

May 19, 1959

B. TERLECKY ET AL  
CONTAINER HOLD DOWN DEVICE

2,887,070

Filed Oct. 22, 1956

3 Sheets-Sheet 1

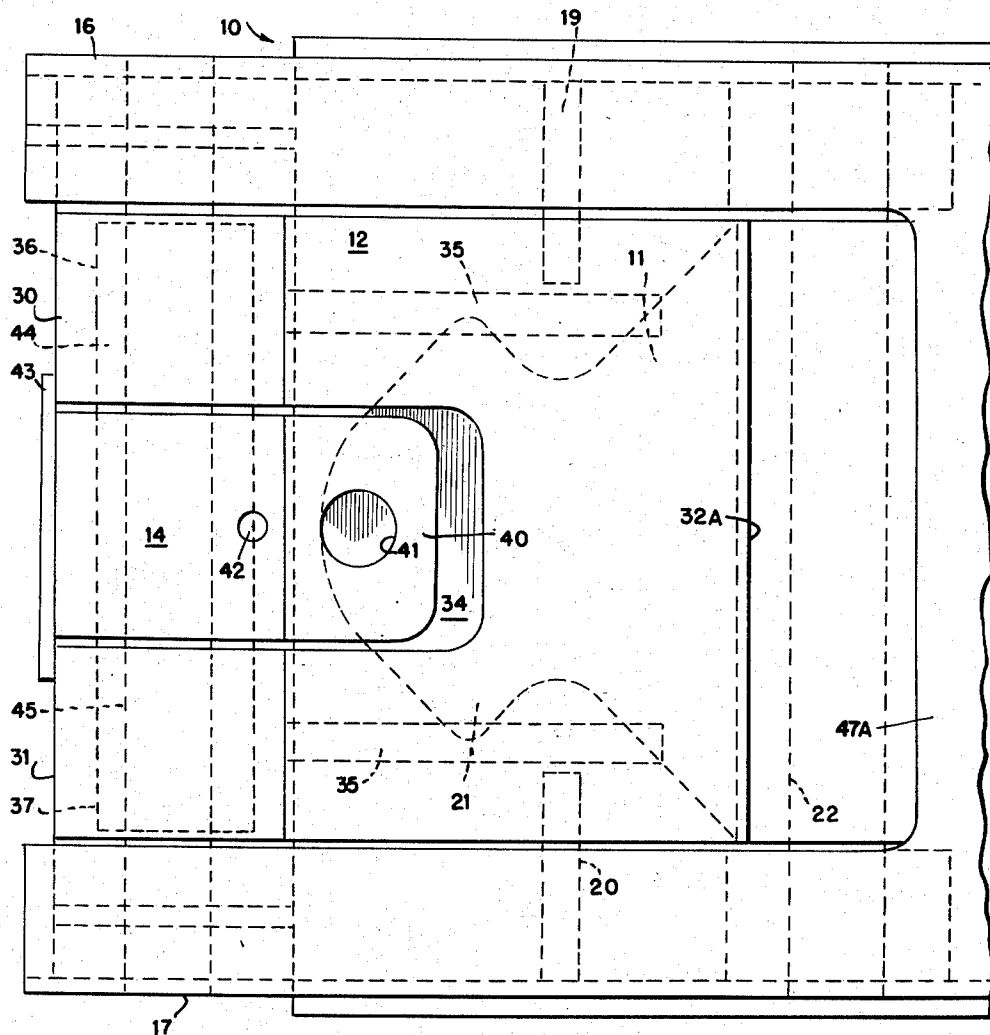


FIG. 1

INVENTOR.  
Boris Terlecky  
BY John R. Furrer

*Robert A. Shields*  
