

[54] COLLAPSIBLE UTILITY CART

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[22] Filed: Jan. 15, 1973

[21] Appl. No.: 323,357

[52] U.S. Cl. 280/36 R

[51] Int. Cl. B62b 11/00

[58] Field of Search 280/36 R, 79.3, 49.35;
108/111; 211/178

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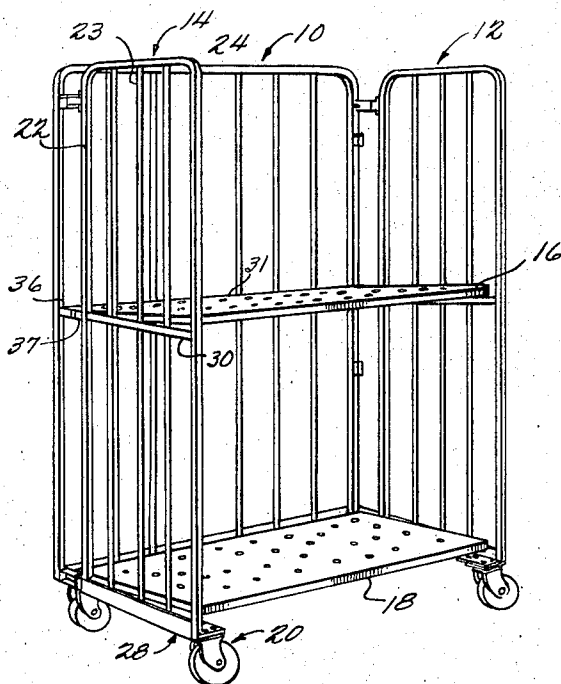
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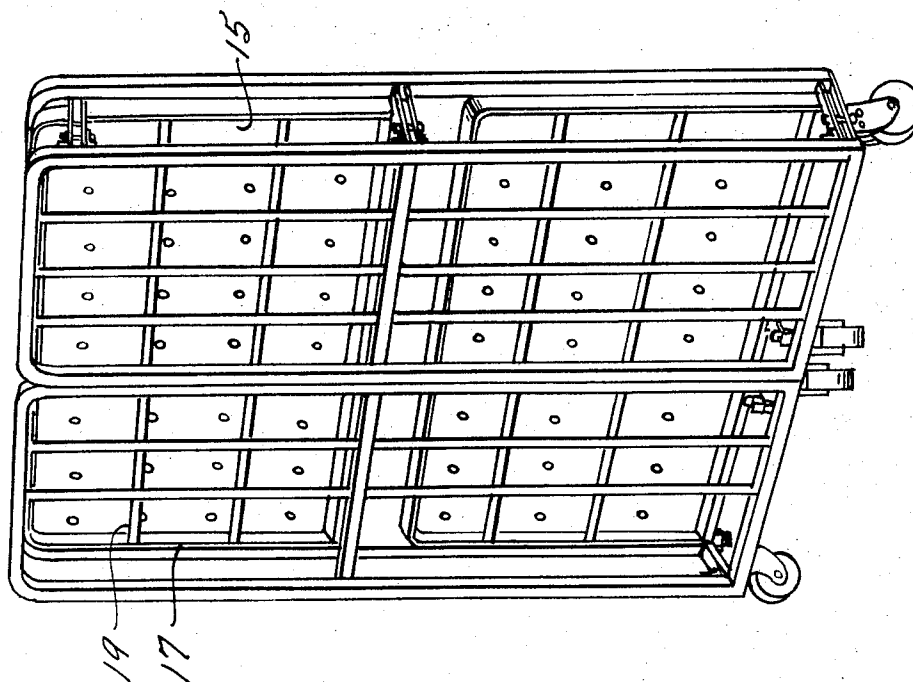
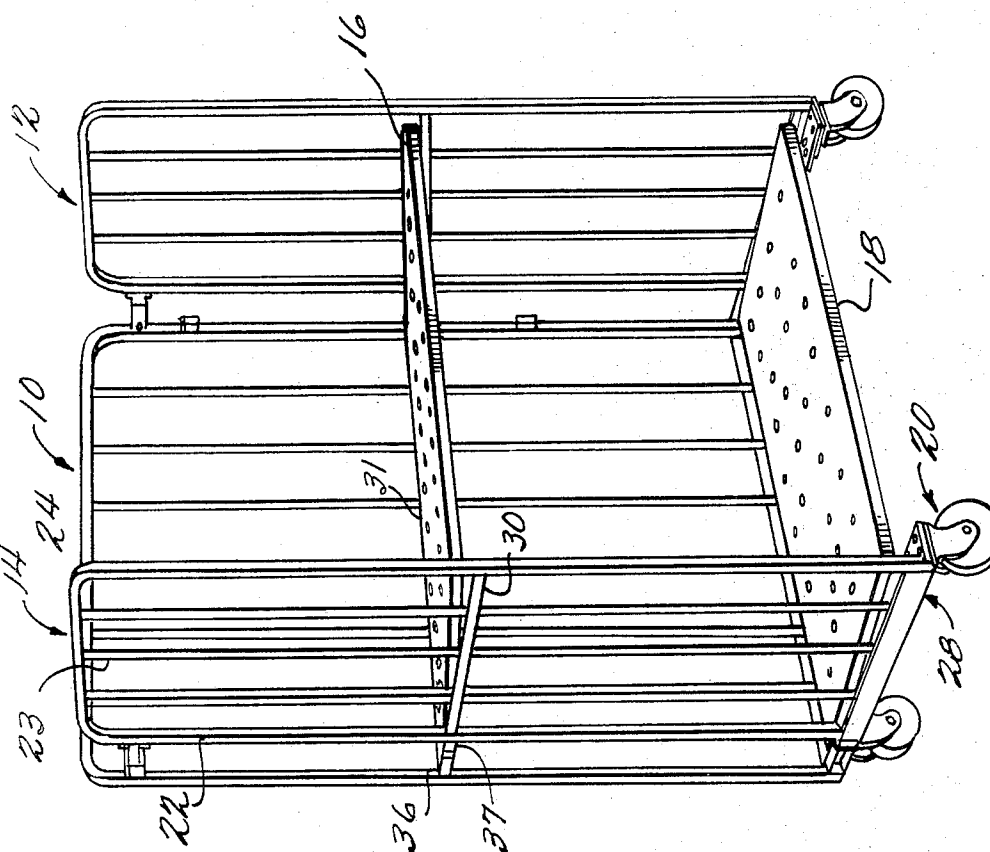
[57] ABSTRACT

