US 20020043534A1

(19) **United States**

(12) **Patent Application Publication** (10) **Pub. No.: US 2002/0043534 A1**

Uke (43) **Pub. Date: Apr. 18, 2002**

(54) **SHOCK-RESISTANT AND ENVIRONMENTALLY SEALED CONTAINER WITH PRESSURE EQUALIZATION**

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(21) Appl. No.: **09/911,928**

(22) Filed: **Jul. 23, 2001**

Related U.S. Application Data

(63) Continuation-in-part of application No. 09/689,001, filed on Oct. 12, 2000.

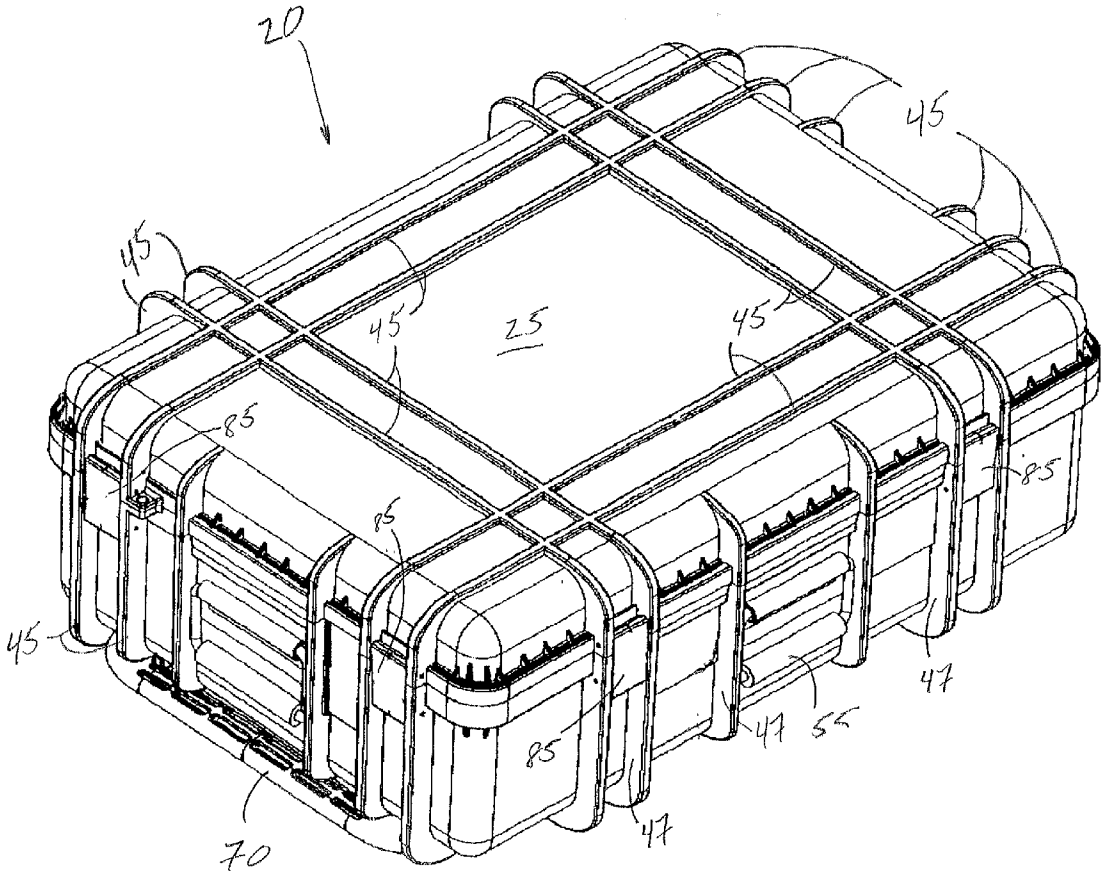
Publication Classification

(51) **Int. Cl.**[7] **B65D 6/28**; B65D 8/18

(52) **U.S. Cl.** **220/4.21**

(57) **ABSTRACT**

A shock-resistant and environmentally sealed container with pressure equalization is provided. A latch is pivotally coupled to the container and has an open position and a closed position. An air passageway is provided that permits air to pass between the interior of the container and the surrounding atmosphere. Several different elements are disclosed that are positioned in the air passageway. These elements are designed to cooperate with the latch so that when the latch is in the closed position, the element seals the air passageway and when the latch is in the open position, air is allowed to pass through the air passageway and equalize any air pressure differentials.



