Jan. 30, 1968 L. L. CANN 3,366,433

CLOSURE ASSEMBLY

Filed March 10, 1966

Fig. 1

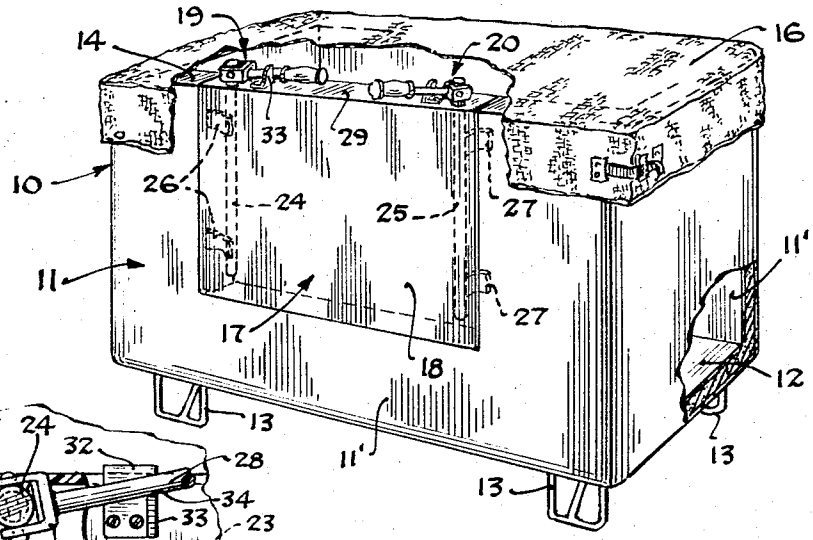


Fig. 4

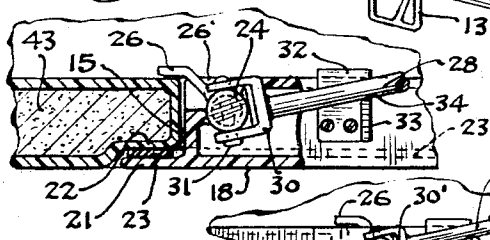


Fig. 2

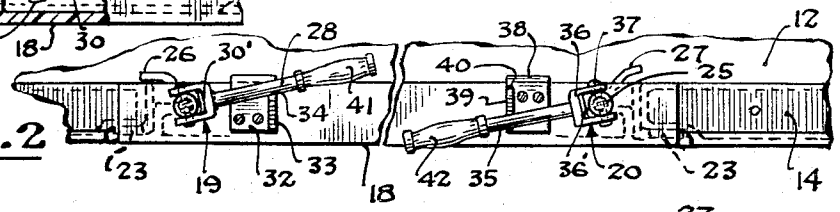


Fig. 3

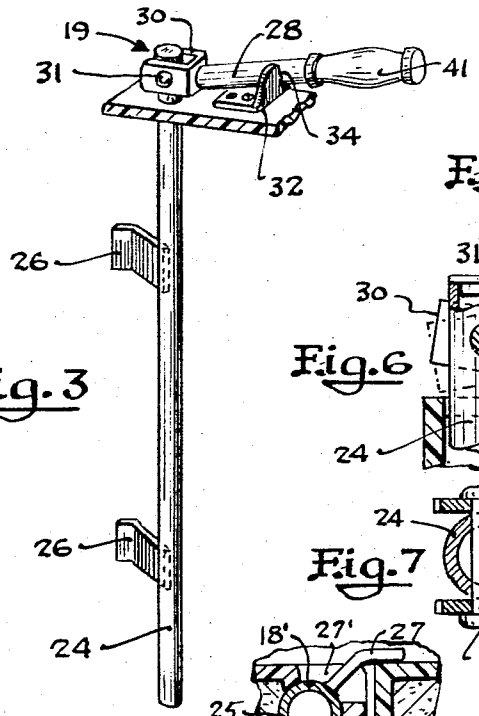


Fig. 5

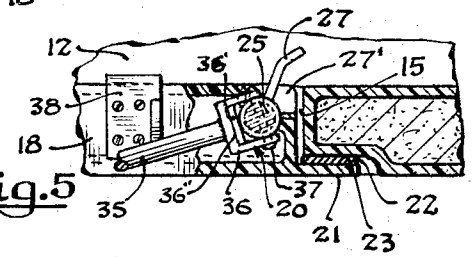


Fig. 6

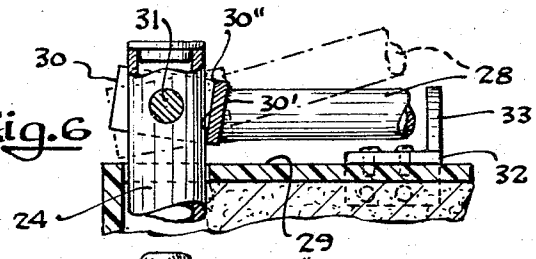


Fig. 7

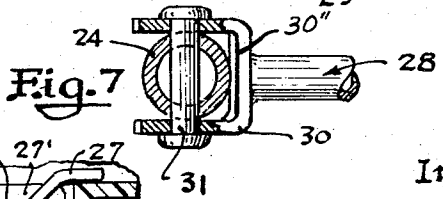
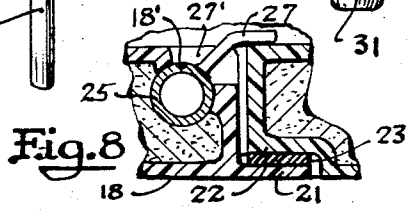


Fig. 8



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CLOSURE ASSEMBLY

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ABSTRACT OF THE DISCLOSURE

A removable closure assembly for an opening in a container wall having an overlapping marginal edge and rotatable clamp members for drawing the edge into sealing contact with the wall.

This invention relates in general to a closure assembly, and in particular to a closure assembly having a closure which can be quickly and easily positioned and clamped or unclamped across a side access opening of an open-top container.

An open top container having a deep cavity for holding a supply of packaged goods, is frequently difficult to load and unload. A person handling the packages near the bottom of the cavity must get into the cavity itself. In the past the handler often suffered injury as he jumped over the walls of the container during entry and exit. Unsanitary matter, such as dirt, is frequently carried into the storage area on the worker's shoes. Insulated containers of the deep-cavity type are useful for the transportation and storage of packages of solid carbon dioxide.

This invention provides an easily removable closure assembly to close an opening in the side wall of an open top container. The opening in the wall provides for easy loading and unloading of the inside cavity. Since the product can be removed or packed through the opening by a man standing outside the container, the cavity is kept in a sanitary condition and injuries to product handlers are substantially reduced. A latching mechanism of this invention, which secures the closure in the opening, is easily operated for quick and efficient insertion and removal of said closure. A resilient gasket provides an air-tight seal between the wall and the closure.

In a specific embodiment of the closure assembly of the invention, there is provided a closure having a pair of spaced apart, generally vertical, shafts pivoted in the closure, one shaft being disposed at one end of the closure and the other shaft being disposed at the other end of the closure, a pair of clamps secured to each shaft and each extending through a cutout in the closure and engageable with wall structure of the container, a handle secured to each shaft above the closure by a clevis and clevis pin, and upstanding lugs on the closure for holding respective handles in position when the clamps exert clamping pressure to hold in compression a resilient seal disposed between a marginal edge of the closure and a edge of the wall structure, the handles being connected to marginal edge of the wall structure, the handles being connected to the respective shafts for limited movement, the handles being generally horizontal and capable of being used to lift the closure away from the container when the clamps are unclamped.

