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PATENT SPECIFICATION

DRAWINGS ATTACHED

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COMPLETE SPECIFICATION

An Improved Frame Carrier for a Stack of Cylindrical Articles

I, YEE LAIN CHEW, Malaysian, of 17, High Street, Gopeng, Perak, Malaya, do hereby declare the invention, for which I pray that a Patent may be granted to me, and the method by which it is to be performed, to be particularly described in and by the following statement:—

This invention relates to a frame carrier for facilitating the carrying of a stack of cylindrical articles or containers. The invention is particularly applicable for lifting and carrying dinner cases of the kind normally used in insulated containers for school dinners and the like.

Hitherto the dinner cases have been extracted from the insulated container by means of a handle frame which is engaged in diametrically opposed rings of the cases. The cases are generally quite heavy, and their contents may be fluid. Additionally, they are generally extremely hot. These factors make the handling of the cases a difficult and dangerous task. It is an object of the present invention to provide a frame carrier particularly, but not exclusively, for dinner cases wherein the aforesaid difficulties and dangers are avoided.

According to the present invention there is provided a frame carrier for a stack of cylindrical articles, comprising a first rectangular frame having a handle, a second rectangular frame pivotally mounted within the first frame, said frames when in operative positions having portions distributed around a circle to imprison said cylindrical articles, said second frame being of a width less than the diameter of said circle, and being dimensioned and arranged so that, on pivoting thereof relative to the first frame, there is formed (for the admission and removal of the articles) an opening of width greater than said diameter, and releasable locking means for locking the frames in their operative relative positions. The locking means is conveniently spring-

loaded toward its locking position. The first rectangular frame may comprise only three sides. It is preferred that the frames be of a non-corrosive metal.

The invention will be described further, by way of example, with reference to the accompanying drawings, in which:—

Figure 1 is a perspective view of a frame carrier in accordance with the present invention.

Figure 2 is a plan view of the carrier of Figure 1.

Figure 3 is a perspective view, to an enlarged scale, of part of the carrier of Figures 1 and 2, and

Figures 4 and 5 are fragmentary perspective views of details of the carrier of Figures 1 and 2.

As shown in the drawings, a frame carrier constructed in accordance with the present invention comprises a first rectangular frame 10 defined by three sides 10a, 11a and 11. A second rectangular frame 12 having four sides 12a, 12b, 12c and 12d is pivotally mounted within the frame 10 at points 14 and 15, the points 14 and 15 forming a pivot axis lying towards the free end of the sides 11, 11a of the first frame 10. The frame 12 is of a width less than the diameter of cylindrical objects 18 to be carried in the frame carrier.

An inverted U-shaped handle 16 is secured to the frame 10 so as to span the side 11. That arm of the U-shaped handle 16 which is secured to the free end of the side 11 has a sleeve 17 from which extend abutment cheeks 17a, sleeve 17 being resiliently loaded to a lowermost locking position by means of a leaf spring 21a, Figure 3 mounted on the side 11 and reaching such position when the two frames are at right angles. In this position of sleeve 17, the cheeks 17a thereof abut the adjacent edges of frame 12. The side 12b of

frame 12 has a downturned lip 22 adjacent a bush 20 surrounding the pivot point 15.

In use, the frame carrier is intended for carrying a stack of cylindrical objects or articles such as dinner cases 18, of which three are indicated by dashed lines in Figures 1 and 2 of the drawings. The lip 22 facilitates sliding of a lowermost case 19 into the frame.

As aforesaid, the frames 10, 12 are locked when at right angles, and provide a three-point support for the stack of cases 18, the three points being distributed around a circle and being spaced by approximately 120° to give maximum stability. The frame carrier facilitates the insertion into or extraction from a cylindrical insulated container of the dinner cases.

The dinner cases are removed from the carrier as follows:—

Firstly, by finger manipulation of a lip 21 associated with sleeve 17, said sleeve 17 is raised against the action of the spring 21a. The frames are then able to pivot about the axis 14, 15, and are so pivoted from their perpendicular positions until the distance between the frame parts 10 and 12 is greater than the diameter of the dinner cases. The sleeve 17 can be released almost immediately after the frames have moved out of their perpendicular relation, as the sleeve then rides on the surface of the side 12c and cannot move to a locking position. The dinner cases 18 can then be removed from the frame. The cases are reinserted into the frames in the reverse order to that stated above.