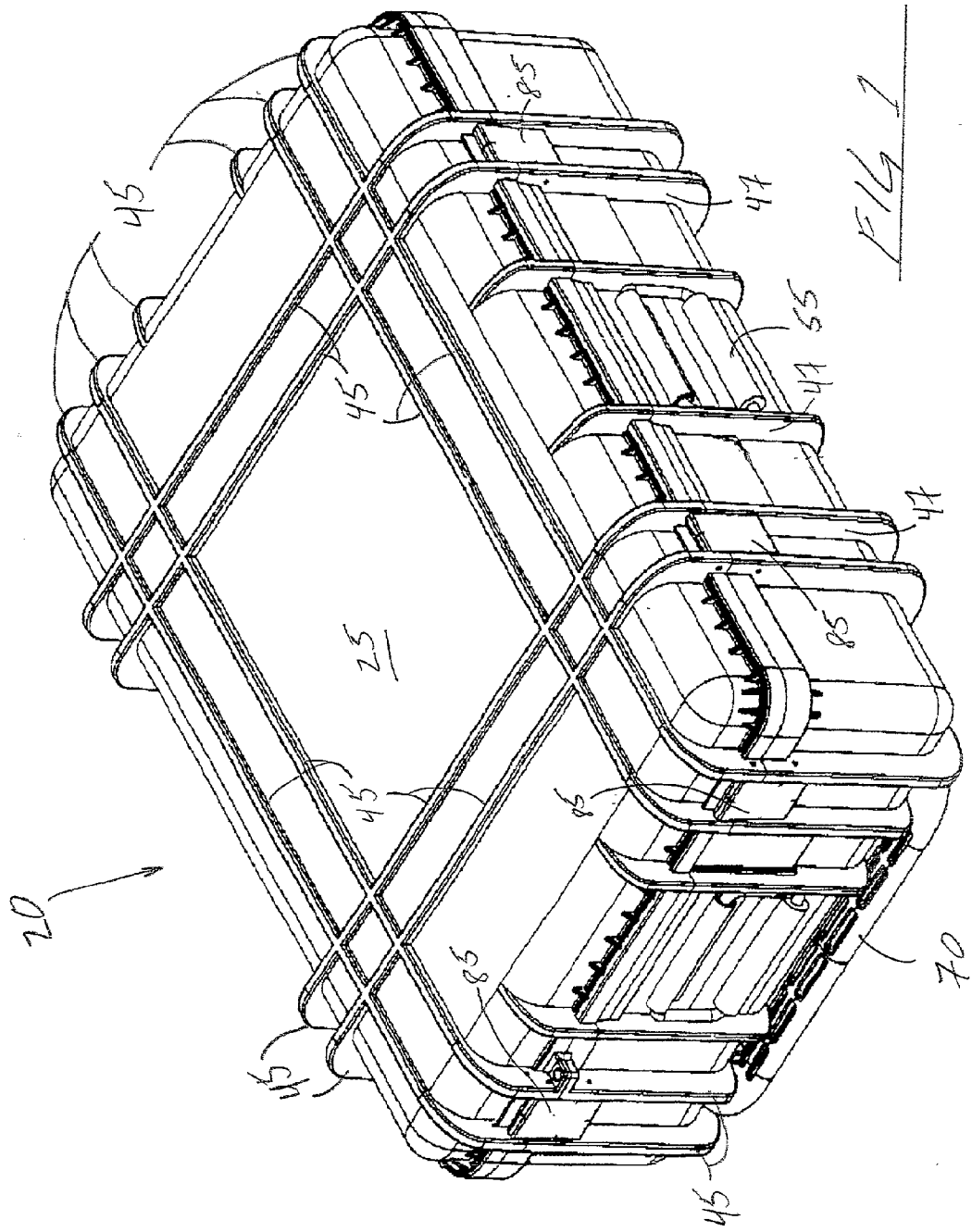


FIG 1
20
25
45
47
55
85
70

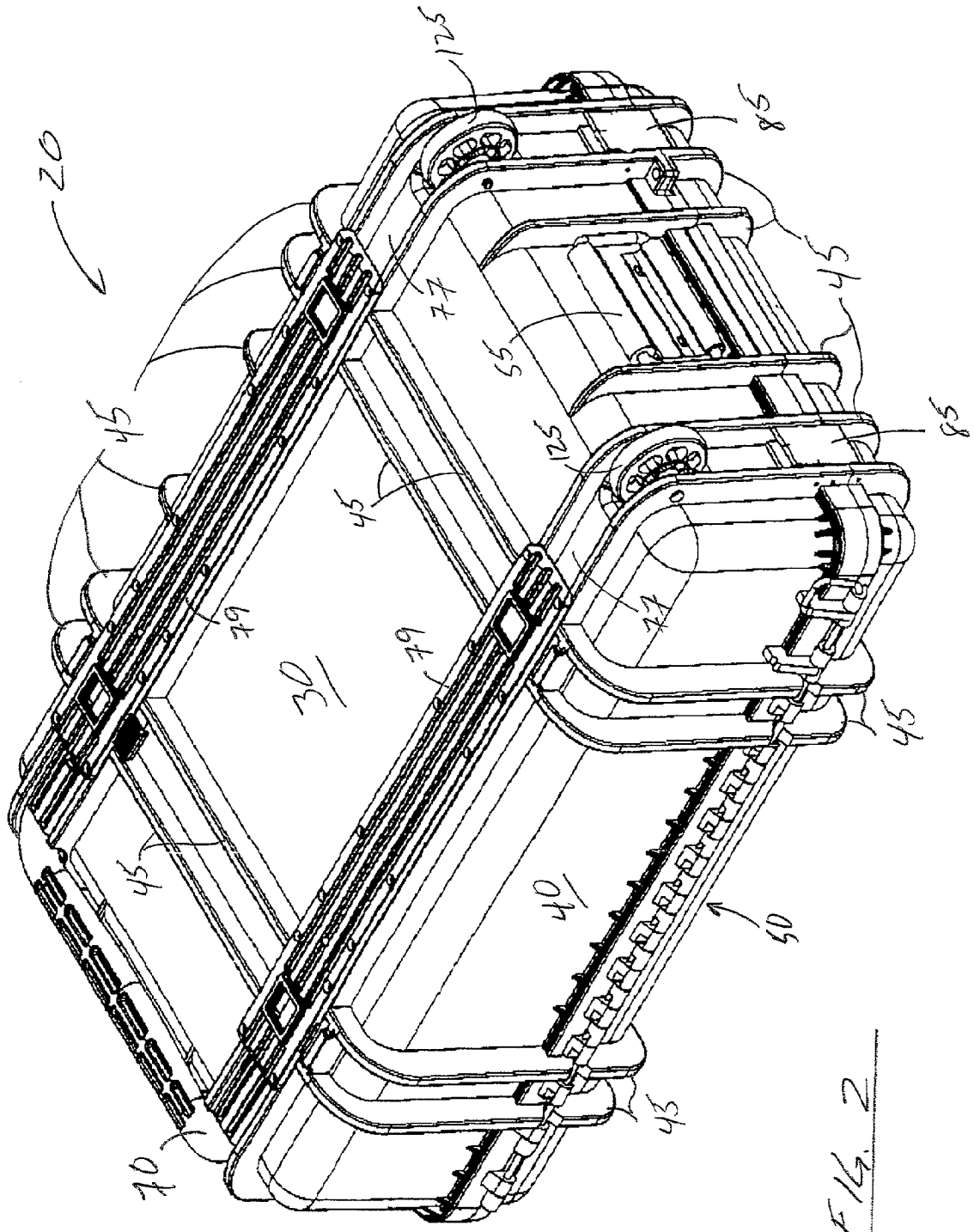


FIG. 2

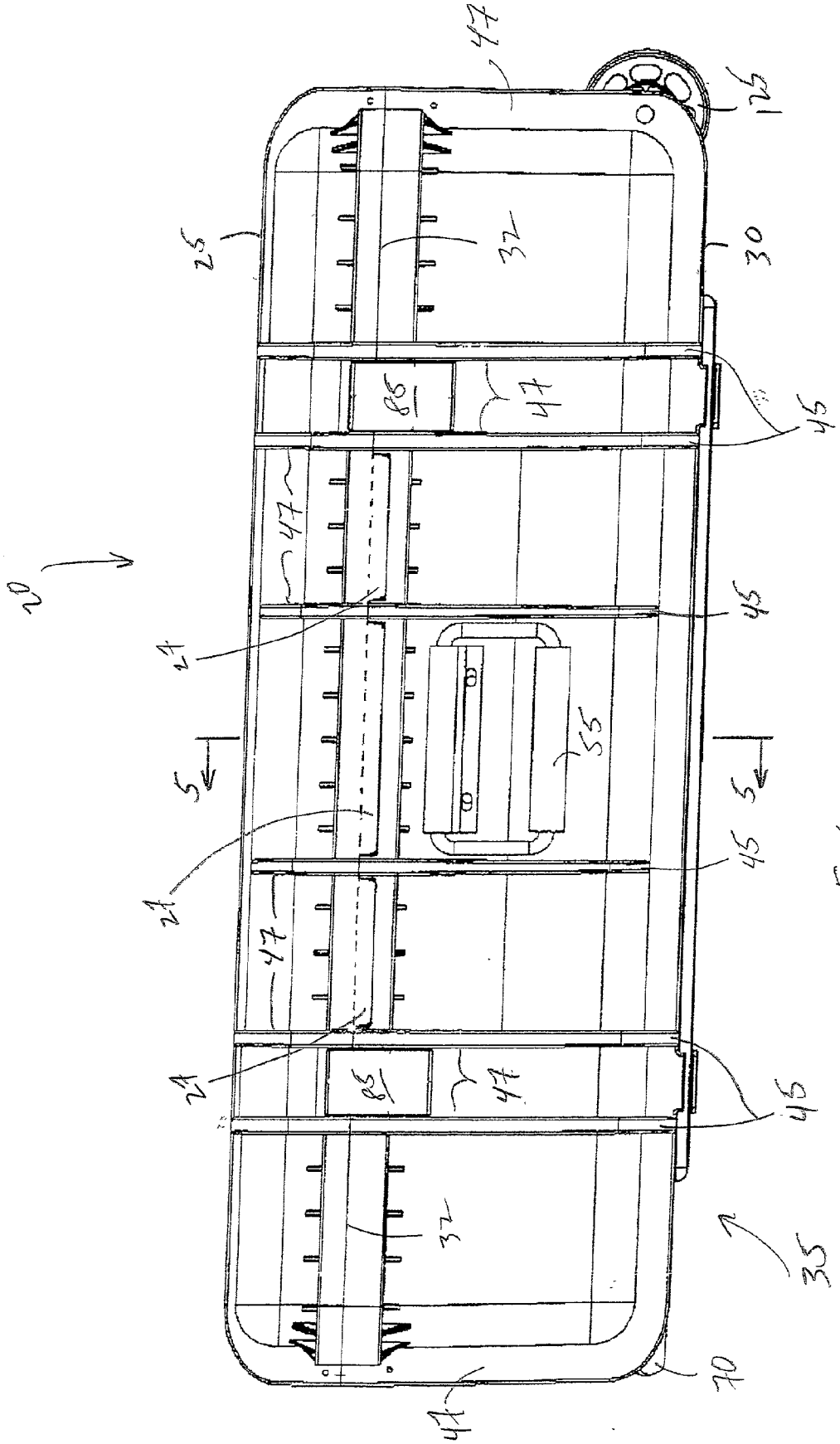

47
125
25
37
30
85
47
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Fig. 3

