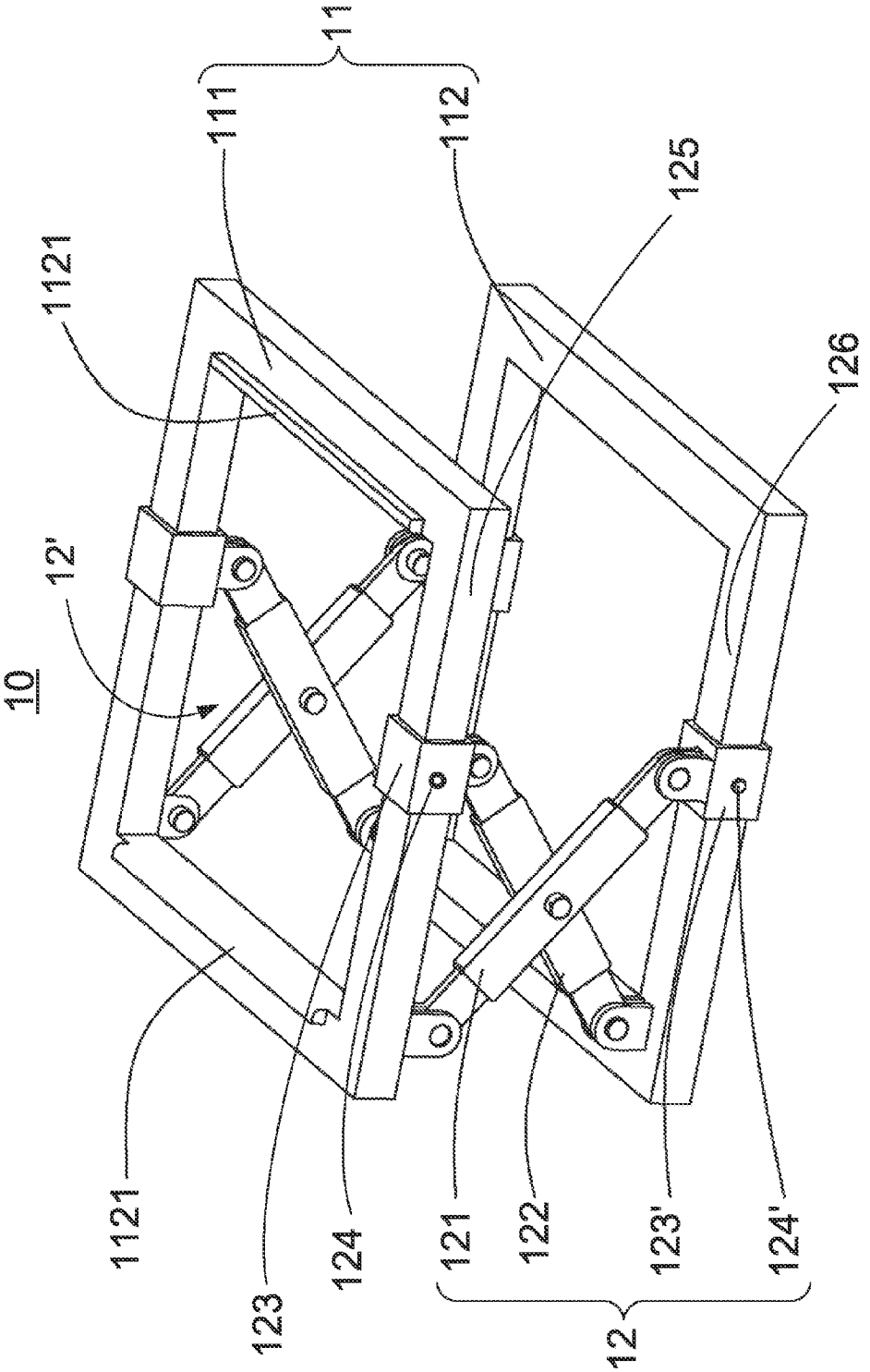


Fig. 2

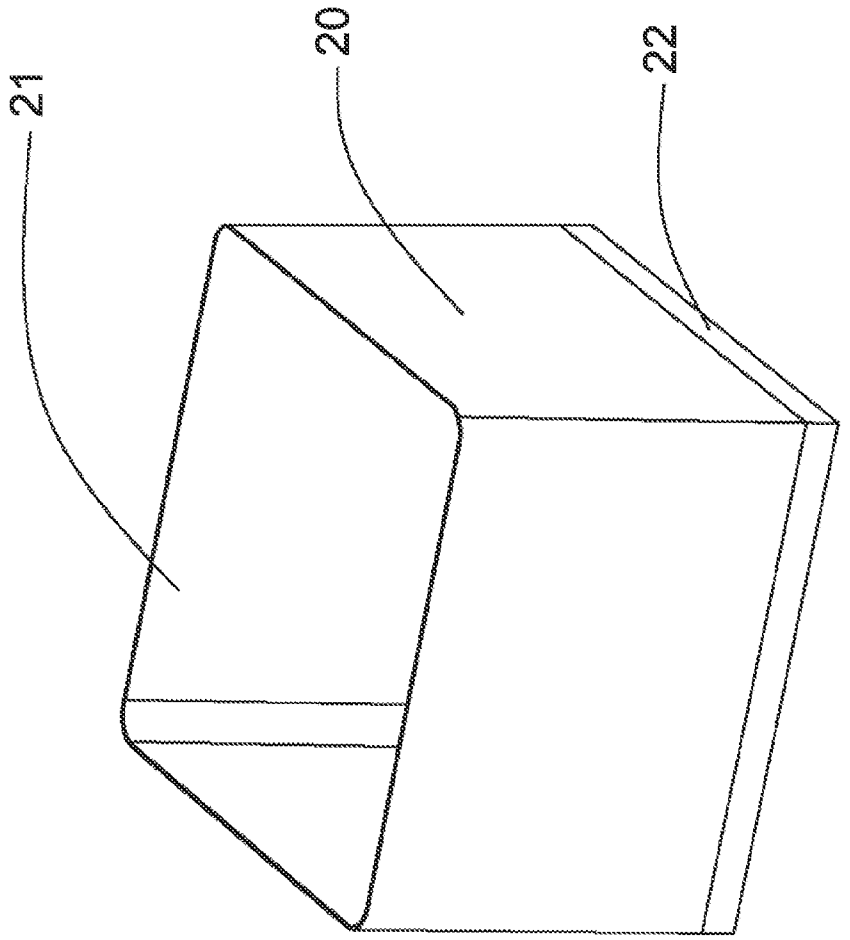


Fig. 3

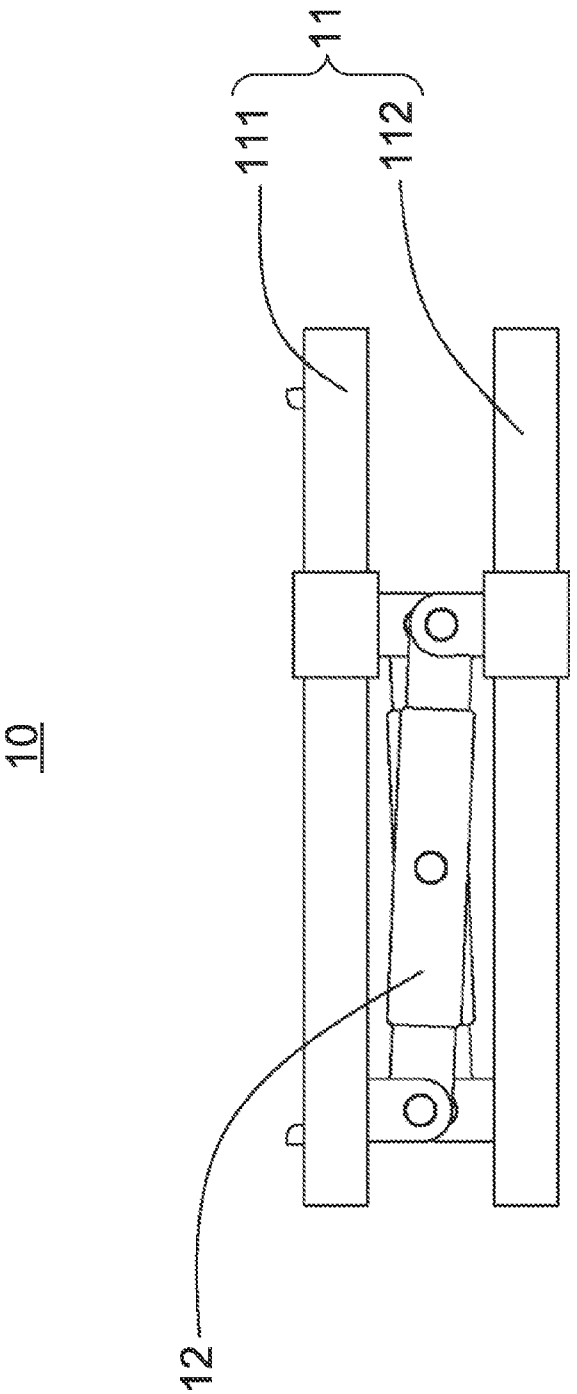


Fig. 4

200

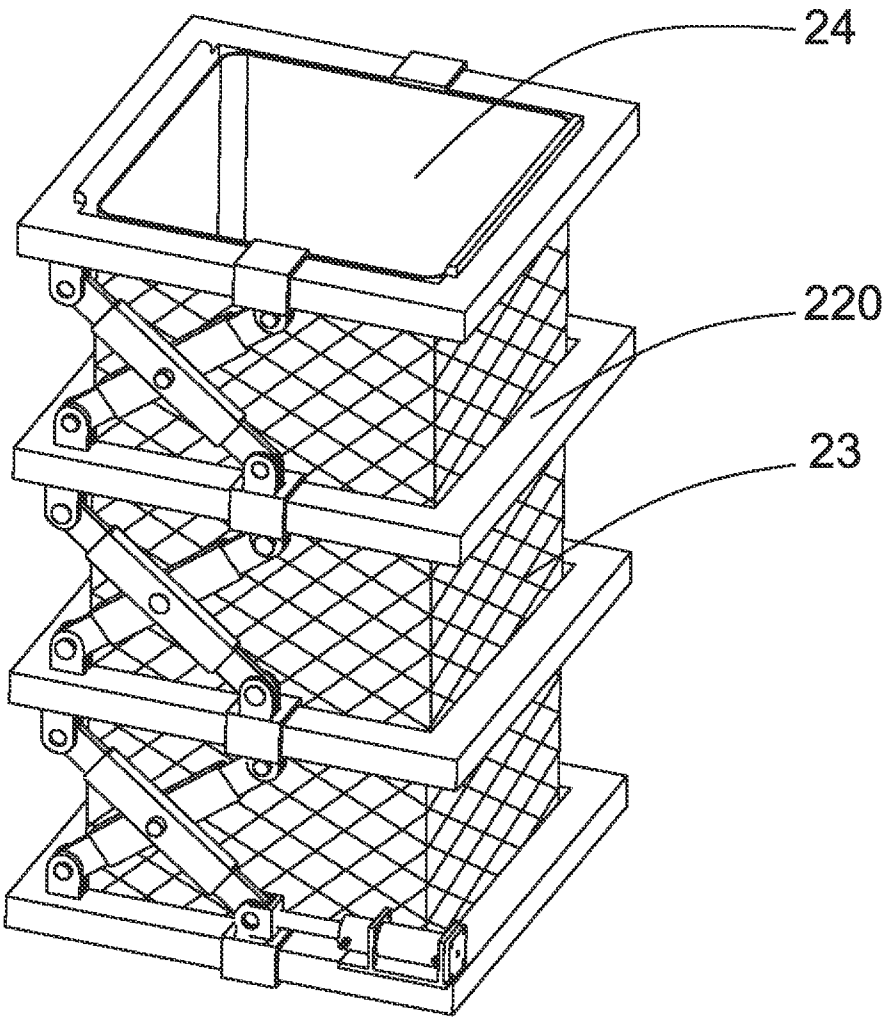


Fig. 5

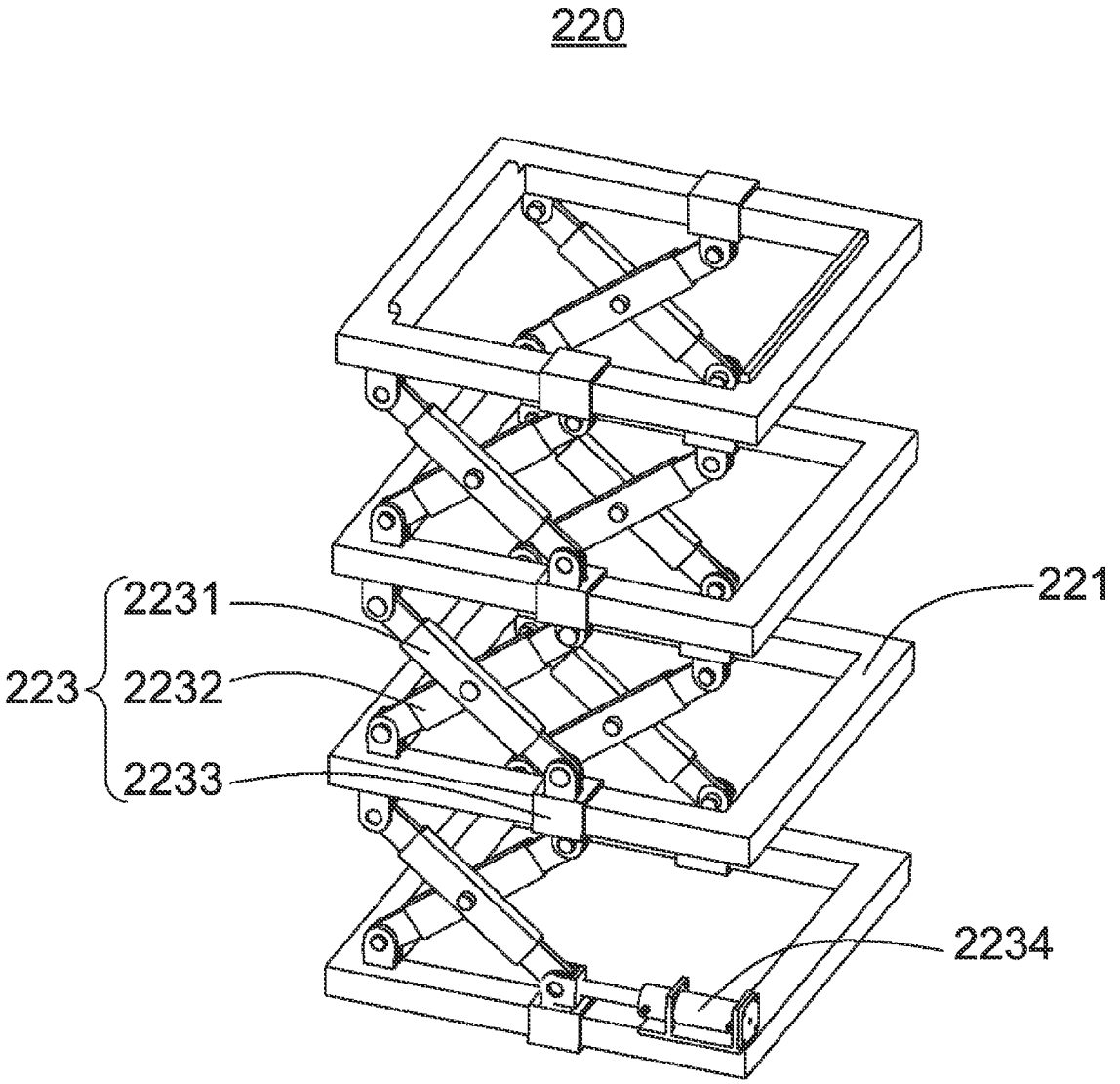


Fig. 6

220

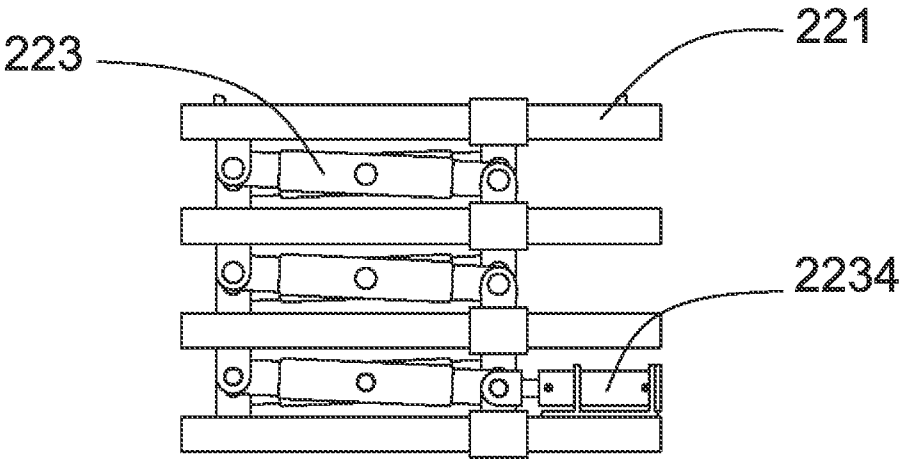


Fig. 7

300

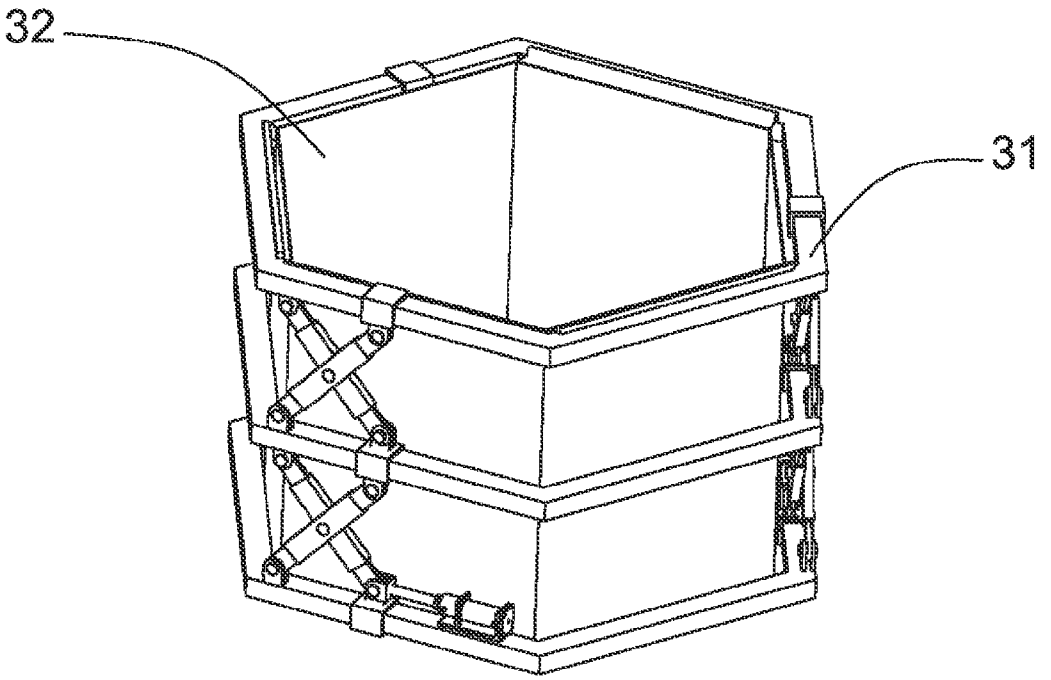


Fig. 8

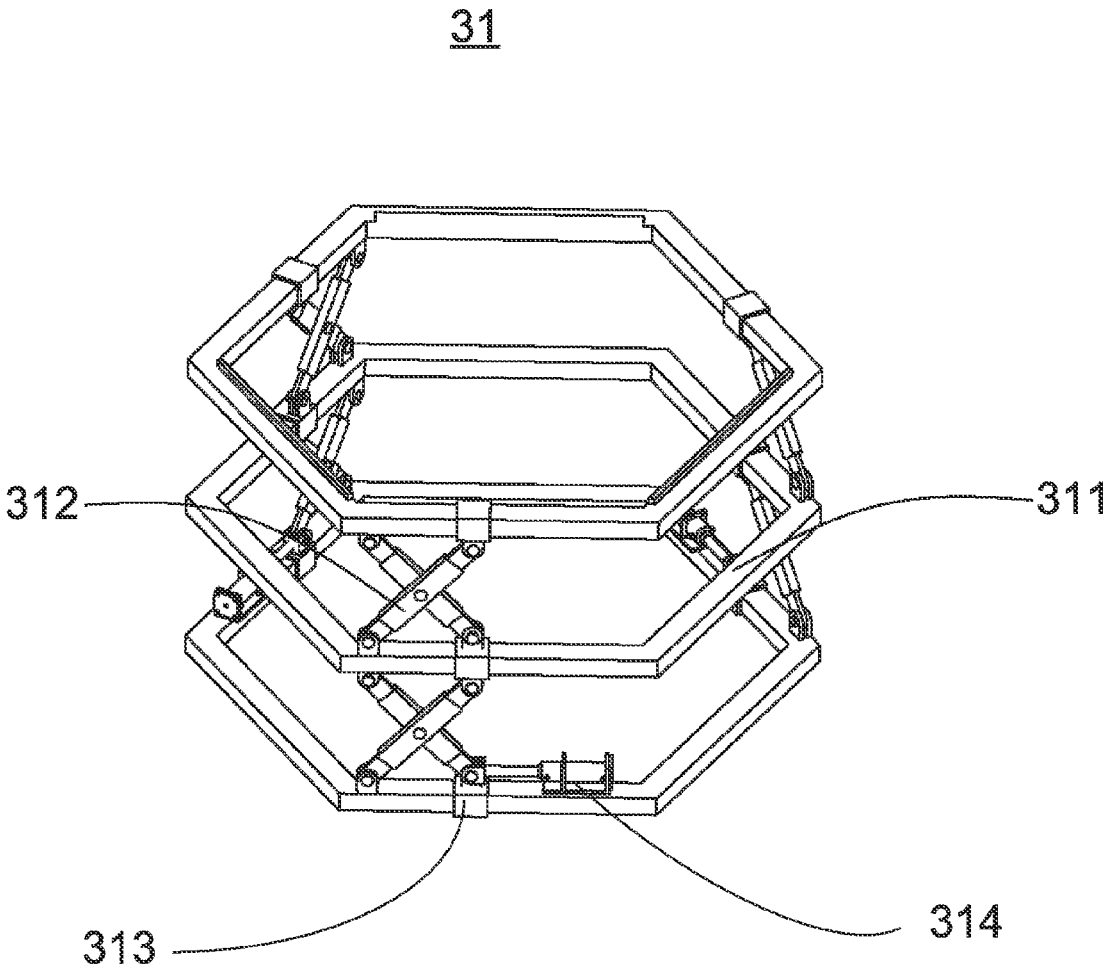


Fig. 9

31

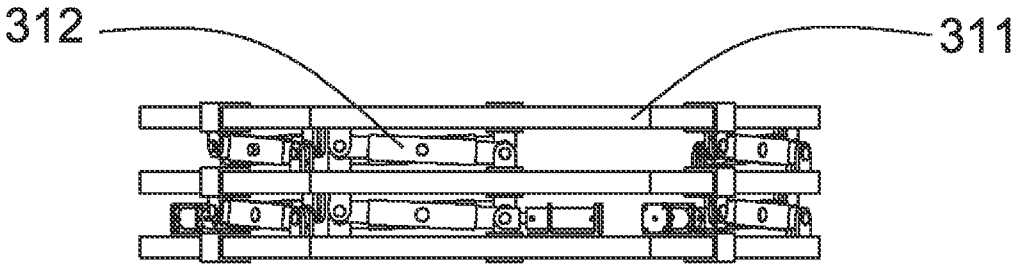


Fig. 10

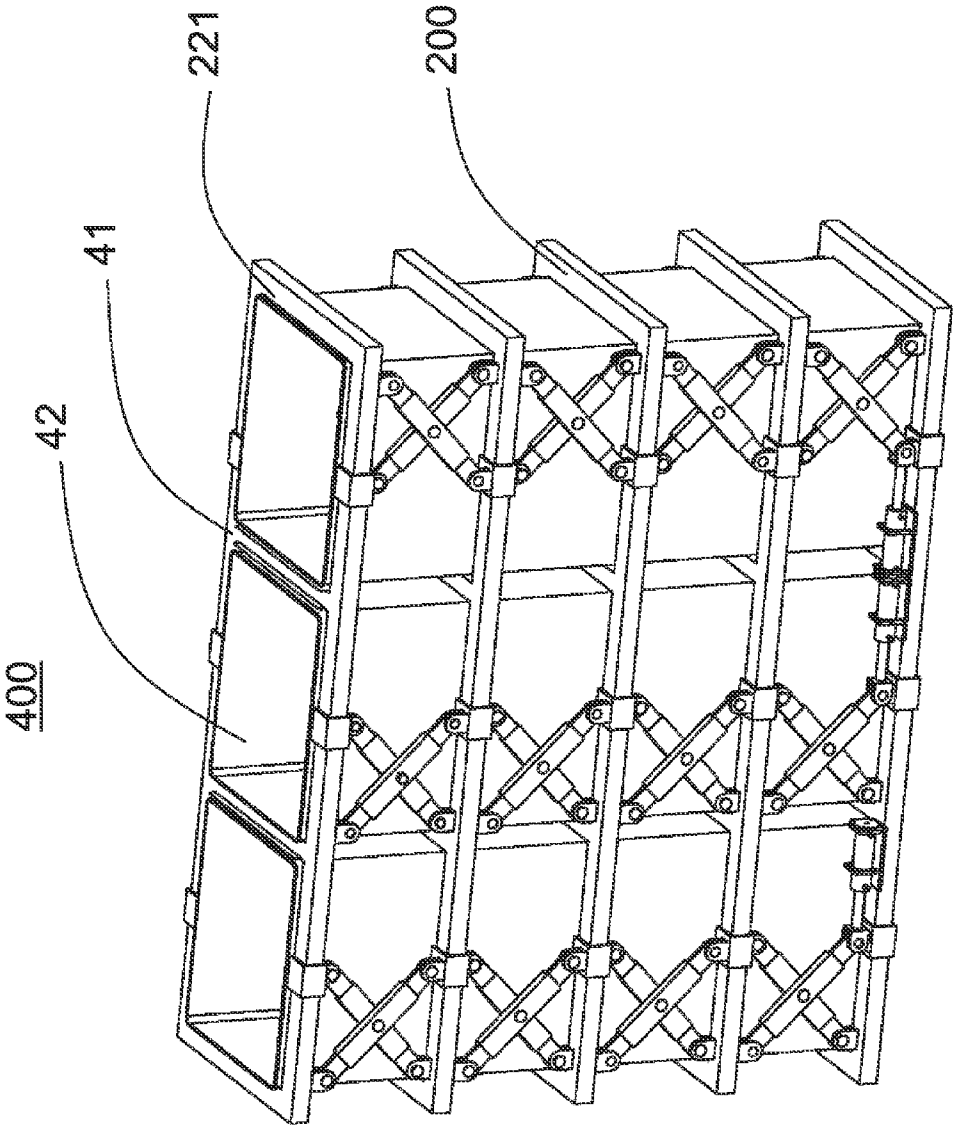


Fig. 11

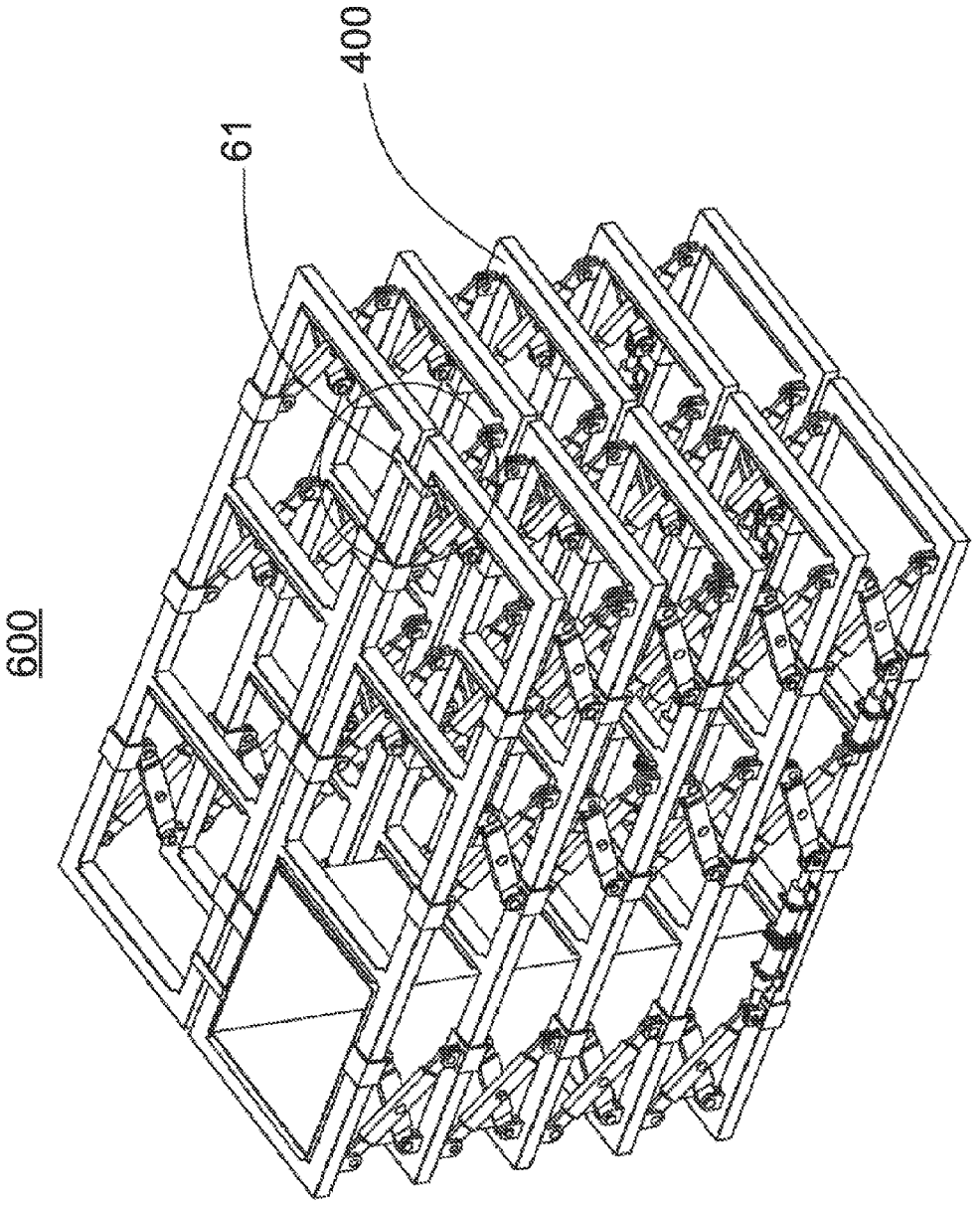