The abutment cheeks 17a may have inclined outer edges as shown which, during the descent of sleeve 17, act as cam surfaces for contact with the adjacent edges of frame 12, to impart lateral thrust thereon on opposite sides of the pivot axis at 14, and thereby maintain said frame 12 firmly in its position of use.

WHAT I CLAIM IS:—

1. A frame carrier for a stack of cylindrical articles, comprising a first rectangular

frame having a handle, a second rectangular frame pivotally mounted within the first frame, said frames when in operative positions having portions distributed around a circle to imprison said cylindrical articles, said second frame being of a width less than the diameter of said circle, and being dimensioned and arranged so that, on pivoting thereof relative to the first frame, there is formed (for the admission and removal of the articles) an opening of width greater than said diameter, and releasable locking means for locking the frames in their operative relative positions.

2. A carrier as claimed in Claim 1, wherein the first frame comprises only three frame members, the fourth side being open.

3. A carrier as claimed in Claim 1 or 2, wherein the locking means is spring-loaded to its locking position.

4. A carrier as claimed in Claim 3, wherein a leaf spring mounted on an adjacent side of the first frame serves as the spring-loading of the locking means.

5. A carrier as claimed in any preceding Claim, wherein the second frame has a downturned lip on its lower frame member to facilitate the insertion of the articles into the frame.

6. A frame carrier for a stack of cylindrical articles substantially as hereinbefore described with reference to and as illustrated in the accompanying drawings.

7. A food container comprising an insulated outer casing and a plurality of inner cylindrical dinner cases mounted in a frame carrier as claimed in any preceding Claim.

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frame 12 has a downturned lip 22 adjacent a bush 20 surrounding the pivot point 15.

5 In use, the frame carrier is intended for carrying a stack of cylindrical objects or articles such as dinner cases 18, of which three are indicated by dashed lines in Figures 1 and 2 of the drawings. The lip 22 facilitates sliding of a lowermost case 19 into the frame.

10 As aforesaid, the frames 10, 12 are locked when at right angles, and provide a three-point support for the stack of cases 18, the three points being distributed around a circle and being spaced by approximately 120° to give maximum stability. The frame carrier 15 facilitates the insertion into or extraction from a cylindrical insulated container of the dinner cases.

The dinner cases are removed from the carrier as follows:—

20 Firstly, by finger manipulation of a lip 21 associated with sleeve 17, said sleeve 17 is raised against the action of the spring 21a. The frames are then able to pivot about the axis 14, 15, and are so pivoted from their 25 perpendicular positions until the distance between the frame parts 10 and 12 is greater than the diameter of the dinner cases. The sleeve 17 can be released almost immediately after the frames have moved out of their perpendicular relation, as the sleeve then rides 30 on the surface of the side 12c and cannot move to a locking position. The dinner cases 18 can then be removed from the frame. The cases are reinserted into the frames in 35 the reverse order to that stated above.

40 The abutment cheeks 17a may have inclined outer edges as shown which, during the descent of sleeve 17, act as cam surfaces for contact with the adjacent edges of frame 12, to impart lateral thrust thereon on opposite 45 sides of the pivot axis at 14, and thereby maintain said frame 12 firmly in its position of use.

WHAT I CLAIM IS:—

45 1. A frame carrier for a stack of cylindrical articles, comprising a first rectangular

frame having a handle, a second rectangular frame pivotally mounted within the first frame, said frames when in operative positions having portions distributed around a circle to imprison said cylindrical articles, 50 said second frame being of a width less than the diameter of said circle, and being dimensioned and arranged so that, on pivoting thereof relative to the first frame, there is formed 55 (for the admission and removal of the articles) an opening of width greater than said diameter, and releasable locking means for locking the frames in their operative relative positions. 60

2. A carrier as claimed in Claim 1, wherein the first frame comprises only three frame members, the fourth side being open.

3. A carrier as claimed in Claim 1 or 2, wherein the locking means is spring-loaded to its locking position. 65

4. A carrier as claimed in Claim 3, wherein a leaf spring mounted on an adjacent side of the first frame serves as the spring-loading of the locking means. 70

5. A carrier as claimed in any preceding Claim, wherein the second frame has a downturned lip on its lower frame member to facilitate the insertion of the articles into the frame. 75

6. A frame carrier for a stack of cylindrical articles substantially as hereinbefore described with reference to and as illustrated in the accompanying drawings.

7. A food container comprising an insulated outer casing and a plurality of inner cylindrical dinner cases mounted in a frame carrier as claimed in any preceding Claim. 80

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