March 10, 1964 C. DAVIDSON 3,124,254

FOLDING AND NESTING DELIVERY TRAY FOR BAKERY GOODS OR THE LIKE

Filed March 16, 1962

4 Sheets-Sheet 1

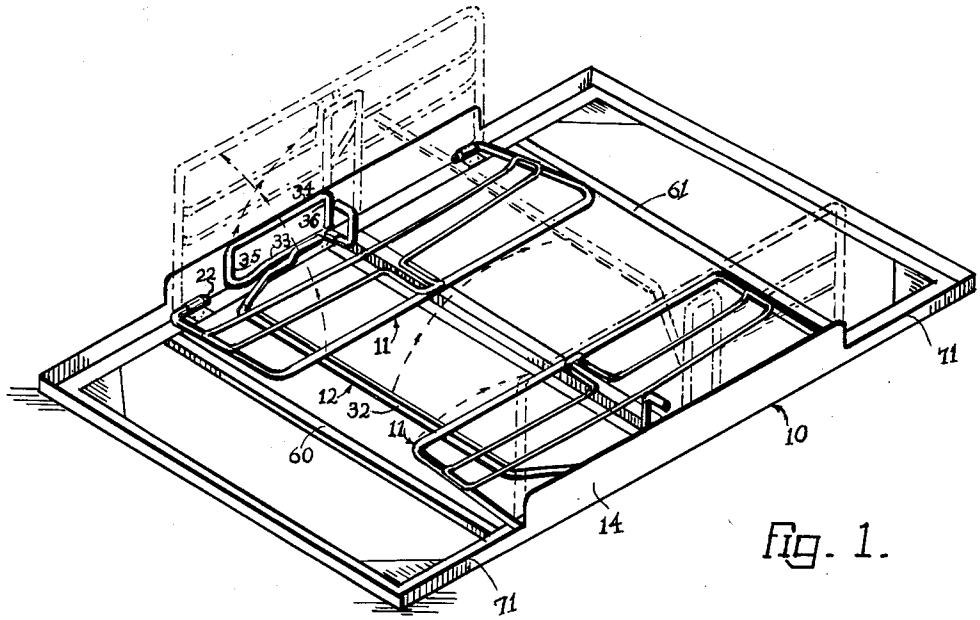


Fig. 1.

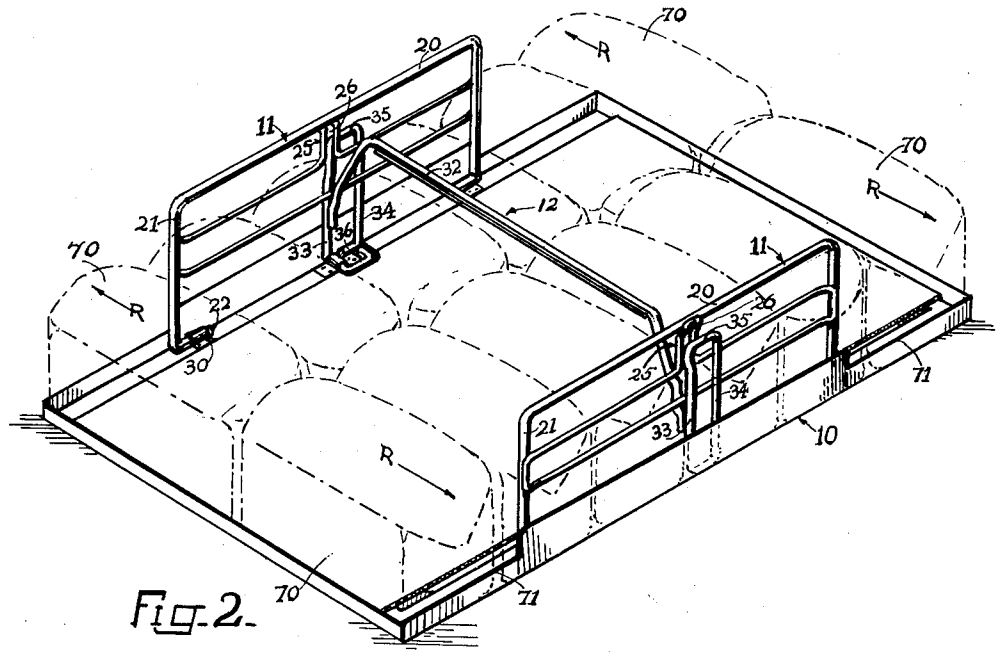


Fig. 2.

