United States Patent [19]

Rhinehart et al.

[11] **3,891,228**

[45] **June 24, 1975**

[54] **CARRIER**

[75] Inventors: **Vance E. Rhinehart,** Apison; **Floyd G. Yother,** Daisy, both of Tenn.

[73] Assignee: **Cumberland Corporation,** Chattanooga, Tenn.

[22] Filed: **Sept. 17, 1973**

[21] Appl. No.: **397,979**

[52] **U.S. Cl.** ..... **280/36 R;** 211/149; 280/79.3

[51] **Int. Cl.** **B62b 11/00**

[58] **Field of Search** ..... 280/36 R, 47.35, 79.3; 211/134, 149, 153

[56] **References Cited**

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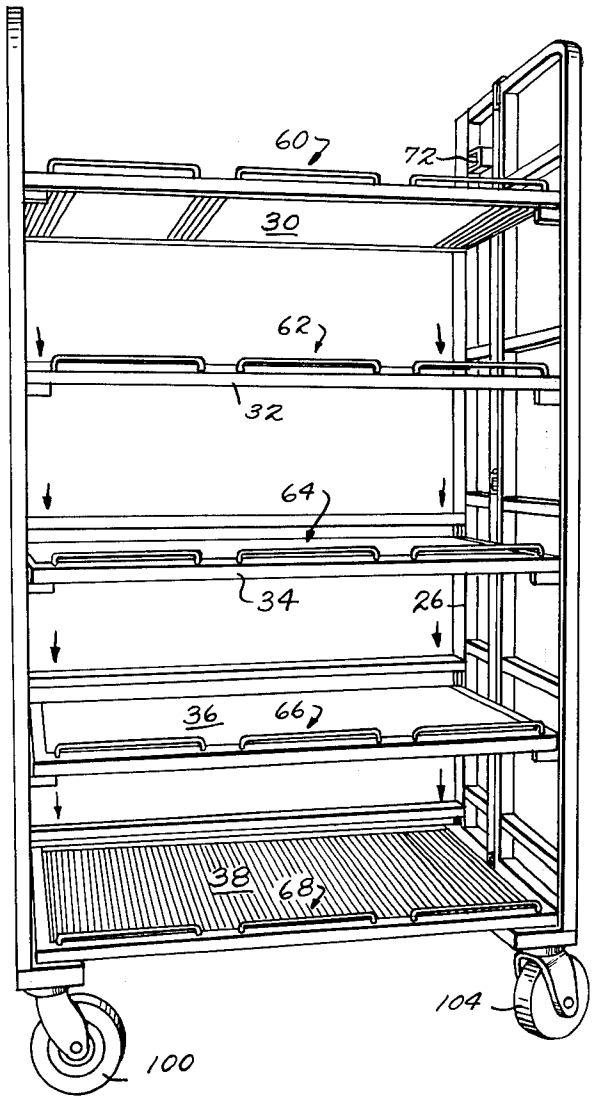
Primary Examiner—Robert R. Song

Attorney, Agent, or Firm—Cushman, Darby & Cushman

[57] **ABSTRACT**

A carrier for milk containers or the like with a plurality of shelves pivotable from a horizontal to a near vertical, storage position and held in place in the near vertical position by a spring-loaded handle mounted on the side of the shelf bottom. A back bar extends along the back of each shelf for preventing containers from being pushed off the back. Each back bar can be forced down against a spring urging the bar upward to a position flush with the shelf for loading the shelf. With all of the shelves pivoted about a horizontal axis to a near vertical position, the sides of the carrier can also be folded about a vertical axis against the carrier back for compact storage and transportation.