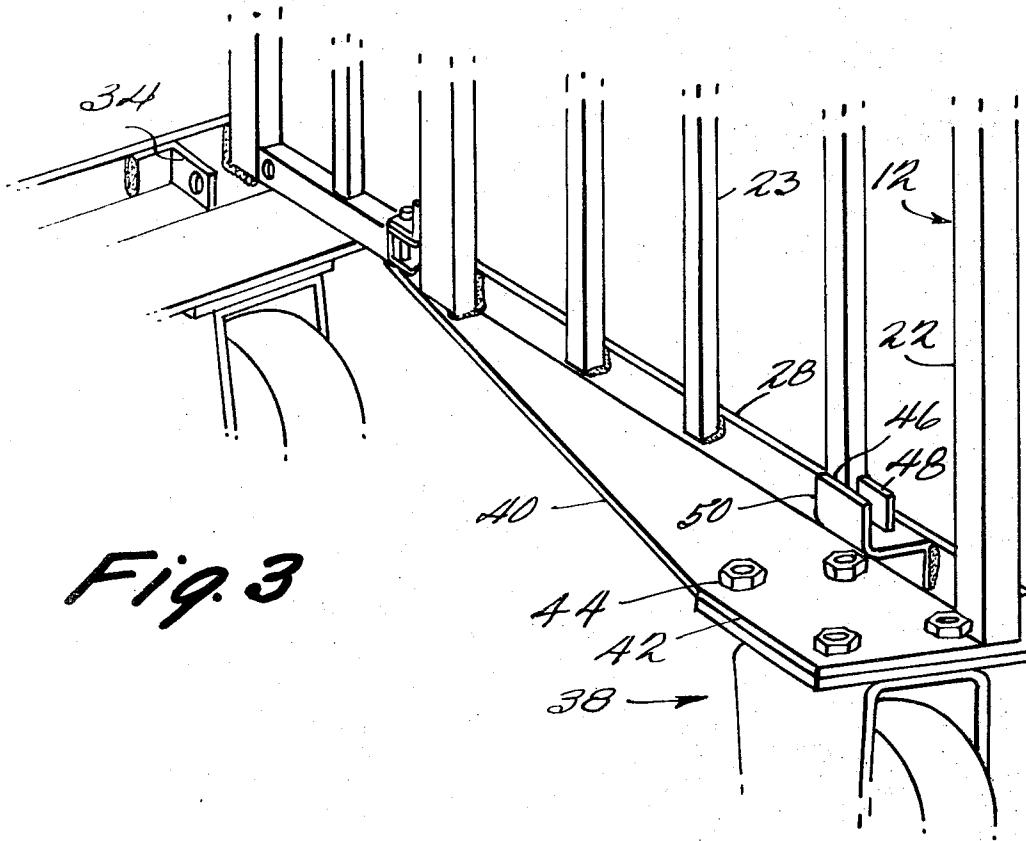
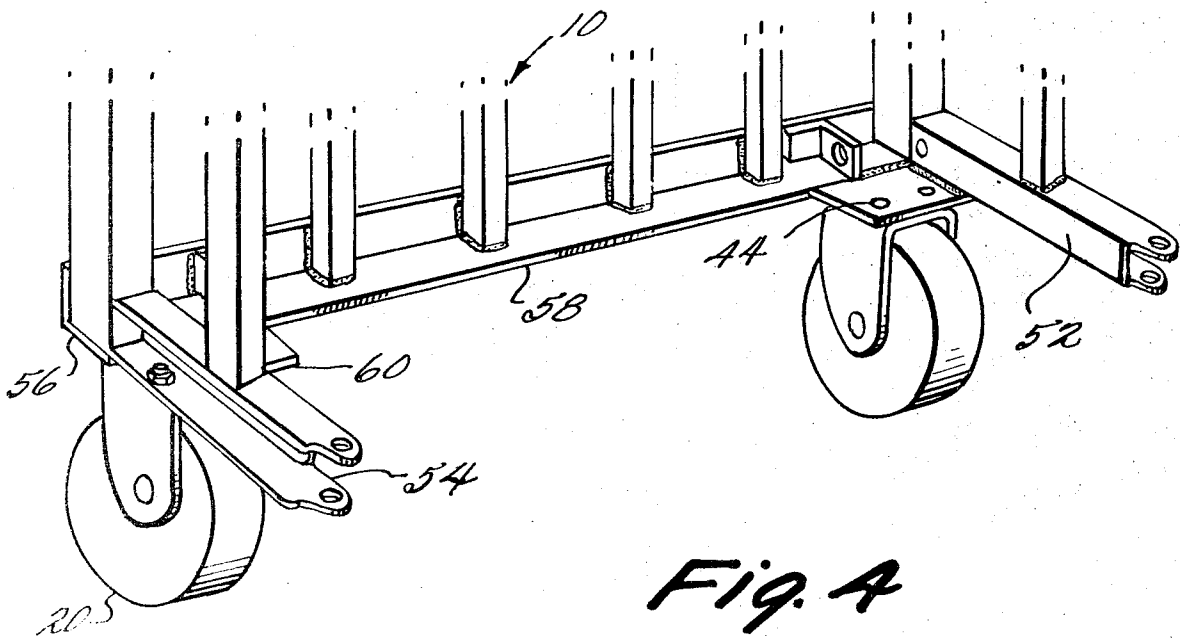
A movable carrier for articles such as milk or ice cream cartons having a back frame member and two side frame members constructed of tubular elements, a rigid base frame assembly which directly mounts suitable wheels or casters adjacent each corner of the carrier. The base frame assembly construction utilizes angle plates which are each connected by welding to the respective back or side frame member with which it is associated so as to form a strong integral frame unit having a high resistance to distortion and deformation from forces transmitted through or by the rollers or casters. The carrier includes one or more shelf members and the side frame members and shelf members can be pivotally connected to the back frame member so that when the carrier is not being used for supporting articles, it can be collapsed to a compact condition by pivoting or folding the shelves and side assemblies toward the back frame assembly.

