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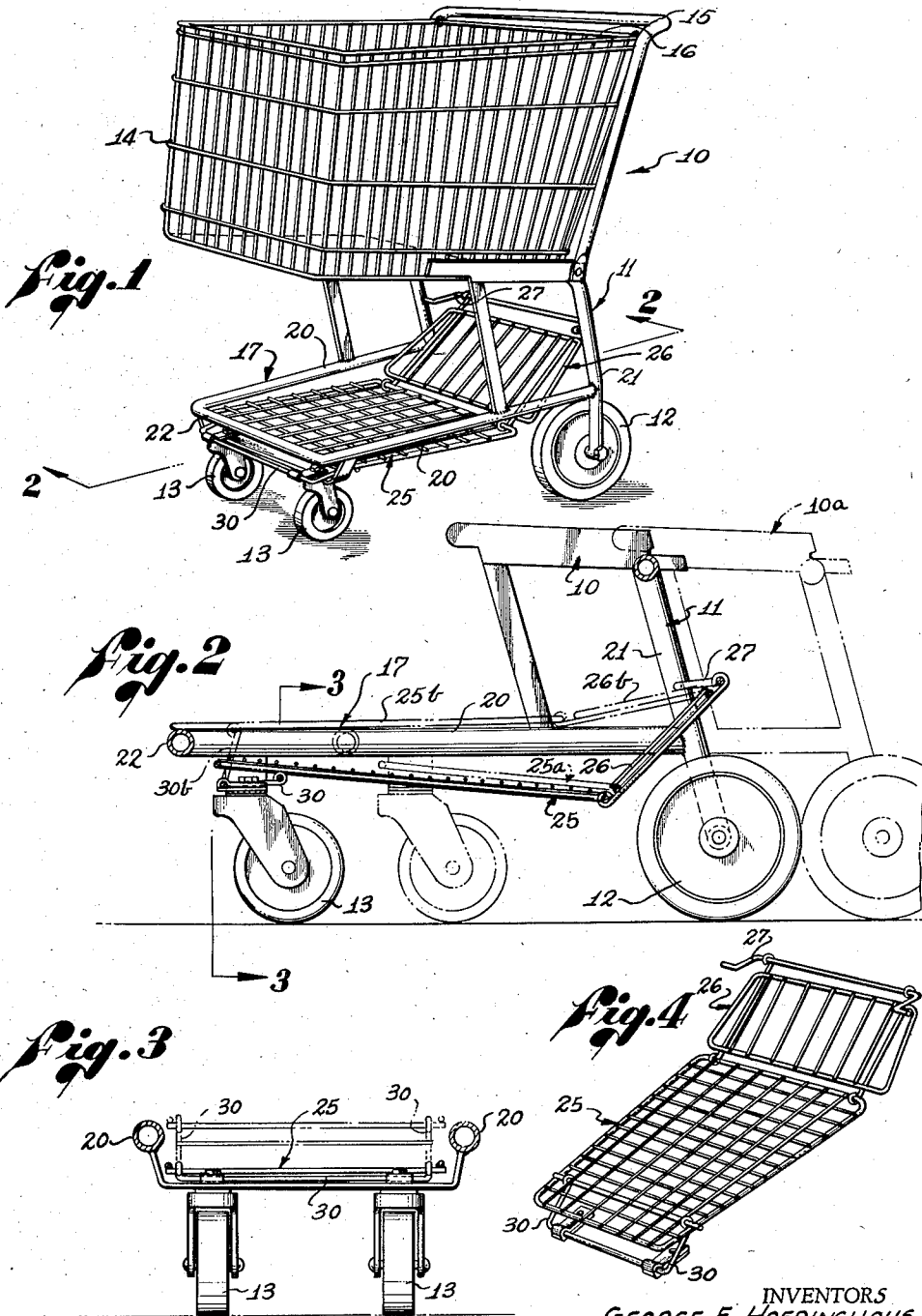
G. E. HOEDINGHAUS ET AL