10 Claims, 11 Drawing Figures



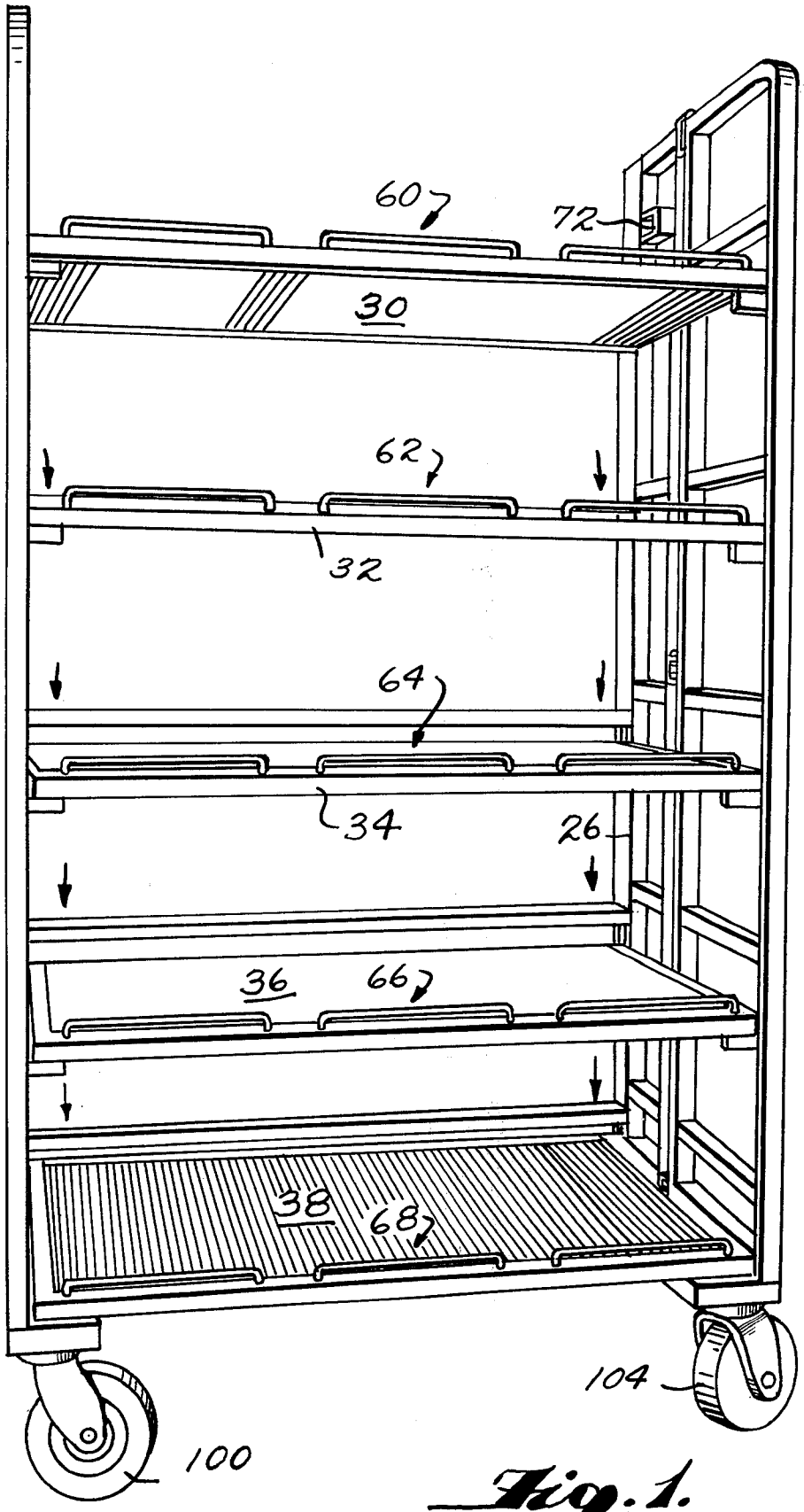


Fig. 1.

Fig. 2.

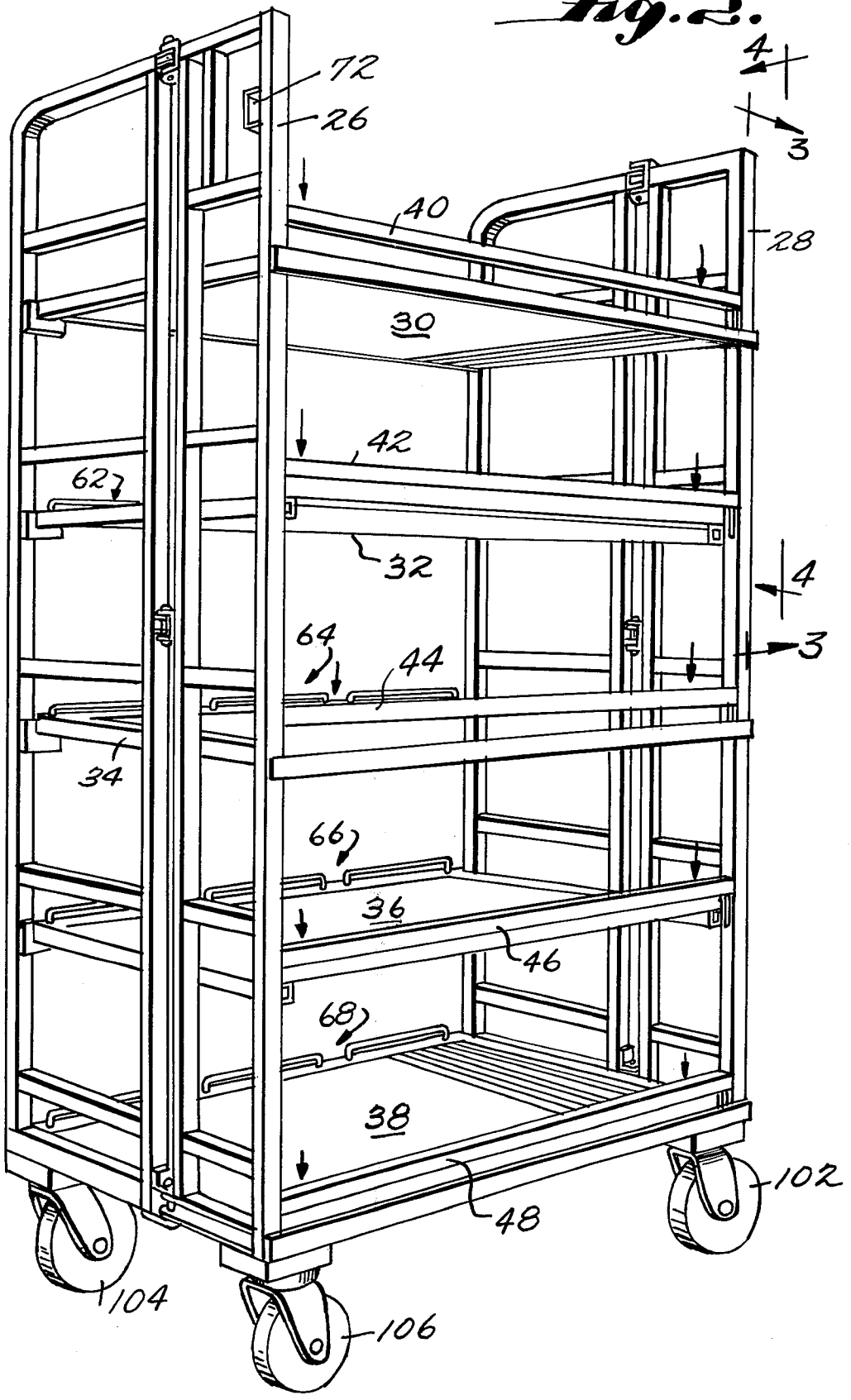


Fig. 3.