In the drawings:

FIGURE 1 is a perspective view of an open-top container, shown in conjunction with a closure assembly for a side access opening of the container;

FIGURE 2 is a fragmentary, broken away, top plan view of the closure assembly shown in FIGURE 1 and a portion of the wall structure and floor of the container;

FIGURE 3 is a perspective view of one clamping assembly embodied in the closure assembly;

FIGURE 4 is a sectional view depicting the clamping assembly, shown in FIGURE 3, in the clamped position;

FIGURE 5 is a fragmentary sectional view depicting the other clamping assembly in the unclamped position;

FIGURE 6 is a fragmentary view showing the manner by which a handle is connected to a shaft of one clamping assembly by a clevis and clevis pin;

FIGURE 7 is a fragmentary view of the handle, shaft, clevis and clevis pin shown in FIGURE 6; and

FIGURE 8 is a fragmentary sectional view showing the manner in which one of the shafts is journalled.

Referring now to the drawings, there is shown an open-top container generally indicated at **10**, illustrated as including wall structure **11** having four insulated walls **11'** and an insulated floor **12**. Four legs **13**, only three of which are shown, are secured to the floor **12**. The wall structure **11** terminates at an open upper end **14**. One wall **11'** of the wall structure **11** has a side access opening **15** which provides easy access to the inside of the container **10**. The opening **15** makes it possible for a workman to reach the contents of the container easily without bending over the upper end **14** and reaching into the inside of the container **10**. The container **10** can be used to hold a variety of materials, but it is especially useful in storing blocks of solid carbon dioxide (not shown). A cover **16**, composed for example of canvas, can be used to close off the open top of the container **11**.

A closure assembly generally indicated at **17** is shown to include an insulated closure **18** and a pair of clamping assemblies **19** and **20**. The closure **18** has a marginal edge **21** at its ends and bottom which overlaps a marginal edge **22** of the wall structure **11**. A continuous resilient seal **23**, is sandwiched between the marginal edges **21** and **22**, and in particular is secured to the marginal edge **21** of the closure **18**.

Clamping assemblies **19** and **20** have generally vertically extending shafts **24** and **25** to which spaced apart clamps **26** and **27** are respectively secured. In FIGURES 1 and 2 the clamping assembly **19** is shown to be in the clamped position, whereas the clamping assembly **20** is shown to be in the unclamped position. When both the clamping assemblies are in clamped position the marginal edges **21** and **22** are urged together, thereby compressing the resilient seal **23**.

A handle **28** is connected to the upper end of the shaft **24** above the upper edge **29** of the closure **18** by a clevis **30** and a clevis pin **31**. A bracket **32** secured to the upper edge **29** has an upstanding lug **33** provided with a stop face **34**. A handle **35** is connected to the upper end of the shaft **25** above the upper edge **29** of the closure **18** by a clevis **36** and a clevis pin **37**. A bracket **38** secured to the upper edge **29** has an upstanding lug **39** provided with a stop face **40**. The handles **28** and **35** have grips **41** and **42**, respectively, composed of heat insulating material such as rubber. When the handles **28** and **35** engage respective stop faces **34** and **40**, the respective clamps **26** and **27** exert force against the wall structure **11** to urge marginal edges **21** and **22** together, thereby holding the seal **23** compressed to affect a fluid-tight seal.

Bights **30'** and **36'** of clevises **30** and **36** are relatively close to respective shafts **24** and **25** so that edges **30''** and **36''** engage the respective shafts **24** and **25** to permit only slight pivotal movement when lifting forces are applied to handles **28** and **35**, as is preferred, so that the handles **28** and **35** always remain substantially horizontal. The ends of the handles **28** and **35** are each beveled and are joined to respective clevises **30** and **36** as by welding.

The clamps **26** and **27** extend through cutouts **26'** and **27'** in the closure **18** adjacent respective shafts **24** and **25**. The clamps **26** and **27** prevent the respective shafts

24 and 25 from shifting axially. Insulation 43 in the closure 18 is relatively firm, being composed for example of polyurethane form, and serves together with closure wall corner 18' as a bearing for the shafts 24 and 25.