ATTORNEY

B. TERLECKY ET AL  
CONTAINER HOLD DOWN DEVICE

3 Sheets-Sheet 2

FIG. 2

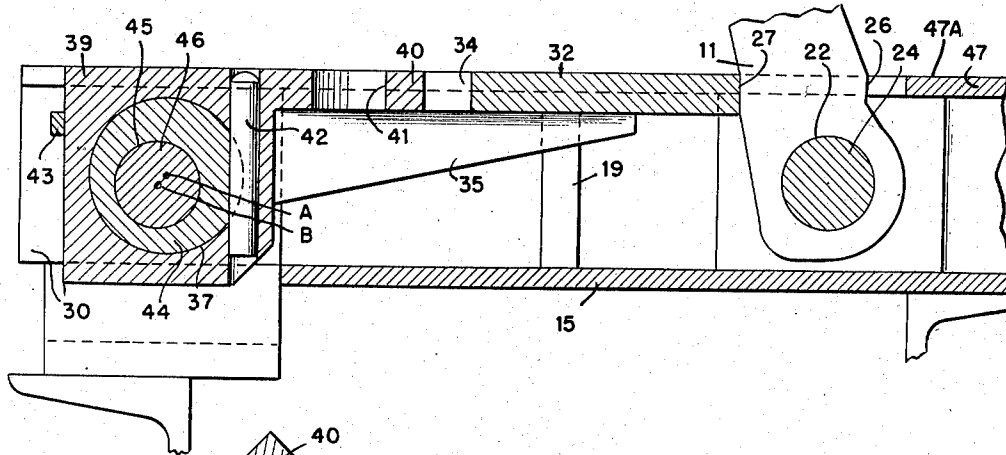


FIG. 3

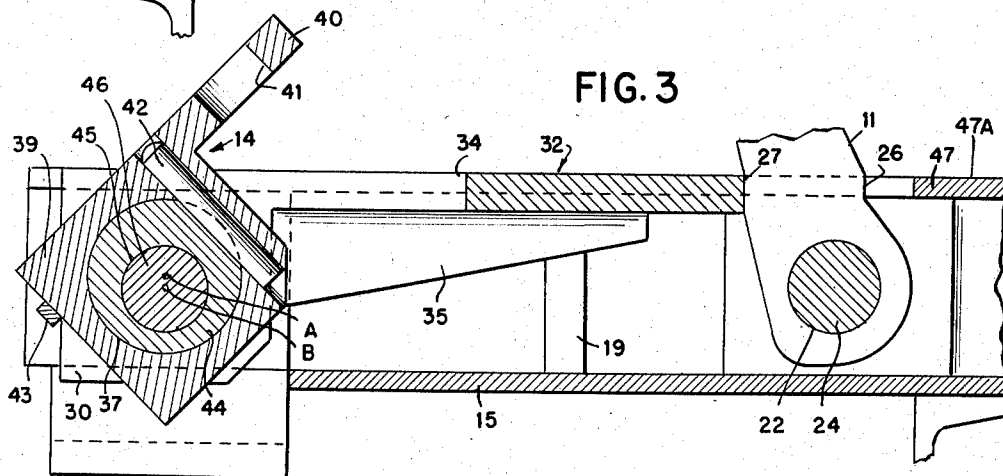
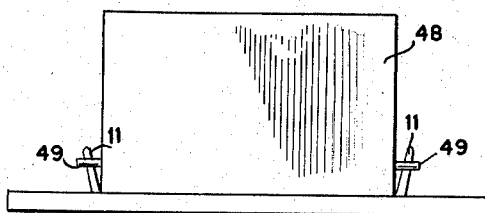