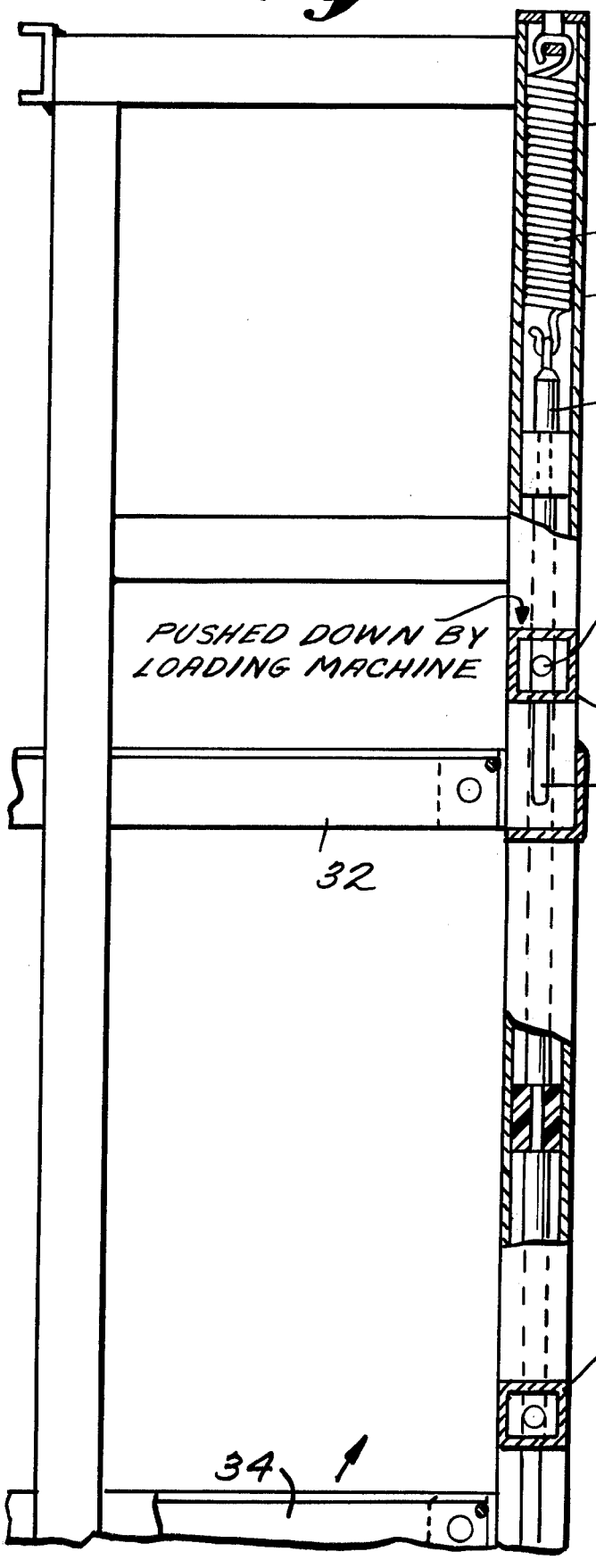

28
54
28
55
PUSHED DOWN BY LOADING MACHINE
56
42
50
32
44
34

Fig. 4.

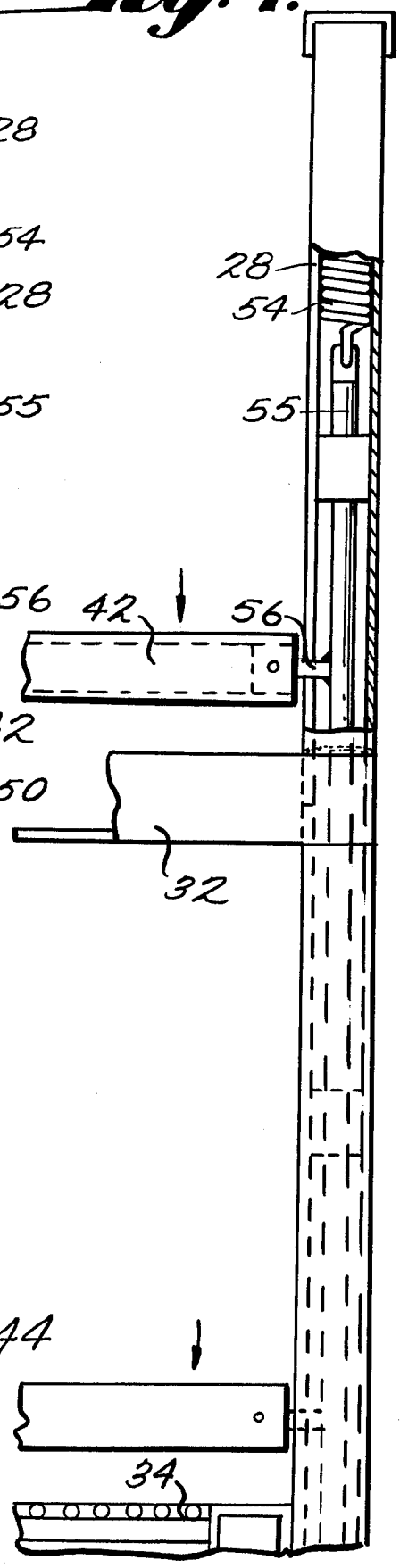

28
54
55
56
42
32
34

Fig. 5.