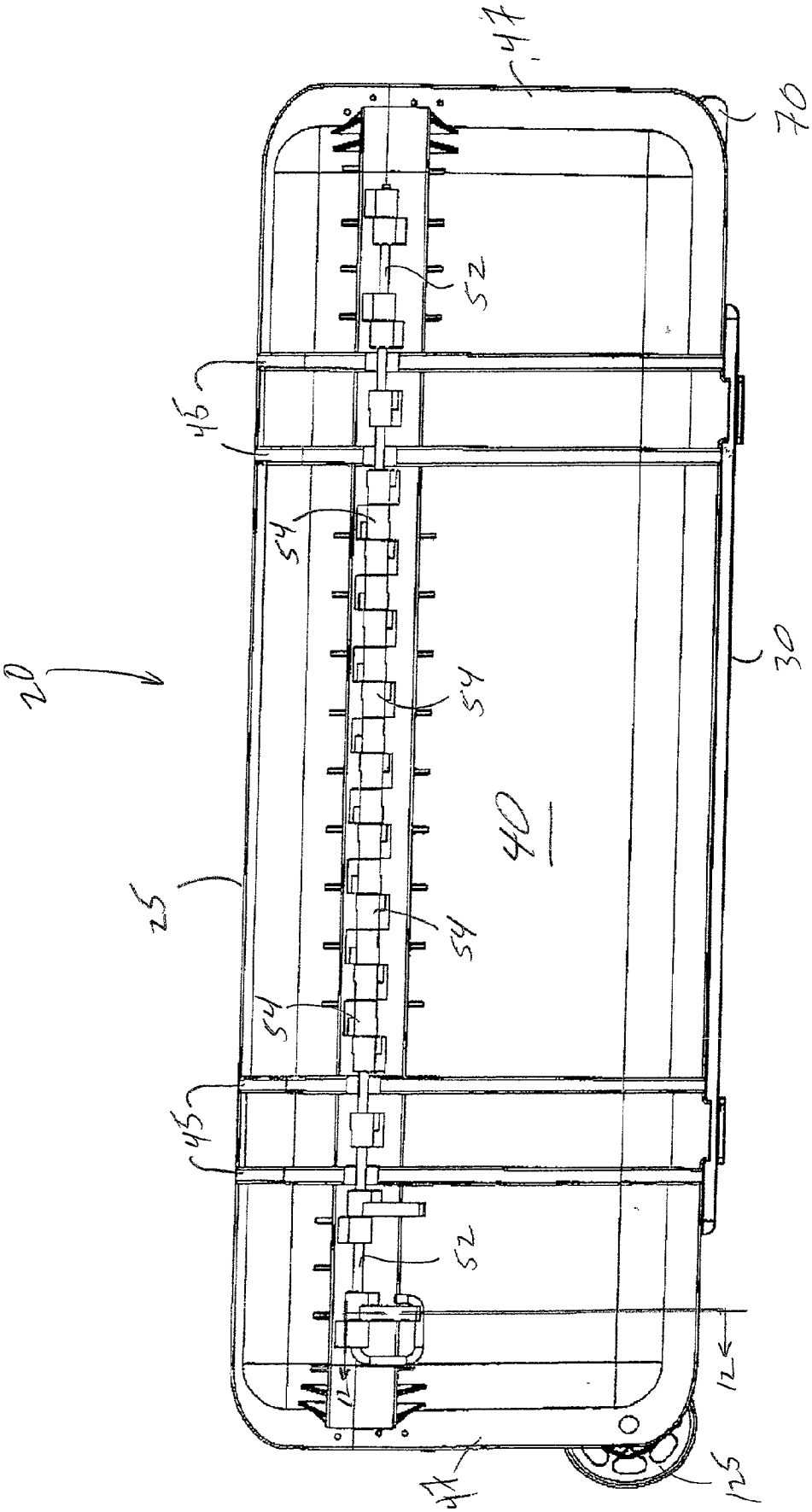

FIG. 4

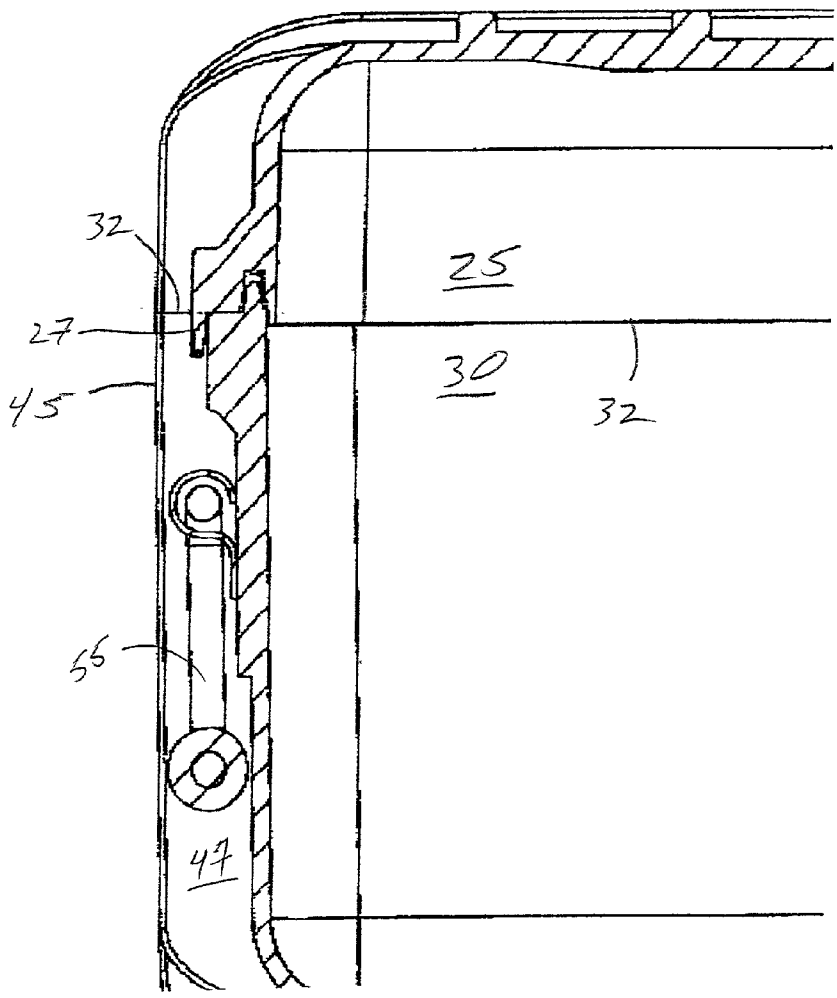

FIG. 5

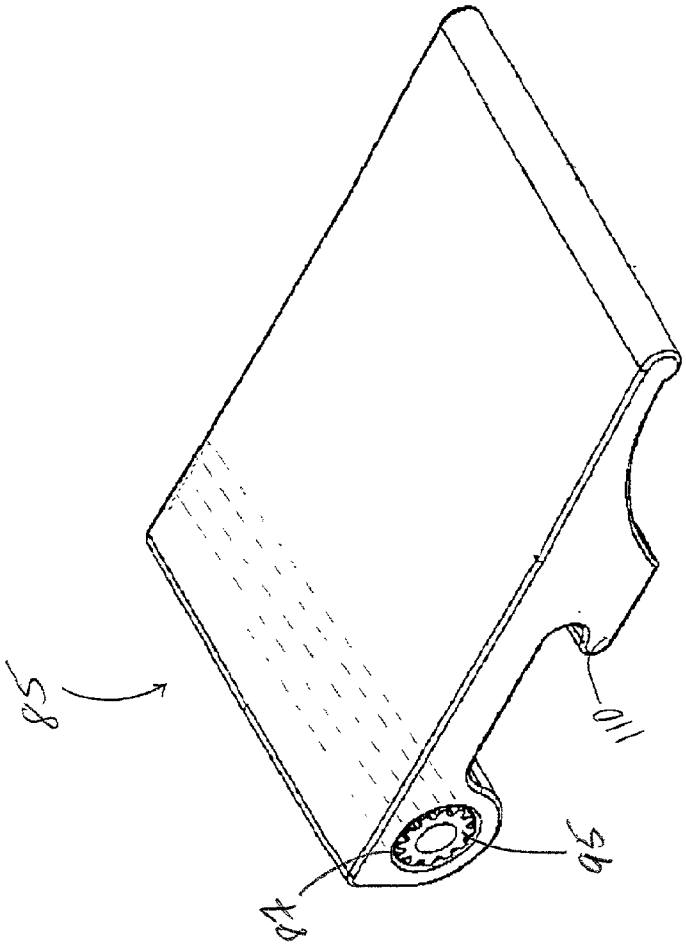

FIG. 6

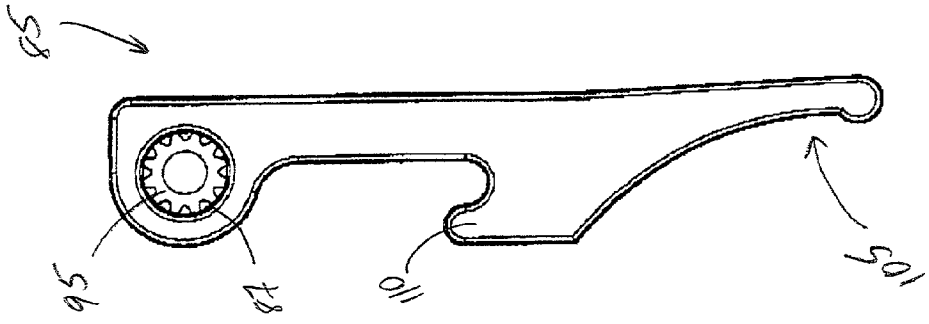

FIG. 7

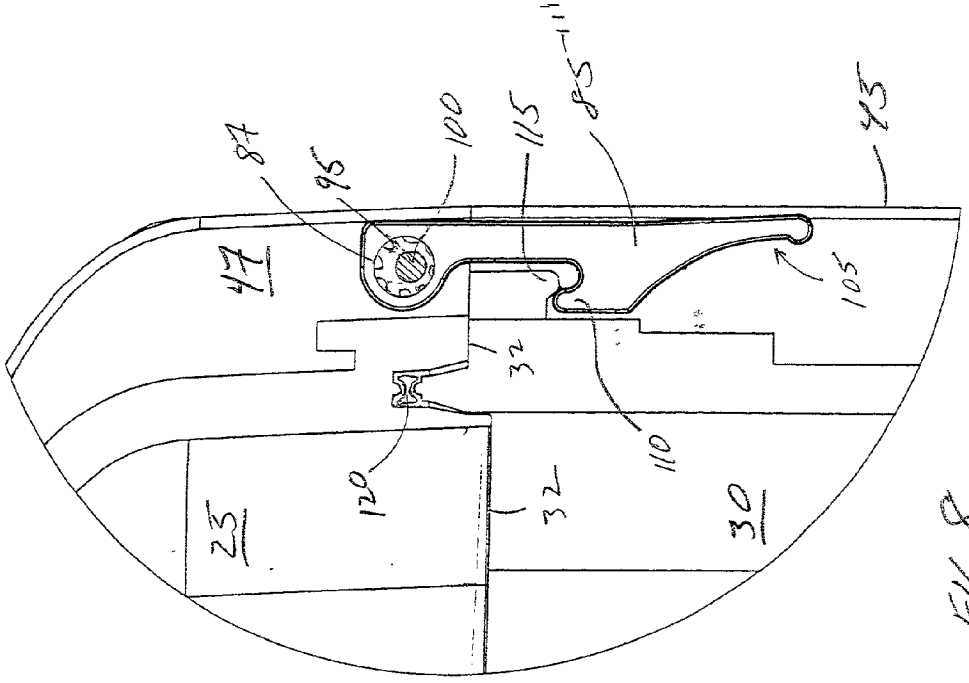

FIG. 8

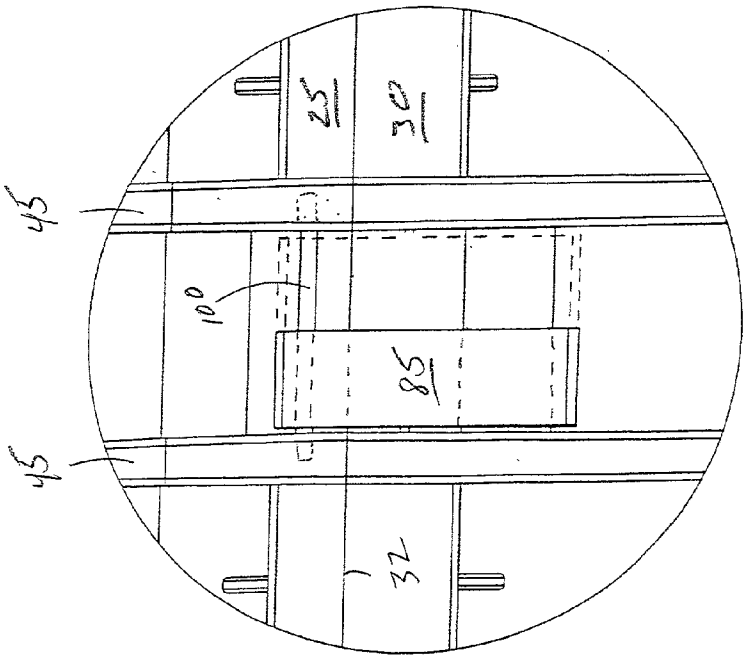

FIG. 9

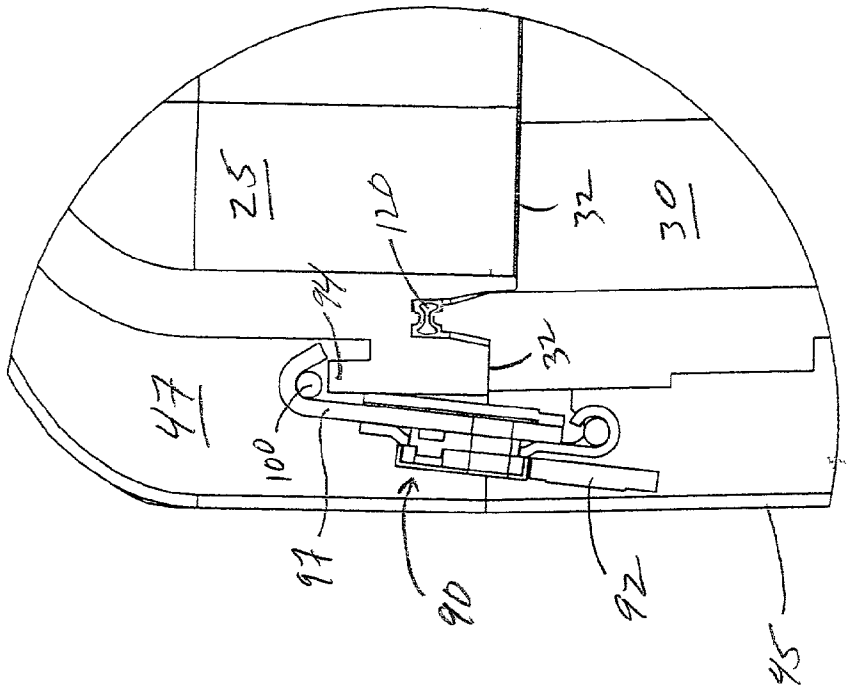

FIG. 10

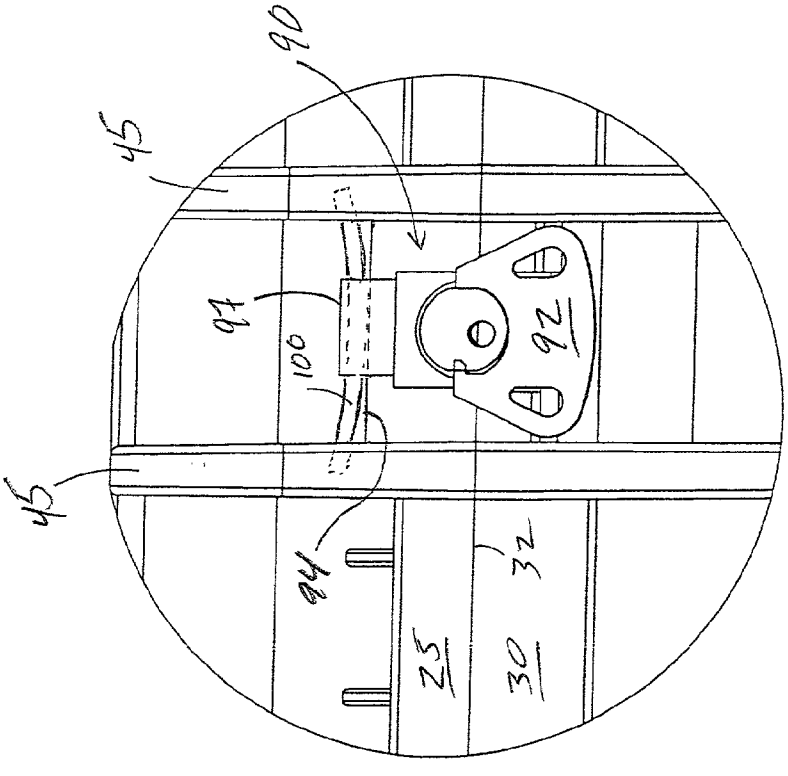

FIG. 11

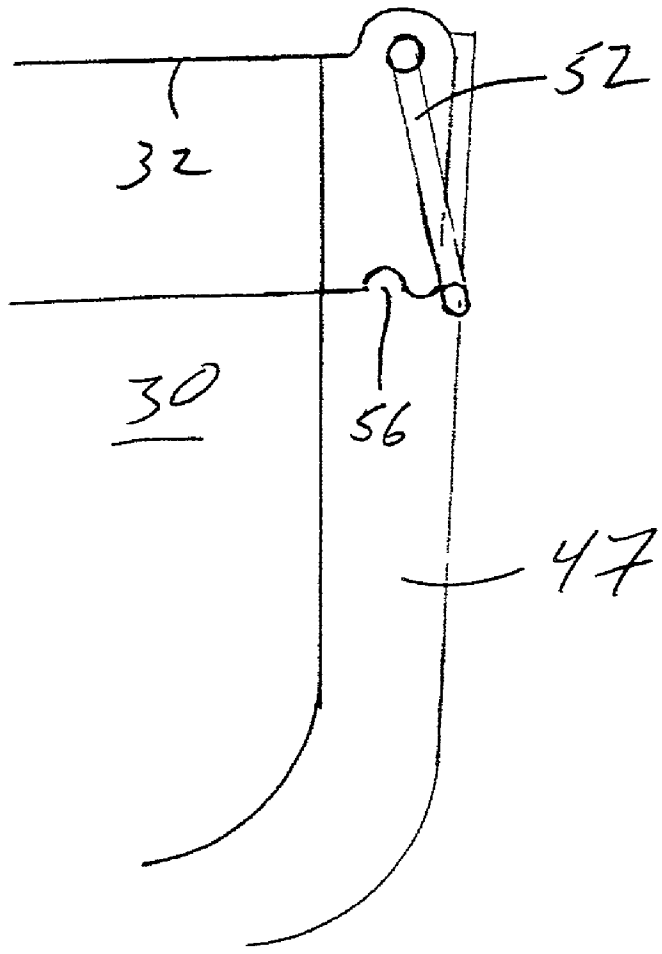

FIG. 12

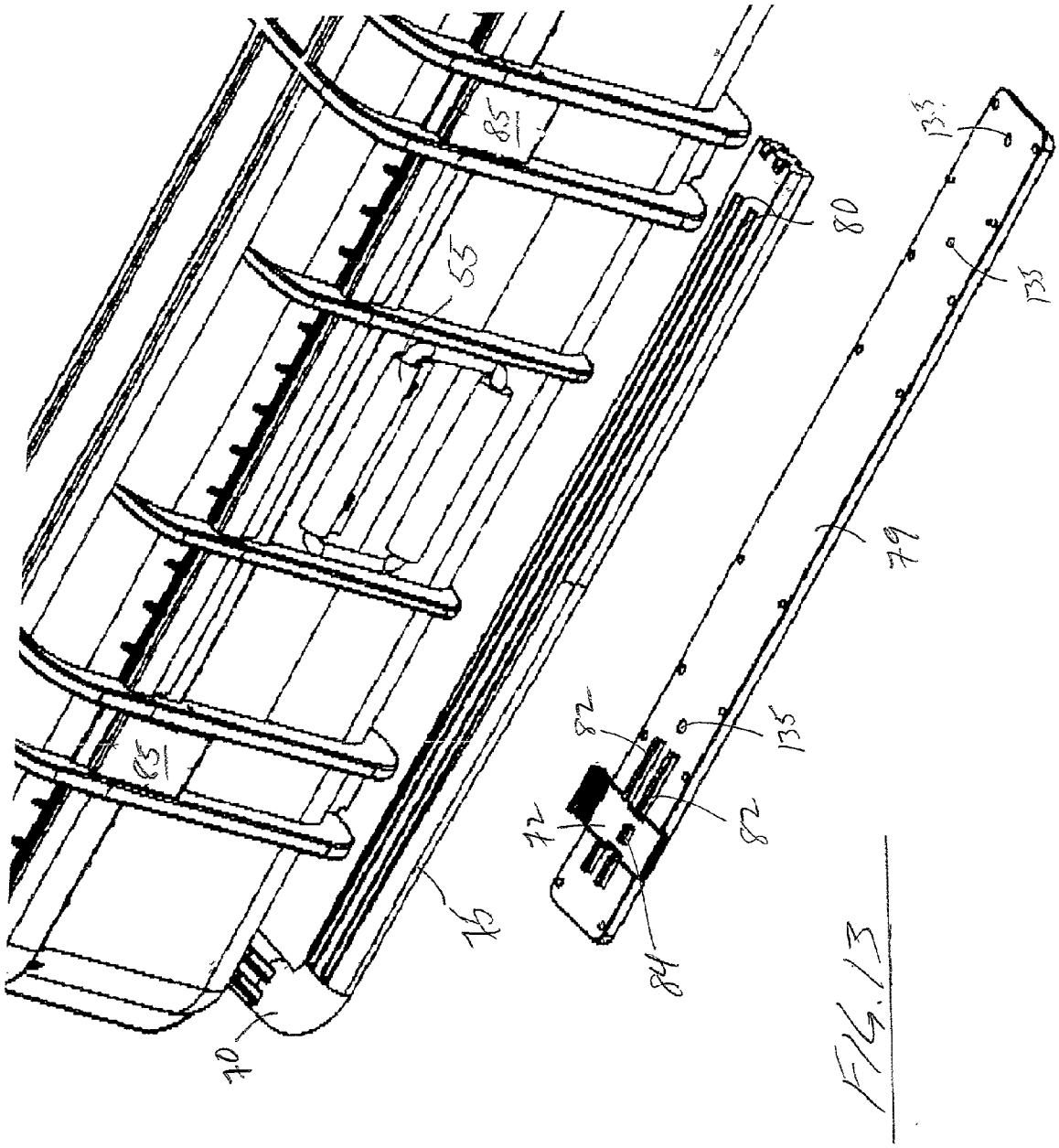

FIG. 13

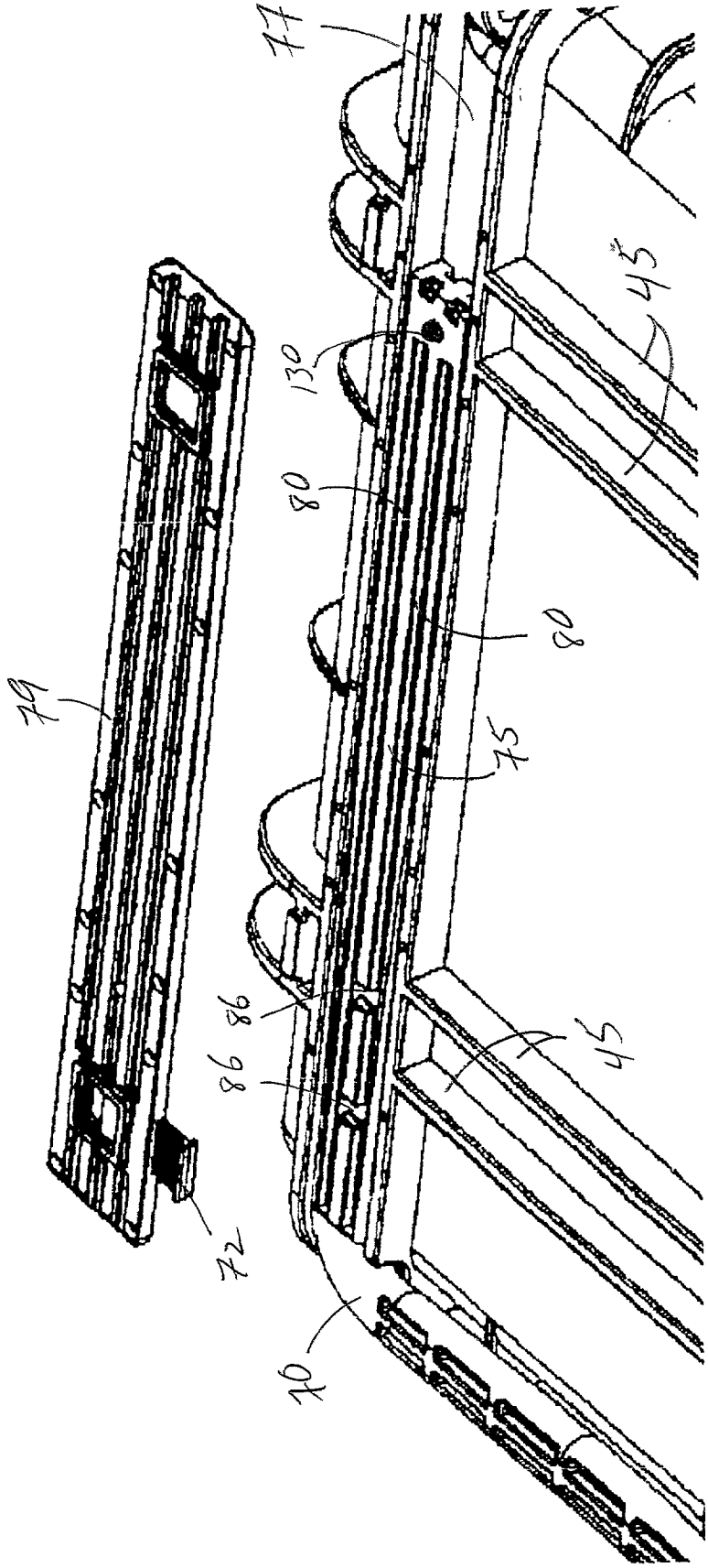

FIG. 14

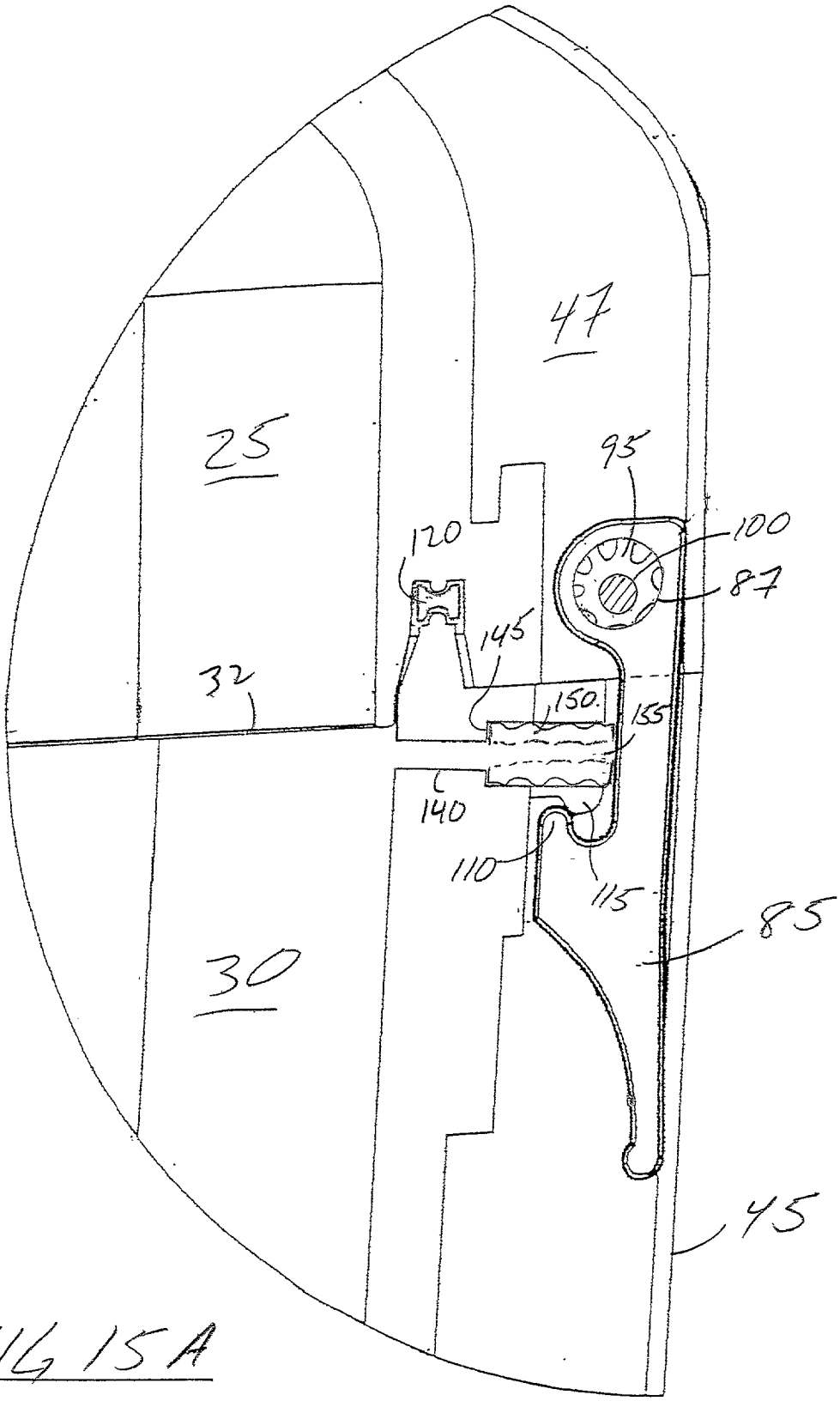

FIG 15A

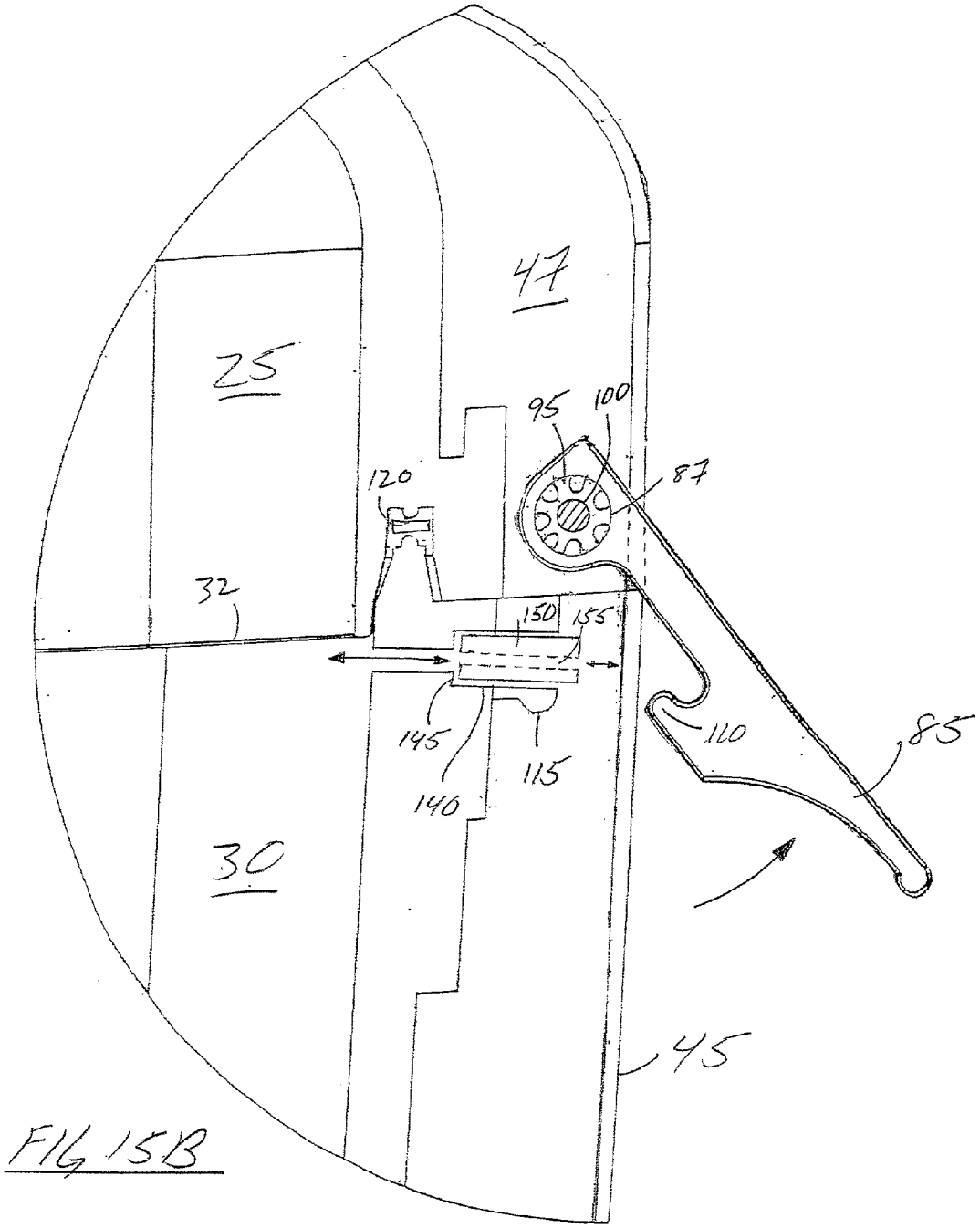

FIG 15B

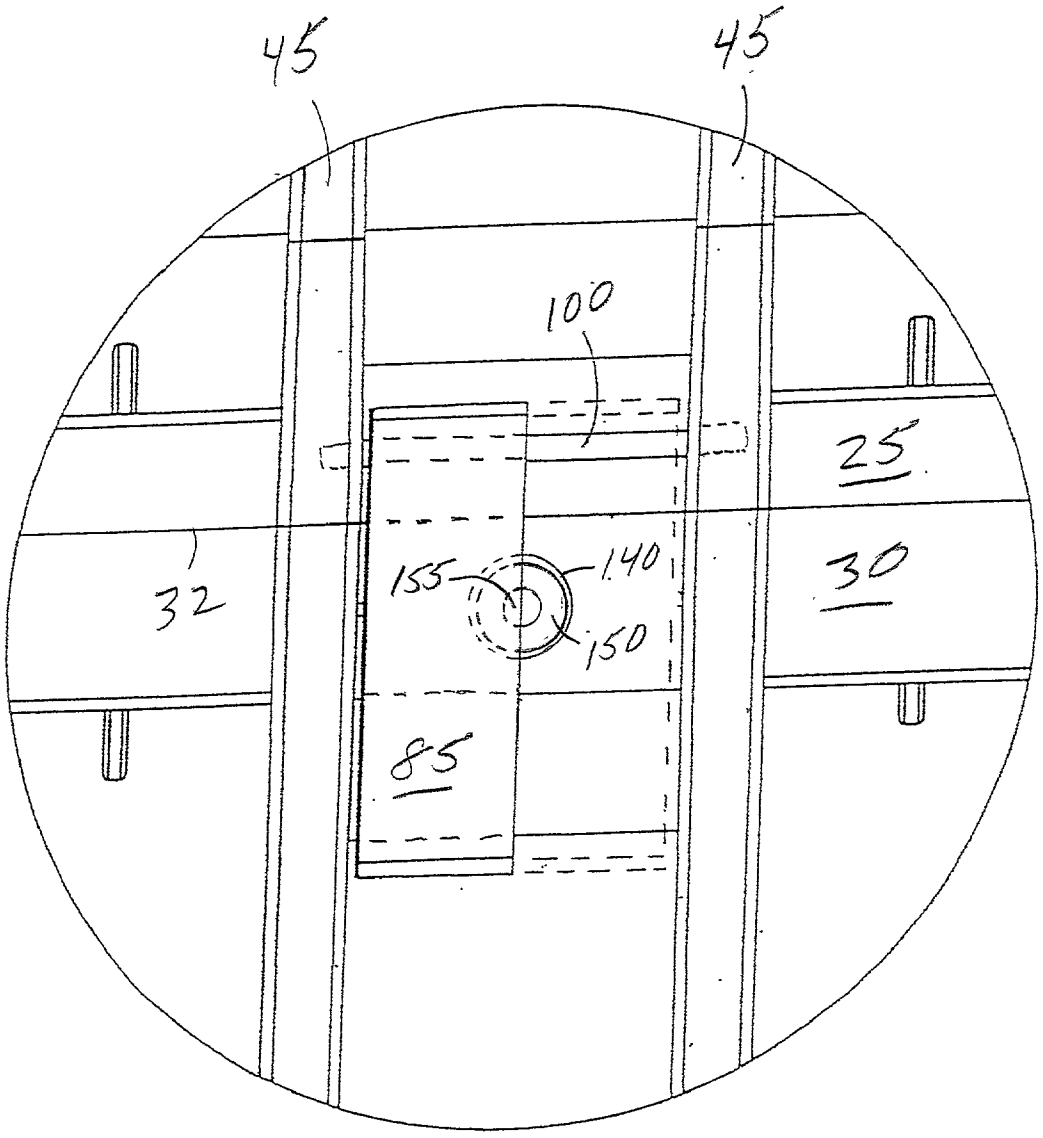

FIG. 16

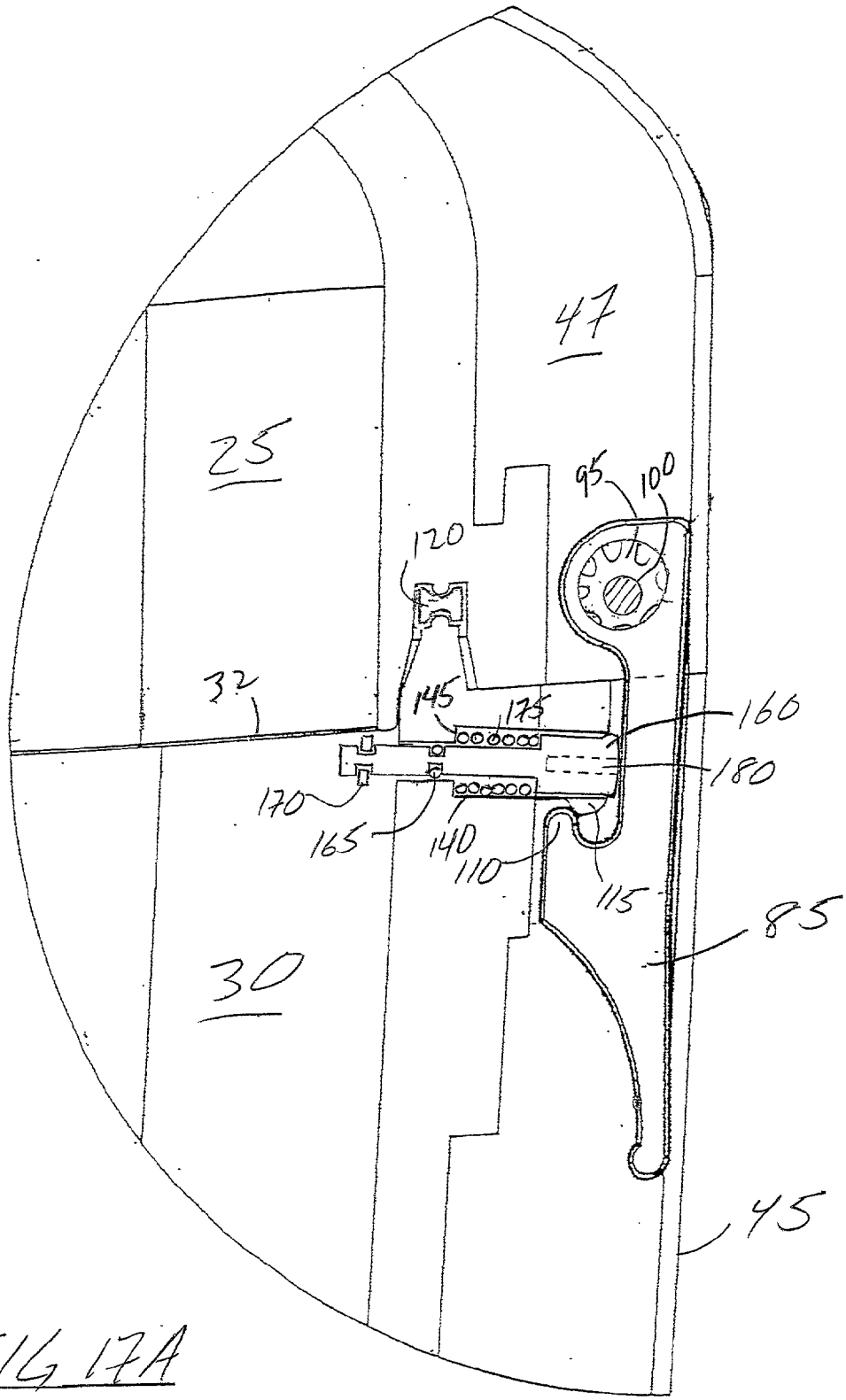

FIG 17A

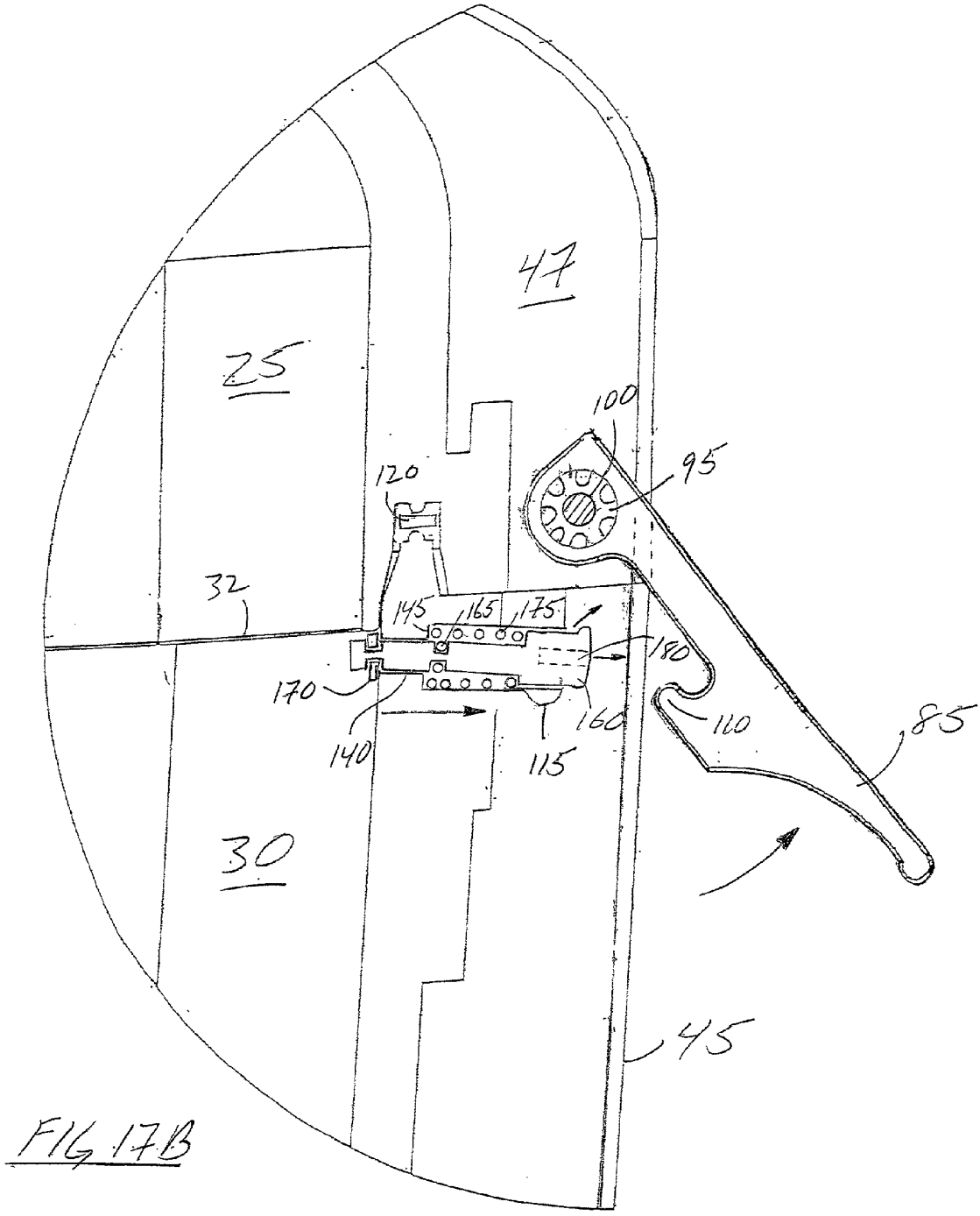

FIG 17B

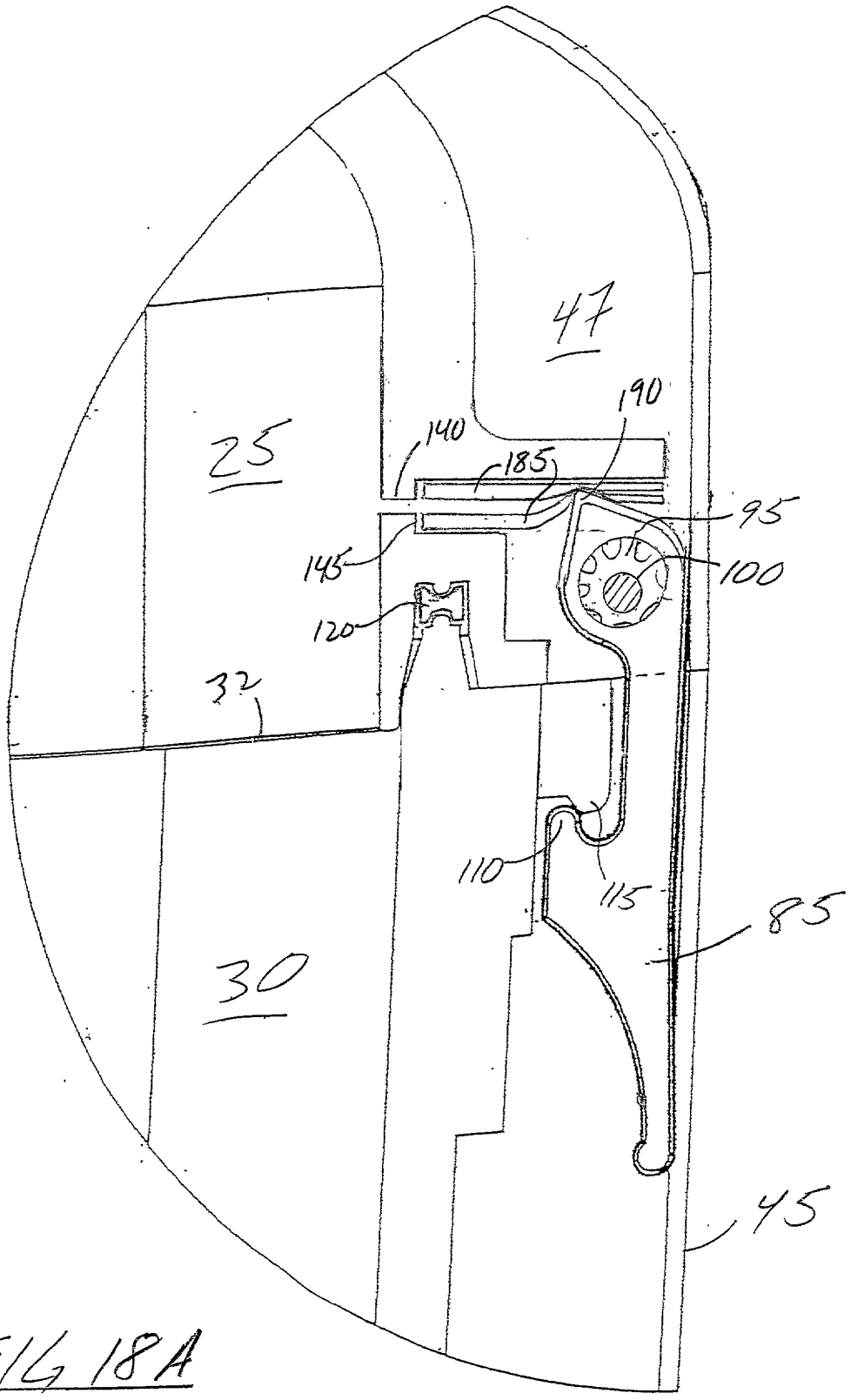

FIG 18A

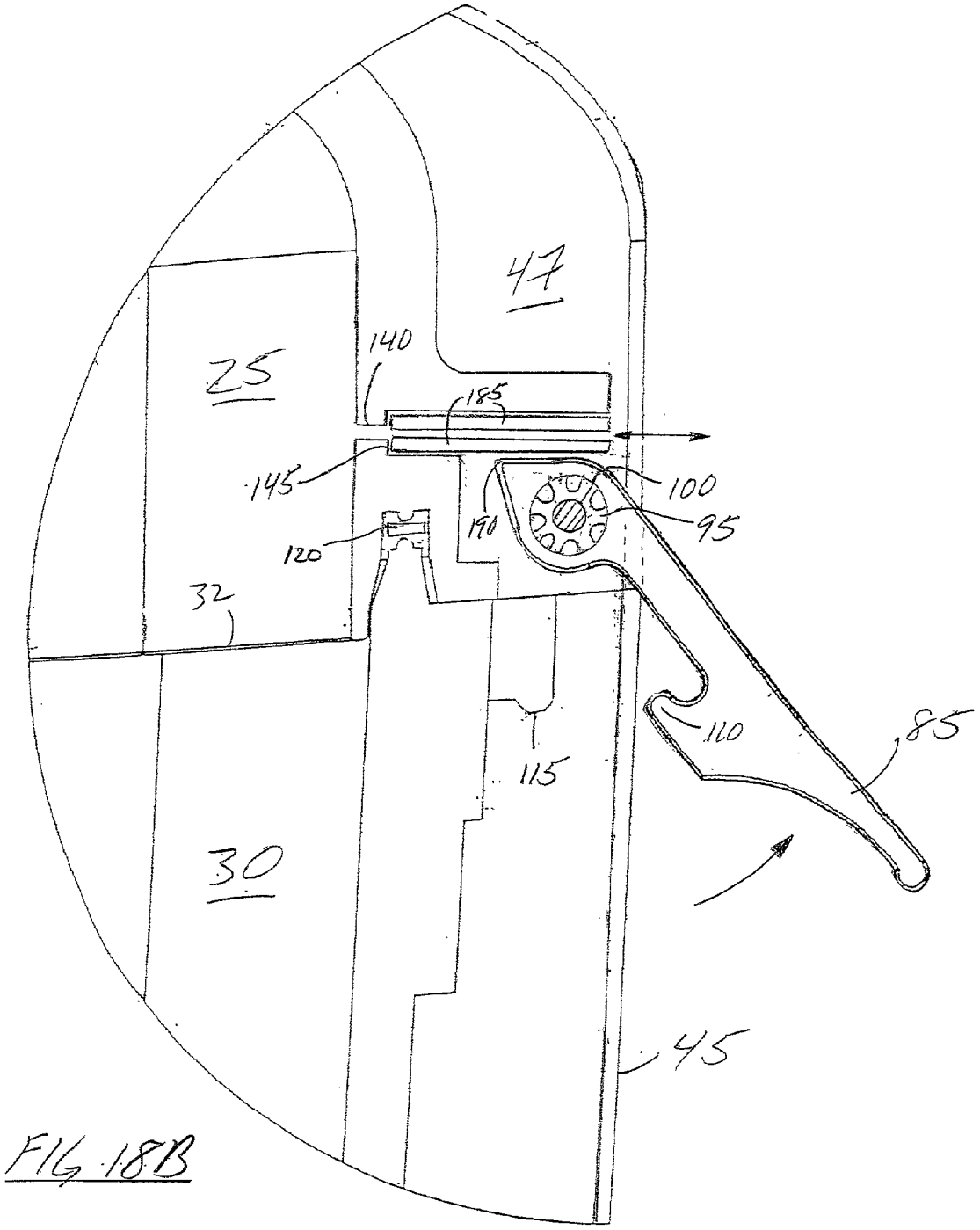

FIG. 18B

SHOCK-RESISTANT AND ENVIRONMENTALLY SEALED CONTAINER WITH PRESSURE EQUALIZATION

[0001] This is a continuation-in-part of co-pending application Ser. No. 09/689,001, filed Oct. 12, 2000, entitled: SHOCK-RESISTANT AND ENVIRONMENTALLY SEALED CONTAINER, which is incorporated herein by reference in its entirety.

FIELD OF THE INVENTION

[0002] The present invention generally relates to containers. More particularly, the invention concerns containers that are both shock-resistant and environmentally sealed.

BACKGROUND OF THE INVENTION

[0003] A wide variety of containers are used everyday to transport the goods that comprise the modern global economy. An ever-increasing part of the new economy are electronic devices such as digital cameras, personal digital assistants, and other apparatus. However, containers that were previously suitable for transporting mechanical goods are not capable of safely shipping the delicate electronic devices of today. Moreover, the technology employed by the transport industry has not kept pace with the goods it transports. For example, shipping containers continue to be dropped by careless handlers and goods shipped overseas are subjected to a host of adverse environmental conditions.