FIG. 5



INVENTOR.  
Boris Terlecky  
BY John R. Furrer  
*Robert A. Shield*  
ATTORNEY

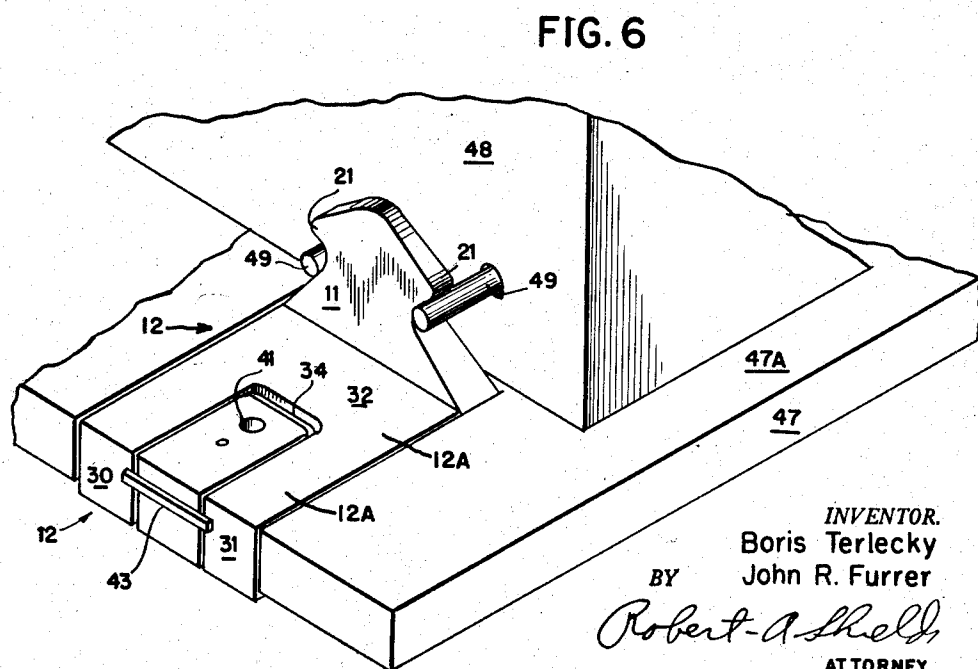
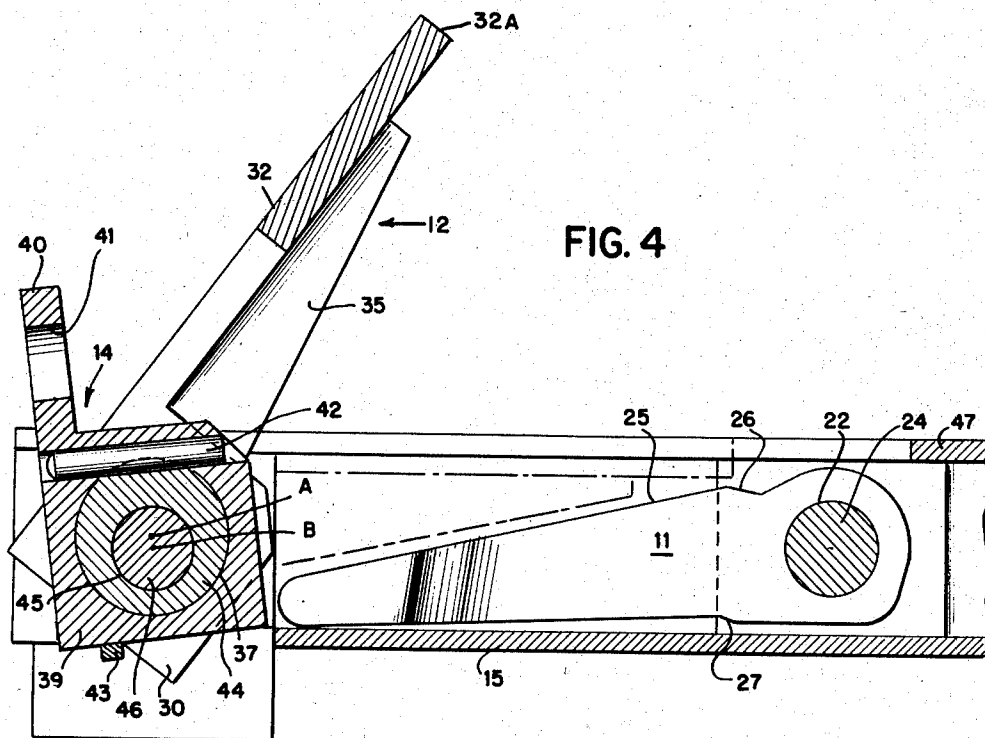
**May 19, 1959**