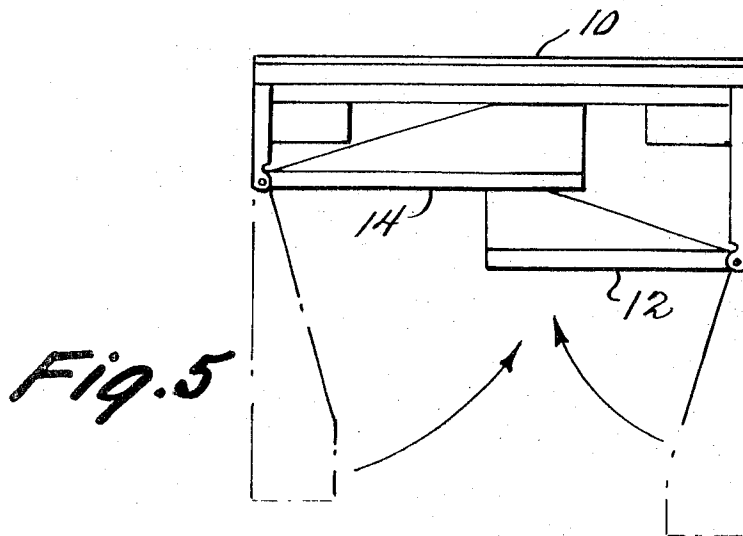
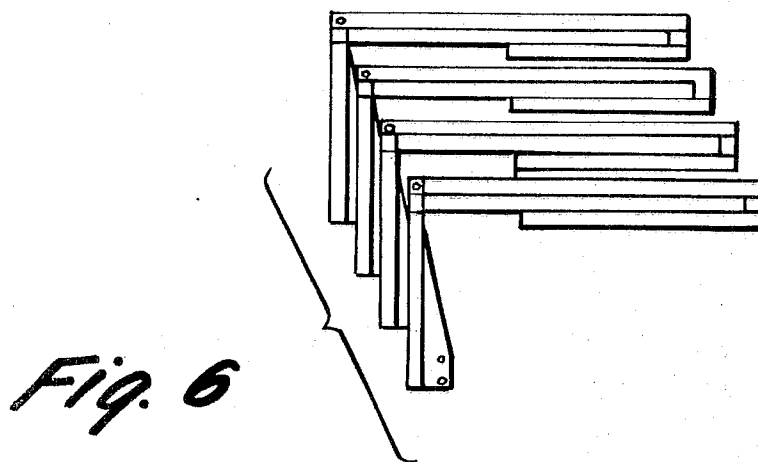
6 Claims, 6 Drawing Figures