Fig. 12

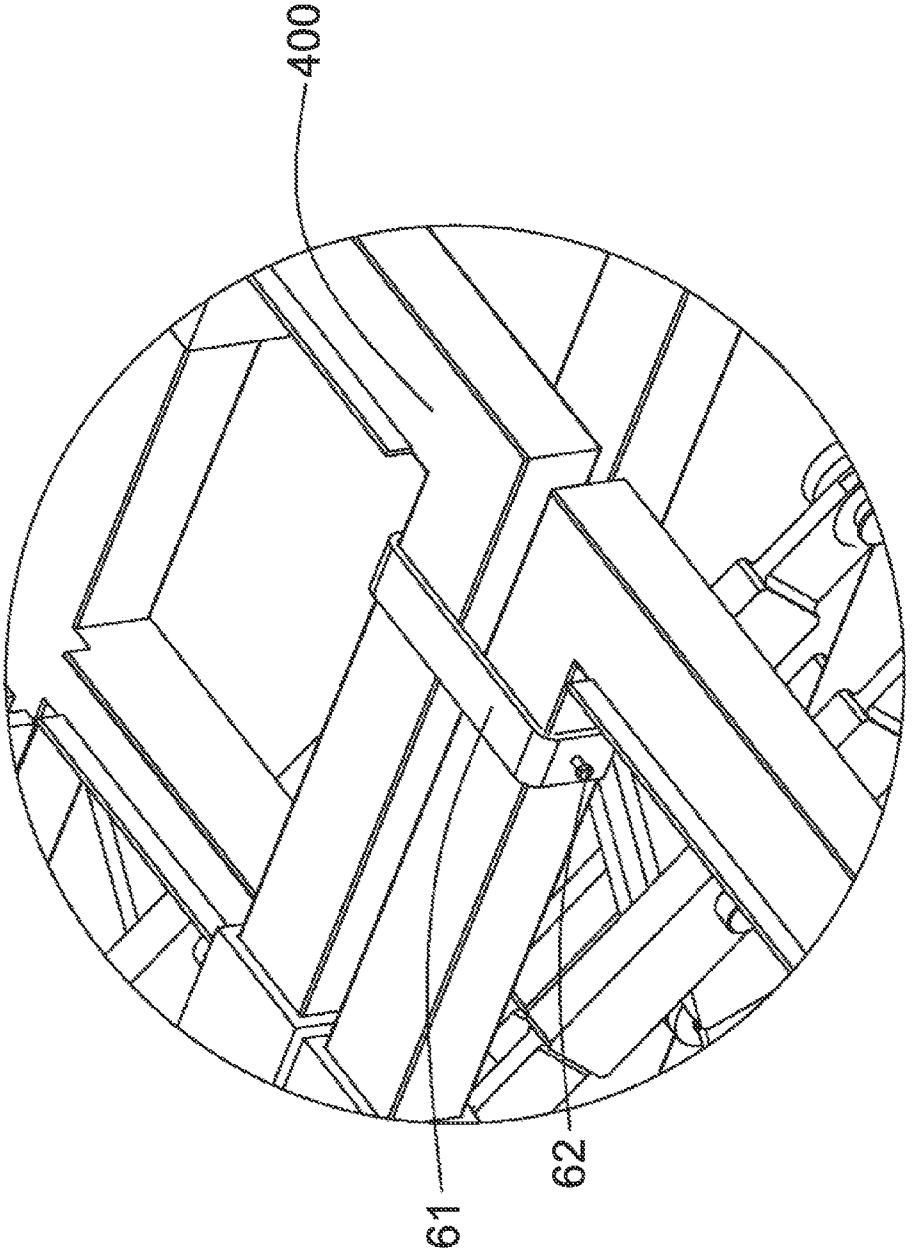


Fig. 13

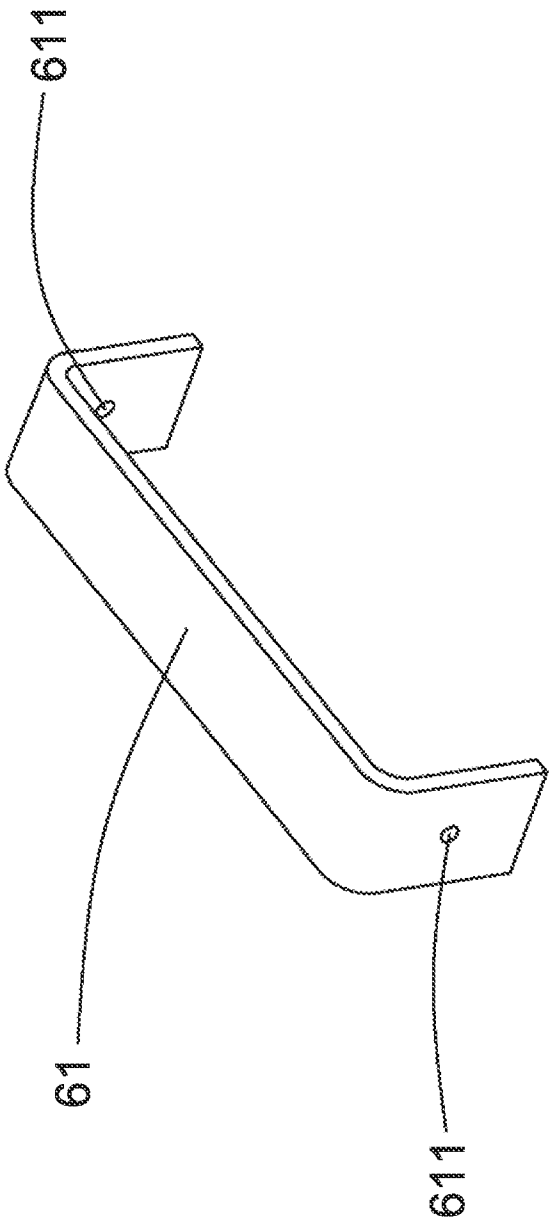


Fig. 14

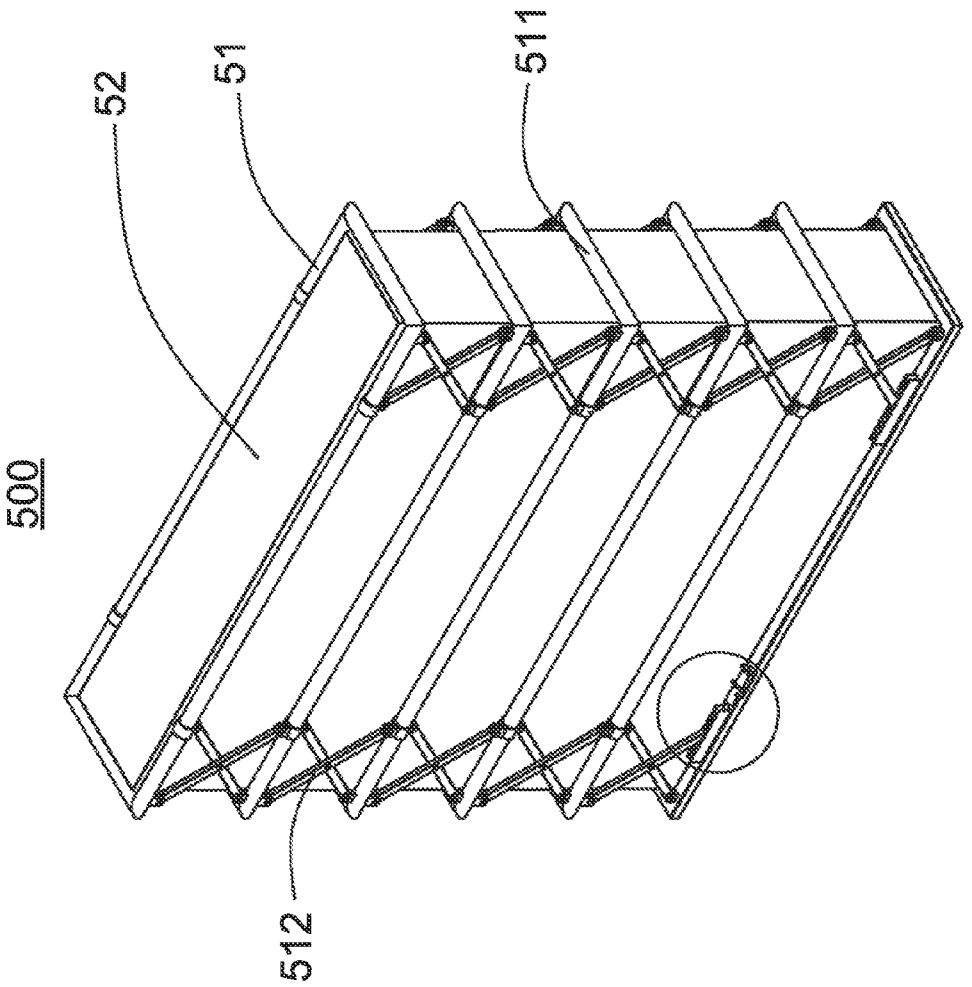


Fig. 15

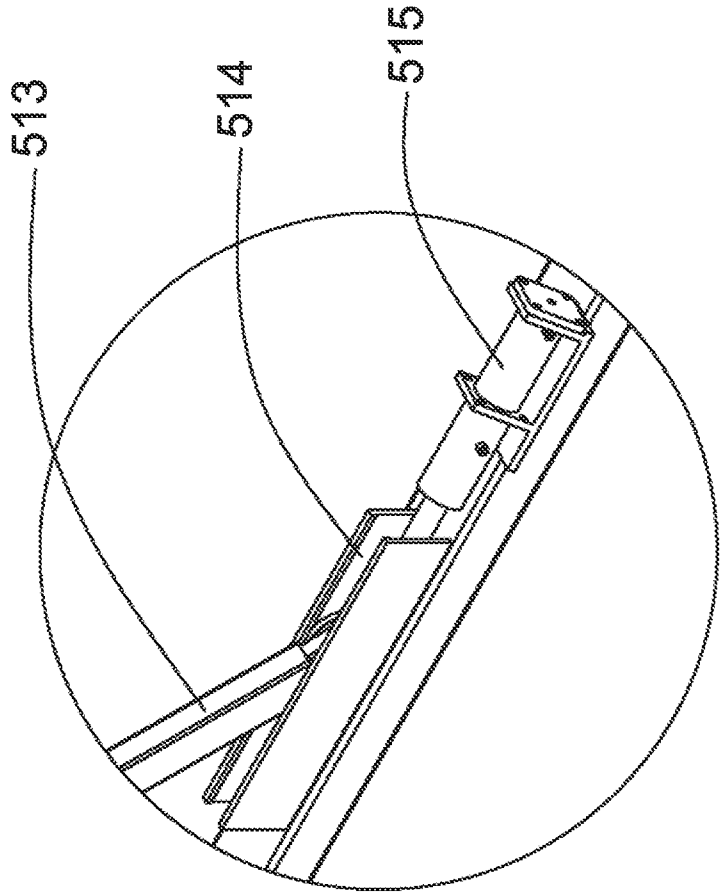


Fig. 16

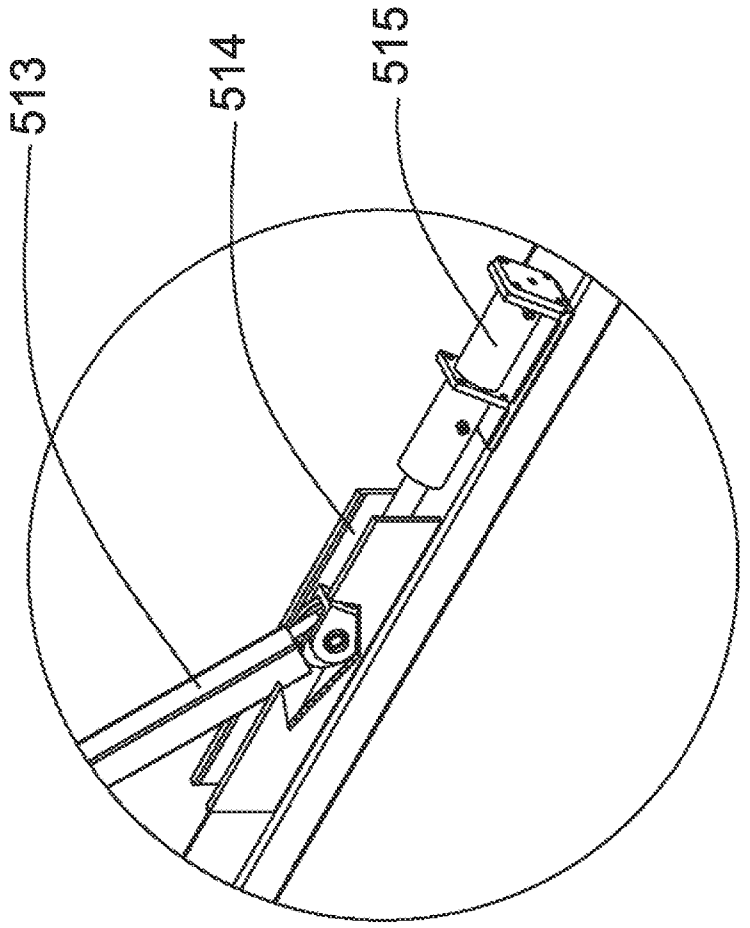


Fig. 17

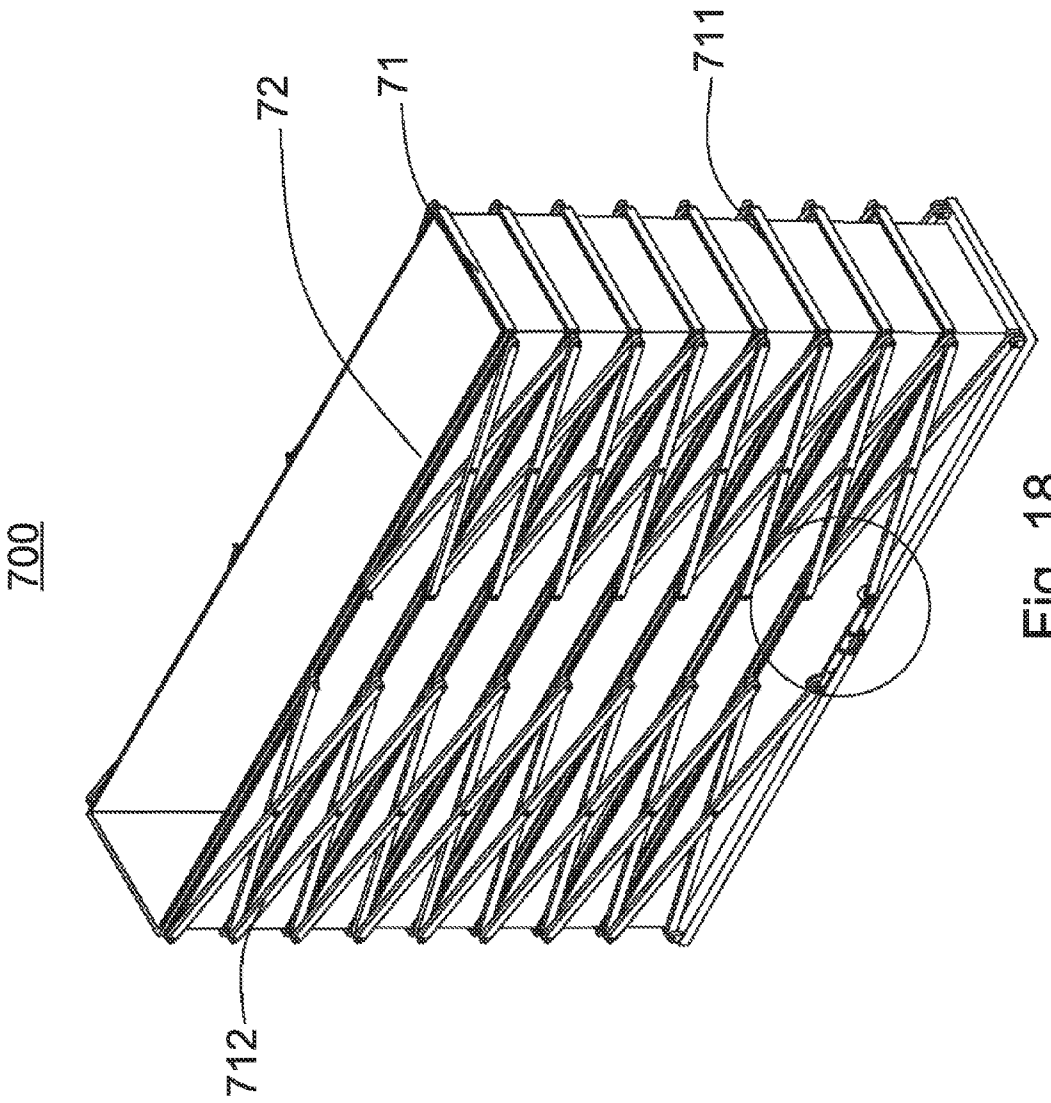


Fig. 18

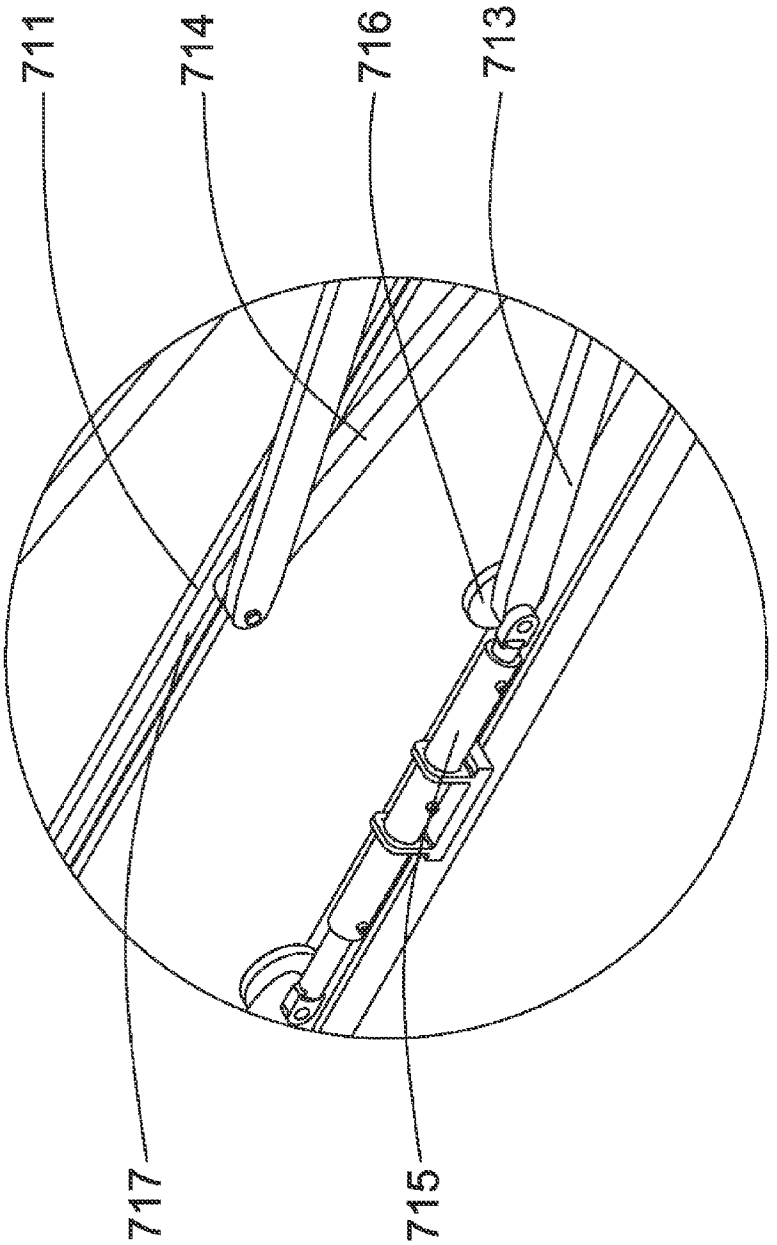


Fig. 19

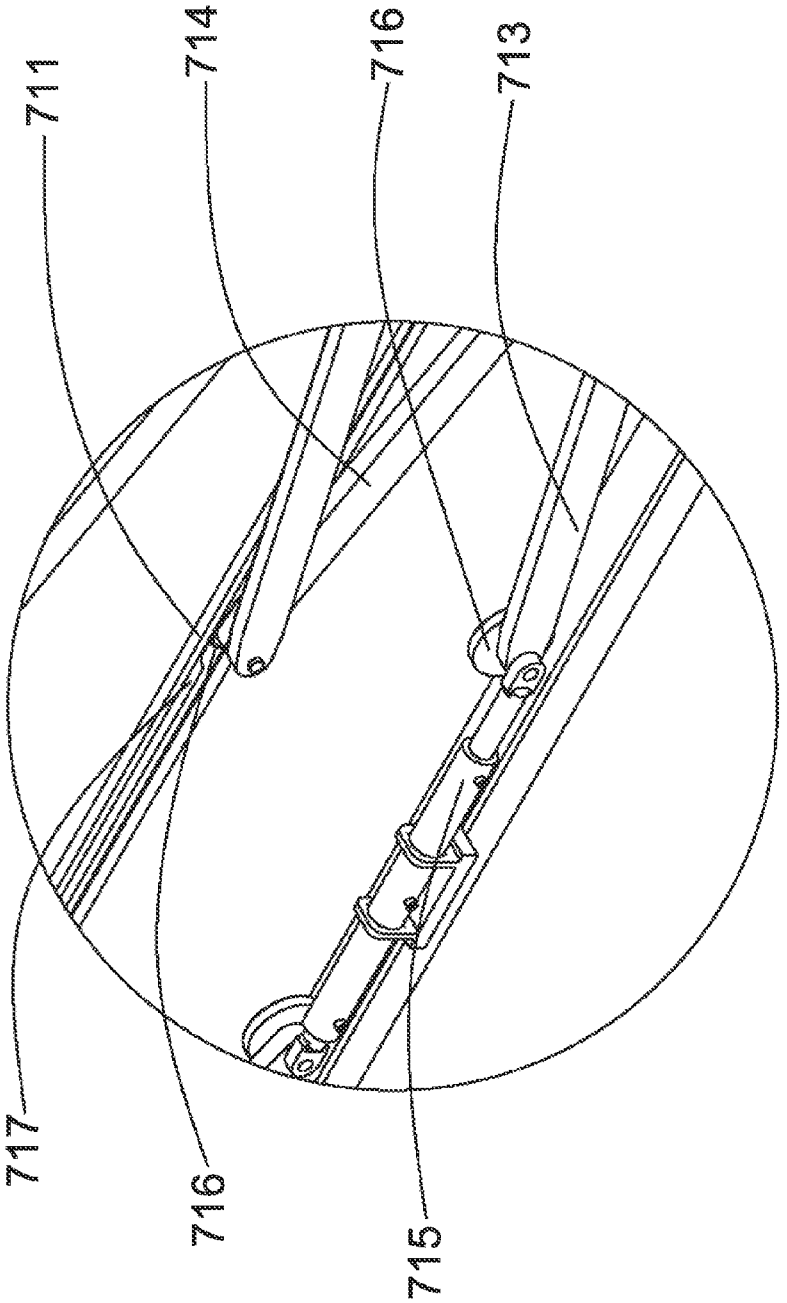


Fig. 20

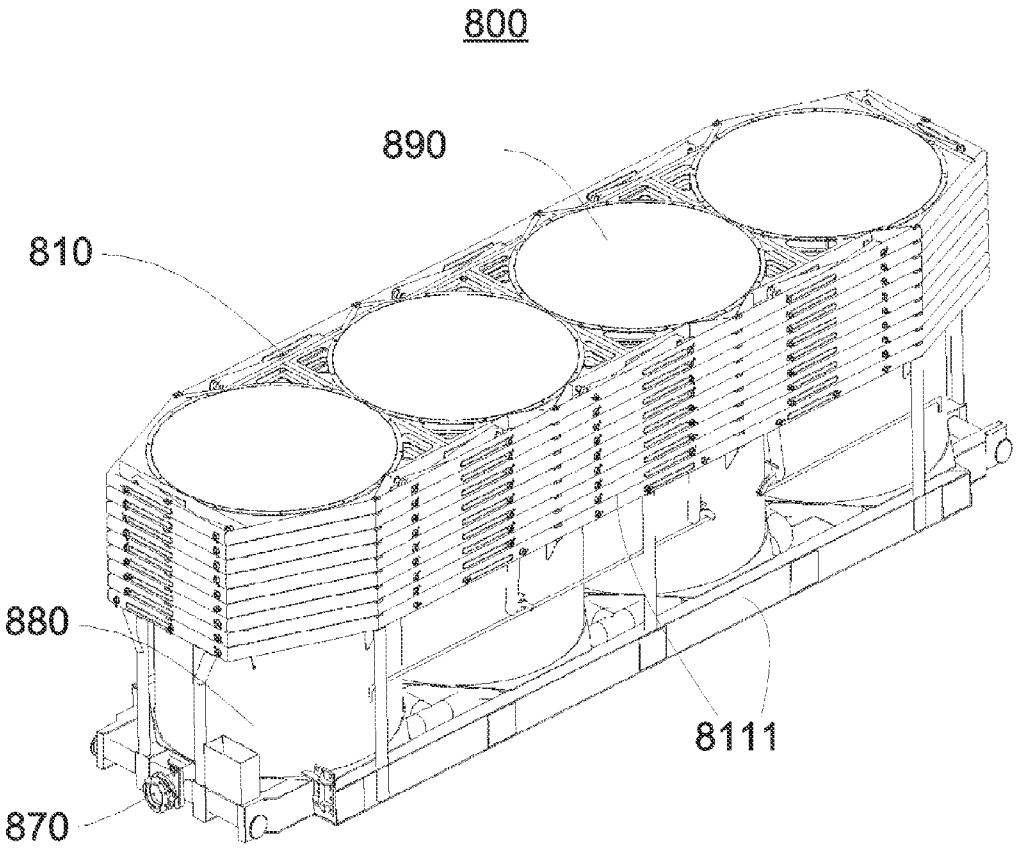


Fig. 21

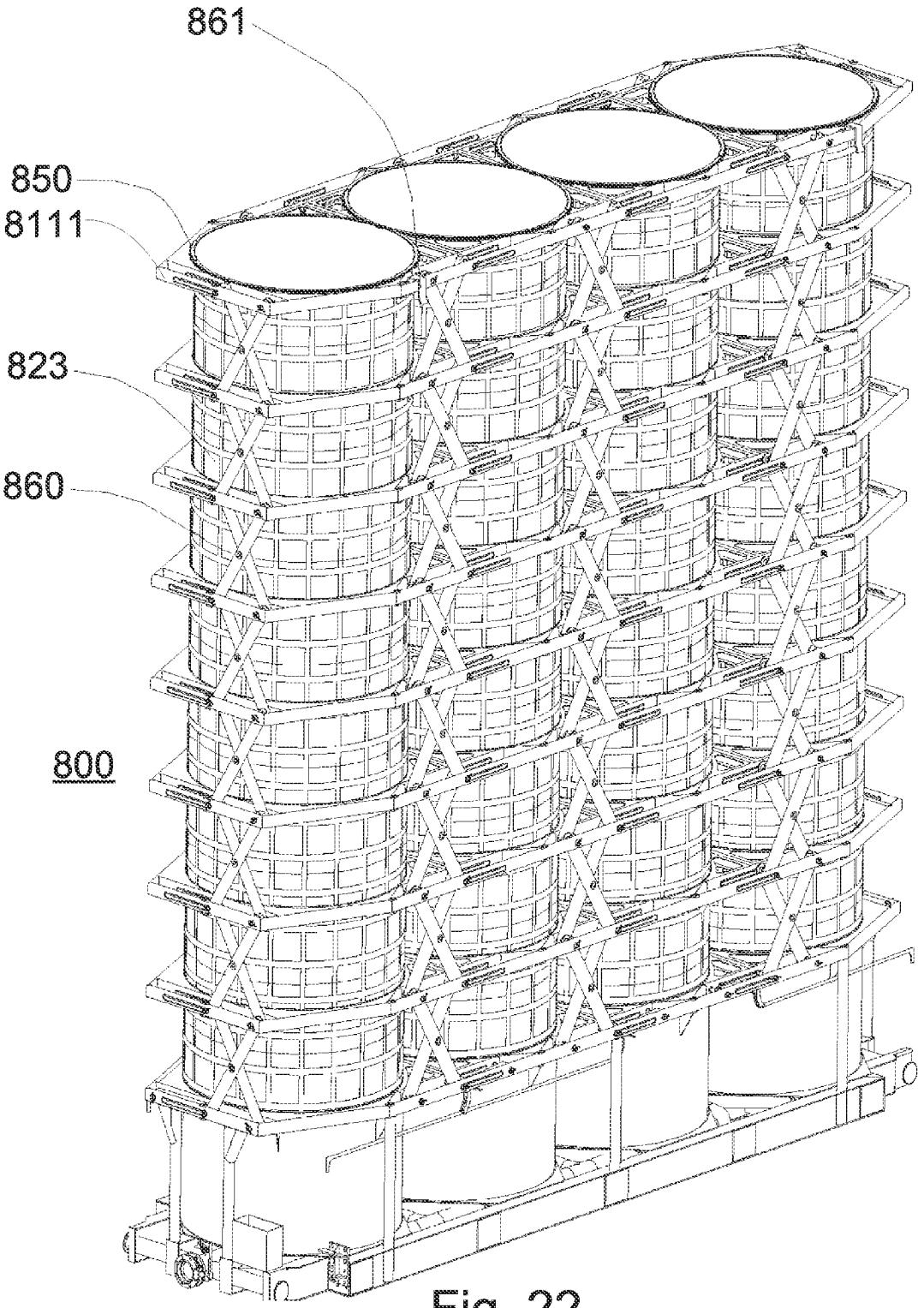


Fig. 22