B. TERLECKY ET AL  
CONTAINER HOLD DOWN DEVICE

**2,887,070**

Filed Oct. 22, 1956

3 Sheets-Sheet 3



**INVENTOR.**  
Boris Terlecky  
John R. Furrer

BY John R. Furrer  
Robert A. Shell  
ATTORNEY

1

2,887,070

## CONTAINER HOLD DOWN DEVICE

Boris Terlecky, New York, and John R. Furrer, Bronxville, N.Y., assignors to ACF Industries, Incorporated, New York, N.Y., a corporation of New Jersey

Application October 22, 1956, Serial No. 617,384

7 Claims. (Cl. 105—369)

This invention relates generally to article carrying equipment, and, more particularly, to lading container securing and hold down devices for use in connection with motor vehicles, railway freight cars and the like.

Heretofore, various types of equipment have been proposed for use in railway freight cars, for example, to hold packaged or container loaded freight in place during transit. Such equipment frequently constituted anchoring means for lading straps, chains, ropes, and the like, and often included recesses providing uneven surfaces, or including projecting elements which, even when not in use, interfered with free movement of packages and loading and unloading operations, or required a relatively long time and large labor force for proper securing.

Accordingly, it is an object of the present invention to provide a container hold down device which is free from the foregoing difficulties and disadvantages.

It is another object to provide such a device which securely holds down containers without the need for straps, ropes, chains, or the like.

It is another object to provide such a device which, when not in use, is flush with the surface in which it is mounted so as not to hinder movement of wheeled containers, for example.

It is a further object to provide such a device which permits containers to be secured for transit and unloaded in a relatively short period of time and with a minimum labor force.

It is a still further object to provide a device of the foregoing character which is simple in design, rugged in construction, economical to manufacture, reliable in operation and readily installed and maintained.

Other and further objects of the invention will be obvious upon an understanding of the illustrative embodiment about to be described, or will be indicated in the appended claims, and various advantages not referred to herein will occur to one skilled in the art upon employment of the invention in practice.

In accordance with the present invention, the foregoing objects are accomplished by providing a container securing and hold down device comprising, an open topped frame, a container engaging member pivotally mounted in the frame, a frame closure member pivotally mounted in the frame on an eccentric axis, and frame closure member operating means mounted for pivotal movement in the frame and shifting said eccentric axis to produce linear movement of said frame closure member.

A preferred embodiment of the invention has been chosen for purposes of illustration and description, and is shown in the accompanying drawing, forming a part of the specification, wherein:

Fig. 1 is a plan view of a container hold down device embodying the present invention;

Fig. 2 is a cross sectional view of a container hold down device embodying the present invention and illustrating the same in container engaging position;

2

Fig. 3 is a cross sectional view similar to Fig. 2 but illustrating the device in an intermediate position;

Fig. 4 is a cross sectional view similar to Figs. 2 and 3 but illustrating the container engaging member in its housed position and, in broken lines, the frame closure member in frame closing position;

Fig. 5 is an elevational view of a container secured for transit by the device of the present invention; and

Fig. 6 is a fragmentary perspective view illustrating the relationship of a vehicle platform, the device of the present invention, and a container secured for transit.

Referring to the drawing in detail, and more particularly to Fig. 1 thereof, there is shown an open topped frame 10, a container engaging member 11 housed within the frame, a frame closure member 12 closing the top of the frame, and a frame closure operating member 14 mounted in the frame for actuating the closure member.

The frame 10 has a flat bottom 15 interconnecting the upstanding opposite side walls 16 and 17 and constituting together therewith a housing for the container engaging member 11 when the same is not in container engaging position. The frame is also formed with a pair of oppositely disposed ribs 19 and 20 extending upwardly from the bottom 15 and terminating slightly below the upper level of the side walls. These ribs project interiorly from side walls 16 and 17, respectively, and serve as stop for the frame closure member, as will be discussed in detail.