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COLLAPSIBLE UTILITY CART

BRIEF DESCRIPTION OF THE PRIOR ART AND SUMMARY OF THE INVENTION

This invention relates to an improvement in carriers of the type used for moving and storing a plurality of cartons such as those used in packaging milk or ice cream.

Typically, milk or ice cream cartons are loaded onto the shelves of a carrier at the dairy processing plant or warehouse and when filled, the carriers are rolled to and loaded on a truck or other vehicle for transport to the ultimate point of sale, such as a supermarket. At their destination, the filled or loaded carriers may be rolled to a suitable storage area where they may be held until the articles are placed on display for ready access by the customer. In modern supermarkets the fully loaded carrier may actually be rolled directly into an air curtain display case on the sales floor where it will remain until all of the articles have been removed. Alternatively, of course, the fully loaded carrier may be rolled to the display area where the articles can be removed from the carrier to stock suitable display cases.

When the carriers have been unloaded, it is desirable in order to conserve or reduce the space required for storage and transport of the empty or unloaded carriers, that they be collapsible or foldable so as to permit maximum utilization of space during storage and transport for the return of the carriers to the warehouse or dairy processing plant where they are again filled and the above-described cycle of use repeated.

In addition to carriers of the type previously described, many types of carriers used for similar purposes are constructed in a rigid manner without folding side members or shelves and consequently may be constructed in a more rigid manner than those of the folding-type carriers. The resultant disadvantage of such a carrier is the requirement of considerably more storage space being needed than for those having folding capabilities.

Previous carriers of the types mentioned above have possessed certain defects which have caused a decrease in the useful life of the carrier or have caused the carrier to be partially inoperable thus requiring substantial maintenance with resultant loss of use. One of the major defects of the prior art carriers, which have been commonly in use, is the manner in which the roller assemblies are attached to the side members of the carriers. It is a common practice in the construction of these prior art carriers to attach the roller carrying brackets in a cantilevered manner to the bottom horizontal corner of the carrier. Since the frames are generally made of tubular steel members which, when fastened together to form the side and back members of the carriers, exhibit little torsional rigidity, this allows considerable force to be applied through the roller to the roller assembly mounting bracket with eventual breakage or distortion of the roller assembly at the point where it is attached to the side or back member, thus making the carrier inoperable and of little use until repaired.

In addition to the common failure of the roller assembly breaking away from the side members, if the weld or other means of attachment of the roller assemblies to the side members is strong enough to retain the roller assembly without breakage, the result is usually a bent or distorted roller assembly which may make the

carrier difficult to use or render it completely inoperable.

Although the more common failures are those described above, since the carrier necessarily has four roller assemblies, breakage of the roller assemblies attached to the back member frequently occurs, again as a result of the low torsional rigidity of the back member due to its construction from tubular steel rods or the like.

The present invention combines the desirable features of both types of carriers previously described by providing a folding carrier in which the side members and shelves may be folded up against the back member to reduce the storage area required by the carrier, and at the same time provides a more rigid structure than those folding-type of carriers previously known and used in the industry, with the resultant increase in the useful life of the carrier.

The carrier of the present invention has vertical side and back members secured together to form a U-shaped structure with a plurality of shelves positioned within this U-shaped structure, and which shelves and side members may be folded against the back member to provide an inoperable position wherein said carrier may be stored, requiring a reduced storage area from that which it occupies in the extended or operable position. The rigidity of said carrier is maximized by the use of brackets having an L-shaped cross-section secured to the bottom portion of each of said side members and to the bottom portion of said back member and to which the roller assemblies are secured. Brackets attached to the side members extend substantially the entire length of the bottom portion thereof, having their widest portion at the front part of the side member where the roller assembly is secured, and tapering back to the rear edge portion of the side member.

The bracket, attached to the back member also having an L-shaped cross section, is substantially of a constant cross-section for the entire length thereof.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 is a perspective view of the apparatus of the present invention in an open position;

FIG. 2 is a perspective view of the apparatus of the present invention in a folded position;

FIG. 3 is a fragmentary view of the lower portion of a side member according to the present invention;

FIG. 4 is a fragmentary view of the back member according to the present invention.

FIG. 5 is a bottom view of an embodiment of the invention without the roller assemblies attached.

FIG. 6 is a schematic view which shows a series of carriers of the present invention nested for storage.

DETAILED DESCRIPTION OF THE DRAWINGS

In describing the construction of the side members, only one side member will be discussed, the parts of the other side member being a mirror image of that being described. Reference is now made to FIG. 1 which illustrates one embodiment of the carrier of the present invention wherein the carrier includes a back member 10, side members 12 and 14, shelves 16 and 18, and, four conventional roller assemblies 20 mounted at the four corners of the carrier.

