Aug. 23, 1938. A. W. CROSS 2,127,500

CONTAINER FOR PNEUMATIC TUBE CONVEYERS

Filed Sept. 1, 1937

Fig. 1.

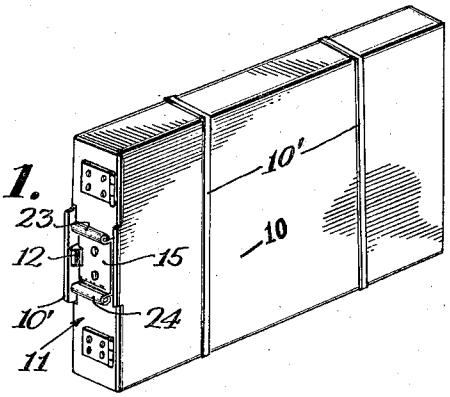


Fig. 2.

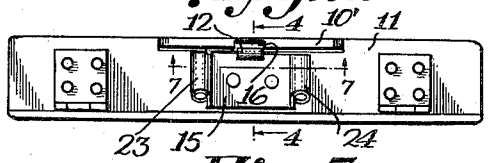


Fig. 3.

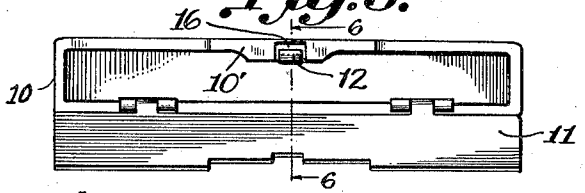


Fig. 4.

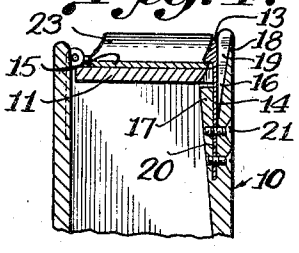


Fig. 5.

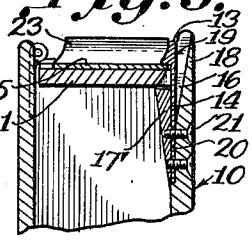


Fig. 6.

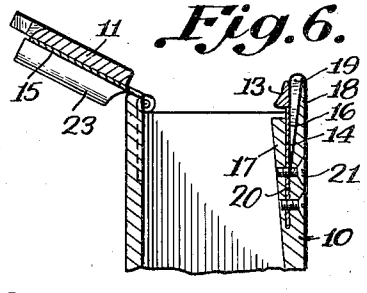


Fig. 7.

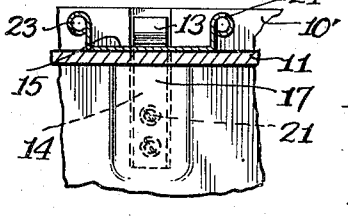
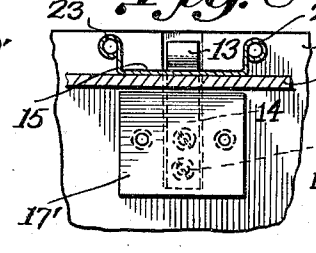


Fig. 8



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CONTAINER FOR PNEUMATIC TUBE CONVEYERS

Arthur W. Cross, Keyser, W. Va.

Application September 1, 1937, Serial No. 161,903

4 Claims. (Cl. 243—35)

(Granted under the act of March 3, 1883, as amended April 30, 1928; 370 O. G. 757)

The invention described herein may be manufactured and used by or for the Government of the United States for governmental purposes without the payment to me of any royalty thereon.

This invention pertains to containers and more particularly to containers of that type which are used as carriers in pneumatic tube conveyers.

Primarily the invention relates to a closure for such containers and means for mounting and locking the closure member of the container with respect to the body portion thereof.

In large department stores, office buildings, and particularly in the departmental buildings of the Government it is a more or less common practice and expedient to transmit mail, papers, packages and objects from one office, or department, to another by means of pneumatic tube conveyers. In the use of these conveyers difficulty has been experienced in the provision of suitable, substantial and dependable containers for the carrying of such objects safely through the tubes.