[0004] In response, electronics and other manufacturers are demanding new containers that can survive drop tests and pressure tests, that are aimed at protecting their products from high humidity, moisture and the severe impacts that can occur during shipment.

[0005] However, the new containers have several shortcomings. For instance, containers designed to be airtight and waterproof employ a sealing ring to seal the container. When the container is closed, the sealing ring is partially compressed. However, upon impact, the seal compresses completely, which allows the latches to loosen, resulting in a container that opens unexpectedly. In addition, the severe impact tests also destroy container hinges which cause the containers to break apart. Additional problems include damage to handles, latches and other components located on the exterior of the containers.

[0006] Therefore, a need exists for a shock-resistant, environmentally sealed container that can transport delicate goods while enduring rigorous shipping conditions.

SUMMARY OF THE INVENTION

[0007] In order to overcome the deficiencies with known, conventional containers, a shock-resistant and environmentally sealed container with pressure equalization is provided. Briefly, the container provides a pressure equalization system to equalize air pressure between the interior of the container and the surrounding atmosphere. Alternatively, the pressure equalization system may equalize pressure between two compartments located within a single container.

[0008] More specifically, one embodiment of the present invention employs a latch that is pivotally coupled to the container. A deflectable member is positioned in a container air passageway and located adjacent to the latch. When the latch is in a closed position, the latch seals one end of the deflectable member and prevents air from flowing through the deflectable member and the air passageway. When the latch is moved to an open position, the seal is broken and air can flow through the deflectable member and through the air passageway, thereby equalizing pressure between the surrounding atmosphere and the interior of the container.