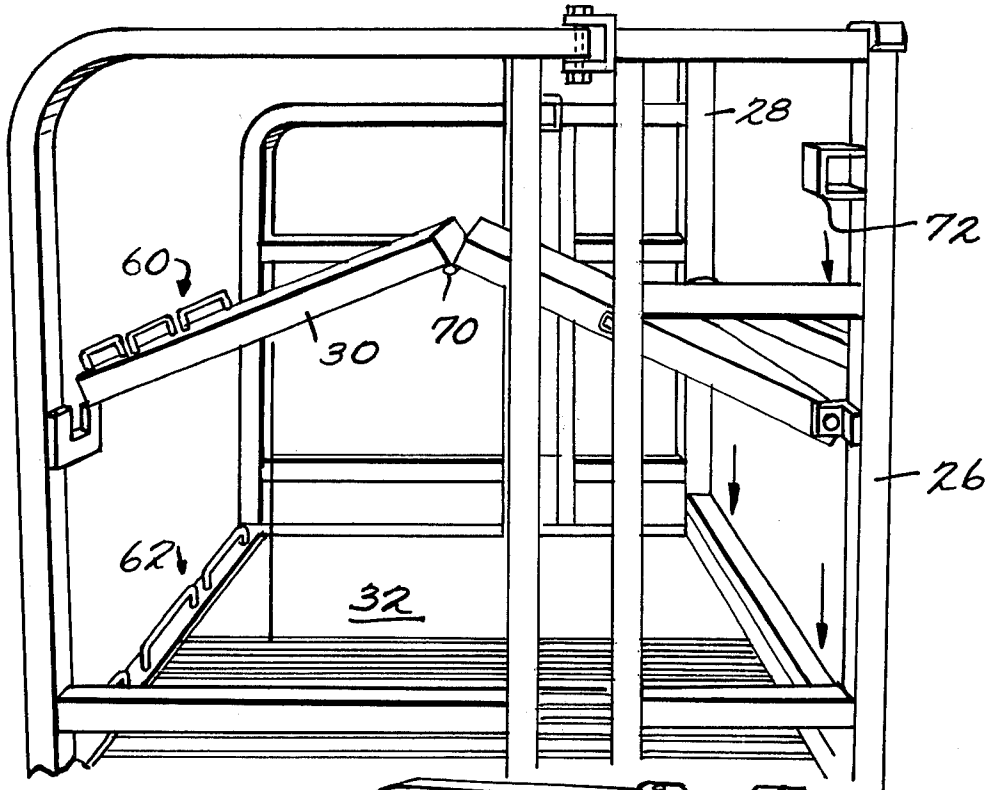


Fig. 6.

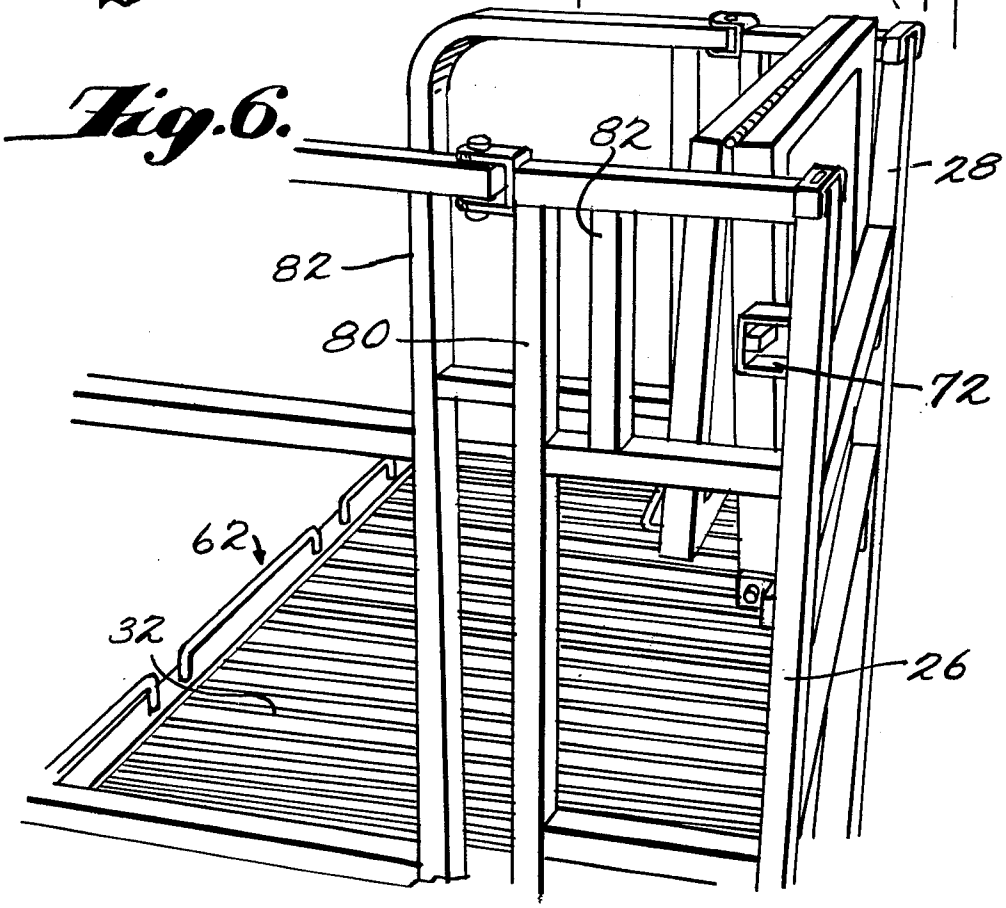
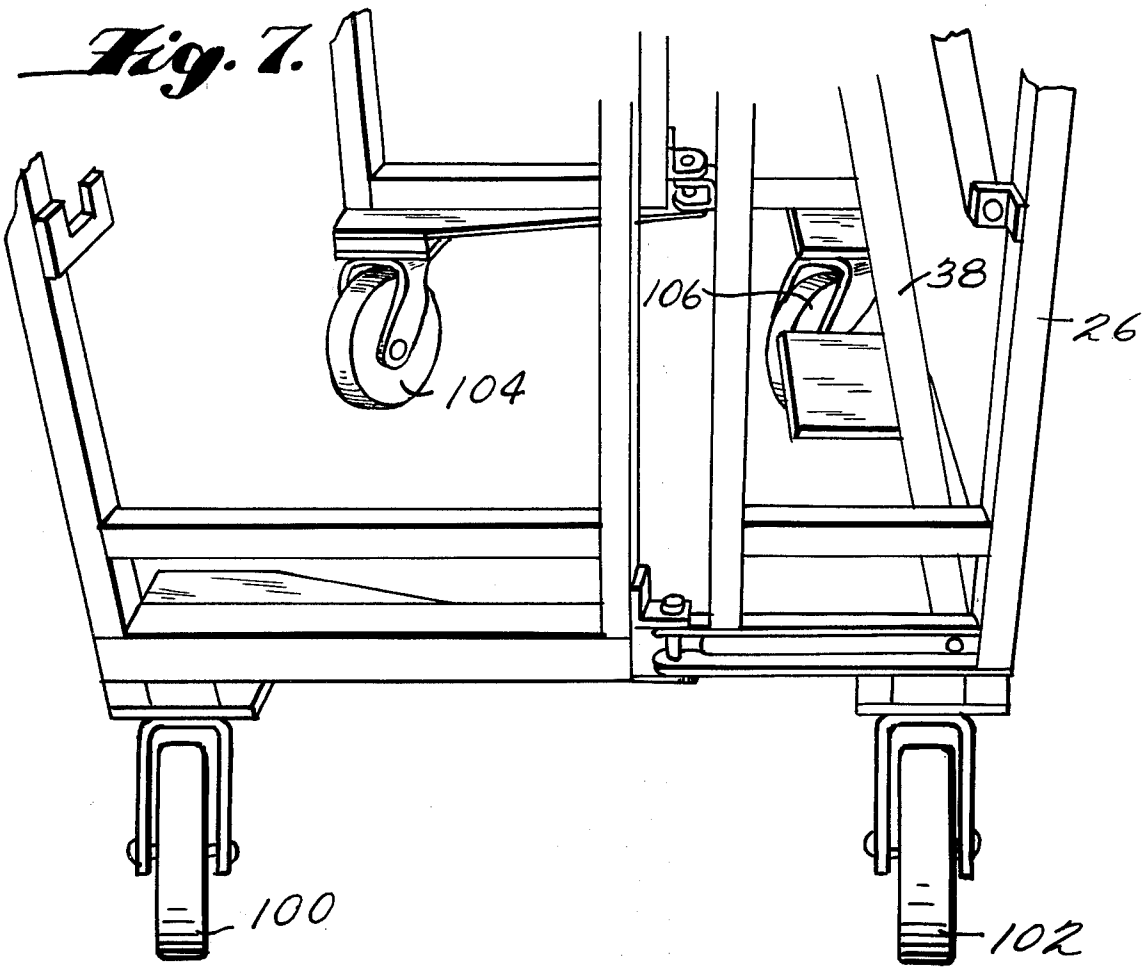