The container engaging member 11 is a generally flat spear head shaped element, as shown in Figs. 1 and 6, and has a pair of oppositely disposed, outwardly extending barb-like projections or lugs 21. This member is provided with a bore 22 extending therethrough adjacent an end thereof by which it is pivotally mounted on a shaft 24 transverse of the frame and supported at its ends in side walls 16 and 17. In plan, the sides of the member 11 diverge in a direction away from the lugs 21 towards the pivoted end thereof. In profile, as viewed in Fig. 4, the member 11 is formed with an upper face 25 which is inclined downwardly in a direction from the pivoted towards the free end thereof. The upper and the lower faces thereof are provided with steps or shoulders 26 and 27, respectively, for a purpose to be described.

The frame closure member 12 consists of a pair of blocks 30 and 31 connected by a flat U-shaped element 32 providing a recess 34 between its legs. Triangular gussets 35 are based upon the blocks 30 and 31 and extend under the U-shaped element 32 along the longitudinal center line of each leg to stiffen the same.

The blocks 30 and 31 are provided with horizontal bores 36 and 37, respectively, extending transversely therethrough along a common axis.

The frame closure operating member 14 consists of a block member 39 having a transverse bore therethrough, and provided with a finger or projection 40 flush with one surface thereof. The member 14 is of a size to fit within the space between the blocks 30 and 31 constituting the recess 34, and the finger 40 is provided with a central aperture 41 adjacent its free end. A transverse bar or latch 43 is secured to the outer surface of the block member 39 and is of sufficient length to overlie the end faces of the blocks 30 and 31.

In assembling the frame, the closure member and the closure operating member, the operating member is centrally and fixedly mounted, as by a suitable pin 42, for example, on a shaft 44, the ends of which are rotatably supported in the bores 36 and 37 of the blocks 30 and 31. This shaft 44 is formed with an eccentric, longitudinal bore 45 extending therethrough having its axis disposed adjacent and parallel to the axis A of the shaft

itself so that a second shaft 46, having a central axis B, may be inserted through the shaft 44 by its eccentric bore 45 for support at its ends in the frame walls 16 and 17.

The shafts 44 and 46 when assembled as described jointly constitute eccentric means, rotation of shaft 44 of which is effective to shift closure member 12 bodily towards and away from container engaging member 11. Such shifting of member 12 in horizontal position toward member 11 in partially elevated position providing very powerful means for forcing member 11 to fully elevated position.

In placing the pin 42, it should be noted that the closure member, the operating member and the shafts 44 and 46 are preferably so related that, when the closure member is in its normal frame closing position, as viewed in Fig. 2, or in broken lines in Fig. 4, and when the operating member is also in its normal flush position, the axis of the shaft 46 is disposed below that of the shaft 44 and outwardly thereof relative to shaft 24 of member 11 so that a plane passing through both axes A and B would be inclined about 45° from the vertical.

In its operating environment, the device of the present invention may be inserted in a suitable recess in a railway freight car deck 47, for example, or the side walls of the deck recess may serve as the frame 10 itself, the shafts 24 and 46 being mounted in the recess side walls. If a separate frame is used, it is mounted with the top of the side walls flush with the top surface 47A of deck 47.

In its normal position, that is, when not in use, the container engaging member 11 is housed within the frame 10, as shown in Figs. 1 and 4, the frame closure member 12 overlies the same, its top surface 12A, which extends continuously between the side walls 16 and 17 and is a weight bearing surface, being flush with the top of the frame side walls and its lower surface resting upon the ribs 19 and 20, and the operating member 14 has its finger 40 in the recess 34 flush with the top surface of the closure member so that the weight bearing top surface of deck 47 is substantially unbroken and the movement of container wheels, for example, thereon will not be interfered with.

In operation, to condition the device of the present invention to hold down a container, the operating member is rotated in a counterclockwise direction, as viewed in Figs. 2, 3 and 4, by means of the aperture 41 which serves as a finger or tool grip. Initially, the operating member 14, and the shaft 44 to which it is fixedly connected by the pin 42, rotate about the axis B of the shaft 46. Due to the eccentric disposition of the shaft 46 with respect to the shaft 44, together with the fact that the shaft 44 is rotatably supported at its ends in the bores 36 and 37 of the blocks 30 and 31, this initial rotation causes the closure member to move linearly in a direction away from the end of the frame in which the container engaging member 11 is mounted. However, when the aforementioned rotation causes the latch 43 to come into abutment with the external faces of the blocks 30 and 31, it will be apparent that further rotation of the operating member will cause the shaft 44 and the closure member to rotate with it as a unit about the axis B of the shaft 46 thereby unclosing the frame.

