Dec. 1, 1964 D. RAWLE 3,159,299

PALLET BINS

Filed Oct. 29, 1963

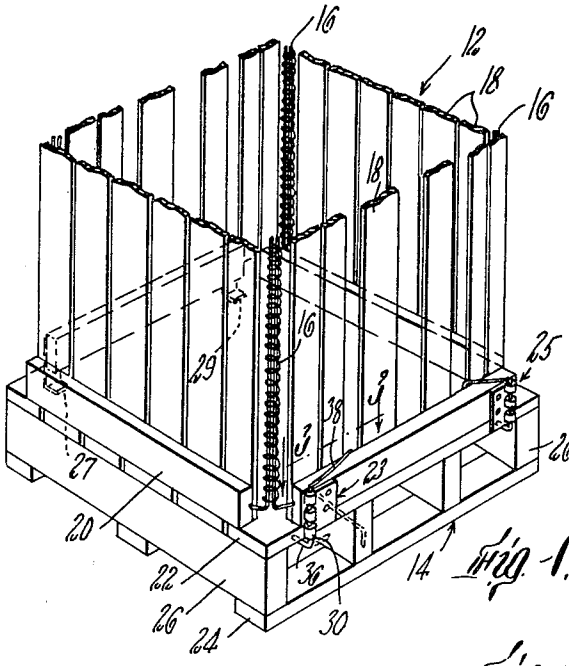


Fig. 1.

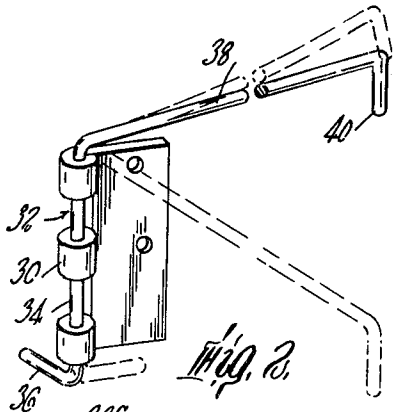


Fig. 2.

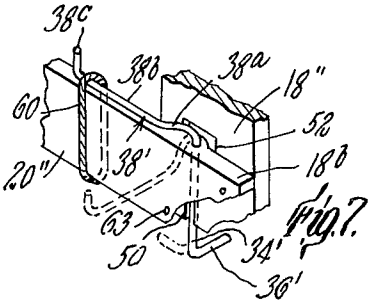
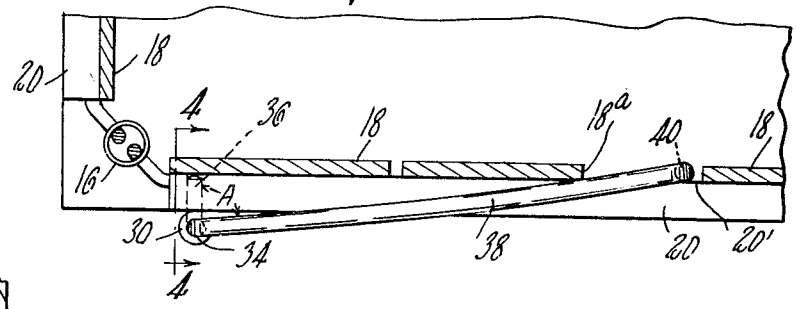


Fig. 7.

Fig. 3.



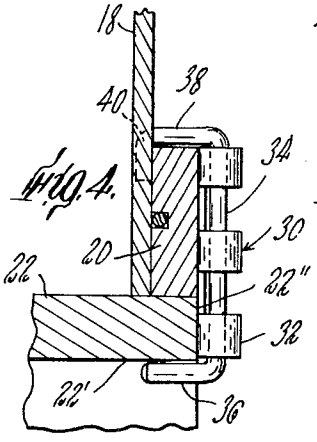


Fig. 4.

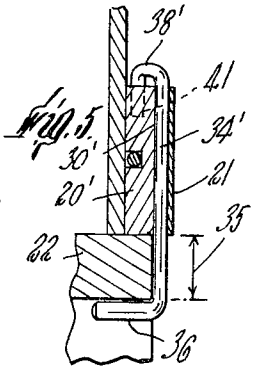


Fig. 5.

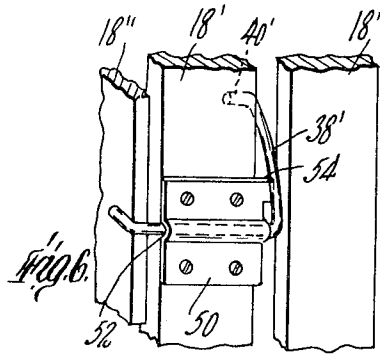


Fig. 6.