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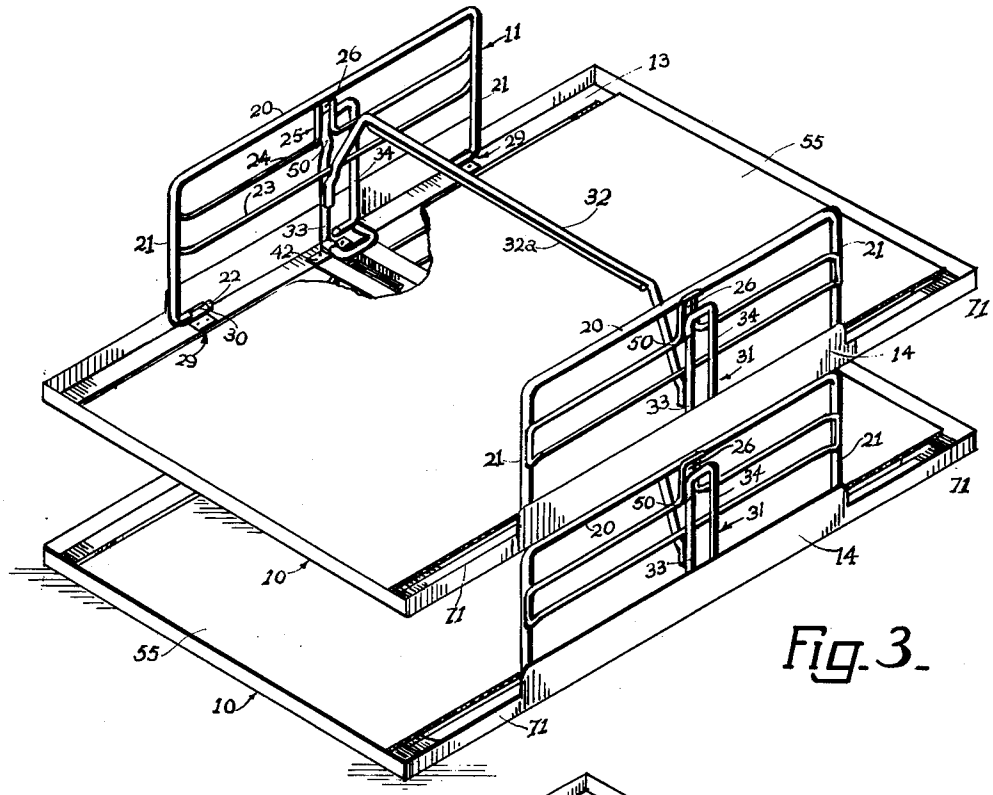


Fig. 3.