When the frame is sufficiently unclosed, that is, when member 12 has swung out of the path of movement of member 11, said container engaging member 11 is rotated in a clockwise direction, as viewed in Figs. 2, 3 and 4, about the shaft 24 until it is almost vertical.

The closure member is then returned to its normal position along with the operating member by rotating the latter in a clockwise direction. It will be noted that, as shown in Figs. 2, 3 and 6, return of the closure member to its normal position places its free end surface 32A in abutment with the shoulder 27 of the container engag-

ing member so that the same is securely locked in operating position.

As shown in Figs. 5 and 6, the container 48 to be secured is provided with a pair of suitably located, horizontally extending spring loaded, retractable pins 49 so that as the container is lowered into position, the inclined face 25 of the container engaging member urges the container pins inwardly against their springs until the pins pass under the lugs 21 at which time the pin springs will snap the pins outwardly thereby locking the container in place.

To remove the container, the pins 49 are retracted by any suitable means such as a push plate so that the container may be lifted free.

The container might also be rolled into place if desired, in which case the hold down device is not placed in operating position until the container is properly placed.

It should be understood that the engagement of the members 11 with the container constitutes a tight fit, as particularly illustrated in Figure 5. When the container is placed before the members 11 assume their engaging position said members will contact the container before reaching the desired engaging position and means must be available for forcing them through a small angular travel from the initial contacting position to the desired tight engaging position. Such means is provided in the closure member 12 and its mounting and operating means previously described. The contacting position is illustrated in Figure 3. The finger 40 may now be forced downward to the horizontal position of Figure 2, thus forcing the closure member 12 rightwardly of the figures, the end surface 32A of element 32 contacting member 11 and forcing it inwardly against the container to tight engaging position.

To remove a container by rolling, it is merely necessary to return all the elements of the hold down device to their normal housed position, in the manner about to be described, so that the container may be rolled over the hold down device to any desired location.

To return the hold down device to its normal position, the frame is unclosed as described heretofore, the container engaging member is rotated about shaft 24 in a counter-clockwise direction, as viewed, to the position shown in Fig. 4, and the closure member and the operating member are returned to their normal positions as has been described.

From the foregoing description, it will be seen that the present invention provides a simple, inexpensive, rugged and reliable container hold down device which secures containers to vehicle surfaces, for example, without the need of straps, chains, ropes or the like. It will also be seen that such device, when not in use is flush with the surface of the vehicle so as not to hinder movements of wheeled containers or other operations and which permits containers to be secured for transit and unloaded in a relatively short period of time and with a minimum labor force.

As various changes may be made in the form, construction and arrangement of the parts herein, without departing from the spirit and scope of the invention and without sacrificing any of its advantages, it is to be understood that all matter herein is to be interpreted as illustrative and not in any limiting sense.

What is claimed is:

1. A container securing device for mounting on a deck having a top surface on which a container may be placed, said device comprising an open topped frame having side walls and means interconnecting said side walls and constituting together therewith a housing, said device further comprising a container engaging member pivotally mounted on a shaft on said side walls, the axis of said shaft being transverse to said side walls and said member being swingable from a substantially horizontal position entirely within said frame to an elevated approxi-

5

mately vertical container engaging position in which it may abut a substantially vertical wall of a container resting on said deck, said device further comprising frame closure means rotatably mounted on said side walls about an axis transverse to said side walls and spaced from said first mentioned axis, said means being swingable from a substantially horizontal position overlying said container engaging member when the latter is horizontal and within said frame to an elevated inclined position out of the path of swinging of said container engaging member, said closure means having an end surface abutting said container engaging member in the elevated position of the latter and when said closure means is horizontal, said closure means in horizontal position further having a substantially flat, continuous weight bearing surface extending substantially from one of said side walls to the other and flush with said deck top surface and said device further comprising stop means mounted on said frame and supporting said closure means in said horizontal position.