United States Patent Office 3,159,299 Patented Dec. 1, 1964

3,159,299

PALLET BINS

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Filed Oct. 29, 1963, Ser. No. 319,872
7 Claims. (Cl. 217—43)

This invention relates to pallet bins and the like in which a collapsible box enclosure rests upon a base, to define a volume for storing and shipping materials, and to collapse when not in use to save space. This application is a continuation in part of my application Serial No. 193,532 filed May 9, 1962.

In many instances of shipping and storing materials, it is necessary that the enclosures be secured to their bases to prevent inadvertent collapse and to provide a stable support for further enclosures and pallets to be stacked on top. It is necessary that the means for securing the enclosures be inexpensive and simple to secure. In the prior art numerous devices have been employed, but every one has been objectionable either from the standpoint of being too expensive, or in employing loose parts or tools which can be lost, or in requiring too much time and care in securing and releasing the enclosure from its base. It is therefore a principal object of the invention to provide a simple and inexpensive device which is permanently attached to the enclosure and enables the enclosure to be quickly secured to and released from its base.

Another objective is to provide such a device which can also serve to secure covers and doors of the enclosures.

In the drawings:

FIG. 1 is a perspective view partly broken away of an enclosure resting upon a pallet, with two of the quick release devices in position;

FIG. 2 is a perspective view on a larger scale of one of the devices alone;

FIG. 3 is a horizontal cross-sectional view of a portion of the embodiment of FIG. 1, taken on line 3—3;

FIG. 4 is a vertical cross-sectional view taken on line 4—4 of FIG. 3;

FIG. 5 is a vertical sectional view, similar to FIG. 4, of another preferred embodiment of the invention;

FIG. 6 is a perspective view of a device of the invention securing a door relative to an enclosure panel; and

FIG. 7 is a perspective view of another embodiment of the invention.

Referring to FIG. 1, a collapsible enclosure rests upon a pallet 14, the enclosure comprises four panels 12 joined together by helix hinges 16 into a collapsible unit. Each of the panels comprises a multiplicity of structural vertical slats 18 joined together at their upper and lower ends by horizontal cleat members 20. The pallet 14 comprises top and bottom decks 22 and 24, respectively, and spaced-apart stringers 26 joining the decks together.

In the embodiment of FIG. 1, two quick locking and release devices, 23 and 25, on one panel of the enclosure cooperate with two permanently stationary clamps 27 and 29 on an opposite panel, to secure the enclosure to the pallet. Each quick locking and release device is an extremely simple pivoted clamp. It is comprised of two elements, a continuous member 32 preferably formed by a constant cross-section rod bent into a special form and an elongated journal 30 mounted on the lower cleat 20, the journal axis extending vertically, positioned slightly outside the part of the panel that corresponds with the outer edge of the deck 22.

Referring to FIG. 2, the member 32 has an elongated, cylindrical pivot portion 34 fitted within the journal 30, and extending downwardly beyond the lower edge of the panel a distance corresponding to the thickness of the top deck 22 or other article to be secured, a locking portion 36 extending from the lower end of the pivot portion at a

right angle to it, and an actuating lever 38 extending from the upper end of the pivot portion at a right angle thereto, the actuating lever 38 being displaced outwardly about the axis of the journal a substantial angle A (FIG. 3) relative to the locking portion 36. The rod member 32 is locked against relative vertical movement with respect to the journal, this being accomplished by the right angle portions at each end of the pivot portion 34. As shown in the dotted lines in FIGS. 1 and 2, when the lever 38 is grasped and turned to extend outwardly at an angle to the plane of the panel, the locking member 36 can extend parallel to the panel plane and outside and below the edge of the pallet deck 22. When the enclosure is to be locked to the pallet, the actuating lever 38 is turned towards the cleat 20, moving the locking portion 36 under the edge of the deck 22. Referring to FIGS. 3 and 4, when the actuating lever 38 lies substantially in the plane of the panel, the locking portion 36 engages the under-surface 22′ of the pallet deck 22. The journal member 30 extends downwardly from the cleat 20, and engages the outer edge 22″ of the top deck of the pallet, restraining the panel from inward movement relative to the top deck.

In the embodiment of FIG. 5, the means defining the journal does not extend below the upper surface of the top deck, but the elongated pivot portion 34′ does, and this portion engages the edge of the top deck, to restrain against horizontal movement.