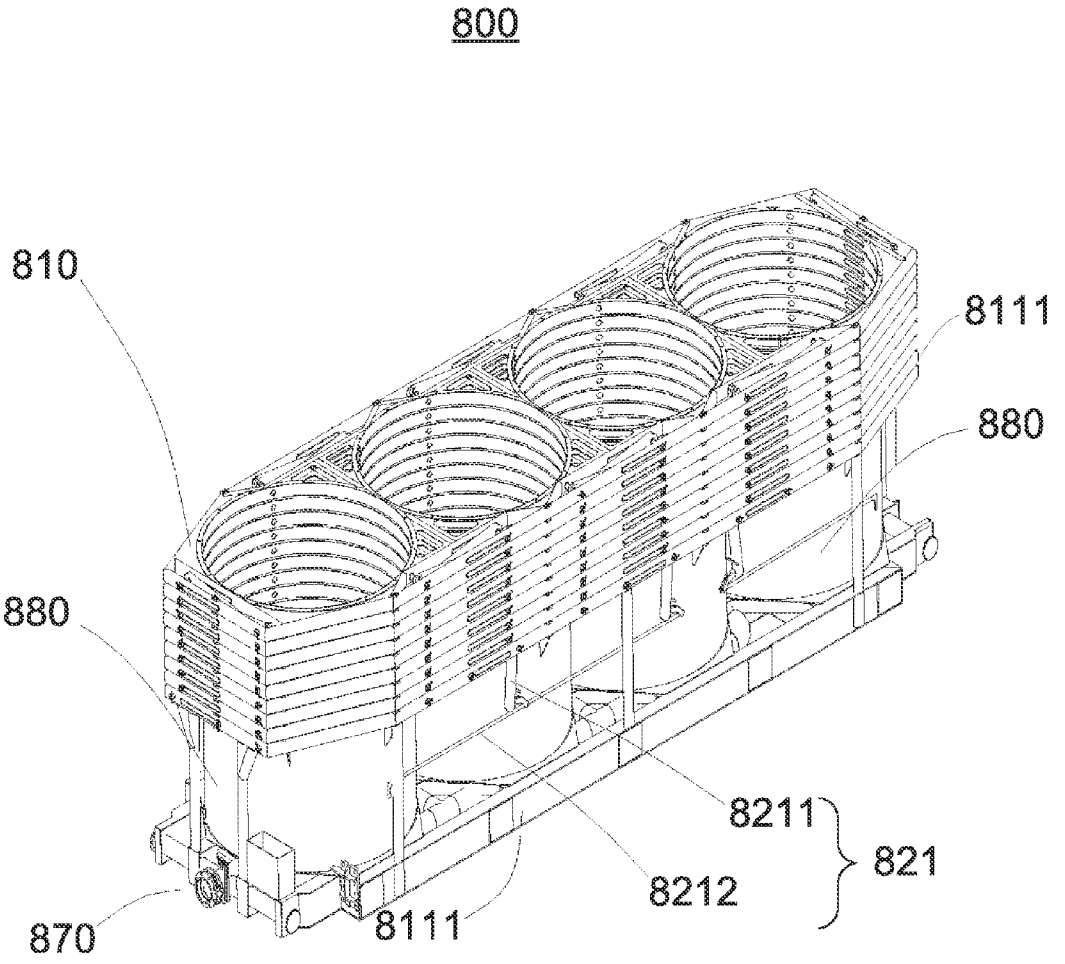


Fig. 23

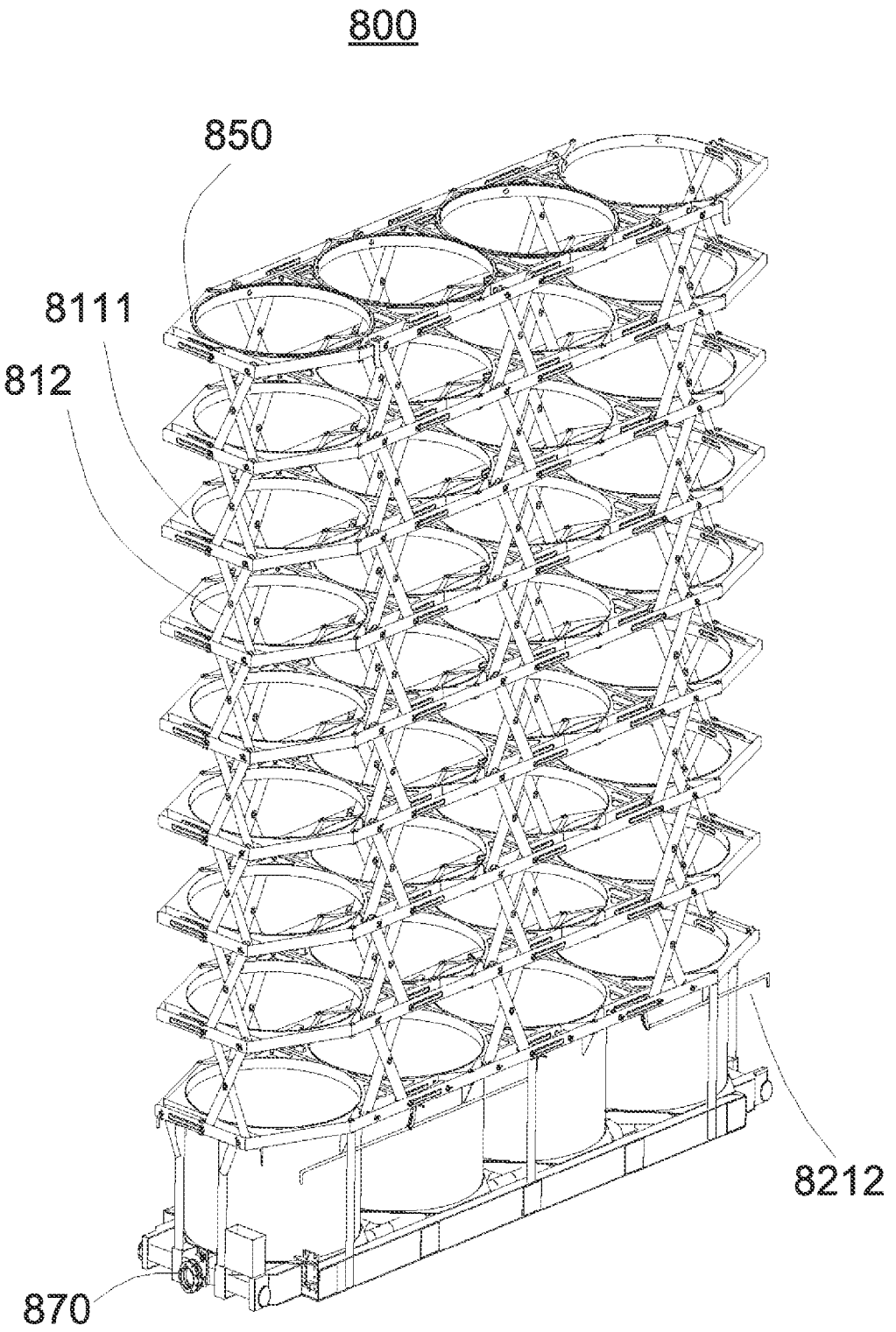


Fig. 24

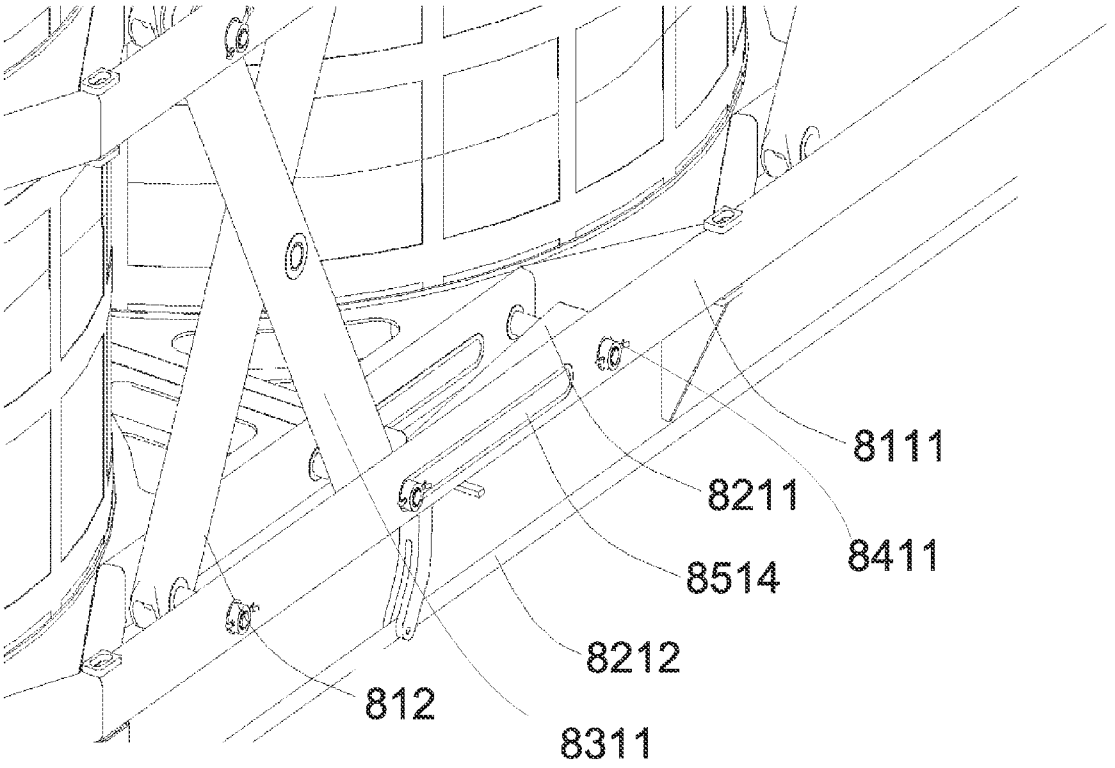


Fig. 25

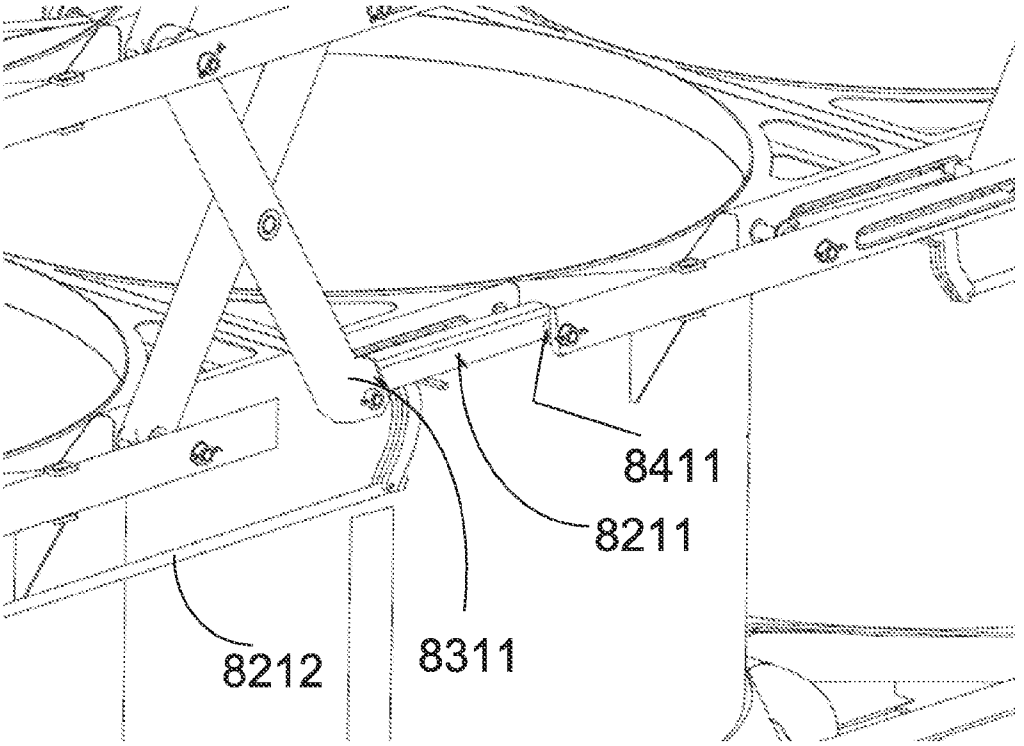


Fig. 26

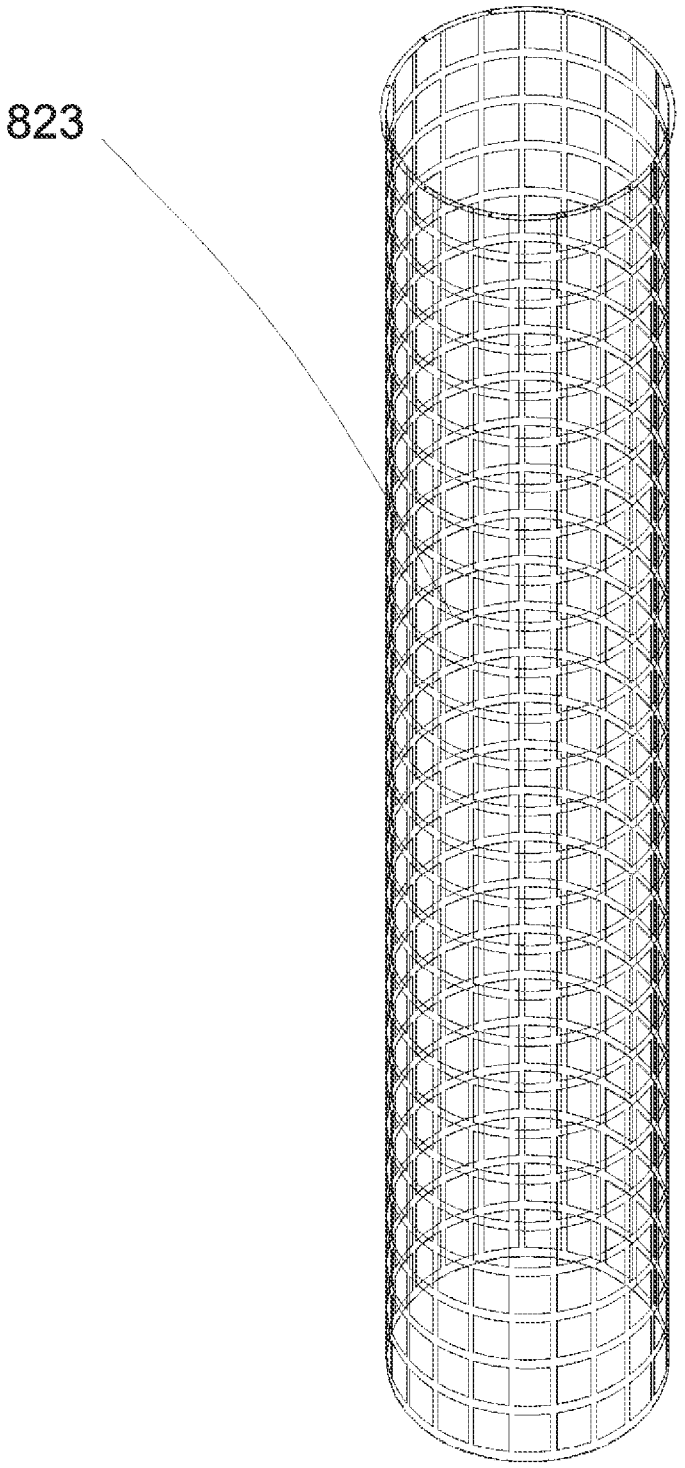


Fig. 27

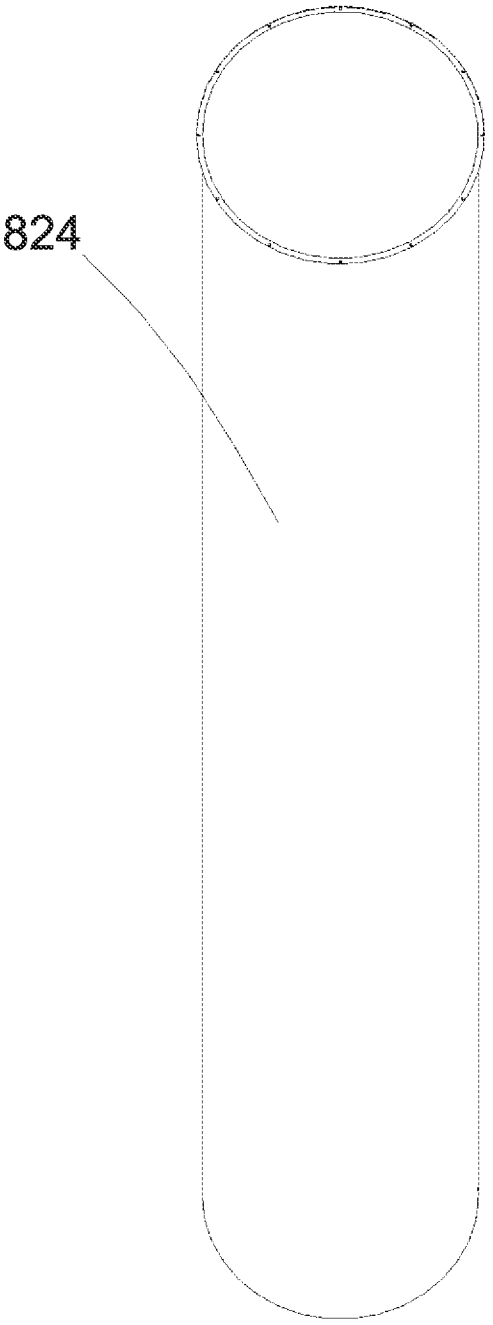


Fig. 28

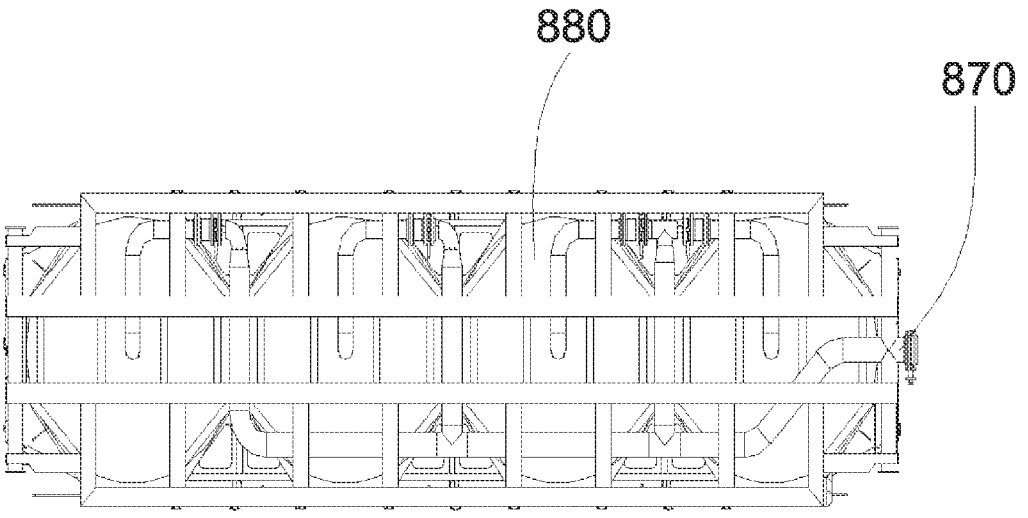


Fig. 29

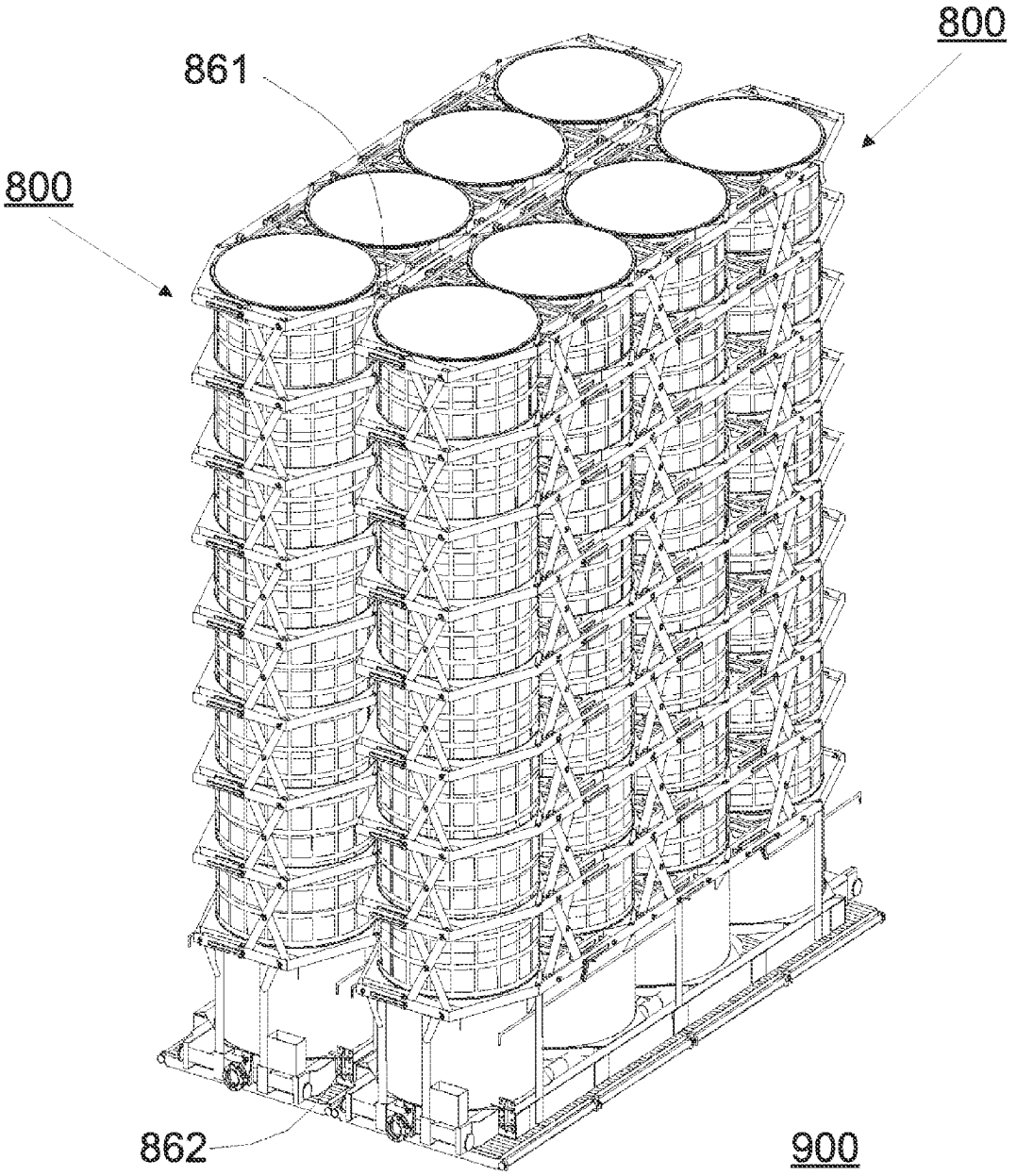


Fig. 30

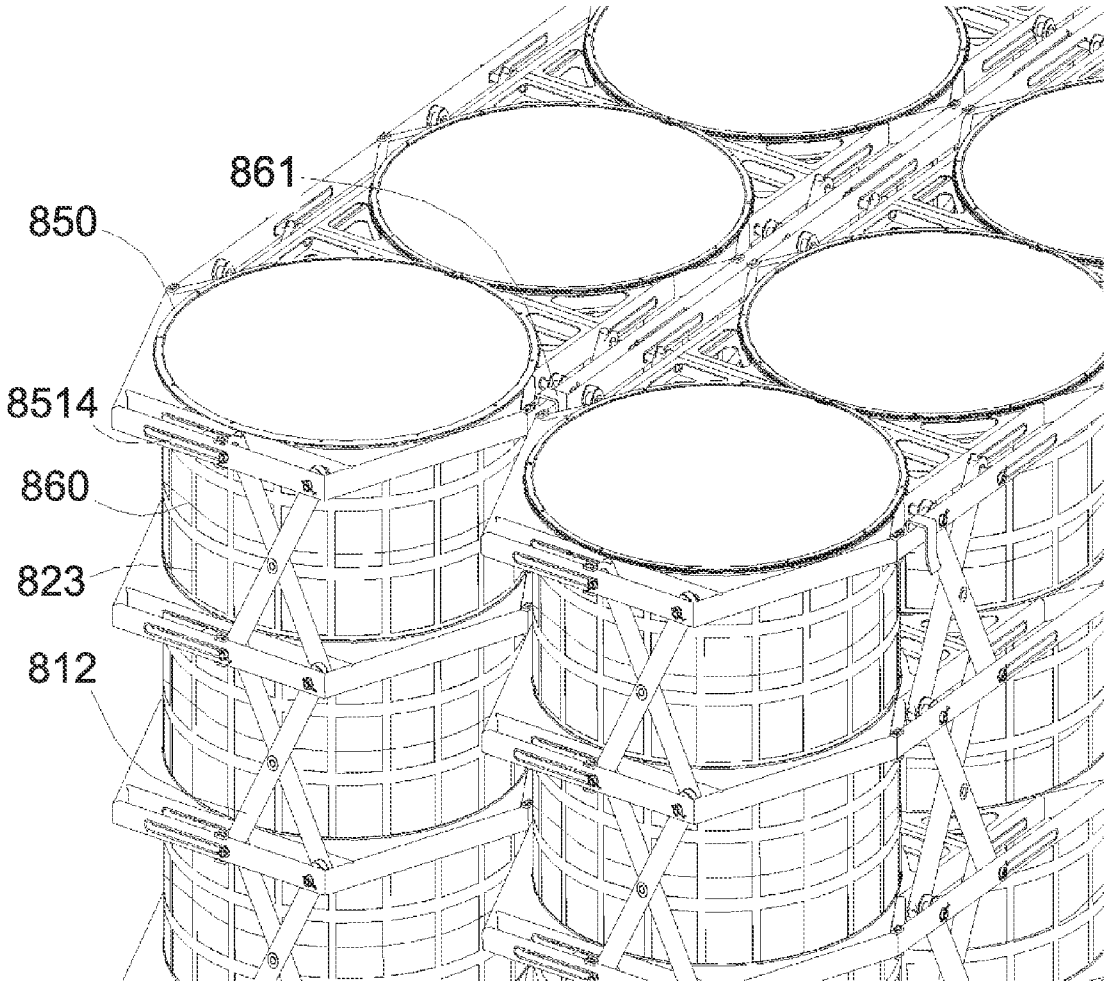


Fig. 31

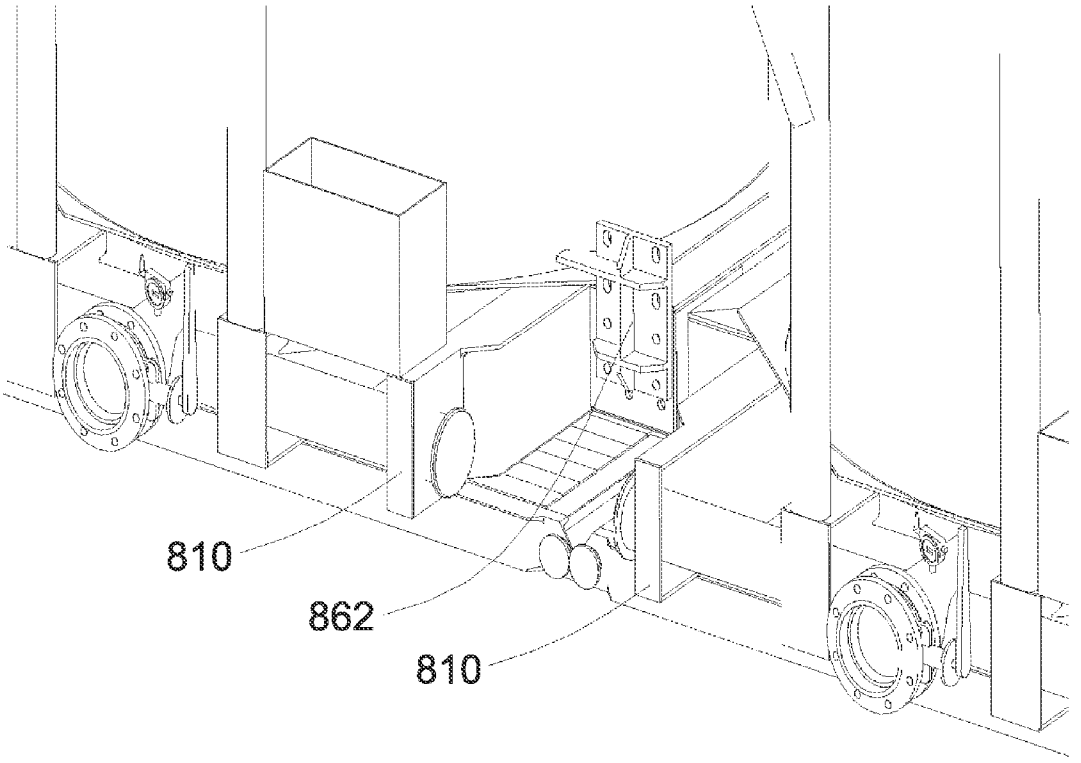


Fig. 32

LIQUID CONTAINER AND COMPONENTS THEREOF

PRIORITY

[0001] This application claims the benefit of priority of Chinese Patent Application No. CN201210034689, filed Feb. 25, 2012, entitled "A LIQUID CONTAINER AND COMPONENTS THEREOF," the entire content of which is incorporated herein by reference.

FIELD OF THE INVENTION

[0002] The present disclosure is directed to a container, and more particularly, to a liquid container and components thereof.

BACKGROUND

[0003] In a hydrofracturing operation, existing technologies utilize rigid round tanks for storing clean water or recycled fracturing waste fluid. Because the hydrofracturing operation typically requires a substantial amount of water, e.g., thousands of cubic meters, a large number of rigid round tanks may be needed for transporting and storing the water. However, because of the large size of the rigid round tanks, the rigid round tanks are difficult to transport. Moreover, because rigid round tanks are often transported only one at a time, the cost of transportation is high. Therefore, there is a need to provide a liquid container that facilitates transportation and reduces cost.