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LOWER SHELF CONSTRUCTION FOR NESTING CART

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2 Sheets-Sheet 1



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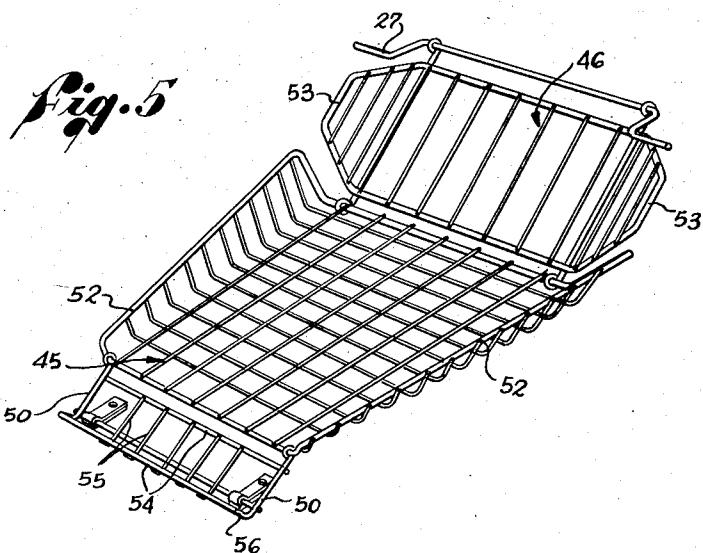
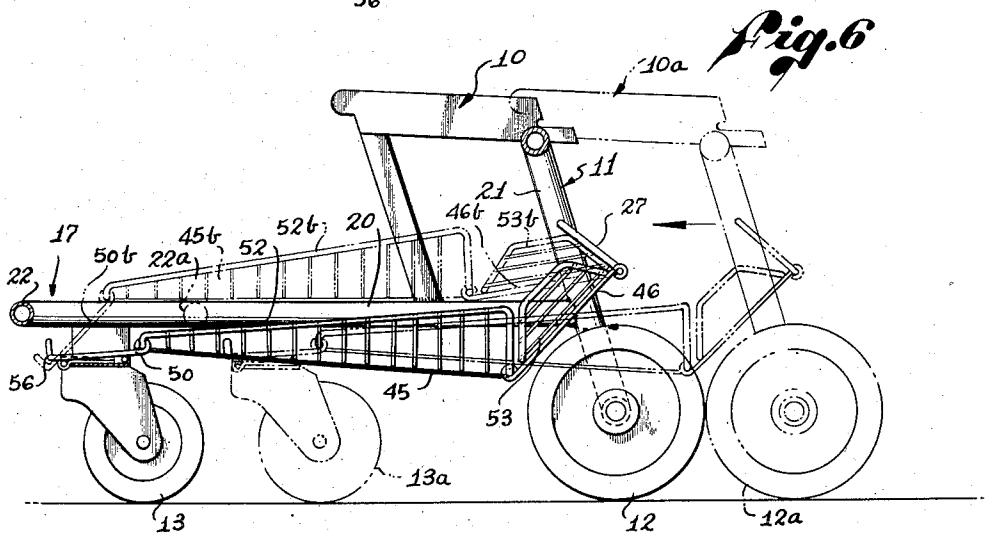
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LOWER SHELF CONSTRUCTION FOR NESTING CART

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This invention relates generally to telescoping carts of the type commonly used in retail food markets, and more particularly to the lower shelf or basket of such carts.

With the advent of the self-service market, the need arose for a cart or similar device in which the customer could put his purchases. The problem of storing these carts until they were needed by the customers led to the development of the telescoping cart, in which the basket of one cart is adapted to enter into the rear of the basket of another cart so that the two may be pushed together, and when so interfitted, a greatly reduced storage space is required.

A number of other improvements have been made in telescoping baskets, but in general these have related to improvements in the upper basket itself, rather than in any of the other portions of the cart. A lower basket, generally similar to the upper basket, but of reduced height, can be provided immediately above the wheels of the cart, but for one reason or another, the use of a lower basket has not proven too popular. Instead, a shelf has been found to be more popular, this usually consisting of a fixed structure particularly adapted to receive bulky and heavy packages, while still retaining the ability, when empty, to interfit with the corresponding shelf of another cart. This has required that the shelf be of a generally open construction, such as might be provided by parallel wickets of heavy wire or light rod material.

However, this construction has made it impractical to place smaller objects on the lower shelf since they tend to fall through the wickets onto the floor. Additionally, the generally forward sloping characteristics of the wickets make it easy for certain objects to topple off the shelf if the movement of the cart is suddenly changed.

It is a major object of the present invention to provide an improved construction for the lower shelf of market carts.

A further object of the invention is to provide such a shelf construction that is particularly suitable for use with interfitting or telescopic carts.

It is a further object of the invention to provide a lower shelf that is well designed to hold packages and articles without danger of dropping or spilling them.

Still another object of the invention is to provide a construction that is simple and rugged and will not cause trouble in the normal operation of the carts.

It is a still further object of the invention to provide such a construction that can easily and inexpensively be incorporated in the manufacture of carts.