Referring to FIG. 5 only actuating lever 38′ engages the journal at an angle in this embodiment, relative vertical movement between the rod member and the journal is restrained with the deck in plane when the deck is equal in thickness to the amount 35 that the pivot portion is longer than its journal. In this embodiment, when not in use, the pivot portion 34′ can be moved upwardly to conceal the lower part of the rod member. Another advantage of this embodiment is that a shim can be inserted under the lever 38 to accommodate pallet decks that are thinner than the standard.

Referring to FIG. 1, the locking member can be positioned to engage the stringer 26, to restrain also against horizontal movement in its direction.

The actuating lever 38 is adapted to be secured to the panel of the enclosure when the device is in locking position. To this end the lever 38 is preferably made of an elongated steel rod that has such a diameter as to have resiliency. The end of the rod is bent downwardly to form a securing portion 40 which in the unstressed or normal condition of the lever, extends below the upper edge of the lower cleat 20 so that the cleat is in the normal path of movement of the securing portion. The resiliency of the rod is sufficient to enable the lever to be bent upwardly as shown in FIG. 2, so that the securing portion 40 can be moved over the upper edge of the cleat. The inner surface 20′ of the cleat (FIG. 3) serves as a catch surface to engage the securing portion 40.

The slats 18 are spaced apart near the outer end of the lever 38 permitting the securing portion 40 to move over the cleat 20 to alignment with the catch surface which it engages when the upward force which flexes lever 38 is released. Equally, where loose material is packed that does not permit such spacing of the slats at this point, a vertical hole 41 (FIG. 5) is provided in the upper surface of the cleat into which the securing portion 40 of the rod can be inserted to secure the device.

The slat edge 18*a* is an abutment positioned to engage the lever 38 intermediate its ends before the securing portion swings inwardly sufficiently to engage the catch surface. Therefore, the lever is resiliently bent about that edge and the rod is under tension when securing portion 40 is pressed inwardly to engage catch surface 20′. Accordingly, when the securing portion 40 engages the catch

surface, the lever 38 is restrained from moving in either direction.

Advantageously, the cleat of the panel, which is a structural member, cooperates to form part of the journal. Referring to FIG. 5, the cleat 20' has a vertical slot 30' cut in it, corresponding in width and depth to the diameter of the pivot portion 34'. A cover plate 21 is secured to the outer surface of the cleat completing the journal.

Referring to FIG. 6, the device for securing the enclosure to the pallet can also be employed to secure an access door of the pallet enclosure to a panel. The panel is formed of slats 18' and the door 18'', when in the closed position, forms a panel at right angles to it, the door being pivoted by means not shown. The clamp device is secured to the first slat 18', the journal axis extending horizontally. The journal is formed by a plate 50 having a slot 52 indented therein, mounted against the slat as shown. The plate extends upwardly to edge 54 lying in the path of arm 38'. The arm engages the edge 54 before the securing portion 40' can extend behind the slat 18'. Movement of the lever arm 38' to carry the securing portion 40' behind the slat 18' causes the rod to be resiliently bent about edge 54 so that here again the securing portion can tightly engage a catch surface, here the inside surface of slat 18'.

Referring to FIG. 7, an embodiment is shown that is similar to that of FIG. 5. However, instead of the journal being completed by a separate cover plate 21 lying over the slotted structural member of the panel as in FIG. 5, the FIG. 7 embodiment advantageously defines the journal by the use of two structural members of the planar panels that are normally secured together. As shown, the structural wooden slat 18'' is provided with an elongated slot 50 cut in the face that is nailed at 63 to the structural wooden cleat 20''. A single steel rod member has an elongated cylindrical pivot portion 34' fitted tightly in the elongated journal thus defined, and supports an integral locking portion or hook 36' for locking the panel to an adjacent panel or pallet.

A perpendicular slot 52 is also provided in the slat 18'', extending parallel to and immediately adjacent the edge 18*b* of the cleat 20 and an integral lever 38' extends at a right angle to the pivot portion 34'. The lever 38' comprises two integral portions set at an angle to each other, the first portion 38*a* adapted to move in the slot 52 and to engage one end thereof when in locking position, and elongated portion 38*b* that extends parallel to the cleat 20'' when the first portion 38*a* engages the end of slot 52, whereby the lever 38' lies in the plane of the panel and is thereby substantially protected when in the normal locking position. It will be understood that all portions of the pivot clamp (the locking portion 36', the pivot portion 34' and the lever portion 38') are integral parts of a single steel rod that has been formed by bending.