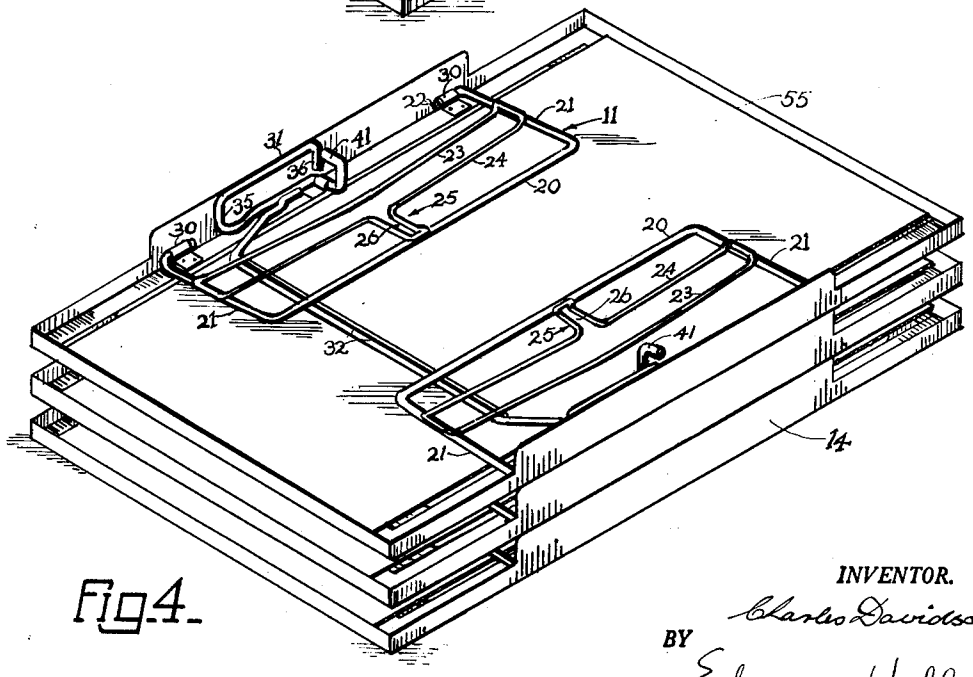


Fig. 4.

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4 Sheets-Sheet 3

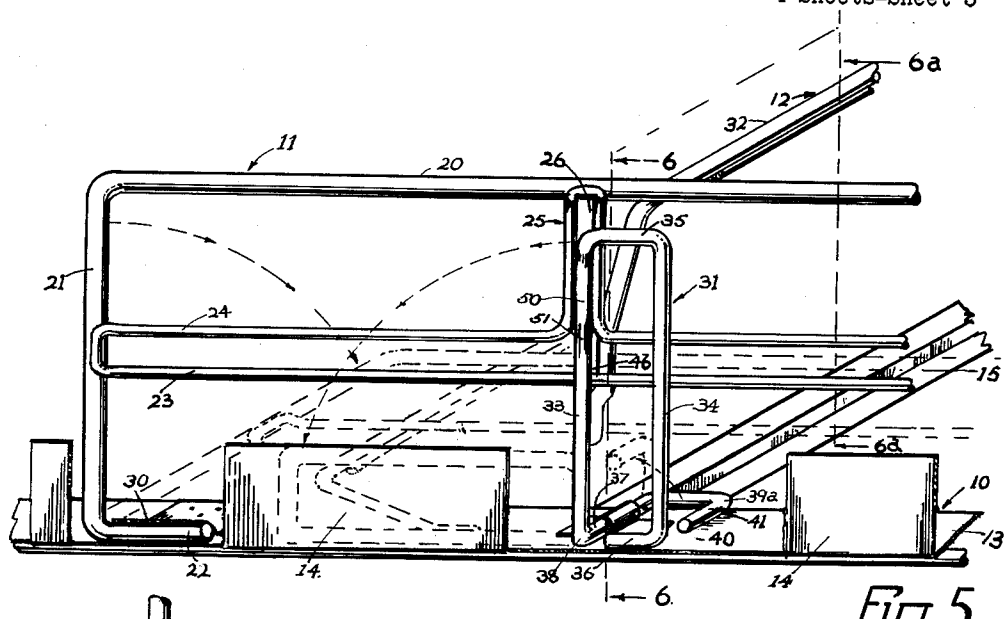


Fig. 5.

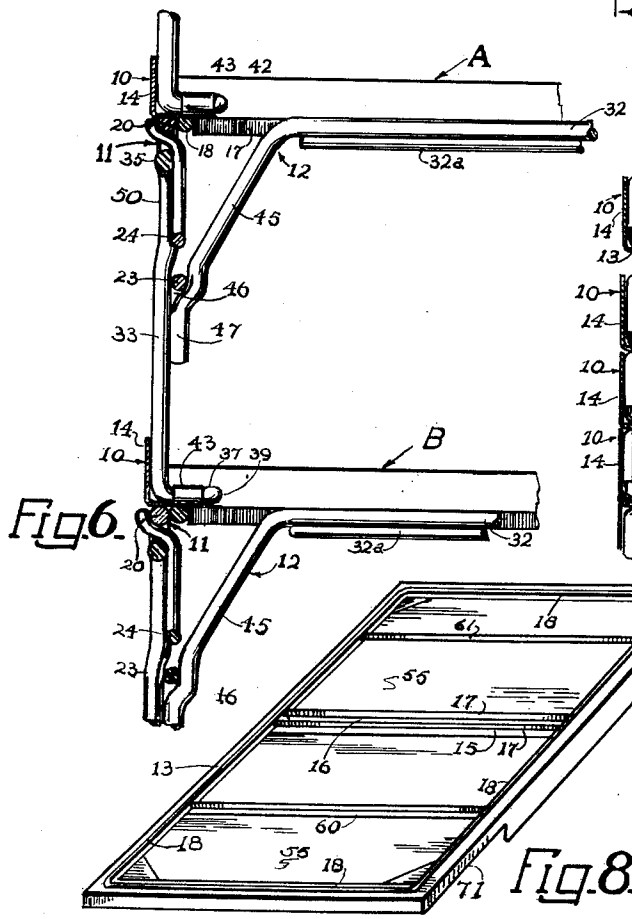


Fig. 6.