The primary failings of the prior known types of containers of this class are that they are receptive to injury, both to the container and closure member therefor as well as to the means for gripping the closure member to the container; and that the locking means are unreliable, complicated and difficult to operate.

The most commonly used containers of this type are provided with exposed latches or locks which are readily liable to damage and interfere with the free passage of the container through the tube. The unshielded locks are further unreliable due to their susceptibility to accidental release caused by the contact or ramming of the containers, one with another, in travel.

In an effort to obviate such failings as mentioned, the locking means are necessarily made complicated and difficult to operate. Also in an effort to remedy the unreliable and unsatisfactory features thereof, resort has been had to a strap type of locking means. In the use of this type of locking means, however, it is a most common occurrence for the strap to wear, tear and stretch, particularly at the point where the strap is engaged by a tongue, buckle or clamp, whereby the closure for the container becomes insecurely closed resulting in damage to the container, to the closure member, the locking means, and particularly to the contents of the container. Furthermore, in the locking and unlocking of the strap type securing means the operator must necessarily utilize both hands, resulting in the inefficient handling of the container and the dispatch of the articles.

A purpose of my invention is to eliminate the aforementioned failings and provide a container having retaining means in which the parts will readily and securely engage upon the bringing of the closure member into juxtaposition with the container proper, which interlocking parts may be easily and expeditiously released by the simple manipulation of one element requiring the use of but one hand of an operator and leaving the other free for inserting and retrieving objects to and from the container. Such a structure may be efficiently handled by a one handed operator.

Further purposes of my invention are to provide a container having means to protect and shield the container, the closure member thereof, and the cooperative locking elements mounted thereon when traveling or being stacked end to end; to provide a container having means to prevent the accidental releasing of the closure member, particularly in travel; to provide a container having latching means which cannot cause injury to, or a jamming in, the tube during its travel; to provide a container having means adjacent its opening to guide objects past the latching means into and out of the container without injuring or snagging either; and to provide a container having means to prevent the elastic exhaustion of the locking means, thereby obviating a common failing of the strap type securing means.

Broadly, the invention comprises a container having a closure member, cooperative means mounted on the container and closure member for securely holding the one in locked position with respect to the other, the cooperative locking means comprising a latch capable of spring action, and so mounted upon the container as to be shielded on all sides, and a keeper, to be engaged by the latch, having opposed shields therefor which may be grasped by one hand in a manner to allow one finger thereof to be utilized to release the latch from the position in which it rests in automatically engaging the keeper.

Other objects and functions will become apparent from the following detailed description of the invention, it being understood that the foregoing statements are intended to generally explain the same without limiting it in any manner.

A container of my improved construction having the characteristics of my invention and by which the same may be practiced is intended to

be illustrated in the accompanying drawing, in which

Figure 1 is a perspective view of a container illustrating the application of the locking elements automatically brought into gripping and locking position by merely bringing the closure member into juxtaposition with the body portion of the container.

Figure 2 is a similar illustration in plan.

Figure 3 is also a plan view with the lid or closure member open and the locking elements in a non-engaging position.

Figure 4 is a cross sectional view taken at lines 4—4 of Figure 2, and—

Figure 5 is similar thereto except for the illustration of a modified form of means for retaining and shielding the spring latch locking elements.

Figure 6 is a cross sectional view taken at lines 6—6 of Figure 3.

Figure 7 is a section in elevation taken at lines 7—7 of Figure 2, and—

Figure 8 is similar to Figure 7, except for the illustration of a modified form of spring retaining and shielding means similar to that of Figure 5.

Referring in particular to the drawing, it will be seen that my invention comprises a container having a body portion 10, provided with suitable driving bands 10' as illustrated in Figure 1, and having a closure member, lid or door 11, which, when brought into juxtaposition are locked securely by the automatic engagement of a locking means 12, comprising a catch 13 actuated by a spring 14, with a keeper 15 carried by closure member 11.