Fig. 7.



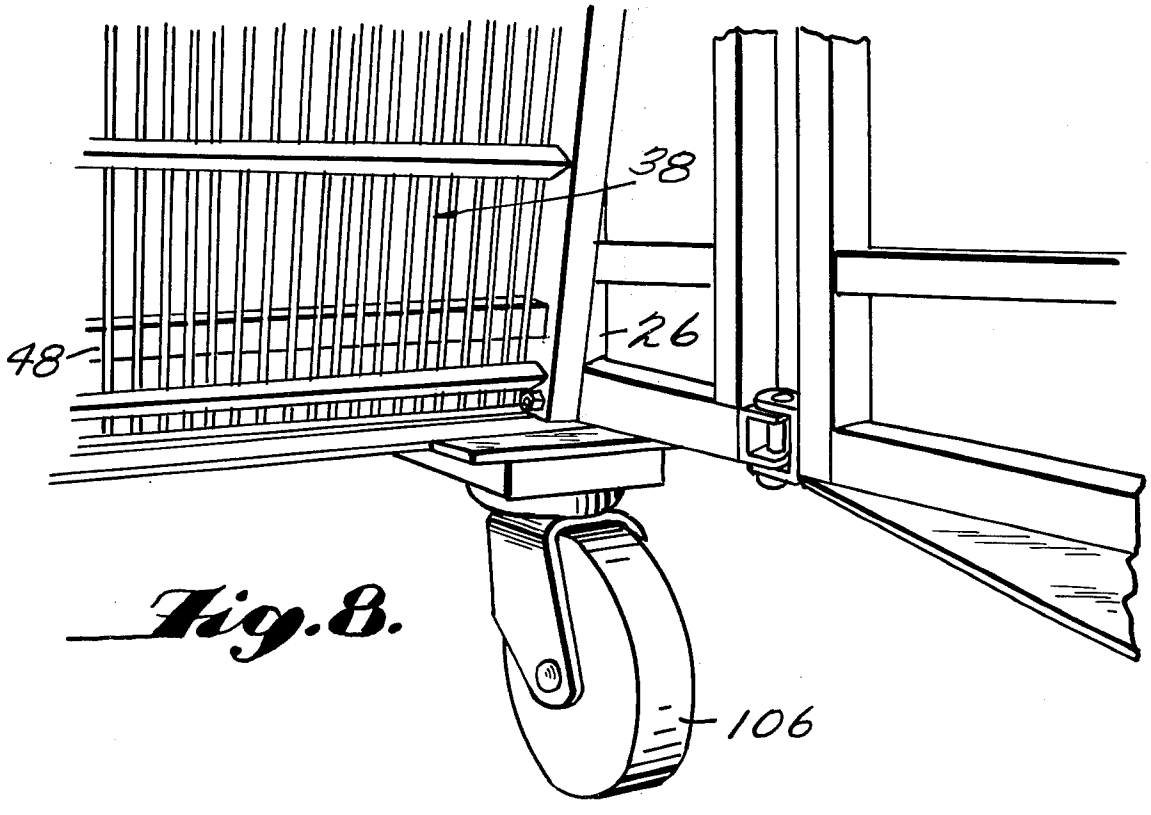


Fig. 8.

Fig. 11.