[0009] Another embodiment of the present invention employs a deflectable member that is pinched by the latch. When the latch is in a closed position, a tip of the latch pinches the deflectable member and seals the air passageway. When the latch is moved to an open position, the tip of the latch rotates away from the deflectable member and the air passageway is opened.

[0010] Yet another embodiment of the present invention employs a slideable member positioned in an air passageway. The slideable member includes a sealing member that seals the air passageway when the latch is in a closed position. A spring member urges the slideable member against the latch, and when the latch is rotated to the open position, the slideable member is urged partially out of the air passageway, unseating the sealing member and allowing air to flow through the air passageway.

[0011] The pressure equalization system affords its users with a number of distinct advantages. During instances when the pressure inside the container is less than the pressure outside the container, the container can be difficult to open. Advantageously, the pressure equalization system constructed according to the present invention performs pressure equalization during the container-opening procedure. When the latches are released to open the container, a seal between one of the latches and a deflectable member is broken, permitting air to flow through an air passageway and into the container. No additional steps are required to equalize air pressure between the interior of the container and the surrounding atmosphere.

BRIEF DESCRIPTION OF THE DRAWINGS

[0012] The nature, goals, and advantages of the invention will become more apparent to those skilled in the art after considering the following detailed description when read in connection with the accompanying drawing in which like reference numerals identify like elements throughout wherein:

[0013] **FIG. 1** is a perspective view of one embodiment of the shock-resistant and environmentally sealed container;

[0014] **FIG. 2** is a perspective view of the embodiment of **FIG. 1** showing the bottom of the container;

[0015] **FIG. 3** is an elevation view of a front side of the container illustrated in **FIG. 1**;