Back member 10 and side members 12 and 14 are preferably constructed of high tensile strength tubular steel members having an outer peripheral frame mem-

ber 22 preformed to a generally inverted U-shaped configuration to which is secured at the upper portion thereof a series of parallel spaced tubular steel members 23, preferably of a smaller cross-section than rod 22, and which are secured to rod 22 at the upper portion 24 by any suitable means, such as welding. Members 22 and 23 are attached to bottom side bracket 28 by welding or otherwise to provide a rigid structure defining side member 14.

An additional center strengthening member 30, also preferably made of tubular steel, is attached at its ends to rod 22 and in its central portion to rods 23. This attachment is preferably accomplished by providing holes in rod 30 of the proper dimensions through which rods 23 may be inserted prior to attachment to rod 22 and bottom side bracket 28 and which may be welded to rod 30 at the entrance and exit of said holes. A similar procedure is utilized to attach similar rods to side members 12 and back member 10.

Shelves 16 and 18 are each pivotably mounted on back member 10 by means of a pair of brackets attached to back member 10. As shown in FIG. 3, bracket 34 is secured to back member 10 so that when the shelf is in an open position, as shown in FIG. 1, bracket 34 and its mate on the other side of member 10 will be underneath the shelves to provide support. The supporting brackets, including bracket 34, preferably consist of a simple pair of L-shaped brackets, one pair attached to the member 31 of the back member 10 and another pair attached to back support bracket 56, by means of welding or the like. Each of the brackets is provided with a hole in the extended end thereof which corresponds to a hole in a tubular steel rod which forms the underside of shelves 16 and 18 (more fully described below). When these holes are aligned, a bolt or other rod-like member may be inserted to pivotably mount the shelves.

Referring to FIG. 2, shelves 16 and 18 are preferably constructed of a thin gauge sheet metal plate 15 supported by a framework of tubular steel rods 17 having at least one central support rod 19 to support the central portion of the shelves.

Referring again to FIG. 1, side members 12 and 14 are rotatably attached to back member 10 by means of hinges 36 which are preferably constructed of a U-shaped steel channel which may be welded to the back member 10 and which has a corresponding member 37 attached to side members 12 and 14, each having appropriate holes in the end thereof for the insertion of a bolt or rod to be used as an axis upon which the side members can be rotated.

The length of the hinge brackets 36 may depend to some extent on the width of side members 12 and 14 in relation to the width of the back member 10. For example, if side members 12 and 14 are of such a dimension that when they are rotated inwardly they do not meet, i.e., when both side members are half the width of the back member or less, equal lengths of hinges may be used on both sides. However, if side members 12 and 14 are of such a width that they overlap when folded in, it is preferable to extend one hinge member outwardly from the back member 10 an adequate distance such as would allow either side member 12 or 14 to be folded in first and the other member to be folded in second so as to be in a parallel position for storage as is shown in FIG. 5.

Because of the folding capability of side members 12 and 14, the carriers may be stored in a nested position, as shown in FIG. 6. By nesting the carriers in this manner for storing, they are more stable than when they are completely folded. This increased stability is especially desirable when the carriers are being stored on a semi-tractor trailer when not being used, since they will not be easily toppled by the normal movements of the vehicle.

Referring now to the details of the construction of brackets 28, FIG. 3 illustrates generally the manner in which side bracket 28 is attached to side member 12 and roller assembly 20. Bracket 28 has an L-shaped cross-section with one leg thereof having a tapered portion and having its widest portion 42 attached to side member 12 at the outer edge thereof. The bracket is preferably of constant cross section through the area in which the roller assembly is attached. From approximately the rear edge of the roller assembly to the rear portion of the side member 12, the inside portion 40 of the bracket 28 is tapered. The rods 22 and 23 are preferably welded to the upright portion of bracket 28 and also along their end portions to the horizontal portion of bracket 28 to provide added strength to side member 12. Roller assembly 20 can be attached by means of bolts 44, as shown in FIG. 3, or may be riveted or welded to bracket 28. Roller assembly 20 can be of the self-pivoting type in order that the carrier may be rolled in any desired direction.