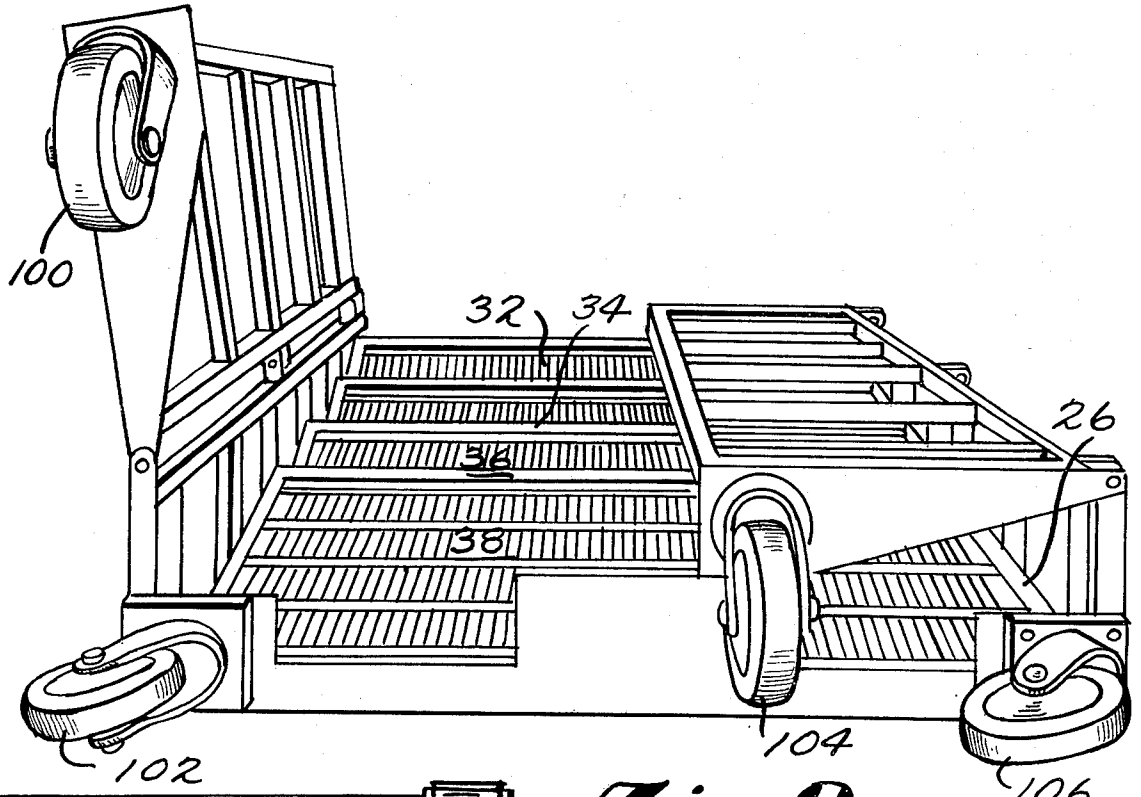


Fig. 9.

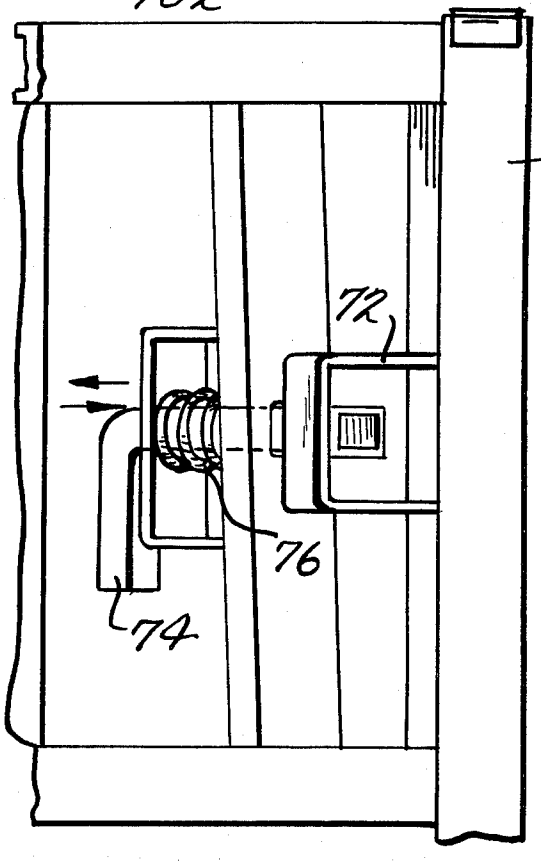
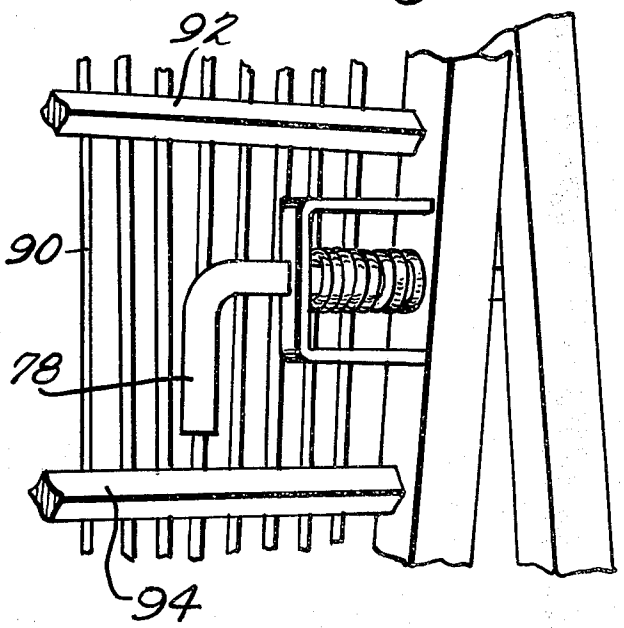


Fig. 10.



CARRIER

BRIEF DESCRIPTION OF THE PRIOR ART AND SUMMARY OF THE INVENTION

The invention relates to improvements in carriers of the type used for moving and storing a plurality of cartons or containers such as those used for packaging milk or the like.

Typically today, milk containers or other similar containers for retail sale are loaded onto the shelves of carriers at the dairy processing plant or warehouse and when filled, the carriers are each rolled and directly loaded onto a truck or other vehicle for transport to the ultimate point of sale, which is usually a supermarket. At the final destination, the filled or loaded carriers are rolled directly to a suitable storage area where they are held without unloading 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 remains until all of the articles have been removed by customers. This technique reduces to an absolute minimum loading and unloading the carriers and accordingly, reduces the cost of the items to the public. In those facilities which do not have a suitable display case for receiving the carriers, the fully loaded carrier may be rolled to the display area where a store employee can then unload the containers from the carrier into suitable display cases.