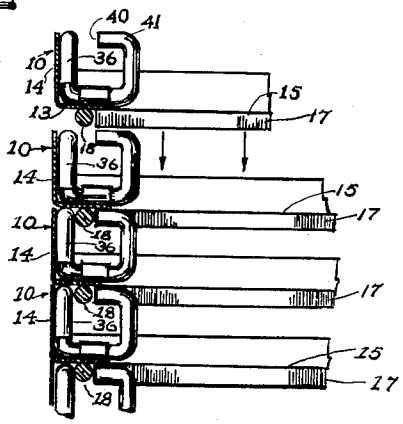


Fig. 7.

Fig. 8.

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FOLDING AND NESTING DELIVERY TRAY FOR BAKERY GOODS OR THE LIKE

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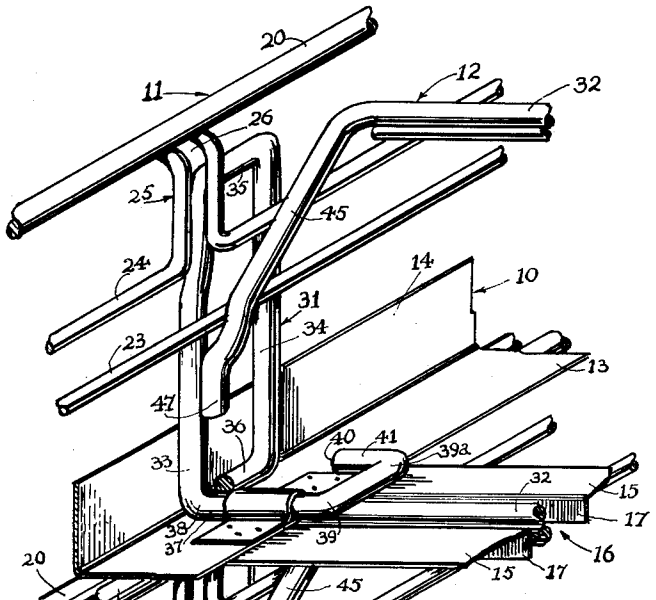


Fig. 9

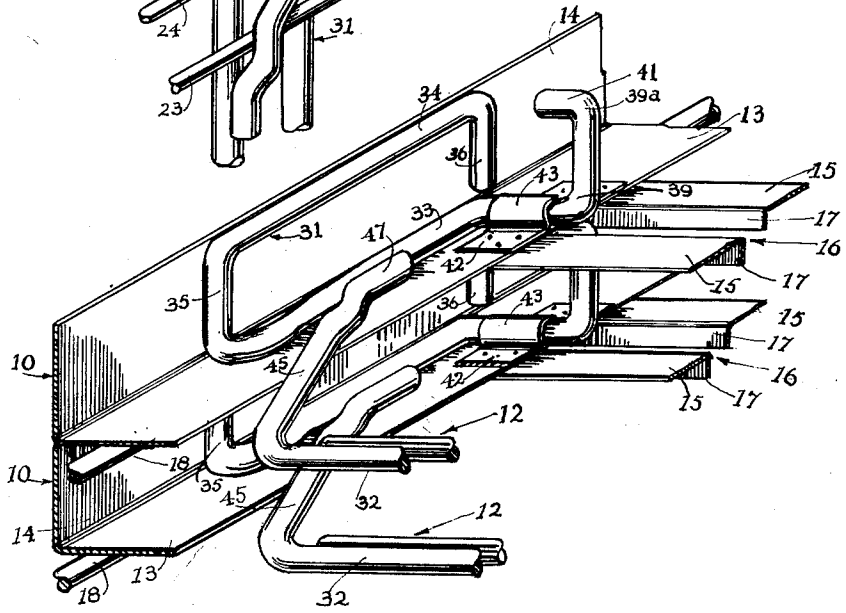


Fig. 10

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United States Patent Office 3,124,254 Patented Mar. 10, 1964

3,124,254

FOLDING AND NESTING DELIVERY TRAY FOR BAKERY GOODS OR THE LIKE

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Filed Mar. 16, 1962, Ser. No. 180,199
11 Claims. (Cl. 211—132)

This invention relates to delivery trays of the type used to carry bread, cakes and the like. The usual delivery tray is rectangular in shape with sides relatively higher than the merchandise inside. The trays are stacked one on top of the other, and usually there is a stop at each corner underneath the tray to prevent slipping and keep the stacked trays in alignment. When the trays are stacked in this manner, they are then spoken of as "nesting."