In this embodiment it is advantageous that the rod has substantial rigidity, and the clamp is held in its normal position by a band that engages the outer end of the lever 38', preferably a strong elastic band 60 as shown, although a band of other material could be employed. Thus a relatively light force can be applied to hold the locking portion 36' in place, while the locking portion is able to withstand great force in the direction perpendicular to rotation, and sufficient force in the plane of rotation. When an elastic band is employed, an upsturned end 38*c* is employed on the lever 38' to prevent inadvertent disengagement of the band 60.

Panels, covers and pallets, which I refer to generically as wall members, can be joined in numerous ways with the pivot clamp of this invention. It is advantageous for the wall member to be engaged by the locking portion simply to have a slot or opening into which the locking portion can move to engage at least one, but possibly as many as four surfaces to restrain relative movement in one to four directions.

Modifications of certain specific details of the foregoing embodiments can be made within the spirit and scope of the invention.

I claim:

1. A pallet box enclosure having a pallet base and a plurality of side panels collapsibly secured together for support upon said pallet base and at least one quick release locking device to lock an edge of one of said panels against the upper part of said pallet base, said locking device comprising a member having an elongated pivot portion rotatably secured to said panel in a journal means, the axis of which lies in a plane substantially parallel to said panel, the locking device including at least said pivot portion protruding beyond the edge of said panel against which device said pallet base can bear laterally, a locking portion at said protruding end of said pivot portion extending at a right angle thereto, and an elongated actuating lever portion at the other end of said pivot portion extending at a right angle thereto, the lever portion being displaced outwardly about the axis of said pivot portion a substantial angle relative to said locking portion so when said lever portion is moved inwardly to lie substantially in the plane of said panel said locking portion extends at a substantial angle to the plane of said panel toward said pallet base and is opposed to the corresponding panel edge, the upper surface of said locking portion engaging a downwardly directed surface of said pallet base to secure said pallet base and the edge of said panel together, and releasable securing means opposing the rotation of said locking device about the axis of said pivot portion while said locking device is in its locking position.

2. The pallet box enclosure of claim 1 wherein said securing means comprises a securing portion extending at an angle to the free end of the lever portion in a plane substantially parallel to the axis of said pivot portion, said panel having a catch member in the path of normal movement of said securing portion defining a catch surface, the lever portion being an elongated steel rod having substantial resiliency adapted to be flexed to allow said securing portion to pass over said catch member and upon release to engage said catch surface to prevent outward movement of said lever portion.

3. The pallet box enclosure of claim 1 wherein said panel has a cleat member extending along said panel edge, slats of said panel being secured to one vertical surface of said cleat member to define the wall of said panel, said securing means comprising a securing portion extending downwardly from the free end of said lever portion, said cleat member lying in the path of normal movement of said securing portion, defining a catch surface, the lever portion being an elongated steel rod having substantial resiliency adapted to be flexed upwardly to allow said securing portion to pass over the edge of said cleat member and engage the catch surface thereof, one of said slats of said panel being positioned to engage said lever portion intermediate its ends as it moves to locking position, defining an edge about which said lever portion is bent when turning inwardly so when said securing portion engages said catch surface, said lever portion is under tension about said slat and presses said securing portion outwardly against said catch surface.

4. The enclosure of claim 1 wherein said journal means is defined by two wooden members joined face to face together, at least one of said members having a slot provided in its face, in which said pivot portion lies, and at least one of said members being a structural component of said panel.

5. The enclosure of claim 4 wherein said panel comprises a plurality of vertical wooden slats and at least one horizontal wooden cleat to which said slats are joined at their lower portions, said journal means being defined by said cleat and one of said slats, said slot provided in said one slat, and said slat having a cross-slot perpen-

dicular to said slot, said cross-slot in registry with said lever, said lever comprising two integral portions set at an angle to each other, said integral portion closest to said pivot portion adapted to move in said cross-slot and to engage one end thereof when said lever is in locking position.

6. The pallet box enclosure of claim 1 wherein said securing means is in the form of a band encircling a structural component of said enclosure, and adapted to encircle said lever portion when said lever portion is in its locking position, to secure said lever portion substantially in the plane of said panel.

7. The enclosure of claim 6 wherein said band is of resilient material and is adapted to be slipped over the end of said lever to secure it in place, said lever having means spaced from the pivot portion to prevent inadvertent disengagement of said band.

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