Particularly, carriers which are designed to be actually rolled into and form part of the display case usually are provided with a plurality of shelves which can each be folded or otherwise shifted out of the way when the shelf is empty to provide easy access to the containers on the shelf below. Further when the containers have been completely 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.

The present invention relates to improvements in carriers of this type which permit even more efficient operation in loading and utilization of the carriers. According to one aspect of the invention as discussed in detail below, each of the shelves is open at the back and provided with a back-bar which normally prevents the containers from falling or being pushed off the shelf during transportation or use at the retail outlet. The back-bars are mounted for vertical movement against a spring or other structure so that each of the bars can be pushed down to a position flush with the associated shelf during automatic loading to permit all of the shelves to be simultaneously loaded by simply pushing the milk or other containers directly onto all of the shelves.

Further, the improved carrier of this invention is provided with a number of shelves which can be pivoted about on an axis at or near the rear of the shelf from a horizontal to a near vertical position, permitting direct and easy access to containers on the shelf below. In order to minimize the vertical space required by the unit in a refrigerated unit and during storage, the upper shelf is preferably hinged near the middle so that when it is pivoted up to its near vertical position, it is also folded so as not to extend substantially above the remainder of the carrier. Further, the shelves are preferably each provided with a spring-loaded handle on the underside thereof which, in the near vertical position, engages the side of the carrier to hold the shelves in a position where they will not fall on a customer removing a container, but from which they can be readily manually released.

To minimize storage and transportation space, the sides of the carrier are also pivotably connected to the rear portion of the carrier at a location near the rear so that the carrier sides can be folded to a compact position. Rollers are preferably provided on the bottom of the carrier for rolling the unit both in the normal loaded position and the folded-up position.

A co-pending application, Ser. No. 323,357, filed Jan. 15, 1973, describes a carrier of this general type in which the sides can also be folded up against the back portion about a vertical pivot to provide more compact storage. This disclosure of this co-pending application is explicitly incorporated herein by reference.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. **1** shows a front perspective view of the carrier of this invention.

FIG. **2** shows a back perspective view of the carrier of FIG. **1.**

FIG. **3** shows a partial sectional side view along the lines **3—3** in FIG. **2** illustrating the structure which normally maintains the back bars of the carrier in the illustrated position, preventing containers or the like on the shelves of the carrier from being pushed off the carrier shelves.

FIG. **4** illustrates a partial sectional side view along the lines **4—4** of the back bar and structure for maintaining the back bar in a position preventing containers from being pushed off the shelves.

FIG. **5** illustrates a side perspective view showing the upper shelf being folded to a near vertical position permitting access by a customer or the like to the shelf below it.

FIG. **6** illustrates a side perspective view with the top shelf fully folded in its storage position.

FIG. **7** shows a bottom side perspective view illustrating the support structure for the wheels.

FIG. **8** shows a bottom front perspective view with the bottom shelf folded upward to the vertical position and illustrating the pivot for the sides of the carrier to permit folding the sides to a position near the back for compact storage and transportation.

FIG. **9** shows a perspective view of the spring-loaded latch mechanism of the top shelf for folding that shelf in a near vertical position.

FIG. **10** shows the spring-loaded latch mechanism for one of the other shelves for engaging a vertical bar of the side of the carrier for folding that shelf in its near vertical position during storage.

FIG. **11** shows a bottom perspective view with one of the sides of the carrier folded to the compact storage position and the shelves folded upward to and held in a near vertical position.

DETAILED DESCRIPTION OF THE DRAWINGS

Reference is now made to FIGS. **1** through **11**, which illustrate one embodiment of the novel improved carrier of this invention. As can be seen best in FIGS. **1** and **2**, the carrier is constructed of a number of bars of

rectangular tubing or the like which are attached together by welding or any other means to form a frame having an open back portion and side portions extending outward about vertical axes near the back portion so as to be foldable back against the open back to a compact position for storage and transportation.

The frame includes a pair of hollow, vertical tubular members, **26** and **28,** with a plurality of shelves pivotably mounted between vertical members **26** and **28.** In the embodiment of this application, shelves **30, 32, 34,** 36 and **38** are pivotably mounted in the carrier. It will, of course, be understood that any suitable number of shelves can be employed if desired. Backbars **40, 42,** 44, 46 and **48** are respectively associated with shelves **30, 32, 34, 36** and **38** and likewise, extend between vertical members **26** and **28,** normally at a position slightly above the level of the associated shelf as illustrated to prevent containers on the shelf from inadvertently falling off the back of the shelf or being pushed off the shelf during storage or use at retail. As can be best seen in FIG. **3,** each such back-bar is movable vertically along slots of vertical members **26** and **28.** For example, in FIG. **3,** back-bar **42** is movable along slot **50** in vertical member **28** and a similar slot in member **26** (not shown).

Within hollow tubular member **28,** a spring **54** is mounted exerting an upward force on member **54,** which includes a portion **56** extending into back-bar **42** and continuously urging back-bar **42** upward to the upper limit of slot **50** and, in the absence of a larger downward vertical force, maintaining back-bar **42** in the illustrated position, slightly above the level of the associated shelf **32.** Similar structure is provided for each of the other back-bars associated with each of the other shelves of the carrier. If desired, compression springs can be mounted within the vertical tubular members below the back bars to exert an upward force. Also, if desired, member **55** may include slots through which a member attached to and extending from back bar **42** may be inserted.

To quickly and easily load milk or other containers onto the carrier, back-bar **42,** as well as the other bars, need only be pushed downward by the exertion of a force greater than that exerted by spring **54,** causing the back-bar **42,** as well as the other back-bars, to move downward until the upper surface of back-bar **42** is roughly flush with the shelf, permitting the milk cartons or the like to be simply pushed over back-bar **42** and onto the shelf until the containers are stopped by the rails on the front of the shelf. Referring to FIG. **1,** it can be seen that shelves **30, 32, 34, 36** and **38** are respectively provided each with sets of rails **60, 62, 64, 66** and **68** at the front thereof and these rails are preferably permanently fixed to the respective shelves.