SUMMARY

[0004] In one exemplary aspect, the present disclosure is directed to a liquid container. The liquid container includes a foldable support structure, and a capsule connected to the foldable support structure and configurable for storing a liquid. The foldable support structure includes a first frame and a second frame having substantially the same shape as the first frame and stacked above the first frame. The foldable support structure also includes a foldable supporting mechanism disposed between the first frame and the second frame and connecting the first frame and the second frame. The foldable support structure is moveable between a closed position in which the first and second frames are positioned substantially next to each other, and an open position in which the first and second frames are separated and support the capsule disposed in a space defined therebetween.

[0005] In another exemplary aspect, the present disclosure is directed to a liquid container. The liquid container includes a foldable support structure, a capsule, and a net. The foldable support structure is moveable between a closed position and an open position to support the capsule disposed in a space defined therein, and the net is disposed between the capsule and the foldable support structure.

[0006] In another exemplary aspect, the present disclosure is directed to a liquid container. The liquid container includes a foldable support structure defining a plurality of divided spaces. The liquid container also includes a plurality of capsules, each capsule being disposed within one of the plurality of divided spaces defined by the foldable support structure, and being configured for storing a liquid.

[0007] In another exemplary aspect, the present disclosure is directed to a liquid container. The liquid container includes a foldable support structure. The liquid container also includes a capsule disposed within a space defined by the foldable support structure and configured for storing a liquid. The liquid container further includes at least two frames and a foldable supporting mechanism disposed between the at least two frames. The foldable supporting mechanism includes at least one linkage having an end slidably disposed within a sliding track on one of the at least two frames.

[0008] In another exemplary aspect, the present disclosure is directed to a liquid container. The liquid container includes a foldable support structure and a capsule disposed within a space defined by the foldable support structure and configured for storing a liquid. The liquid container also includes at least two frames and a foldable supporting mechanism disposed between the at least two frames. The foldable supporting mechanism includes at least one linkage having a roller disposed within a sliding track on one of the at least two frames.

[0009] In a further exemplary aspect, the present disclosure is directed to a liquid container. The liquid container includes a foldable support structure including a plurality of receiving containers. The liquid container also includes a plurality of capsules, each capsule being at least partially disposed within one of the plurality of receiving containers, and being configured for storing a liquid.

[0010] Features and advantages consistent with the disclosure will be set forth in part in the description which follows, and in part will be apparent from the description, or may be learned by practice of the disclosure. Such features and advantages will be realized and attained by means of the elements and combinations particularly pointed out in the appended claims.

[0011] It is to be understood that both the foregoing general description and the following detailed description are exemplary and explanatory only and are not restrictive of the invention, as claimed.

[0012] The accompanying drawings, which are incorporated in and constitute a part of this specification, illustrate several embodiments of the invention and together with the description, serve to explain the principles of the invention.

BRIEF DESCRIPTION OF THE DRAWINGS

[0013] FIG. **1** illustrates a perspective view of a liquid container according to a first exemplary disclosed embodiment;

[0014] FIG. **2** illustrates a perspective view of a support structure of the liquid container of FIG. **1** according to an exemplary disclosed embodiment;

[0015] FIG. **3** illustrates a perspective view of a soft capsule in an expanded state according to an exemplary disclosed embodiment;

[0016] FIG. **4** illustrates a side view of the support structure of FIG. **2** in a folded state according to an exemplary disclosed embodiment;

[0017] FIG. **5** illustrates a perspective view of a liquid container according to a second exemplary disclosed embodiment;

[0018] FIG. **6** illustrates a perspective view of a support structure of the liquid container of FIG. **5** according to an exemplary disclosed embodiment;

[0019] FIG. **7** illustrates a side view of the support structure of FIG. **6** in a folded state according to an exemplary disclosed embodiment;

[0020] FIG. **8** illustrates a perspective view of a liquid container according to a third exemplary disclosed embodiment;

[0021] FIG. **9** illustrates a perspective view of a support structure of the liquid container of FIG. **8** according to an exemplary disclosed embodiment;

[0022] FIG. **10** illustrates a side view of the support structure of FIG. **9** in a folded state according to an exemplary disclosed embodiment;

[0023] FIG. **11** illustrates a perspective view of a liquid container according to a fourth exemplary disclosed embodiment;

[0024] FIG. **12** illustrates a perspective view of a liquid container assembly including two liquid containers shown in FIG. **11** connected together according to an exemplary disclosed embodiment;

[0025] FIG. **13** illustrates an enlarged view of a portion of the liquid container assembly shown in FIG. **12** according to an exemplary disclosed embodiment;

[0026] FIG. **14** illustrates a perspective view of a connector that connects the two liquid containers shown in FIG. **12** according to an exemplary disclosed embodiment;

[0027] FIG. **15** illustrates a perspective view of a liquid container according to a fifth exemplary disclosed embodiment;

[0028] FIG. **16** illustrates an enlarged view of a portion of the liquid container shown in FIG. **15** according to an exemplary disclosed embodiment;

[0029] FIG. **17** illustrates a regional broken-out sectional view of the portion of the liquid container shown in FIG. **16** according to an exemplary disclosed embodiment;

[0030] FIG. **18** illustrates a perspective view of a liquid container according to a sixth exemplary disclosed embodiment;

[0031] FIG. **19** illustrates an enlarged view of a portion of the liquid container shown in FIG. **18** according to an exemplary disclosed embodiment;

[0032] FIG. **20** illustrates a regional broken-out sectional view of the portion of the liquid container shown in FIG. **19** according to an exemplary disclosed embodiment;

[0033] FIG. **21** illustrates a perspective view of a liquid container in a folded state according to a seventh exemplary disclosed embodiment;

[0034] FIG. **22** illustrates a perspective view of the liquid container shown in FIG. **21** in an expanded state according to an exemplary disclosed embodiment;

[0035] FIG. **23** illustrates a perspective view of the liquid container shown in FIG. **21** with a support structure in a folded state according to an exemplary disclosed embodiment;

[0036] FIG. **24** illustrates a perspective view of the liquid container shown in FIG. **21** with the support structure in an expanded state according to an exemplary disclosed embodiment;

[0037] FIG. **25** illustrates an enlarged view of a frame and a locking mechanism of the liquid container shown in FIG. **21** according to an exemplary disclosed embodiment;

[0038] FIG. **26** illustrates an enlarged view of the locking mechanism according to an exemplary disclosed embodiment;

[0039] FIG. **27** illustrates a net which may be implemented with the liquid container shown in FIG. **21** according to an exemplary disclosed embodiment;

[0040] FIG. **28** illustrates a soft capsule which may be implemented with the liquid container shown in FIG. **21** according to an exemplary disclosed embodiment;

[0041] FIG. **29** illustrates an bottom view of the liquid container shown in FIG. **21** according to an exemplary disclosed embodiment;

[0042] FIG. **30** illustrates a liquid container assembly including two liquid containers shown in FIG. **21** connected together according to an exemplary disclosed embodiment;

[0043] FIG. **31** illustrates a top view of the liquid container assembly shown in FIG. **30** according to an exemplary disclosed embodiment; and

[0044] FIG. **32** illustrates a bottom view of the liquid container assembly shown in FIG. **30** according to an exemplary disclosed embodiment.

DETAILED DESCRIPTION

[0045] Reference will now be made in detail to the drawings. Wherever possible, the same reference numbers will be used throughout the drawings to refer to the same or like parts.

[0046] FIG. **1** illustrates a perspective view of a liquid container **100** according to a first exemplary disclosed embodiment. Throughout this discussion of various embodiments, the term "liquid container" may refer to a single liquid container or a liquid container assembly including more than one liquid container. The term "liquid" may refer to liquid, fluid, gas, or mixture of liquid and solid, such as sand, dirt, and/or rock. The liquid container **100** may include a support structure **10**. The support structure **10** may be at least partially foldable. That is, at least a portion of the support structure **10** may be expanded to an open state or expanded position, e.g., as shown in FIG. **1**, when in use, and that portion may be folded to a folded state or closed position, e.g., as shown in FIG. **4**, when not in use to reduce size. The liquid container **100** may include a soft, flexible capsule **20**. The soft capsule **20** may be accommodated or disposed within a space defined by the support structure **10**. The soft capsule **20** may be supported by the support structure **10** when disposed therein.

[0047] FIG. **2** illustrates a perspective view of the support structure **10** of the liquid container **100** shown in FIG. **1**, according to an exemplary disclosed embodiment. The support structure **10** may include a main body **11** and at least a first foldable supporting mechanism **12** and a second foldable supporting mechanism **12'**. The first and the second foldable supporting mechanisms **12** and **12'** may be substantially identical to one another, and may include similar components. The main body **11** may include a plurality of frames, for example, a first frame **111** and a second frame **112**. The first frame **111** may be stacked above the second frame **112** with corresponding frame members facing each other. The first frame **111** and the second frame **112** may be connected by the foldable supporting mechanisms **12** and **12'** disposed therebetween. Although two frames are shown in FIG. **1**, it is understood that the foldable support structure **10** may include any suitable number of frames, e.g., three, four, five, etc.

[0048] Referring to FIG. **2**, the first frame **111** and the second frame **112** may have substantially the same shape or may have different shapes. For example, as shown in FIG. **2**, the first frame **111** and the second frame **112** have a quadrilateral shape, such as, a rectangular or square shape. It is understood that the first frame **111** and the second frame **112** may have any suitable shape, such as, a triangle, a pentagon, a hexagon, any other polygon, a circle, or an irregular shape. The first frame **111** may include one or more fixing blocks **1121** located at a top side that is opposite to the second frame **112**, i.e., that does not face the second frame **112**.

[0049] The first and the second foldable supporting mechanisms **12** and **12'** may be disposed between the first and the second frames **111** and **112**, on two opposite sides facing one another (e.g., on the front and rear sides as shown in FIG. **2**). Each of the first and the second foldable supporting mechanisms **12** and **12'** may connect corresponding frame members of the first and the second frames **111** and **112**. The first foldable supporting mechanism **12** may include a first linkage **121** and a second linkage **122** cross connected with the first linkage **121** through a pivotal rod provided at substantially a middle section of the first linkage **121** and the second linkage **122**.

[0050] Referring to FIG. **2**, the first foldable supporting mechanism **12** may include a first sliding sleeve **123** and a second sliding sleeve **123'**. The first sliding sleeve **123** and the second sliding sleeve **123'** may be slidably disposed on corresponding frame members of the first frame **111** and the second frame **112**. For example, the first sliding sleeve **123** may be disposed on a first frame member **125** of the first frame **111**, and the second sliding sleeve **123'** may be disposed on a corresponding second frame member **126** of the second frame **112**. The first and the second sliding sleeves **123** and **123'** may be slidable along the corresponding first and second frame members **125** and **126** as the foldable support structure **10** is moved between the open and closed positions. The first linkage **121** may include an end pivotally connected with the first frame **111**, and another end connected with the second sliding sleeve **123'** disposed on the second frame **112**. The second linkage **122** may include one end pivotally connected with the second frame **112**, and another end connected with the first sliding sleeve **123** disposed on the first frame **111**.

[0051] Referring to FIG. **2**, the foldable support structure **10** may include at least one locking component associated with at least one of the first sliding sleeve **123** or the second sliding sleeve **123'** and operable to block (or limit, prevent) or allow movement of at least one of the first sliding sleeve **123** or the second sliding sleeve **123'** along the first frame member **125** or the second frame member **126**, thereby locking or unlocking the positions of at least one of the first sliding sleeve **123** or the second sliding sleeve **123'** relative to the first frame member **125** or the second frame member **126**. For example, the first foldable supporting mechanism **12** may include a first locking component **124**. The first locking component **124** may be disposed on the first sliding sleeve **123**, or may be a standing alone component separated from the first sliding sleeve **123**. The first foldable supporting mechanism **12** may include a second locking component **124'**, which may be different from or similar to the first locking component **124**. The second locking component **124'** may be disposed on the second sliding sleeve **123'**, or may be a standing alone component separated from the second sliding sleeve **123'**.

[0052] Referring to FIG. **2**, when the first locking component **124** and the second locking component **124'** are engaged, they may block (or limit, prevent) the movement of the first sliding sleeves **123** and the second sliding sleeve **123'** along the first frame member **125** of the first frame **111** and the second frame member **126** of the second frame **112**, thereby locking or fixing the position of the first sliding sleeve **123** and the second sliding sleeve **123'**, and accordingly, locking or fixing the position of the first foldable supporting mechanism **12**. As shown in FIG. **2**, the support structure **10** is in an open, expanded, or unfolded position. When the first and the second locking components **124** and **124'** are disengaged, the first sliding sleeves **123** and the second sliding sleeve **123'** may be moved (e.g., slid) along the first frame member **125** of the first frame **111** and the second frame member **126** of the second frame **112**, and as a result, the first foldable supporting mechanism **12** may be folded or closed. FIG. **4** shows the foldable support structure **10** in a folded state or closed position, in which the foldable supporting mechanisms **12** and **12'** are folded or closed, and the first and second frames **111** and **112** are positioned substantially next to each other.

[0053] In some embodiments, the second foldable supporting mechanism **12'** may include substantially the same structure as the first foldable supporting mechanism **12**, and therefore, may include similar components as those included in the first foldable supporting mechanism **12**. In some embodiments, it is possible for the second foldable supporting mechanism **12'** to include components different from those of first foldable supporting mechanism **12**.

[0054] FIG. **3** illustrates a perspective view of the soft capsule **20** in an expanded state according to an exemplary disclosed embodiment. The soft capsule **20** may be made of any suitable material that renders the soft capsule **20** flexible, and that enables the soft capsule **20** to be capable of being expanded and collapsed or folded. In one embodiment, the soft capsule **20** may be made of natural rubber or synthetic rubber. For example, the soft capsule **20** may be made of chlorosulfonated polyethylene or the like material. The soft capsule **20** may be utilized for storing a suitable liquid.

[0055] As shown in FIG. **3**, the shape of the soft capsule **20** in an expanded state may substantially match the space defined by the support structure **10**. In some embodiment, the shape of a top opening portion **21** of the soft capsule **20** may match the shape of first frame **111** and/or the second frame **112**. For example, when the first and the second frames **111** and **112** have a rectangular shape, the top opening portion **21**, in the expanded state, may have a rectangular shape.

[0056] As shown in FIG. **3**, the soft capsule **20** may include a pad or plate **22** disposed at a bottom portion. The pad **22** may prevent or reduce wear at the bottom portion of the soft capsule **20**. When the pad **22** is worn, the pad **22** may be conveniently replaced. In one embodiment, the pad **22** may be an integral single pad that may be fixed to the bottom portion of the soft capsule **20** by glue, weld, or any other suitable methods. In another embodiment, the pad **22** may be a separate part detachably attached to the bottom portion of the soft capsule **20**. In some embodiments, the pad **22** may include a plurality of small pads. When one of the plurality of small pads is worn, instead of replacing the entire pad **22**, the specific worn small pad may be replaced.

[0057] The soft capsule **20** may be disposed within the space defined by the support structure **10**, as shown in FIG. **1**. The top opening portion **21** shown in FIG. **3** may be secured to a portion of the support structure **10**. For example, a circumferential portion of the top opening portion **21** may be secured to the one or more fixing blocks **1121** (shown in FIG. **2**) provided on a top frame, e.g., the first frame **111**, of the support structure **10**, by a suitable means, such as, for example, clamp, glue, or screw and nut, to prevent break away from the support structure **10** when the soft capsule **20** is filled with liquid.

[0058] FIG. **4** illustrates a side view of the support structure **10** of FIG. **2** in a folded state or closed position according to an exemplary disclosed embodiment. When the liquid container **100** is used for storing liquid, the soft capsule **20** is disposed within the space defined by the support structure **10**.

When the liquid container **100** is not used for storing liquid, the soft capsule **20** may be taken out of the support structure **10**. The soft capsule **20** may be collapsed or folded, because of its softness and flexibility. The first and the second locking components **124** and **124'** may be disassembled or disengaged from the support structure **10**, thereby allowing the first and the second sliding sleeves **123** and **123'** to be moved along the corresponding first frame member **125** and second frame member **126**, respectively. Thus, the foldable supporting mechanisms **12** and **12'** may be folded, causing the support structure **10** to be folded, as shown in FIG. **4**. The folded support structure **10** reduces its overall size and therefore the space it occupies, thereby facilitating storage and transportation. Accordingly, the cost associated with the storage and transportation of the liquid container **100** is reduced.

[0059] Still referring to FIG. **4**, in some embodiments, when the liquid container **100** is not in use for storing liquid, the soft capsule **20** need not be taken out of the support structure **10** when the support structure **10** is folded. In such embodiments, the first and the second locking components **124** and **124'** may be disassembled or disengaged from the support structure **10**, thereby enabling the first and the second sliding sleeves **123** and **123'** to be moved along corresponding first frame member **125** and the second frame member **126**, respectively. The support structure **10** may then be placed in a folded state, so that the liquid container **100**, including the soft capsule **20** and the support structure **10**, is placed in the folded state or closed position. The folded liquid container **100** reduces the space it occupies, and facilitates storage and transportation, thereby reducing the cost associated with storage and transportation.

[0060] In the embodiments shown in FIGS. **1-4**, the liquid container **100** includes two foldable supporting mechanisms **12** and **12'**. It is understood that in other embodiments, the liquid container **100** may include any suitable number of foldable supporting mechanisms, such as, for example, one, three, four, etc.

[0061] FIG. **5** illustrates a perspective view of a liquid container **200** according to a second exemplary disclosed embodiment. The second liquid container **200** may include a support structure **220**, a soft, flexible capsule **24** disposed within a space defined by the support structure **220**, and a net **23** disposed between the soft capsule **24** and the support structure **220**. The soft capsule **24** may be similar to the soft capsule **20**. The support structure **220** may include components similar to those included the support structure **10**, and may be at least partially foldable.

[0062] The net **23** shown in FIG. **5** may be soft, flexible, or may be rigid. In one embodiment, the net **23** is flexible, and is made of a suitable flexible material, such as nylon. The net **23** may be disposed between the soft capsule **24** and the support structure **220**, and may help maintain (e.g., by restraining) the soft capsule **24** within the space defined by the support structure **220**, thereby preventing the soft capsule **24** from squeezing out of the space from open gaps between any pair of two adjacent frames **221** when the soft capsule **24** is filled with liquid.