2. A device according to claim 1, said closure means being rotatably mounted on a first shaft and said first shaft being eccentrically mounted on a second shaft, said second shaft being mounted on said side walls, the axis of said first shaft upon rotation thereof in one direction moving in a direction toward said shaft of said container engaging member and upon rotation of said first shaft in a direction opposite to said first named direction moving in a direction away from said shaft of said container engaging member, and said device further comprising a closure operating member comprising a block fast on said first shaft and having a latch member projecting from said block and abutting a surface of said closure means after limited rotation of said block relative to said closure means, rotation of said operating member around the axis of said second shaft when said container engaging member is engaged resulting first in rotation of said first shaft in said second named direction and linear withdrawal of said closure means away from said container engaging member and subsequently resulting in engagement of said latch member with said closure means and rotation of the latter as a unit with said operating member to swing said closure means free of said container engaging member.

3. A device according to claim 2, said closure means being U-shaped in plan and being pivotally mounted adjacent the ends of the legs of the U and said legs defining a recess located between them and said closure operating member being located in said recess.

4. A device according to claim 1, said closure means being rotatably mounted on a first shaft and said first shaft being eccentrically mounted on a second shaft, said second shaft being mounted on said side walls, the axis

6

of said first shaft upon rotation thereof in one direction moving in a direction toward said shaft of said container engaging member and upon rotation of said first shaft in a direction opposite to said first named direction moving in a direction away from said shaft of said container engaging member, said device further comprising a closure operating member operatively connected to said first shaft to rotate the same and means operatively connected to said first shaft and to said closure means and providing upon rotation of said first shaft in said second means direction limited free rotation thereof relative to said closure means followed by rotation of said first shaft and said closure means as a unit, whereby upon such operation of said operating member said closure means during said free rotation of said first shaft in said second named direction is withdrawn linearly from said container engaging member and during said rotation as a unit said closure means is swung away from said container engaging member.

5. A device according to claim 1, said closure means being rotatably mounted on a first shaft and said first shaft being eccentrically mounted on a second shaft, said second shaft being mounted on said side walls, the axis of said first shaft upon rotation thereof in one direction moving in a direction toward said shaft of said container engaging member and upon rotation of said first shaft in a direction opposite to said first named direction moving in a direction away from said shaft of said container engaging member, said device further comprising a closure operating member operatively connected to said first shaft to rotate the same whereby upon operation of said closure operating member in one direction said closure means is withdrawn linearly away from said container engaging member and upon operation of said closure operating member in the opposite direction said closure means is moved linearly against said container engaging member.

6. A structure according to claim 1 and further including means in engagement with said frame closure means for forcibly shifting said frame closure means in horizontal position bodily towards said container engaging member.

7. A structure according to claim 1 and further including eccentric means connected to said side walls and to said frame closure means for bodily shifting said frame closure means in horizontal position towards and away from said container engaging member.

#### References Cited in the file of this patent

##### UNITED STATES PATENTS

|           |            |               |
|-----------|------------|---------------|
| 999,828   | McNaughton | Aug. 8, 1911  |
| 2,532,743 | Storch     | Dec. 5, 1950  |
| 2,567,063 | Fox        | Sept. 4, 1951 |

---

UNITED STATES PATENT OFFICE  
CERTIFICATE OF CORRECTION

Patent No. 2,887,070

May 19, 1959

Boris Terlecky et al.

It is hereby certified that error appears in the printed specification of the above numbered patent requiring correction and that the said Letters Patent should read as corrected below.

Column 6, line 10, claim 4, for "said second means" read -- said second named --.

Signed and sealed this 22nd day of September 1959.

(SEAL)

Attest:

KARL H. AXLINE  
Attesting Officer

ROBERT C. WATSON  
Commissioner of Patents