After all of the shelves have been loaded, preferably simultaneously, the back-bars can simply be released to automatically return to the position illustrated in FIG. **3** and provide protection against the cartons or the like being pushed over the back of the shelves. Accordingly, the carrier of this invention can be quickly and easily loaded by machine, while at the same time, providing a back-bar at the back of each shelf during its normal storage and use for preventing the milk cartons from falling off the back of the carrier.

As discussed briefly above, when the carrier is to be used directly for retail sale of milk in an air-curtain type of refrigerator or the like, it is desirable to be able to fold the shelves out of the way when they have been emptied to permit easy access to containers on the shelf below. Further, it is desirable to fold the shelves up to a near vertical position to minimize the storage and transportation space required after the shelves have been completely emptied.

Reference is now made to those FIGS. **5** and **6,** which illustrate the manner in which the upper shelf **30** is folded to its near vertical position. As indicated above, it is desirable to provide a piano-hinge **70** or the like, near the center of the upper shelf so that it can be folded as it is shifted to the vertical position and does not extend substantially above the normal height of the carrier. Since space is normally limited in air-curtain refrigerators and may be limited in trucks and the like, it is desirable that the upper shelf not extend substantially above the normal height of the carrier.

As can be seen best in FIGS. **5** and **6,** one side of the carrier is provided with a square bracket **72,** which receives a portion of a spring-loaded handle, **74,** when the shelf **30** has been pivoted to the vertical position illustrated in FIG. **6.** Referring to FIG. **9,** handle **74** is continuously urged inward by spring **76** but can be pulled outward manually when the shelf is pivoted upward and then released so that the tubular portion engages square bracket **64** to hold the shelf **30** in the vertical position. The shelf can be quickly and easily latched and released manually.

Each of the other shelves is also preferably provided with a similar handle on its underside for engaging a portion of the side of the carrier when the corresponding shelf has been pivoted to the near vertical storage position. Referring to FIG. **10,** handle **78** is associated with shelf **32** and extends into the closed space between vertical members **80** and **82** as shown in FIG. **6.** The remainder of the shelves similarly extend into the closed areas defined by vertical member **80** and vertical member **82** as illustrated in FIG. **6.**

Also referring to FIG. **10,** it will be noted that each of the shelves is constructed of a number of flat wire elements **90** which are welded periodically to cross braces consisting of square tubes such as **92** and **94.** The flat wire elements **90** are welded to the square tubing at the corner edge of the tubing. This configuration has been found to be particularly satisfactory and to produce a carrier having excellent strength characteristics.

Reference is now made to FIGS. **2** and **11** which illustrate the manner in which the carrier can be very easily folded into a compact position after each of the shelves have been pivoted and secured in a near vertical position. As can be seen in FIG. **2,** each of the sides of the carrier is pivotable along a vertical axis so as to be easily pivotable as illustrated in FIG. **10** to a position with each of the sides engaging the rear of the carrier. The carrier can be very easily pushed on its four wheels, **100, 102, 104** and **106** in the compact position or otherwise transported. If desired, one of the sides can be left open to provide additional stability and the carrier nested with other carriers also having one side open.

The arrangement for attaching the wheels to the carrier also is particularly advantageous and is discussed in greater detail in the co-pending application indicated above as incorporated by reference herein.

Many changes and modifications in the above-described embodiment of the invention can, of course, be made without departing from the scope of the inven-

tion. Accordingly, that scope is intended to be limited only by the scope of the appended claims.

What is claimed is:

1. A carrier for containers or the like comprising:

a frame including first and second hollow, vertical, tubular members each having a groove on the side facing the other hollow member,

a plurality of shelves mounted on said frame and each having an extending surface,

a back bar extending along one side of each of a number of said shelves,

means mounting each said back bar on said frame so that each said bar can be moved from a position slightly above said extending surface of that shelf to a position substantially flush with said extending surface of said shelf,

means mounted on said frame for urging each said back bar toward said position slightly above said extending surface including further members each movable in one of said vertical members and having a portion extending through said groove and engaging an end of said back bar, and a spring within each said vertical member and connected to said further member in that vertical member exerting a force on that further member to urge that member and that back bar to said position substantially flush with said extending surface of said shelf.

2. A carrier as in claim 1 wherein each said shelf is comprised of a plurality of wire elements extending substantially parallel to each other and a plurality of tubes having a square cross section and extending substantially transverse to said wire elements with each said tube attached to said wire elements at a corner of that tube.

3. A carrier as in claim 2 wherein said tubes are welded to said wire elements.

4. A carrier as in claim 1 further including a plurality of wheels mounted on the bottom of said frame.

5. A carrier as in claim 1 wherein said frame includes means defining a back portion and side portions extending from opposite ends of said back portion and further includes means for pivoting said side portions about a vertical axis from a position extending substantially transverse to said back portion to a compact position substantially against said back portion.

6. A carrier as in claim 5 wherein said back and side portions comprise a plurality of tubular members.

7. A carrier as in claim 1 further including means mounting said shelves on said frame so that each shelf is pivotable about a substantially horizontal axis to a near vertical position, and means mounted on each shelf for latching that shelf in said near vertical position and for releasing that shelf to permit pivoting to said substantially horizontal position.

8. A carrier as in claim 7 wherein at least one of said latching means includes a handle member extending toward the side of said shelf and a spring member exerting a force on said handle member to urge the end of said handle member beyond the edge of the side of said shelf and wherein said frame includes a bracket member for receiving said end of said handle member when said shelf is in said near vertical position.

9. A carrier as claimed in claim 1 further including means on the top shelf for pivoting said top shelf about a horizontal axis near the center of said shelf so that said top shelf folds to a near vertical position not substantially extending above the top of said frame.

10. A carrier as in claim 9 wherein said top shelf is pivoted about said horizontal axis near the center in a direction opposite to the direction of pivoting of said top shelf about said horizontal axis near said end of said top shelf.

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