[0063] FIG. **6** illustrates a perspective view of the support structure **220** included in the liquid container **200** of FIG. **5** according to an exemplary disclosed embodiment. The support structure **220** may include a plurality of frames **221**, e.g., four frames **221**, stacked one above another, as shown in FIG. **6**. The support structure **220** may include a plurality of foldable supporting mechanisms **223**, e.g., six foldable supporting mechanisms **223**, as shown in FIG. **6**. It is understood that the support structure **220** may include three, four, five, or any suitable number of foldable supporting mechanisms **223**.

[0064] In some embodiments, the shape and structure of the frames **221** may be substantially the same as those of the first frame **111** and the second frame **112** of the liquid container **100** shown in FIGS. **1-4**. In some embodiments, the frames **221** may have shapes and structures different from those of the first and the second frames **111** and **112**. For example, the shape of the frames **221** may be quadrilateral, such as, rectangular or square. It is understood that in other embodiments, the frames **221** may have a shape of a triangle, a pentagon, a hexagon, any other polygon, a circle, or an irregular shape. In the embodiments shown in FIG. **6**, the four frames **221** are stacked one above another, with corresponding frame members facing each other, and are connected by the six foldable supporting mechanisms **223** disposed between pairs of two adjacent frames **221**.

[0065] In the embodiment shown in FIG. **6**, each of the foldable supporting mechanisms **223** connects corresponding frame members of each pair of two adjacent frames **221**. Two foldable supporting mechanisms **223** are disposed between each pair of two adjacent frames **221**. Each foldable supporting mechanism **223** includes a first linkage **2231**, a second linkage **2232**, and a sliding sleeve **2233**. The structures and positions of the first linkage **2231**, the second linkage **2232**, and the sliding sleeve **2233** with respect to the frames **221** may be similar to those of the first linkage **121**, the second linkage **122**, and the second sliding sleeve **123'** with respect to the first and the second frames **111** and **112**, as shown in FIG. **2**. The positional relationship of the first linkage **2231**, the second linkage **2232**, and the sliding sleeve **2233**, with respect to the four frames **221**, may be similar to that of the first linkage **121**, the second linkage **122**, and the second sliding sleeve **123'** with respect to the first frame **111** and the second frame **112**. Similar to the embodiment shown in FIGS. **1** and **2**, the first linkage **2231** and the second linkage **2232** may each be connected to a sliding sleeve **2233** disposed on a corresponding frame **221**.

[0066] As shown in FIG. **6**, the support structure **220** may include a drive unit **2234** disposed on one of the plurality of frames **221**, e.g., the lowest one of the frames **221**. It is understood that the drive unit **2234** may be disposed on any one of the plurality of frames **221**. The drive unit **2234** may be connected with one of the six foldable supporting mechanisms **223**, e.g., the foldable supporting mechanism **223** connecting the lowest pair of two adjacent frames **221**. The drive unit **2234** may be connected with at least one of a linkage of the foldable supporting mechanisms **223** or a sliding sleeve disposed on at least one of the frames **221**. For example, the drive unit **2234** may be connected with the first linkage **2231**, the second linkage **2232**, or the sliding sleeve **2233**. It is understood that the support structure **220** may include more than one drive unit **2234** disposed on more than one frame **221**, each drive unit **2234** connected with one of the foldable supporting mechanisms **223**.

[0067] In the embodiment shown in FIG. **6**, the drive unit **2234** may be configured to push and pull the first linkage **2231** or the sliding sleeve **2233**, thereby causing the sliding sleeve **2233** to move (e.g., slide) along a frame member of the lowest frame **221**, and accordingly, causing the support structure **220** to expand or fold. The drive unit **2234** may include an end fixed to the frame member of the lowest frame **221**, and another end connected with the corresponding sliding sleeve

2233 or the first linkage 2231 located on the frame side of the lowest frame 221. When the drive unit 2234 pushes the sliding sleeve 2233 away from the drive unit 2234, the movement of the sliding sleeve 2233 causes the support structure 220 to expand up in the vertical direction. When the drive unit 2234 pulls the sliding sleeve 2233 toward the drive unit 2234, the movement of the sliding sleeve 2233 causes the support structure 220 to fold down in the vertical direction.

[0068] The drive unit 2234 shown in FIG. 6 may include a hydraulic drive unit, a pneumatic drive unit, an electric motor drive unit, a piezoelectric drive unit, a chain drive unit, or any suitable drive unit. Although not shown in FIG. 6, the drive unit 2234 may include or may be connected with a power unit that supplies power to the drive unit 2234. The power unit may include a battery, solar panel, an electricity generator, etc.

[0069] FIG. 7 illustrates a side view of the support structure 220 in a folded state according to an exemplary disclosed embodiment. When the support structure 220 is folded, the liquid container 200 is also in a folded state, making storage and transportation of the liquid container 200 relatively easier.

[0070] In the embodiment shown in FIG. 6, the support structure 220 includes four frames 221. It is understood that the support structure 220 may include two, three, or any suitable number of frames 221. The number of the frames 221 may be determined by operational needs. The number of the foldable supporting mechanisms 223 also may vary depending on operational needs. For example, in some embodiments, the number of the foldable supporting mechanisms 223 may vary in proportion to the number of frames 221.

[0071] FIG. 8 illustrates a perspective view of a liquid container 300 according to a third exemplary disclosed embodiment. The liquid container 300 may include a support structure 31 and a soft capsule 32 disposed within a space defined by the support structure 31 for storing liquid. The liquid container 300 may include other components similar to those included in the liquid containers 100 and 200. FIG. 9 illustrates a perspective view of the support structure 31 in an expanded state, and FIG. 10 illustrates a side view of the support structure 31 in a folded state, according to exemplary disclosed embodiments. The support structure 31 may be at least partially foldable and may include components similar to those included in the support structures 10 or 220.

[0072] Referring to FIG. 9, the support structure 31 may include three frames 311 and six foldable supporting mechanisms 312. It is understood that the support structure 31 may include any suitable number of frames 311 and foldable supporting mechanisms 312. One difference between the first and second embodiments shown in FIGS. 1-7 and the embodiment shown in FIG. 9 is that the shape of the frames 311 is hexagon. The frames 311 are stacked together and connected by the foldable supporting mechanisms 312, with corresponding frame members facing each other.

[0073] As shown in FIG. 9, each of the foldable supporting mechanisms 312 connects a pair of two adjacent frames 311. Three foldable supporting mechanisms 312 are provided in this embodiment to connect a pair of two adjacent frames 311. In the embodiment shown in FIG. 9, the three foldable supporting mechanisms 312 are distributed on every other pair of frame members. It is understood that more or lesser number of foldable supporting mechanisms 312 may be provided to connect each pair of two adjacent frames 311.

[0074] The structural and positional relationship of each of the foldable supporting mechanisms 312 with respect to the frames 311 may be similar to those discussed above with respect to the foldable supporting mechanisms 223 and the frames 221 of the liquid container 200 shown in FIGS. 5-7. For example, the support structure 31 may include a plurality of sliding sleeves 313. The support structure 31 may also include a plurality of drive units 314 located on the lowest frame 311, each drive unit 314 being associated with one of the foldable supporting mechanisms 223. The drive units 313 may drive the sliding sleeves 313 to move along corresponding frame members of the frames 311, thereby causing the support structure 31 to expand or fold. FIG. 10 illustrates a side view of the support structure 31 of FIG. 9 in a folded state according to an exemplary disclosed embodiment. When the support structure 31 is folded, the size of the support structure 31 is reduced, thereby making storage and transportation easier.

[0075] In the embodiment shown in FIG. 9, the support structure 31 includes three frames 311. It is understood that the number of frames may vary depending on operational needs. Any suitable number of frames may be included in the support structure 31. Although FIG. 9 shows that the support structure 31 includes six foldable supporting mechanisms 312, it is understood that the support structure 31 may include any suitable number of foldable supporting mechanisms 312. In addition, although three sliding sleeves 313 and three drive units 314 are shown in FIG. 9, it is understood that the number of the sliding sleeves 313 and the drive units 314 may vary with the number of the foldable supporting mechanisms 312. The support structure 31 may include more or less number of sliding sleeves 313 and drive units 314.

[0076] FIG. 11 illustrates a perspective view of a liquid container 400 according to a fourth exemplary disclosed embodiment. The liquid container 400 may include at least one support structure 41 and at least one soft capsule 42 disposed within a space defined by the at least one support structure 41 for storing liquid. In one embodiment, the liquid container 400 may include an assembly of separate liquid containers, e.g., three as shown in FIG. 11. The three separate liquid containers may be connected together, each of which may be structurally similar to the liquid container 200, and each of which may define a space for accommodating a soft capsule 42. In another embodiment, the liquid container 400 may include a single support structure 41 having a plurality of (e.g., three, as shown in FIG. 11) divided spaces, each space accommodating a soft capsule 42. The single support structure 41 may be at least partially foldable and may include components similar to those included in the support structure 10, the support structure 220, or the support structure 31.

[0077] The liquid container 400 may include a plurality of frames 221, e.g., five, as shown in FIG. 11, stacked one above another in a vertical direction. In the embodiment shown in FIG. 11, the liquid container 400 may include a single support structure 41 including five frames 221 stacked in the vertical direction and having a space defined by the single support structure 41 divided into three subspaces, each subspace accommodating a soft capsule 42. In other embodiments, the liquid container 400 may include the single support structure 41 including any suitable number of frames 221 in the vertical direction. The liquid container 400 may include a space defined by the single support structure 41 divided into any suitable number of, e.g., four, five, six, etc., subspaces, each accommodating a soft capsule 42.

[0078] In some embodiments, the liquid container **400** may include three liquid containers **200** connected in series in a horizontal direction, each having a support structure **41** with five frames **221** stacked in the vertical direction and a soft capsule **42** disposed within the space defined by the support structure **41**. The number of the liquid containers **200** and/or the number of the soft capsules **42** may vary according to operational needs, and may be any suitable number, e.g., four, five, six, etc. The number of frames **221** may vary according to operational needs, which may be any suitable number, e.g., six, seven, eight, etc.

[0079] In some embodiments, the liquid container **400** may include an assembly of the liquid containers **100** or the liquid containers **300** arranged in a manner similar to that discussed above with respect to FIG. **11**. In other embodiments, the liquid container **400** may include an assembly of a combination of the liquid containers **100**, **200**, and **300**.

[0080] FIG. **12** illustrates a perspective view of a liquid container assembly **600** including two liquid containers **400** shown in FIG. **11** connected together according to an exemplary disclosed embodiment. The two liquid containers **400** may be arranged side by side and connected by one or more connectors **61**. FIG. **13** illustrates an enlarged view of a portion of the liquid container assembly **600**, showing in detail the connection of the two liquid containers **400** by the one or more connectors **61** according to an exemplary disclosed embodiment. FIG. **14** illustrates a perspective view of an example of the one or more connectors **61** according to a disclosed embodiment. The one or more connectors **61** may include any suitable connector, such as a bracket, a clamp, etc. In the embodiment shown in FIGS. **13** and **14**, each of the one or more connectors **61** may include a bracket having a U-shape, with each vertical side of the bracket having at least one hole **611** for receiving at least one screw **62**.

[0081] The one or more connectors **61** may be placed across two adjacent frame members of the two liquid containers **400** arranged side by side, as shown in FIG. **13**. The at least one screw **62** may secure the one or more connectors **61** to the two adjacent frame sides of the two liquid containers **400**, thereby holding the two liquid containers **400** together to form the liquid container assembly **600**. It is understood that other suitable connection means may also be implemented to connect the two liquid containers **400**. In some embodiments, the liquid container assembly **600** may include any other suitable number of liquid containers **400**, e.g., three, four, five, etc., connected together by suitable connection means, such as, the one or more connectors **61** and the at least one screw **62**. In some embodiments, the liquid containers **400** may be replaced by at least one of the liquid containers **100**, **200**, or **300** to form the liquid container assembly **600**. In other embodiments, the liquid container assembly **600** may include a combination of the liquid containers **100**, **200**, **300**, and/or **400** connected together by suitable connection means.

[0082] FIG. **15** illustrates a perspective view of a liquid container **500** according to a fifth exemplary disclosed embodiment. The liquid container **500** may include components similar to those included in the liquid containers **100**, **200**, **300**, **400**, and/or the liquid container assembly **600**. The liquid container **500** may include a support structure **51** and a soft capsule **52** disposed within a space defined by the support structure **51** for storing liquid. The support structure **51** may include a plurality of, e.g., six as shown in FIG. **15**, frames **511**. The support structure **51** may include a plurality of, e.g., twenty, foldable supporting mechanisms **512**, each connecting a pair of two adjacent frames **511**. It is understood that the support structure **51** may be at least partially foldable and may include components similar to those included in the support structures **10**, **220**, **31**, or **41**.

[0083] As shown in FIG. **15**, the six frames **511** are stacked one above another in a vertical direction with corresponding frame members facing each other. The six frames **511** are separated and connected by the foldable supporting mechanisms **512**. Four foldable supporting mechanisms **512** are disposed between each pair of two adjacent frames **511**. The structure and components of the foldable supporting mechanisms **512** may be similar to the foldable supporting mechanisms **12** and/or **223** discussed above. In one embodiment, the foldable supporting mechanisms **512** may include sliding sleeves that may be similar to the sliding sleeves **123**, **123'**, and/or **2233** discussed above.

[0084] FIG. **16** illustrates an enlarged view of a portion of the liquid container **500** shown in FIG. **15**. FIG. **17** illustrates a regional broken-out sectional view of the portion of the liquid container **500** shown in FIG. **16** according to an exemplary disclosed embodiment. In the embodiment shown in FIGS. **16** and **17**, a linkage **513** included in one of the foldable supporting mechanisms **512** (such as the one located on the lowest frame **511**) may be connected to a corresponding frame member through a sliding track **514** rather than a sliding sleeve. The sliding track **514** may be disposed on one of the plurality of frames **511**, e.g., on a frame member of the lowest frame **511**. An end of the linkage **513** may be slidably disposed within or on the sliding track **514** in such a manner that the end of the linkage **513** may slide along the sliding track **514**. The end of the linkage **513** may also be connected to a drive unit **515**. It is understood that the number of the sliding tracks **514** may vary according to operational needs, and the foldable supporting mechanisms **512** may include any suitable number, e.g., one, two, three, four, etc., of sliding tracks **514**. The foldable supporting mechanisms **512** may include a combination of sliding tracks and sliding sleeves. For example, the foldable supporting mechanisms **512** may include one sliding track **514** disposed at the lowest frame **511**, and a plurality of sliding sleeves disposed on other suitable frames. The number of drive unit **515** may also vary in accordance with the number of sliding tracks and/or sliding sleeves.

[0085] The drive unit **515** shown in FIG. **16** may drive the linkage **513** to slide along the sliding track **514** relative to the corresponding frame **511**, so as to cause the liquid container **500** to expand or fold. When the liquid container **500** is in a folded state, storage and transportation of the liquid container **500** is facilitated and the cost associated with the storage and transportation is reduced.

[0086] FIG. **18** illustrates a perspective view of a liquid container **700** according to a sixth exemplary disclosed embodiment. The liquid container **700** may include components similar to those included in the liquid containers **100**, **200**, **300**, **400**, **500**, and/or the liquid container assembly **600**. The liquid container **700** may include a support structure **71** and a soft capsule **72** disposed within a space defined by the support structure **71** for storing liquid. The support structure **71** may include a plurality of, e.g., nine, frames **711**. It is understood that the support structure **71** may include any suitable number of frames **711**, e.g., more or less than nine. The support structure **71** may include a plurality of, e.g., thirty two, foldable supporting mechanisms **712**. It is understood that the support structure **71** may include any suitable number

of foldable supporting mechanisms **712**, e.g., more or less than thirty two. The support structure **71** may be at least partially foldable and may include components similar to those included in the support structures **10**, **220**, **31**, **41**, or **51**.

[0087] In the embodiment shown in FIG. **18**, the nine frames **711** are stacked one above another, with corresponding frame members facing each other. The nine frames **711** are separated and connected by the foldable supporting mechanisms **712**. Each of the foldable supporting mechanisms **712** connects corresponding frame members of a pair of two adjacent frames **711**. Each pair of two adjacent frames **711** are connected by four foldable supporting mechanisms **712**. It is understood that each pair of two adjacent frames **711** may be connected by any suitable number of foldable supporting mechanisms **712**, e.g., more or less than four.

[0088] The foldable supporting mechanisms **712** shown in FIG. **18** may include one or more sliding sleeves that may be similar to the sliding sleeves **123**, **123'**, and/or **2233** discussed above. Additionally or alternatively, the foldable supporting mechanisms **712** may include one or more sliding tracks that may be similar to the sliding track **514** discussed above. In some embodiments, the foldable supporting mechanisms **712** may include a combination of sliding sleeves and sliding tracks.

[0089] FIG. **19** illustrates an enlarged view of a portion of the liquid container **700** shown in FIG. **18**. FIG. **20** illustrates a regional broken-out sectional view of the portion of the liquid container **700** shown in FIG. **19** according to an exemplary disclosed embodiment. As shown in FIG. **19**, at least one of the foldable supporting mechanisms **712** may include a first linkage **713**, a second linkage **714**. Connection between the first and the second linkages **713** and **714** and the corresponding frame **711** may utilize a sliding track **717** rather than sliding sleeves. The sliding track **717** may be disposed on a frame member of a corresponding frame **711**. At least one of the first linkage **713** and the second linkage **714** may include an end connected with a roller **716** disposed within the sliding track **717**, as shown in FIGS. **19** and **20**. The first linkage **713** may include another end connected to the drive unit **715**. The drive unit **715** may drive the first linkage **713** to slide, through the roller **716**, within the sliding track **714** relative to the corresponding frame **711**, when the liquid container **700** is expanded or folded. When the liquid container **700** is folded, the storage and transportation of the liquid container **700** is facilitated and the cost associated with the storage and transportation is reduced.