In use, the closure assembly 17 can be quickly and easily clamped to and unclamped from the wall structure 11 at the access opening 15. The user simply grasps the grips, by which he is able to lift the closure into position and with the closure 18 in place, he can move the handles 28 and 35 to pivot the shafts 24 and 25 to urge the clamps 26 and 27 against the wall structure 11, and by moving the handles 28 and 35 over respective lugs 32 and 39 and into engagement with the respective stop faces 34 and 40 the closure assembly 17 is clamped in position. Friction between the handles 28 and 35 and the stop faces 34 and 40 holds the respective handles 28 and 35 in the down position. When it is desired to remove the closure assembly 17 from across the access opening 15, the user lifts the handles 28 and 35 slightly, pivots shafts 24 and 25 and simply lifts the closure assembly 17 away from the access opening by means of the handles 28 and 35.

Other embodiments and modifications of this invention will suggest themselves to those skilled in the art, and all such of these as come within the spirit of this invention are included within its scope as best defined by the appended claims.

I claim:

1. A removable closure assembly for an open-top container having wall structure, a floor at the lower end of said wall structure, and a side access opening in said wall structure extending to the upper end of said wall structure: a marginal edge of said closure overlapping a marginal edge of said wall structure adjacent said access opening, and means for clamping said marginal edge of said closure against said marginal edge of said wall structure, said clamping means including at least one rotatably mounted shaft, at least one clamp mounted to the shaft to urge the marginal edges of the closure and the wall structure toward each other, and handle means by which said closure can be lifted away from said access opening.

2. A removable closure assembly as claimed in claim 1, a resilient seal disposed between said marginal edge of said closure and said marginal edge of wall structure.

3. A removable closure assembly for an open-top container having wall structure, a floor at the lower end of said wall structure, and a side access opening in said wall structure extending to the upper end of said wall structure: a marginal edge of said closure overlapping a marginal edge of said wall structure adjacent said access opening, and means for clamping said marginal edge of said closure against said marginal edge of said wall structure, said clamping means including handle means by which said closure can be lifted away from said access opening, said clamping means further including a generally vertical shaft pivotally mounted at each end of

said closure, each shaft having at least one clamp engageable with said wall structure, said handle means including a handle secured to the upper end of each shaft, and means for locking each handle in position when said clamps engage the wall structure to hold said marginal edge of said closure and said marginal edge of wall structure clamped together.

4. A removable closure assembly for an open-top container having wall structure, a floor at the lower end of said wall structure, and a side access opening in said wall structure extending to the upper end of said wall structure: a marginal edge of said closure overlapping a marginal edge of said wall structure adjacent said access opening, and means for clamping said marginal edge of said closure against said marginal edge of said wall structure, said clamping means including handle means by which said closure can be lifted away from said access opening, said clamping means further including a pair of generally vertically extending shafts, said handle means including a pair of handles, a clevis secured to each handle, a clevis pin connecting one clevis to one of said shafts and another clevis pin connecting the other clevis to the other of said shafts, a pair of upstanding lugs secured to said closure and engageable with respective handles to hold said clamping means in clamped position, each clevis having a bight relatively close to its respective shaft to limit pivotal movement of each handle about its respective clevis pin so that said handles can be used to lift said closure away from said container.

5. A removable closure assembly for an open-top container having wall structure, a floor at the lower end of said wall structure, and a side access opening in said wall structure extending to the upper end of said wall structure: a marginal edge of said closure overlapping a marginal edge of said wall structure adjacent said access opening, a pair of pivotally mounted spaced apart shafts, at least one clamp mounted by each shaft to clamp said closure in position across said access opening, and means for pivoting said shafts to effect clamping and unclamping action.

6. A removable closure assembly as claimed in claim 5, said shafts being pivotally mounted by said door.

7. A removable closure assembly as claimed in claim 5, said shafts being pivotally mounted in said door, each clamp projecting through a cutout in said door and engageable with said wall structure.

References Cited

UNITED STATES PATENTS

189,749	4/1877	King	312—290 X
1,601,647	9/1926	Rose	297—218
2,047,415	7/1936	Horvath et al.	312—290
2,379,157	6/1945	Jones	312—320 X
2,849,764	9/1958	Rich et al.	49—465 X
3,120,412	2/1964	Caldwell	312—320

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