[0016] **FIG. 4** is an elevation view of the hinge side of the container illustrated in **FIG. 1**;

[0017] **FIG. 5** is a sectional view taken along cutting plane **5-5** of **FIG. 3**;

[0018] **FIG. 6** is a perspective view of one embodiment of a latch used to secure the container illustrated in **FIG. 1**;

[0019] **FIG. 7** is an elevation view of the latch illustrated in **FIG. 6**;

[0020] **FIG. 8** is a side elevation sectional view of the latch illustrated in **FIG. 6** attached to the container illustrated in **FIG. 1**;

[0021] **FIG. 9** is an elevation view of the latch and surrounding area illustrated in **FIG. 8**;

[0022] **FIG. 10** is a side elevation sectional view of an alternative embodiment latch that secures the container illustrated in **FIG. 1**;

[0023] **FIG. 11** is an elevation view of the latch illustrated in **FIG. 10**;

[0024] **FIG. 12** is a sectional view taken along cutting plane **12-12** of **FIG. 4**;

[0025] **FIG. 13** is a perspective view of the container illustrated in **FIG. 1** showing the extendable handle;

[0026] **FIG. 14** is a perspective view of the extendable handle illustrated in **FIG. 13**;

[0027] **FIG. 15A** is a side elevation sectional view of an alternative embodiment of the present invention incorporating one embodiment of a pressure equalization system;

[0028] **FIG. 15B** is a side elevation sectional view of the pressure equalization system illustrated in **FIG. 15A**;

[0029] **FIG. 16** is an elevation view of the pressure equalization system illustrated in **FIG. 15A**;

[0030] **FIG. 17A** is a side elevation sectional view of yet another embodiment of the present invention incorporating an alternative embodiment pressure equalization system;

[0031] **FIG. 17B** is a side elevation sectional view of the pressure equalization system illustrated in **FIG. 17A**;

[0032] **FIG. 18A** is a side elevation sectional view of another embodiment of the present invention incorporating yet another embodiment of a pressure equalization system; and

[0033] **FIG. 18B** is a side elevation sectional view of the pressure equalization system illustrated in **FIG. 18A**.