The retaining and shielding means for the spring 14 and catch 13 may be provided, according to my invention, in a number of alternate and modified ways such as disclosed in the drawing. For example, as shown in Figures 4, 6 and 7 the portion of the body 10 of the container upon which the spring latch 12 is to be mounted, may be provided with a flange portion 10', inwardly of which may be provided a slot 16 to receive the spring 14 between the surfaces of the wall of the container 10. This slot 16 should preferably be of a depth as great as, or greater than, the length of the spring 14 combined with the catch 13. The wall portion 17 inwardly of the slot 16 should be removed to a depth sufficiently to permit the catch 13 to project thereover without exposing the upper end of the catch above the flange 10' of the opposed portion of the wall, and should further be removed sufficiently beneath the catch 13 to provide a space, between the bottom of the catch and the top of the wall portion 17, sufficiently to receive the keeper 15 and the lid or closure member 11, unless it is desired to have the closure member pass by the portion 17. The wall portion 18 outwardly of the slot 16 which continues into the flange portion 10' forms a shield to the outer side of the spring 14 and the back of the catch 13 while the wall portion 17 forms a shield to the under side of the catch and the innermost face of the spring to prevent injury to or by the spring latch. The flange portion 10' also functions as a guide with respect to the walls of the tube of the conveyer to prevent snagging which may result in the jamming of the containers with the tube, while the wall portion 17 also forms a shield to deflect objects past the catch 13 as they are inserted or returned from the container. A flange similar to 10' may be provided on the opposite side wall of the container, as illustrated in Figures 1, 4, 5 and 6, for a purpose similar to flange 10'.

The upper portion 19 of the wall of the slot 16 at the back of the catch should be beveled from an intermediate point in the slot sufficiently to provide a breadth substantially that of the breadth of the catch 13 in order that the spring 14 may be flexed sufficiently to allow the keeper 15 to pass over the nose of the catch 13. The beveled wall portion 19 also serves as a means for limiting the flexure of the spring whereby elastic exhaustion is prevented, thereby obviating a failing common to the strap type latching means. The bottom portion 20 of the walls of the slot 16 should have perpendicular or parallel walls on a plane with the surface of the slot formed by the wall portion 17 in order that the spring 14 may be held vertically, against the wall of the slot formed by the wall portion 17, when the spring is normally at rest.

The spring 14 may be secured within the slot by any suitable means, preferably, however, by screws 21, counter-sunk to prevent snagging, in order that the spring may be removable.

In the latter form of construction, the slot 16 should be so located between the surfaces of the container wall as to provide a thickness in the wall portion 17 equivalent to, or greater, than the breadth of the catch 13 in order that the portion 17 may function to guide to and deflect objects, passing in close proximity thereto, past the nose of the catch without injury thereto or thereby, and should also be of sufficient thickness, as pointed out heretofore, to serve as a seat for the keeper 15, and closure member 11.

If the container wall is not thick enough to provide an inner wall portion 17 of sufficient thickness to shield the catch from beneath, then the upper portion thereof may be bent away from the slot sufficiently to compensate for the additional breadth of the catch, or the entire wall portion 17 may be bulged toward the interior of the container, as is indicated in Figure 7, and a filler or shim (not shown) inserted into the slot between the inner wall portion 17 and the spring 14.

As an alternative to compensate for an insufficient thickness, the wall of the container may be formed with a boss or added thickness such as is illustrated in Figures 3 and 6, respectively.

An alternative form of applying and shielding the spring latch is illustrated in Figures 5 and 8, wherein it will be seen that the same results and functions are accomplished by substituting a strap or plate 17' for the inner wall portion 17 in the previous form of construction. In this form of construction the plate 17', or the adjacent inner surface of the container wall, or both, may be recessed or grooved, instead of slotted, to accommodate the spring 14. If desired, however, the plate 17' may be omitted entirely, but in such a construction the inner wall of the container should be recessed or grooved deep enough to carry the spring on a plane with, or below, the plane of the surface of the inner wall of the container to prevent a snagging of, or by, objects as they are inserted and removed from the container.