[0090] Now refer to FIGS. **21-32**. FIG. **21** illustrates a perspective view of a liquid container **800** in a folded state according to a seventh exemplary disclosed embodiment. FIG. **22** illustrates a perspective view of the liquid container **800** in an expanded state. The liquid container **800** may include components similar to those included in the liquid containers **100**, **200**, **300**, **400**, **500**, the liquid container assembly **600**, and/or the liquid container **700**. As shown in FIG. **21**, the liquid container **800** may include a support structure **810** and a base support **880**. The base support **880** may be provided at a bottom portion of a plurality of frames **8111**. The base support **880** may include at least one receiving bucket **890** with a cylindrical shape disposed in the vertical direction. In the embodiment shown in FIG. **21**, the base support **880** includes four receiving buckets **890**. It is understood that the base support **880** may include any suitable number of receiving buckets **890**, e.g., one, two, three, etc. Each of the receiving buckets **890** may be a rigid container for storing a net **823** (an exemplary embodiment of the net **823** is shown in FIG. **27**) and a soft capsule **824** (an exemplary embodiment of the soft capsule **824** is shown in FIG. **28**). The total number of nets **823** or soft capsules **824** may be the same as the total number of the receiving buckets **890**. For example, in the embodiment shown in FIG. **21**, the liquid container **800** includes four nets **823** and four soft capsules **824**.

[0091] The soft capsule **824** shown in FIG. **28** may be at least partially stored within the receiving bucket **890**. The soft capsule **824** may include an opening at a top portion (similar to the embodiment shown in FIG. **3**). Circumferential portions of the top portion of the soft capsule **824** may be secured to a top portion of the receiving bucket **890** through any suitable mechanism, e.g., clamp, screw, elastic band, etc. The soft capsule **824** may include a ring structure **850** (shown in FIG. **22**), which may secure the circumferential portions of the top portion of the soft capsule **824** to a top portion of the support structure **810**, such as, for example, a top frame **8111**, by press-fitting, clamping, or any other suitable means. The ring structure **850** may also secure circumferential portions of a top portion of the net **823** to a top portion of the support structure **810**, such as, for example, a top frame **8111**. The ring structure **850** may have a shape that matches the shape of the opening of the soft capsule **824** or the opening of the receiving bucket **890**.

[0092] The base support **880** shown in FIG. **21** may include at least one hose **870** disposed at a bottom portion of the base support **880**. The hose **870** may be connected with the soft capsule **824** disposed within the receiving bucket **890**. The soft capsule **824** may include at least one inlet for allowing a flow of liquid into the soft capsule **824**. The hose **870** may be connected with the at least one inlet. The hose **870** may include a fluid height measuring device configured to measure a height of liquid contained in the soft capsule **824**. In order to facilitate deposition of solid matters, such as sand, dirt, rocks, at the bottom portion of the soft capsule **824**, the bottom of the receiving bucket **890** may have an upside down cone shape, such as a shape similar to that of a funnel.

[0093] The net **823** shown in FIG. **27** may include a shape substantially matching that of an inner wall of the support structure **810**. For example, in one embodiment, the shape of the net **823** and that of the inner wall of the support structure **810** may both be cylindrical. The net **823** may include, at an outer surface, one or more flexible strips **860** (shown in FIG. **22**). The flexible strips **860** may help the net **823** to stay within the space defined by the support structure **810**. When the net **823** is being folded in the vertical direction, e.g., when the liquid container **800** is being folded, the flexible strip **860** may help the folded net **823** stay within the space defined by the support structure **810**, thereby preventing a portion of the net **823** being caught between the gap of a pair of two adjacent frames **8111** when the pair of two adjacent frames **8111** are brought closer to each other. The soft capsule **824** may be disposed within the net **823**, which may restrain the radial expansion of the soft capsule **824** when the soft capsule **824** is filled with liquid. Accordingly, the forces exerted by the expanded soft capsule **824** on the support structure **810** may be reduced, which may in turn reduce the deformation of the support structure **810**, thereby prolonging the life of the support structure **810** and enhancing the safety and reliability of the liquid container **800**.

[0094] FIG. **23** illustrates a perspective view of the liquid container **800** with the support structure **810** in a folded state, and FIG. **24** illustrates a perspective view of the liquid con-

tainer **800** with the support structure **810** in an expanded state. The support structure **810** may include a foldable supporting mechanism **812**. The support structure **810** may be at least partially foldable and may include components similar to those included in the support structures **10**, **220**, **31**, **41**, **51**, or **71**. The foldable supporting mechanism **812** may include components similar to those included in the foldable supporting mechanisms **12**, **12'**, **223**, **312**, **512**, and/or **712**.

[0095] The liquid container **800** may include a locking mechanism **821**, as shown in FIG. **23**. The locking mechanism **821** may be configured to lock/unlock the position of the foldable supporting mechanism **812** relative to the frames **8111**. When the position of the foldable supporting mechanism **812** is locked by the locking mechanism **821**, the support structure **810** may be maintained in an expanded state. The locking mechanism **821** may include a position locking bar **8211** and a pulling link **8212**.

[0096] FIG. **25** illustrates an enlarged view of the frame **8111** and the locking mechanism **821** of the liquid container **800**. The position locking bar **8211** may be connected with at least one of the frames **8111** through a fixing shaft or rod **8411**. The foldable supporting mechanism **812** may include a linkage **8311**. When the foldable supporting mechanism **812** is in an expanded state, a user may adjust the position of the position locking bar **8211** such that a moveable end of the position locking bar **8211** is positioned at a first position within a moving path or range of an end of the linkage **8311** along the at least one frames **8111**. When the moveable end of the position locking bar **8211** is positioned at the first position, the moveable end of the position locking bar **8211** may block or limit the movement of the linkage **8311**, thereby locking the position of the foldable supporting mechanism **812** in a desired expanded, open state. When the moveable end of the position locking bar **8211** is positioned at a second position out of the moving range or path of the end of the linkage **8311**, the movement of the linkage **8311** is unblocked or allowed.

[0097] Similar to the embodiments shown in FIGS. **2** and **16**, the linkage **8311** may be connected to the at least one of the frames **8111** through a sliding sleeve that may be similar to the sliding sleeve **123**, or through a sliding track that may be similar to the sliding track **514**, or a combination of both a sliding sleeve and a sliding track. When the linkage **8311** is connected with the at least one of the frames **8111** through a sliding sleeve that may be similar to the sliding sleeve **123**, the moveable end of the position locking bar **8211** may be rotated to be at a locking position within the moving range of the sliding sleeve. The moveable end may block or limit the movement of the sliding sleeve and the linkage **8311**. Accordingly, the position locking bar **8211** may lock the position of the foldable supporting mechanism **812** relative to the at least one of the frames **8111**, and the liquid container **800** may be maintained in an expanded state.

[0098] When the foldable supporting mechanism **812** is to be folded, the moveable end of the position locking bar **8211** may be rotated to an unlocking position away from or out of the moving range or moving path of the sliding sleeve, such that the moveable end of the position locking bar **8211** does not interfere with the movement of the sliding sleeve and the linkage **8311**. Accordingly, the sliding sleeve and the linkage **8311** may be moved along the at least one of the frames **8111**, thereby unlocking the position of the foldable supporting mechanism **812**, and enabling the support structure **810** to be folded.

[0099] In some embodiments, the foldable supporting mechanism **812** may be connected with the at least one of the frames **8111** through a sliding track **8514** that may be similar to the sliding track **514**, as shown in FIG. **25**. In such embodiments, the moveable end of the position locking bar **8211** may be rotated such that the moveable end is within the moving range of a sliding part (e.g., a roller that may be similar to the roller **716** shown in FIG. **19**) of the linkage **8311** within the sliding track **8514**. In order to maintain the foldable supporting mechanism **812** in an expanded state, after the moveable end of the position locking bar **8211** is rotated to be the locking position within the moving range of the sliding part of the linkage **8311**, the moveable end of the position locking bar **8211** is positioned to contact the sliding part of the linkage **8311**, as shown in FIG. **26**, thereby blocking the movement of the linkage **8311**.

[0100] As shown in FIG. **25**, the pulling link **8212** that is connected to the position locking bar **8211** may be used to help cause rotation of the position locking bar **8211** to realize position locking and unlocking of the foldable supporting mechanism **812**. For example, after the liquid container **800** has been expanded to a working open state, the pulling link **8212** may be pulled or pushed to cause the position locking bar **8211** to rotate until the moveable end of the position locking bar **8211** is moved to the locking position within the moving range of the moving part of the linkage **8311**. The moveable end of the position locking bar **8211** may then be positioned to block the movement of the linkage **8311** along the at least one of the frames **8111**, thereby locking the position of the foldable supporting mechanism **812** relative to the at least one of the frames **8111**. When the liquid container **800** needs to be folded, e.g., for storage or transportation, the pulling link **8212** may be pulled or pushed to cause the position locking bar **8211** to rotate such that the moveable end of the position locking bar **8211** is moved to the unlocking position away from or out of the moving path or moving range of the moving part of the linkage **8311**. Accordingly, the moveable end of the position locking bar **8211** does not interfere with the movement of the linkage **8311**, thereby unlocking the position of the foldable supporting mechanism **812**. The foldable supporting mechanism **812** then may be folded for storage or transportation.

[0101] The liquid container **800** shown in FIG. **22** may include at least one first connector **861** for connecting various parts of the support structure **810**. For example, the liquid container **800** may be an assembly of a plurality of (e.g., four) liquid containers connected side by side by the at least one first connector **861**, which may include any suitable connectors for connecting parts of the support structure **810**, such as, for example, screws, brackets, clamps, bolts, nuts, chains, etc. For example, in some embodiments, the at least one first connector **861** may include components similar to the one or more connectors **61** and/or the at least one screw **62** discussed above in connection with FIGS. **12-14**.

[0102] FIG. **27** illustrates the net **823** according to an exemplary disclosed embodiment. The net **823** may be similar to the net **23** discussed above in connection with FIG. **5**. FIG. **28** illustrates the soft capsule **824** according to an exemplary disclosed embodiment. The soft capsule **824** may be similar to the soft capsule **20** discussed above in connection with FIG. **3**.

[0103] FIG. **29** illustrates a bottom view of the liquid container **800** according to an exemplary disclosed embodiment. The hose **870** may be provided at a bottom portion of the base

support **880**. FIG. **30** illustrates a liquid container assembly **900** including two liquid containers **800** connected together according to an exemplary disclosed embodiment. The liquid containers **800** may be connected by the at least one first connector **861** and at least one second connector **862**. The at least one first connector **861** may be configured for connecting top portions of the liquid containers **800**, and the at least one second connector **862** may be configured for connecting bottom portions of the liquid containers **800**. The at least one second connector **862** may include any suitable connectors, such as, for example, screws, brackets, clamps, bolts, nuts, chains, etc.

[0104] FIG. **31** illustrates a top view of the liquid container assembly **900** according to an exemplary disclosed embodiment, and FIG. **32** illustrates an enlarged view of a bottom portion of the liquid container assembly **900** showing an exemplary embodiment of the at least one second connector **862**. The at least one second connector **862** may include plates and screws, or any other suitable securing means, for securely connecting the support structures **810** of the two liquid containers **800**.

INDUSTRIAL APPLICABILITY

[0105] The disclosed liquid container may be implemented in a wide range of applications. For example, in some embodiments, the disclosed liquid container may be configured for storing liquid in a drilling operation. In some embodiments, the disclosed liquid container may be configured for storing water or other fluid for agriculture irrigation, human consumption, or fire fighting purposes. In some embodiments, the disclosed liquid container may be used for storing liquid/fluid other than water, such as oil, gas, alcohol, industrial waste, or industrial chemicals. Materials for making the disclosed soft capsule may be selected to have sufficient resistance to potential erosion caused by the liquid contained in the soft capsule. When the foldable liquid container is in use, it can be expanded to store fluid. When the foldable liquid container is not in use, it can be folded to reduce the overall size. Folded liquid container facilitates storage and transportation, and significantly reduces the cost associated with the storage, transportation, and maintenance.

[0106] Although, for purposes of this disclosure, certain disclosed features are shown in some figures but not in others, it is contemplated that, to the extent possible, the various features disclosed herein may be implemented by each of the disclosed, exemplary embodiments. Accordingly, differing features disclosed herein are not to be interpreted as being mutually exclusive to different embodiments unless explicitly specified herein or such mutual exclusivity is readily understood, by one of ordinary skill in the art, to be inherent in view of the nature of the given features.

[0107] While the presently disclosed device have been described with reference to the specific embodiments thereof, it should be understood by those skilled in the art that various changes may be made and equivalents may be substituted without departing from the scope of the disclosure. In addition, many modifications may be made to adapt a particular situation, material, composition of matter, process, process step, or steps to the objective, spirit, and scope of the present invention. Other embodiments of the invention will be apparent to those skilled in the art from consideration of the specification and practice of the invention disclosed herein. It is intended that the specification and examples be considered as exemplary only.

What is claimed is:

1. A liquid container, comprising:
- a foldable support structure; and
- a capsule connected to the foldable support structure and configurable for storing a liquid;
- wherein the foldable support structure comprises:
  - a first frame;
  - a second frame having substantially the same shape as the first frame and stacked above the first frame; and
  - a foldable supporting mechanism disposed between the first frame and the second frame and connecting the first frame and the second frame; and
- wherein the foldable support structure is moveable between a closed position in which the first and second frames are positioned substantially next to each other, and an open position in which the first and second frames are separated and support the capsule disposed in a space defined therebetween.

2. The liquid container of claim **1**, wherein the foldable support structure comprises at least one sliding sleeve disposed on a frame member comprising part of at least one of the first frame or the second frame, the sliding sleeve being slidable along the frame member as the foldable support structure is moved between the open and closed positions.

3. The liquid container of claim **2**, wherein the foldable support structure further comprises:
- at least one locking component associated with the at least one sliding sleeve and operable to block or allow movement of the at least one sliding sleeve.

4. The liquid container of claim **2**, wherein the foldable supporting mechanism comprises:
- a first linkage; and
- a second linkage cross connected with the first linkage,
- wherein at least one of the first linkage or the second linkage is connected with the at least one sliding sleeve.

5. The liquid container of claim **1**, wherein the capsule is made of a soft or flexible material and is configured to be expandable and foldable.

6. The liquid container of claim **1**, wherein the capsule comprises:
- an opening portion configured to be secured to a portion of the foldable support structure; and
- a pad disposed at a bottom portion of the capsule.

7. A liquid container, comprising:
- a foldable support structure;
- a capsule; and
- a net;
- wherein the foldable support structure is moveable between a closed position and an open position to support the capsule disposed in a space defined therein, and the net is disposed between the capsule and the foldable support structure.

8. The liquid container of claim **7**, the foldable support structure comprising:
- at least two frames; and
- a foldable supporting mechanism disposed between the at least two frames.

9. The liquid container of claim **8**, wherein the foldable supporting mechanism further comprises:
- at least one sliding sleeve disposed on a frame member comprising part of at least one of the at least two frames, the sliding sleeve being slidable along the frame member as the foldable support structure is moved between the open and closed positions.

10. The liquid container of claim **9**, wherein the foldable supporting mechanism further comprises:
a first linkage; and
a second linkage cross connected with the first linkage,
wherein at least one of the first linkage or the second linkage is connected with the at least one sliding sleeve.

11. The liquid container of claim **10**, wherein the foldable supporting mechanism further comprises:
a drive unit connected with at least one of the first linkage, the second linkage, or the at least one sliding sleeve.

12. The liquid container of claim **7**, wherein the foldable support structure comprises at least two frames, each having a shape selected from the group consisting of a rectangle, a square, a pentagon, a hexagon, and a circle.

13. A liquid container, comprising:
a foldable support structure defining a plurality of divided spaces; and
a plurality of capsules, each capsule being disposed within one of the plurality of divided spaces defined by the foldable support structure, and being configured for storing a liquid.

14. The liquid container of claim **13**, wherein the foldable support structure comprises a plurality of foldable support structures connected together by at least one connector.

15. The liquid container of claim **14**, wherein the at least one connector comprises at least one of a connecting bracket and a screw.

16. A liquid container, comprising:
a foldable support structure;
a capsule disposed within a space defined by the foldable support structure and configured for storing a liquid;
at least two frames; and
a foldable supporting mechanism disposed between the at least two frames,
wherein the foldable supporting mechanism includes at least one linkage having an end slidably disposed within a sliding track on one of the at least two frames.

17. The liquid container of claim **16**, further comprising:
a drive unit connected with the end of the at least one linkage,
wherein the end of the at least one linkage is configured to be moveable along the sliding track when driven by the drive unit.

18. A liquid container, comprising:
a foldable support structure;
a capsule disposed within a space defined by the foldable support structure and configured for storing a liquid;
at least two frames; and
a foldable supporting mechanism disposed between the at least two frames,
wherein the foldable supporting mechanism includes at least one linkage having a roller disposed within a sliding track on one of the at least two frames.

19. A liquid container, comprising:
a foldable support structure including a plurality of receiving containers; and
a plurality of capsules, each capsule being at least partially disposed within one of the plurality of receiving containers, and being configured for storing a liquid.

20. The liquid container of claim **19**, wherein the plurality of receiving containers are rigid containers.

21. The liquid container of claim **20**, wherein each of the plurality of receiving containers has a bottom portion of a cone shape.

22. The liquid container of claim **19**, further comprising:
a base support; and
a hose provided at the base support and connected with an inlet of the plurality of soft capsules.

23. The liquid container of claim **19**, further comprising:
a ring structure configured to secure a top portion of each of the plurality of soft capsules to the foldable support structure.

24. The liquid container of claim **23**, further comprising:
a net disposed between the plurality of soft capsules and the foldable support structure, wherein
the ring structure is further configured to secure a top portion of the net to the foldable support structure.

25. The liquid container of claim **19**, wherein the foldable support structure comprises:
at least two frames; and
a foldable supporting mechanism disposed between the at least two frames.

26. The liquid container of claim **25**, wherein the foldable support structure further comprises:
a locking mechanism configured to limit a position of the foldable supporting mechanism relative to the at least two frames.

27. The liquid container of claim **26**, wherein the locking mechanism comprises:
a position locking bar; and
a pulling link connected with the position locking bar and configured to cause rotation of the position locking bar.

28. The liquid container of claim **27**, wherein the foldable support structure further comprises:
at least one of a sliding sleeve or a sliding track connected with a linkage of the foldable supporting mechanism, wherein
the position locking bar is configured to be rotated by the pulling link so as to move an end of the position locking bar between a first position within a moving range of the linkage to block a movement of the linkage, and a second position out of the moving range of the linkage to allow a movement of the linkage.

29. The liquid container of claim **19**, wherein the foldable support structure comprises a first foldable support structure and a second foldable support structure connected with the first foldable support structure by one or more connectors.

* * * * *