[0034] It will be recognized that some or all of the Figures are schematic representations for purposes of illustration and do not necessarily depict the actual relative sizes or locations of the elements shown.

DETAILED DESCRIPTION OF THE INVENTION

[0035] In the following paragraphs, the present invention will be described in detail by way of example with reference to the attached drawings. Throughout this description, the preferred embodiment and examples shown should be considered as exemplars, rather than as limitations on the present invention.

[0036] Referring to **FIGS. 1 and 2**, a shock-resistant and environmentally sealed container **20** in accordance with the present invention is illustrated. As defined herein, a "container" comprises any enclosed volume that can hold other objects within itself, such as receptacles, canisters, tanks, chests, trunks, and other devices.

[0037] One embodiment container **20** generally comprises a substantially rectangular receptacle for holding delicate or fragile objects. Other configurations, such as substantially cylindrical, or other suitable configurations are also contemplated. The container **20** is shock-resistant and is configured to absorb substantial impacts. The container **20** is also environmentally sealed and therefore is waterproof and airtight. As used herein, waterproof means the container **20** is highly resistant to penetration by water into the interior of the container **20** when it is closed. In addition, as used herein airtight means the container **20** is highly resistant to penetration by air into the interior of the container **20** when it is closed. The container **20** incorporates several unique features that permit it to securely transport delicate and fragile objects without the risk of opening as result of mishandling or inadvertent accidents.

[0038] FIGS. **1-4** illustrate a container **20** having a top or first section **25** and a bottom or second section **30**. The container **20** is substantially rectangular, but it will be appreciated that other container shapes, such as squares or more elongated rectangles, may also be constructed using principles according to the present invention. In the illustrated embodiment, eight ribs **45** extend around the outer surface of the container **20**. Additional rib portions **45** also extend along the sides of the container **45**. For example, illustrated in **FIG. 3** the front side **35** has six rib portions **45**. Shown in **FIG. 4**, the hinge side **40** of the container **20** has four rib portions **45**. It will be appreciated that the number of ribs **45** can vary depending upon the strength requirements and aesthetic requirement of the container **20**. In a preferred embodiment, the ribs are molded integrally into the first and second sections **25** and **30**, respectively. The container **20**, including ribs **45**, is injection-molded using acrylonitrile-butadiene-styrene (ABS). It will be appreciated that other types of plastics or other composite materials can be used to manufacture the container **20**. Ribs **45** add structural strength to the container by increasing the bending and torsional stiffness of the container **20**. In addition, as illustrated in **FIGS. 1 and 2**, the ribs extend past the latches **85**, handles **55** and other objects positioned on the outside of the container **20**, thereby protecting these objects from damage.

[0039] Referring now to **FIGS. 3 and 5**, the ribs **45** in conjunction with overlapping tabs **27** keep the first section **25** from being tom-off or otherwise removed from the second section **30** during impacts. Overlapping tabs **27** are connected to the first section **25** and overlap over the second section **30**. Shown in **FIG. 5**, parting line **32** defines the meeting point of first section **25** and second section **30**. Overlapping tab **27** extends over the parting line **32** from the first section **25** over the second section **30**. Referring now to **FIG. 3**, the overlapping tabs **27** closely abut the rib sides **47**. The distance between the rib sides **47** and the overlapping tabs **27** can range from about 0.01 inches to about 0.1 inches. When the container **20** is dropped or otherwise mishandled and encounters a force on load on the first section **25**, that load is transferred to the second section **30** through the overlapping tabs and into the ribs sides **47**. In this manner, the rib sides **47** support the first section **25** and keep the first section **25** from deflecting relative to the second section **30**. This ensures that the first section **25** remains securely attached to the second section **30** thereby keeping the container **20** environmentally sealed even under severe impact loads.

[0040] Referring now to FIGS. **6-9**, a latch **85** constructed in accordance with the present invention is illustrated. Latch

85 includes a bushing **95** located in a cylindrical cavity **87** of latch **85**. One embodiment of the bushing **95** comprises a cylindrically-shaped bushing having an outer surface comprised of a series of projections running along the longitudinal-axis of the bushing **95**. It will be appreciated that other versions of the bushing **95** could be employed such as one or more bushings positioned within the cylindrical cavity **87** of the latch **85**. Bushing **95** has a central aperture extending along its longitudinal axis which is sized to receive a latch pin **100**, shown in **FIGS. 8 and 9**. In one embodiment, latch pin **100** is mounted in first section **25**, but it will be appreciated that the latch pin **100** could be mounted in the bottom section **30**. That is, the orientation of latch **85** may be reversed. Latch **85** is pivotally coupled to the first section **25** by the latch pin **100** which is inserted through the bushing **95**. When the container **20** is closed, latch **85** can be rotated about the latch pin **100** so that latch locking ridge **110** frictionally engages the container locking ridge **115**, shown in **FIG. 8**. In this manner, the two container sections **25** and **30** are securely held together. When desired, the container **20** can be opened by pulling on the finger grip **105** and releasing the latch **85** from the container locking ridge **115** and pivoting the latch **85** about the latch pin **100**. Advantageously, latch pin **100** is mounted in a double-shear arrangement in ribs **45**, resulting in an extremely strong and durable latch **85** mount.

[**0041**] Referring now to **FIG. 8**, gasket **120** is positioned between the first section **25** and the second section **30** of the container **20**. In one embodiment the gasket **120** resides in a recessed channel in the first section **25**, but it will be appreciated that the gasket **120** can also be located in the second section **30**. Gasket **120** creates an airtight and waterproof seal by sealing the first section **25** to the second section **30**. In a preferred embodiment gasket **120** is made of a soft rubber or plastic material and has a substantially D-shaped cross-section with a hollow center section. However, it will be appreciated that solid gasket or gaskets of other cross-sections such as O-rings can be employed.

[**0042**] Referring now to **FIG. 8**, one advantage of the present invention is illustrated. When a force or load is exerted against the top section **25** of the container **20**, such as when the container **20** is dropped, the top section **25** presses against the bottom section **30**, compressing gasket **120**. Latch pin **100**, which is also connected to first section **25** compresses bushing **95** as the top section **25** is forced against the bottom section **30**. In contrast to conventional latch systems that are rigidly mounted, and that would release and allow the container **20** to open, the latch system of the present invention can absorb the load and keep the latch **85** securely engaged. This is because bushing **95** deflects, as shown in **FIG. 8**, allowing the latch pin **100** to shift in the cylindrical aperture **87** of the latch **85**. Because the bushing **95** deflects, the latch **85** does not move, keeping the latch **85** securely engaged with the second section **30** of the container **20**. Another advantage of the present invention is that the bushing **95** frictionally engages the latch pin **100**, creating a rotational resistance in latch **85**. Because latch **85** does not freely rotate about latch pin **100**, when the latch **85** is released and the container **20** is opened the latch **85** remains in an open position keeping the finger grip **105** from contacting the parting line **32** when the container **20** is closed.

[**0043**] Referring now to FIGS. **10-11**, an alternative embodiment latching system in accordance with the present invention is illustrated. In this embodiment, military latch **90** is employed to secure the first section **25** of the container **20** to the second section **30**. The military latch **90** is a conventional latch used for military applications and meets military specifications. The military latch **90** employs a twist tab **92** that pulls pin engaging member **97** downward into the latch **90** when the twist tab **92** is twisted by an operator. In this manner the first section **25** is firmly held against the second section **30**, tightly sealing the container **20**. However, the military latch **90** is comprised of several individual elements and each element has its own manufacturing tolerance. During assembly these elements having different tolerances, or dimensions are combined creating military latches **90** having different sizes. For example, the pin engaging member **97** may be slightly longer than another pin engaging member **97** and twist tab **92** may not pull in the engaging member **97** as far as military latch **90** as another military latch **90**, hereby creating a clamping difference between military latches **90**. One advantage of the present invention is the use of a latch pin **100** that deflects, thereby absorbing the manufacturing tolerances of the military latch **90**. Illustrated in **FIG. 11**, latch pin **100** is engaged by the pin engaging member **97** and when twist tab **92** is rotated by an operator the latch pin **100** deflects, closing the container **20**. The deflection of the latch pin **100** absorbs the manufacturing tolerances in contrast to prior latching systems that permitted the military latch **90** to release inadvertently during shipment. In addition, the latch pin **100** absorbs the compression of the gasket **120** when the container **20** encounters impacts or loads. As discussed above, the gasket **120** can compress during severe impacts causing the first section **25** and second sections **30** to compress together creating slack in the military latches **90**. The deflectable latch pin **100** absorbs this slack keeping the military latch **90** secured about the latch pin **100** and keeping the container **20** closed. Also shown in FIGS. **10-11** is deflectable pin stop **94**. The deflectable pin stop **94** acts as a support or deflection limiting member to the deflectable latch pin **100**. When severe impacts are encountered by the container **20**, the first section **25** and the second section **30** can move relative to each other causing the latch pin **100** to deflect. Under extreme impacts, the deflectable latch pin **100** may deflect to the point where pin engaging member **97** disengages from the deflectable latch pin **100**, allowing the container **20** to open. With the deflectable pin stop **94** positioned adjacent to the deflectable latch pin **100**, the total amount of deflection of the latch pin **100** is limited. Limiting the deflection of the latch pin **100** keeps the pin engaging member **97** of the military latch **90** firmly engaged with the latch pin **100** even under extreme impacts. As shown in **FIG. 11**, when a load is encountered, the latch pin **100** deflects contacting deflectable pin stop **94**, thereby limiting the deflection of the latch pin **100** and ensuring that the pin engaging member **97** remains attached to the deflectable latch pin **100**. Preferably, latch pin **100** is made of tempered spring-steel. It will be appreciated that other types of materials can be used to make latch pin **100** so that it can deflect and spring back into position. In one embodiment latch pin **100** is about 0.175 inches in diameter, and can be easily replaced by pushing the latch pin **100** through ribs **45**.

[0044] Advantageously, container **20**, constructed according to the present invention, can accept either the military latch **90** or the latch **85**, without change to the structure of the container **20**.

[0045] Referring now to **FIGS. 2 and 4**, a hinge **50** constructed in accordance with the present invention is illustrated. The hinge comprises an elongated rod **52** that is positioned in a plurality of rod receivers **54**. The rod receivers **54** are alternatively mounted on the first section **25** and on the second section **30** and are sized to slideably receive the elongated rod **52**. One advantage of the present invention is that elongated rod **52** can be easily removed from the rod receivers **54** thereby allowing the first section **25** to be completely separated from second section **30**. In this manner, the individual sections can be used to carry the contents of the container **20** or the separate sections can be separated for efficient storage.

[0046] Referring now to **FIG. 12**, locking means for securing the elongated rod **52** to the second section **30** are illustrated. A rod detent **56** is located on the second section **30** of the container **20** and when the elongated rod **52** is inserted into all of the rod receivers **54** the elongated rod end is pivoted so that it engages the rod detent **56** securely. Advantageously, inserting the elongated rod **52** into the rod detent **56** can be performed by hand, yet the arrangement permits the elongated rod **52** to remain secure even under the most severe shipping impacts. In this manner, the container **20** remains intact under strenuous conditions, yet can be easily separated into first **25** and second **30** sections for use by the operator. It will appreciated that the rod detent **56** can also be located in the first section **25**. In a preferred embodiment the elongated rod **52** is metal, but it will appreciated that other materials can be employed.

[0047] Referring now to FIGS. **15A-16**, a pressure equalization system is illustrated. Because the container **20** is airtight, conditions may arise where the pressure inside the container is less than the pressure outside the container and an operator will not be able to open the container **20** because of the pressure differential. For example, if the container **20** is filled with goods at a manufacturing facility located at 5,000 above sea level, then shipped to a receiving facility at sea level, a significant pressure differential will exist between the interior of the container **20** and the exterior of the container **20**. In this situation it will be extremely difficult, if not impossible, to open the container **20** as a result of the higher pressure outside the container **20** relative to the lower pressure inside the container **20**.