A shelf support bracket 46 is attached to the upright portion of bracket 28, preferably by welding and should have an inner lip 48 and an outer lip 50 which fit on either side of the rod making up the outer support of the bottom shelf 18. Lips 48 and 50 prevent rotational movement of side member 12 during use of the carrier. Bracket 46 is preferably positioned in the vertical direction so as to provide a slight angulation in shelf 18 such that packages placed thereon have a tendency to move towards back member 10 and thus reduce the possibility of packages falling from the open side of the carrier and being damaged. A pair of brackets similar to brackets 46 are attached to central support rods 30 of side members 12 and 14 to support top shelf 16 in like manner to shelf 18.

By utilizing a support bracket 28 of the design herein contemplated, the torsional rigidity of the side member is increased considerably from the torsional rigidity of prior art carriers, thus reducing the possibility of the roller assembly 20 being distorted or broken away from the carrier.

Referring to FIG. 4, back member 10 is shown with the hinge portions 52 and 54 extending therefrom. The back support bracket 56 is attached to the bottom portion of each of rods 22 and 23 and hinge portions 52 and 54 by welding. The roller assemblies 20 are preferably attached to the back support bracket 56 by bolts 44.

Back support bracket 56 preferably has an L-shaped configuration of substantially constant cross-section for its entire length. Bracket 56 supplies adequate support to increase the torsional rigidity of the back member as compared to the prior art devices, and thus reduce the possibility of flexure of the roller assemblies that would result in damage or destruction thereto.

Although the foregoing description illustrates the preferred embodiment of the present invention, it will be apparent to those skilled in the art that variations

are possible. All such variations as would be obvious to those skilled in this art are intended to be included within the scope of this invention.

What is claimed is:

1. A carrier comprising:
 - a vertical back member,
 - a pair of vertical side members,
 - a plurality of shelves,

means for pivotably mounting each of said side members on one end of said back member so that each of said side members is pivotable about a substantially vertical axis between a carrying position extending outward from and substantially perpendicular to said back member and a storage position extending roughly parallel to and adjacent said vertical back member,

means for pivotably mounting said shelves on said back member so that each of said shelves is pivotable about a substantially horizontal axis between a carrying position extending substantially horizontally, and outward from said back member to engage said side members for supporting goods or the like and a storage position extending substantially vertical and adjacent said back member,

a pair of front roller assemblies each including a roller and a front roller mounting plate having an extending surface,

a pair of rear roller assemblies each including a roller and a rear roller mounting plate having an extending surface,

a pair of front bottom brackets each having an L-shaped cross section and each extending along the bottom of one of said side members and having one side welded at a plurality of locations to the side member along which it extends to form an integral unit and the other side of each providing at the front of each side member an extending surface having a tapering portion extending from its widest cross section at its connection to said roller assem-

bly to its narrowest cross section at the rear portion of said side member,

means for connecting said front mounting plates to said bottom brackets respectively so that said extending surfaces of said front mounting plates are substantially covered by said extending surfaces of said bottom brackets,

a rear bottom bracket extending along the bottom of said back member and connected to the back member to form an integral unit and providing at both ends a rear extending surface, and

means for connecting said rear mounting plates to said rear bottom bracket so that said extending surfaces of said rear mounting plates are substantially covered by said rear extending surfaces of said rear bottom bracket.

2. A carrier as defined in claim 1 wherein each of said side members is constructed from a series of tubular metal bars having portions extending in the vertical direction and rigidly secured at their bottom portions to said front bottom brackets.

3. A carrier as defined in claim 1 wherein said back bottom bracket has an L-shaped cross-section having one side welded in a plurality of locations to said bottom portion of said back member, and another side defining said rear extending surfaces.

4. A carrier as defined in claim 1 wherein said connecting means include a plurality of separated bolts.

5. A carrier as in claim 1 wherein side member mounting means include members at either end of said rear bottom bracket extending outward from and roughly perpendicular to said rear bottom bracket for pivotable attachment to said side members.

6. A carrier as in claim 5 wherein said members of said side member mounting means on one side of said back member extend further than the members on the other side so that said side members in said storage position will fit inside each other.

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