The plate 17' may be secured in position by any suitable means such as by screws 21 which retain the spring 14, or by additional similar screws as is indicated in Figure 8.

The keeper 15 may consist of a portion of the closure member 11, or it may be cast thereon, or

be separately applied thereto. The latter would seem to be the simpler.

The keeper 15 is provided with a surface portion to be gripped or engaged by the catch 13. The edge of the keeper, as well as the edge of the member upon which the keeper is mounted, should preferably be beveled or rounded, as is indicated in Figures 4, 5 and 6, to impart a directional force to the catch 13 as the keeper passes therebeneath, and also to minimize the friction between these elements during the latching operation.

In combination with the gripping surface of the keeper 15, I provide opposed shields 23 and 24, along the sides thereof, which shields should preferably project at an angle to the closure surface and should project to a height approximately that of so much of the catch 13 as projects above the gripping surface of the keeper when the catch is in gripping position.

The shields 23 and 24, therefore, function to shield the gripping surface of the keeper and the catch 13, as well as to shield the closure 11 upon which the keeper is mounted, against injury to or by objects brought into contact therewith or passing in close proximity. Frequently containers, of the type shown to illustrate the invention, travel or are stacked end to end, and in the use of my improvements thereon the shields 23 and 24, function as a spacer between the carriers as well as a protector for the latch and also for the container. These shields 23 and 24 also function as means to prevent the accidental releasing of the catch 13 from the gripping surface of the keeper 15.

The upper ends of these shields are preferably rolled, curved or bent at an angle to the standing parts of the shields for an important purpose, namely to facilitate a manual gripping thereof, incidentally as a handle and primarily for the expeditious releasing of the catch 13, expeditious in respect that the catch may be released by the use of but one hand. For example, the shield 23 may be gripped by the thumb and the shield 24 by the second or third fingers, the catch 13 may then be pushed forward and released by the index finger. The other hand of the operator is thus left free for other purposes, such for example as for the insertion or retrieving of objects to and from the container.

What I claim is:

1. A pneumatic despatch carrier including a body having an open end, a closure hinged to said body adjacent its open end, a portion of the wall of the body extending above the closure, a spring latch the spring of which is carried within the extended wall portion and the catch of which terminates below the end of the extended wall portion, a shield on the closure at each side of the latch to shield it against accidental displacement and also to serve as handles for facilitating the manipulations of the closure in opening and closing the same, and means whereby the carrier may be propelled.

2. A pneumatic despatch carrier, the wall ends of which form an access opening having an inwardly stepped seat and peripheral shield for a closure member, a closure member adapted to fit into the access opening and having a surface portion adapted to serve as a keeper for a latch, a latch mounted upon a wall of the carrier for automatically engaging the keeper surface of the closure member, opposed means projecting outwardly from the face of the closure member contiguous with said keeper surface to shield the latch and keeper and to serve as manual gripping means to facilitate releasing the latch when in engagement with said keeper, and circumambient means whereby the carrier may be propelled through a conduit.

3. A pneumatic despatch carrier adapted to be propelled through a conduit, said carrier including an open ended body having opposed side walls the respective inner sides of which are provided with a hinge and a seat, a closure member for the body opening secured to said hinge and adapted to rest upon said seat, a latch adapted to latch over the edge of the closure member, said latch having an actuating spring and a latching portion, the actuating spring being mounted between the surfaces of the seat-provided wall in a manner to carry the latching portion below the end of the seat-provided wall and superposedly over the entire thickness of said seat, said latching portion having an upper obliquely disposed surface to facilitate the passage of the closure member therebeneath.

4. A pneumatic despatch carrier including an open ended body having side walls and a means thereon whereby the carrier may be propelled, a closure member shielded by said side walls, a latch for the closure member shielded by one of said side walls, and a seat for the closure member shielded by said latch.

ARTHUR W. CROSS.