[0048] To address this pressure differential problem, the present invention includes a pressure equalization system. As shown in **FIGS. 15A and 15B**, the pressure equalization system includes a deflectable member **150** located in an air passageway **140**. The deflectable member **150** includes an aperture **155** positioned along the longitudinal axis of the deflectable member **150**. The aperture **155** permits the passage of air from the interior of the container **20** to the atmosphere, and vice-versa. The deflectable member **150** is located within the air passageway **140** and rests against a step **145**. The deflectable member **150** is sized to extend beyond the outer surface of the container **20** so that when latch **85** is secured in the closed position, the deflectable member **150** is compressed between the latch **85** and the step **145**. In this fashion, an airtight seal is formed between the latch **85** and the deflectable member **150**, preventing passage of air through the aperture **155**. In addition, the deflectable member **150** is compacted into the air passageway **140** by the latch **85**, preventing the passage of air between the outside of the deflectable member **150** and the walls of the air passageway **140**. In a preferred embodiment, the deflectable member **150** is constructed of rubber, but other types of materials, such as plastics, polyurethanes, elastomers, and other suitable materials can be employed. In a second preferred embodiment of the present invention, the deflectable member **150** remains compressible in a temperature range between −60 degrees Fahrenheit and +150 degrees Fahrenheit.

[0049] One advantage of the present invention is that pressure equalization is accomplished simply by pivoting the latch **85** away from the deflectable member **150**, which occurs whenever a user wishes to open the container **20**. For example, when a pressure differential exists between the interior of the container **20** and the exterior of the container **20**, the container **20** may be difficult, if not virtually impossible to open. When latch **85** is pivoted about the latch pin **100**, as shown in **FIG. 15**B, air is now allowed to pass through the aperture **155** and into the interior of the container **20**. Conversely, if the air pressure inside container **20** is greater than the air pressure outside the container **20**, air may pass from the interior of container **20** to the exterior through aperture **155**. This pressure equalization system is activated when the latch **85** is released during the container **20** opening process. Therefore, no additional steps must be performed to equalize air pressure between the atmosphere and the interior of container **20**. In this way, the container **20** will always open safely and easily.

[0050] Referring now to **FIGS. 17A and 17B**, an alternative embodiment pressure equalization system is illustrated. A moveable plug or slideable member **160** is slideably positioned in air passageway **140**. An interior end of the moveable plug **160** includes a stop **170** that opposes a force exerted by spring **175**. The spring **175** urges the moveable plug **160** against latch **85** in the closed position, as shown in **FIG. 17A**. In one embodiment, stop **170** is comprised of a "C"-ring, but other suitable devices can be employed. When latch **85** is the closed position, the spring **175** is compressed and the air passageway **140** is sealed by sealing member **165**. In one embodiment, the sealing member is an "O"-ring but other types of seals, gaskets or other suitable devices can be employed. When latch **85** is pivoted away from the container **20**, spring **175** urges the moveable plug **60** outward and O-ring **165** is moved beyond step **145**, as shown in **FIG. 17B**. Air can now pass through air passageway **140** and any air pressure difference between the interior of container **20** and the surrounding atmosphere is eliminated. An alternative embodiment of the moveable plug **160** can include one or more channels **180** to facilitate movement of air through the air passageway **140**. The movement of the moveable plug **160** is limited by stop **170** which contacts the interior surface of the container **20**, as shown in **FIG. 17B**. Similar to the pressure equalization system illustrated in FIGS. **15A-15B**, no additional steps are required to equalize air pressure beyond rotating latch **85** away from the container, as would be necessary during the opening of container **20**.

[0051] Referring now to **FIGS. 18A and 18B**, yet another embodiment of a pressure equalization system is illustrated.

Positioned within air passageway **140** is tube member **185**. In one embodiment, the tube member is a substantially cylindrical rubber element or other type of deflectable tube. Other types of tube shapes and materials can be employed, such as a square, rectangular or other cross-sectional member that could be constructed of rubber, plastic, polyurethane or other suitable materials. Tube member **185** is positioned adjacent to latch **85** that includes a tip **190**. In the closed position, as shown in **FIG. 18**A, tip **190** pinches tube member **185** so that the interior of container **20** remains airtight. When latch **85** is pivoted about latch pin **100**, tip **190** is rotated away from the tube member **185** and air is now allowed to flow through air passageway **140** equalizing pressure between the interior of container **20** and the surrounding atmosphere. As discussed above, no additional steps must be performed to equalize air pressure between the atmosphere and the interior of the container **20**.

[**0052**] Another advantage of the present invention embodied in container **20** are the devices that permit easy transportation of the container **20**. For example, handles **55**, illustrated throughout the Figures, are positioned on all sides of the container **20** except for the hinge side **40**. It will be appreciated that the handles **55** can be positioned only on one side, or on all sides including hinge side **40**. Illustrated in **FIG. 5**, handle **55** is spring-actuated and remains positioned adjacent to the side of the container **20**. Ribs **45** project past the handle **55** protecting the handle from impacts. In addition, illustrated in **FIGS. 2 and 3**, wheels **125** are located on the second section **30** of the container **20** enabling operators to pull or push the container **20**. Wheels **125** are mounted in the second section **30** without the use of bearings. Therefore, the wheels **125** cannot be fouled by sand or dirt. Pins (not shown) located in ribs **45** position the wheels **125** in the second section **30**.

[**0053**] Referring now to **FIGS. 2, 13** and **14**, an extendable handle **70** constructed in accordance with the present invention is illustrated. Extendable handle **70** is located in the second section **30** of the container, and includes handle legs **75** that are positioned in exterior channels **77**. In this manner, the container **20** remains environmentally sealed because the handle **70** does not enter the interior of the container **20**. Handle covers **79** fasten to the second section **30** and locate the extendable handle **70** in the exterior channels **77**. When desired, extendable handle **70** is deployed by an operator by pulling on the extendable handle **70** and releasing sliding lock **72**. Shown in **FIG. 13**, sliding lock **72** includes a projection **84** that can be positioned by the sliding lock **72** to either align with slot guides **82** or be positioned between slot guides **82**. Slot guides **82** fit into slots **80** in extendable handle legs **75**. As the legs **75** slide in the slot guides **82**, the projection **84** can be positioned between slot guides **82** so that the legs are fixed in a retracted position maintaining the handle **70** in this desired position. In a preferred embodiment, the handle **70** can be fixed in an extended position by engaging the projection **84** into a projection receiver **86**. However, it will be appreciated that the number of projection receivers **86** can be varied to adjust the extendable height of the handle **70**.

[**0054**] Also shown in FIGS. **13-14** a spring-mounted sphere **130** is positioned near a bottom section of the handle legs **75**. In one embodiment, the sphere is a metal ball, but it will be appreciated that a pin or other deflectable member could be positioned in the bottom area of the handle leg **75**. The spring-mounted sphere **130** is sized to be received into the sphere receivers **135** located in handle covers **79**. The spring-mounted sphere extends into the sphere receivers **135** locking the leg **75** in either a stored position or in an extended position.

[**0055**] One skilled in the art will appreciate that the present invention can be practiced by other than the preferred embodiments which are presented in this description for purposes of illustration and not of limitation, and the present invention is limited only by the claims that follow. It is noted that equivalents for the particular embodiments discussed in this description may practice the invention as well.

What is claimed is:

1. A pressure equalization system for a container comprising:

a latch pivotably coupled to the container, the latch having an open position and a closed position; and

a deflectable member positioned in a container air passageway and adjacent to the latch, the deflectable member including an aperture;

wherein the latch is structured to contact the deflectable member and seal the air passageway when the latch is in the closed position, and when the latch is in the open position, the air passageway is unsealed.

2. The pressure equalization system of claim 1, wherein the latch includes a surface structured to seal one end of the deflectable member.

3. The pressure equalization system of claim 1, wherein the latch is structured to secure a top section of the container to a bottom section of the container.

4. The pressure equalization system of claim 1, wherein the air passageway extends through the container and allows air to communicate between an interior of the container and the atmosphere.

5. The pressure equalization system of claim 1, wherein the aperture located in the deflectable member is positioned substantially along a longitudinal axis of the deflectable member and allows air to pass through the deflectable member.

6. The pressure equalization system of claim 1, wherein the deflectable member is constructed of a material selected from the group consisting of: rubber, plastic, polyurethane, a combination of any of rubber, plastic and polyurethane, and other suitable materials.

7. The pressure equalization system of claim 1, wherein the container is substantially waterproof and substantially airtight.

8. The pressure equalization system of claim 1, wherein the deflectable member is cylindrical and includes an aperture positioned along a longitudinal axis of the cylinder.

9. A method of equalizing atmospheric pressure between an interior of a container and a surrounding atmosphere, the method comprising the steps of:

providing a deflectable member that is positioned in an air passageway in the container, the deflectable member including an aperture;

positioning a latch adjacent to the deflectable member so that when the latch is in a closed position, the latch seals the air passageway; and

pivoting the latch away from the deflectable member so that air passes through the air passageway, thereby equalizing atmospheric pressure between an interior of a container and a surrounding atmosphere.

10. The method of claim 9, wherein the step of pivoting the latch away from the deflectable member is performed each time the container is opened.

11. A pressure equalization system for a container comprising:

means for providing a deflectable member that is positioned in an air passageway in the container, the deflectable member including an aperture;

means for positioning a latch adjacent to the deflectable member so that when the latch is in a closed position, the latch seals the air passageway; and

means for pivoting the latch away from the deflectable member so that air passes through the air passageway, thereby equalizing atmospheric pressure between an interior of a container and a surrounding atmosphere.

12. A pressure equalization system for a container comprising:

a latch pivotably coupled to the container, the latch having an open position and a closed position; and

a slideable member positioned in a container air passageway and adjacent to the latch;

wherein the latch is structured to contact the slideable member and the slideable member seals the air passageway when the latch is in the closed position, and when the latch is in the open position, the air passageway is unsealed.

13. The pressure equalization system of claim 12, wherein the latch includes a surface structured to contact one end of the slideable member.

14. The pressure equalization system of claim 12, wherein the latch is structured to secure a top section of the container to a bottom section of the container.

15. The pressure equalization system of claim 12, wherein the air passageway extends through the container and allows air to communicate between an interior of the container and the atmosphere.

16. The pressure equalization system of claim 12, wherein the container is substantially waterproof and substantially airtight.

17. The pressure equalization system of claim 12, further including a spring positioned in the air passageway, the spring structured to urge the slideable member out of the air passageway.

18. The pressure equalization system of claim 12, further including a sealing member coupled to the slideable member, the sealing member structured to seal the air passageway.

19. The pressure equalization system of claim 12, further including a stop coupled to the slideable member, the stop structured to limit a movement of the slideable member in the air passageway.

20. A pressure equalization system for a container comprising:

a latch pivotably coupled to the container, the latch having an open position and a closed position; and

a deflectable member positioned in a container air passageway and adjacent to the latch, the deflectable member including an aperture;

wherein the latch is structured to contact the deflectable member and close the air passageway when the latch is in the closed position, and when the latch is in the open position, the air passageway is open.

21. The pressure equalization system of claim 20, wherein the latch includes a tip structured to close the deflectable member.

22. The pressure equalization system of claim 20, wherein the latch is structured to secure a top section of the container to a bottom section of the container.

23. The pressure equalization system of claim 20, wherein the air passageway extends through the container and allows air to communicate between an interior of the container and the atmosphere.

24. The pressure equalization system of claim 20, wherein the aperture located in the deflectable member is positioned substantially along a longitudinal axis of the deflectable member and allows air to pass through the deflectable member.

25. The pressure equalization system of claim 20, wherein the deflectable member is constructed of a material selected from the group consisting of: rubber, plastic, polyurethane, a combination of any of rubber, plastic and polyurethane, and other suitable materials.

26. The pressure equalization system of claim 20, wherein the container is substantially waterproof and substantially airtight.

27. The pressure equalization system of claim 20, wherein the deflectable member is cylindrical and includes an aperture positioned along a longitudinal axis of the cylinder.

28. A method of equalizing atmospheric pressure between an interior of a container and a surrounding atmosphere, the method comprising the steps of:

providing a deflectable member that is positioned in an air passageway in the container, the deflectable member including an aperture;

positioning a latch adjacent to the deflectable member so that when the latch is in a closed position, the latch closes the aperture in the deflectable member; and

pivoting the latch away from the deflectable member so that air passes through the air passageway, thereby equalizing atmospheric pressure between an interior of a container and a surrounding atmosphere.

29. A method of equalizing atmospheric pressure between an interior of a container and a surrounding atmosphere, the method comprising the steps of:

providing a slideable member that is positioned in an air passageway in the container;

positioning a latch adjacent to the slideable member so that when the latch is in a closed position, the latch contacts the slideable member, and the slideable member seals the air passageway; and

pivoting the latch away from the slideable member so that air passes through the air passageway, thereby equalizing atmospheric pressure between an interior of a container and a surrounding atmosphere.

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