Because of the tender, fragile nature of merchandise such as bakery products, heavy clumsy trays have been used to protect the products, and quite often these trays weighed considerably more than the payload they carried. This is a distinct hardship on the worker.

Another disadvantage in existing trays is that whether empty or full, they always occupy the same amount of space, whether loaded with merchandise or not, so that the load space of the vehicle that transports them is always filled, making profitable loads on the return journey impossible. In addition, considerable space is needed to store these trays at shipping areas where the empty trays are returned and stored until needed.

Because of the open top and skeleton construction of these trays and the hard usage they receive, they are especially vulnerable to careless handling when empty; thus, the replacement rate is very high.

One of the objects of my invention, therefore, is to provide a lightweight tray, or carrier, to ease the burden of the worker. Another object is to provide a rugged lightweight carrier, the side walls of which will fold down and be protected within the base of the carrier when the carrier is empty.

A further object is to provide simple means for folding the sidewalls. This is accomplished by a center span that raises the sidewalls to an upright position, holds them there by a novel locking action, and, when desired, lowers them by gentle controlled pressure.

A further object is to provide such trays, or carriers, which will stack and nest one over the other securely when either in open, or closed, position by using the center span of the tray and the slotted portion of the tray base together with the undercarriage of the tray base.

A further object is to provide such a tray or carrier with removable inserts made of stiff, lightweight material such as corrugated cardboard or the like that will permit several different methods of filling or emptying of the carriers.

A further object is to lighten the weight of the carrier and make the carrier more functional by adapting each part of the carrier to two or more different uses.

A still further object is to provide a carrier that may be folded to occupy substantially less storage space when empty than when loaded and in use.

The foregoing and other objects are accomplished by my invention comprising an arrangement and combination of parts hereinafter described and claimed. The invention is not restricted to the exact details of the construction disclosed herein. However, for the purpose of illustrating a practical embodiment thereof, reference is had to the accompanying drawings, in which similar reference characters designate the same parts in the several views, and in which:

FIG. 1 is a perspective view of the invention in folded position showing (in dotted lines) how the side walls and cross span are moved to unfolded position;

FIG. 2 is a perspective view similar to FIG. 1 showing the tray in unfolded position, with the representation (in dotted line) of a load of a dozen loaves of bread;

FIG. 3 is a perspective view of two trays unfolded and in stacked position with a part of a floor insert cut away to show details of construction;

FIG. 4 is a series of three trays nested together in folded position;

FIG. 5 is an enlarged detail of the working components of the tray with parts cut away;

FIG. 6 is a sectional detail of stacked trays in unfolded position from a position as indicated along lines 6—6 and 6a—6a in FIG. 5;

FIG. 7 is a sectional detail similar to that shown in FIG. 6 except that the trays are nested in folded position, and the uppermost tray is about to be nested with the lower trays as indicated by downwardly directed arrow;

FIG. 8 is a perspective view of the bottom of a tray shown in upside down position;

FIG. 9 is an enlarged perspective view showing construction details of unfolded nested trays; and

FIG. 10 is an enlarged perspective view showing construction details of folded nested trays.

Referring now more particularly to the drawings, I show a foldable and nestable delivery carrier, or tray, that comprises a main frame or base 10, to which are hinged side walls 11 and an operating cross span 12. The frame 10 is rectangular in shape, and is made of bent sheet metal or angled material having a floor portion 13 and an upright portion 14. A pair of cross members 15 are affixed, by welding or other means, to side floor portions 13 of the main frame or base 10. The cross members 15 are centrally located within the frame 10, and are spaced with relation to each other so that a slotted opening 16, which divides the frame 10 in half, will be formed between them. The cross members 15 are provided with downwardly disposed flanges 17.

A rectangular underbase means such as a sub-frame 18, which may be formed of heavy wire or the like, is affixed by welding or other means beneath the floor portion 13 of the base 10. The sub-frame 18 is spaced inwardly from the outside perimeter of the base 10, and is adapted to cooperate in nesting relationship with certain portions of other similarly constructed trays as will be more fully explained hereinbelow.

The side walls 11 comprise foldable frames constructed preferably of round rods of metal or wire. The side walls 11 are rectangular in shape, and will be described in their upright or opened position. The main rod or wire forming the frame of the side wall 11 is bent at four corners to form a horizontal side wall top 20, side wall sides 21 and side wall hinge pins 22 which are parallel to the side wall tops 20. The side walls 11 also comprise a secondary wire formation which is welded or otherwise attached longitudinally to the top 20 and sides 21 of the side walls 11, and form a lower riding rail 23 and an upper rail 24. Centrally located in the upper rail 24 is a latching means which comprises an upwardly bent portion 25 which provides a catch space 26 designed to cooperate with and hold in place a catch space engaging means 50 on one of the moving elements of the tray as will be described hereinbelow. The catch space 26 will be on the same central plane as the slotted opening 16 which divides the frame 10 of the tray in half.

The side walls are attached to the frame 10 by providing hinge covers 30 adapted to cooperate with the hinge pins 22. The hinge covers 30, which are welded or affixed by other means to the upper sides of the floor portions 13 and the hinge pins 22, form complete hinges 29 so that the side walls 11 can fold inwardly from a vertical or open position to a substantially horizontal or closed position.

The operating cross span **12** comprises a pair of extension means, such as wings **31** and a connecting operating handle **32**. The wings **31** are composed of rectangularly bent metal rods or wires of a cross-area dimension compatible with the material forming the top **20** of the side walls **11**. The wings **31** comprise a rectangle formed by a central upright **33**, an off-center upright **34** and end portions **35** and **36**. Each one of the wings **31** has an inwardly disposed portion forming hinge pin means **37** by means of a bend **38** and extension of the material of the wings **31**. The inwardly disposed portion **37** is further bent at points designated by reference numerals **39** and **39***a* and extends to its end **40** to form a combined stop, or check arm, and nesting member **41**, the purpose of which will be described hereinbelow.

Hinge pins **37** are connected to the upper side of floor portion **13** of the frame **10** by means of hinge cover means such as a strap **42** having an appropriate bend **43**. The strap **42** is welded or affixed by other means to the upper side of the floor portion **13**. It is understood that the pair of wings **31** are affixed on either side of the base **10** and face each other in a mirror-like relationship and are connected in positive manner by the operating handle **32** so that when the operating handle **32** is moved, both wings **31** will move together with it as a unit on hinges **43** to comprise the operating cross span **12**.

The operating handle **32** has a series of bends at each end to provide camming portions **45** (to cooperate with the lower riding rails **23**) and pockets **46** (to engage and hold riding rails **23**). The operating handle **32** is welded or otherwise affixed at each of its ends **47** to a portion of a central upright **33** of a wing **31**. Thus, when the completed device is in unfolded or open position, the operating cross span **12** is disposed vertically and the side walls **11** are disposed vertically. The wings **31**, which are made of similar material to the side wall tops **20**, and sides **21**, are disposed in a lateral vertical plane with the mentioned side wall tops **20** and sides **21**. The rails **23** and **24** will be disposed inwardly of the top **20** and sides **21** of the side walls **11**, and the lower riding rail **23** will be held in the pocket **46** formed by the central upright **33** and the operating handle **32**. Check arm **41** will serve as a stop means against floor portion **13**. Also, a catch engager **50** formed by a portion of central upright **33** will press into catch **26** to engage it and to maintain the cross span **12** in its open or vertical position. The catch engager **50** is inwardly disposed for better engagement by means of a bend at point **51**.

With the trays in open or unfolded position, they may be nested as follows. The inner sides of side wall tops **20** of a lower tray, such as tray "B" in FIG. 6, will engage the outer edges of sub-assembly **18** of upper tray "A," it being understood that sub-assembly **18** on each tray is spaced inwardly for a distance equivalent to the thickness of upper side wall **20**. At the same time, operating handle **32** will be disposed within slotted opening **16** formed between the flanges **17** of the cross members **15**. Thus, the trays "A" and "B" are firmly nested and stacked. The cooperation of operating handle **32** and the slotted opening **16** prevents longitudinal (endwise) displacement, and the relationship of side wall top **20** cooperating with sub-assembly **18** prevents a lateral (sidewise) displacement.

As further support for the frame **10**, I may provide additional cross members **60** and **61** as shown in FIG. 1 of the drawings, and I may also provide an additional reinforcing member **32***a*, in the form of a steel wire or other suitable material or shape, to reinforce the operating handle **32**. Reinforcing member **32***a* may be welded or attached to operating handle **32** in any suitable manner. It should be no wider than handle **32**, and should not increase the height of operating handle **32** so it is preferably placed below the handle **32** when the handle is in an upright position.

While I have thus far described the preferred form of my invention, I have not included the description of a floor member to support the merchandise in the tray. This may be done in either of two ways. I may provide an integral floor (not shown) which may be placed over the cross members **15** and the floor portions **13** in any manner suitable for placing such floor in the device, or I may provide removable inserts **55** made of board, corrugated board or any other material which may be placed over portions of the floor members **13** and the cross members. It may be held in place by means of tabs or other means, if desired. The trays may be folded with or without a floor member **55** in position.

When it is desired to fold a tray, the operating handle **12** is manually pressed and moved toward the base **10**. A sharp motion will disengage catch engager **50** from catch **26** and move the wings **31** from a vertical to a horizontal position. The wings **31** will press against the rails **24** and **23** of side walls **11**, and cause them to start moving inwardly. Sides **11** will fall inwardly, and when operating cross span **12** reaches a substantially horizontal position, side walls **11** will be folded inwardly and rest on top of it. In this folded position, the side walls **11** and the operating cross span **12** will be contained completely within the area formed by the uprights **14** of the frame **10**, and will be in a protected position.

In order to unfold each tray, the reverse procedure is followed. Operating handle **32** of a folded tray is drawn upwardly. The operating handle **32** will move upper portions **20** of side walls **11** upwardly, and then the camming ends **45** will move against the riding rails **23** to move the side walls **11** upwardly and outwardly until riding rail **23** is caught in pocket **46** and catch engager **50** engages catch **26**, with check arm **41** stopping against floor portion **13**.

By making elements **20** and **34**, as well as elements **32** and **41** of the same cross section dimension, they will fit respectively against sub-assembly **18** and within slotted opening **16** of other similarly made trays, in the same manner, and provide the same nesting support, regardless of whether the trays are folded or unfolded.

The height of operating handle **32**, when in vertical position, should be sufficient so that the handle **32** will fit substantially within the flanges **17** and yet remain below the upper surface of the cross members **15**, so that a floor insert **55** may be placed over the cross members **15** without interfering with the nesting operation. Check arm nesting elements **41** should also be of a height which does not protrude above upright portion **14**.

The trays will nest in folded position in the following manner. Inner sides of element **34** will engage the outsides of sub-assembly **18**, and check arms **41** will be upright and disposed within slotted opening **16**. Further advantages of my invention are inherent in the fact that trays may be stacked in either folded or unfolded condition simultaneously. In other words, a stack of trays may comprise both folded and unfolded trays. In addition, the uppermost tray in a stack of trays may be folded or unfolded while in stacked position.

If one of my trays is provided with casters or wheels at each of its corners of its frame, it may be used as the lowermost tray in a stack in lieu of a dolly. In such case, trays, either folded or unfolded, and if unfolded, containing merchandise, can be stacked one upon the other above the wheeled tray and moved as an entire unit easily and efficiently.

A further advantage of my invention is that a delivery truck can be completely loaded, and as deliveries are made, trays removed, folded and placed back in the truck in folded condition, thereby creating an aisle for containing further merchandise within the truck because the folded trays will not require the complete space of the unfolded trays.

Still another advantage of my invention is the provision for removal of one or more loaves of bread, or other goods, from nested trays without unstacking the trays. Reference

to FIG. 2 of the drawings will show representation in dotted line of loaves of bread **70**. Each end of the frame **10** has a cutout or reduced portion **71** in side wall **14** which lowers side wall **14** sufficiently to permit withdrawal of a loaf **70**, manually. Thus, any one of the end loaves **70** may be removed laterally through cutouts **71** as shown by the arrows marked "R" in FIG. 2 of the drawings. This advantage provides a great added convenience to the invention when it is necessary to remove only one or two loaves, and permits such removal without the necessity of unstacking an entire tray.

While I have described my invention in its preferred form, there are various other forms which it may take, and I desire to be protected for all forms of the invention coming within the claims appended hereinbelow, wherefore I claim:

1. A carrying device comprising a base, sidewalls swingably attached to the said base comprising catch means, a cross-span pivoted to the said base at right angles to the said side walls, and said cross-span including camming means, check means and catch means, with the said camming means adapted to contact a portion of each of the side walls to effect erection of said side walls upon upward rotation of the said cross span, and said cross-span will effect a lock with the aforementioned side walls through the said catch means, and said cross-span's upward motion will be checked by said check means when both cross-span and side walls have attained the perpendicular; and comprising depressive means formed on the said cross-span whereby downward rotation of cross-span will effect collapse of said sidewalls to a horizontal position with relation to the aforementioned base.

2. A carrying device having a main frame comprising: sides and ends with side walls swingably attached thereto, slot means in said main frame generally perpendicular to said side walls, cross-span means generally parallel to the said slot means and swingably attached to said main frame, and comprising extension means and camming means on said swingably attached cross-span in which each of said swingably attached sidewalls defines a pathway while swinging from vertical to horizontal with relation to said frame, and camming means on said cross-span are of a form which defines at least one pathway, while swinging from horizontal to vertical which intersects the said pathways defined by the said sidewalls, whereby upward rotation of said cross-span will place the said camming means in engagement with the said sidewalls and effect an erection of said sidewalls perpendicular to said base with a portion of said cross-span means directly over the said slot means, and said extension means will be placed in engagement with said side walls to maintain them in erect position.

3. The device as defined in claim 2, in which the said main frame has at least one downward depending portion with an outer lateral surface in substantially the same vertical plane as an inner lateral surface of a top portion of a said side wall.

4. The device as defined in claim 3, in which the said cross-span has latching means cooperating with latching means on the said sidewalls, and has nesting and checking means in the form of at least one perpendicular extension.

5. The device as defined in claim 4, in combination with a removable floor for the said main frame.

6. A plurality of devices as defined in claim 4, stacked in vertical relationship with the said inner lateral surfaces of top portions of the said sidewalls of at least one lower device in contacting relationship with the said outer lateral surface of said downward depending portion of the said main frame of at least one upper device.

7. A plurality of devices as defined in claim 4, stacked in vertical relationship with the said inner lateral surfaces of top portions of the said sidewalls of at least one lower device in contacting relationship with the said outer lateral surface of said downward depending portion of the said main frame of at least one upper device, and in which the bottom device is equipped with caster means.

8. The device as defined in claim 4, in which the said extension means are in the form of wings at the ends of the said cross-span with offset portions which are substantially perpendicular to the top portions of the said sidewalls in a first position when the said sidewalls are substantially perpendicular to the said base, and which are substantially parallel to the tops of the said sidewalls in a second position when the cross-span is rotated downwardly and the said sidewalls are rotated down toward and are substantially parallel to the said base.

9. A plurality of devices as defined in claim 8, nested in vertical relationship with at least a portion of the inner lateral surfaces of said offset portions of said wings of at least one lower device in contacting relationship with said outer lateral surface of said downward depending portion of the said main frame of at least one upper device.

10. A plurality of devices as defined in claim 8, nested in vertical relationship with at least a portion of the inner lateral surfaces of said offset portions of said wings of at least one lower device in contacting relationship with said outer lateral surface of said downward depending portion of the said main frame of at least one upper device, and with the said inner lateral surfaces of the top portions of the sidewalls of at least one other lower device in contacting relationship with the said outer lateral surface of said downward depending portion of the said main frame of at least one upper device.

11. A carrying device having a main frame comprising: sides and ends with side walls swingably attached thereto, cross-span means generally perpendicular to the said side walls and swingably attached to said main frame, and comprising extension means and camming means on said swingably attached cross-span in which each of said swingably attached sidewalls defines a pathway while swinging from vertical to horizontal with relation to said frame, and camming means on said cross-span are of a form which defines at least one pathway, while swinging from horizontal to vertical which intersects the said pathways defined by the said sidewalls, whereby upward rotation of said cross-span will place the said camming means in engagement with the said sidewalls and effect an erection of said sidewalls perpendicular to said base, and said extension means will be placed in engagement with said sidewalls to maintain them in erect position.

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