These and other objects and advantages of the invention will become apparent from the following description of preferred and optional forms thereof, and from the drawings illustrating those forms in which:

Figure 1 is a perspective view of a market cart having a preferred form of lower shelf construction incorporated therein;

Figure 2 is a longitudinal sectional view taken on the

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line 2—2 of Figure 1 and showing the lower shelf in both its normal and nested positions;

Figure 3 is a transverse sectional view taken on the line 3—3 of Figure 2;

Figure 4 is a perspective view of the lower shelf structure separated from the remainder of the cart;

Figure 5 is a perspective view of an alternate form of lower shelf construction, the shelf being removed from the remainder of the cart; and

Figure 6 is a longitudinal sectional view, similar to Figure 2, showing the alternate form of shelf in both normal and nested positions.

Referring now to the drawings and particularly to Figure 1 thereof, the numeral 10 indicates generally a telescoping market cart of the type commonly used in self-service markets. The cart 10 includes a frame 11 supported by a pair of rear wheels 12 and a pair of caster-type front wheels 13, the frame supporting an upper basket 14. The rear end of the frame 11 is provided with a handle portion 15 located at the upper rear end of the basket 14, and the rear wall or gate 16 of the basket is pivoted at its upper end to swing inwardly and upwardly when that rear wall is contacted by the forward wall or end of the basket 14 of another cart 10. Such carts are well known, and the basic features of their construction are shown in the patent to Watson, No. 2,479,530, issued August 16, 1949 and entitled Store Basket and Carriage.

The basket 14 is supported in a generally cantilever fashion from its rear end by the frame 11, and an open space is thus provided between the lower surface of the basket and the front wheels 13. A horizontal projection 17 of the frame 11 extends from the rear portion of the frame, aligned with the rear wheels 12, to the front wheels 13, the latter being attached to the projection 17 at its forward end.

Preferably, the projection 17 is formed of tubular material bent into a generally U-shaped member with the arms 20 of the U extending generally longitudinally of the cart 10 and attached at their rear ends to uprights 21 forming a portion of the vertical structure of the frame 11, the uprights carrying the wheels 12 at their lower ends. The base 22 of the U extends transversely across the cart 10 and from the forward end of the horizontal projection 17.

The lower shelf structure of the present invention fits within the horizontal projection 17 of the frame 11, and extends from one arm 20 to the other arm of the U, and from the base 22 to the vertical member 21 of the frame. In this way, the maximum usable space is provided for the reception of articles and packages.

As seen in Figure 4, the lower shelf construction includes a generally horizontal bottom member 25 hingedly connected at its rear end to a rear member 26. The upper rear end of the rear member 26 is hingedly connected to a cross support 27 that is attached to the upright 21 of the frame 11. Near its forward end, the bottom member 25 is hingedly connected to a pair of link members 30 that in turn are hingedly attached to the horizontal projection 17. The bottom member 25, the rear member 26, the links 30, and the frame 11 thus cooperate to provide a linkage in which the frame 11 is a fixed member, and the other members are movable between limiting positions.

As best seen in Figure 2, in its normal position the linkage is so positioned that the link members 30 are substantially horizontal, and support the forward end of the bottom member 25 a slight distance below the upper surface of the arms 20 and base 22 of the U-shaped member. The length of the rear member 26 is such that in its normal position, it extends generally downwardly and somewhat forwardly from the cross support 27 that is

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rigidly connected to the uprights 21 of the frame 11. In this normal position, the bottom member 25 slopes downwardly a slight amount from the links 30 toward the rear member 26, and a shelf surface is thus provided on which various articles may be placed. The arms 20 and the base 22 of the U-shaped portion of the frame 11 act to form a fence or guard around the shelf thus formed, and aid in retaining the articles upon the shelf. In this connection, the fact that the bottom member 25 slopes toward the rear helps to prevent articles from falling from the shelf in the event that forward motion of the cart 10 is suddenly stopped. Additionally, the spacing between the upper edge of the rear member and the bottom of the basket 14 permits the user to place articles on the lower shelf from the rear of the cart 10.

When two or more carts 10 are to be nested, the first cart is placed in the desired position, and the front end of a second cart is then placed in abutting relationship with the rear end of the first cart. By then pushing the second cart toward the first cart, the rear gate or wall 16 of the basket 14 of the first cart will be swung inwardly and upwardly, to admit the basket of the second cart into the basket of the first cart, and at the same time, the lower shelf structure of the first cart will be raised and somewhat flattened. This latter condition is best illustrated in Figure 2.

As shown in that figure, when the second cart, indicated in phantom outline and designated by the numeral 10a, is pushed into nesting engagement with the first cart, shown in solid outline and designated by the numeral 10, the most forwardly portion of the projection 17, the base member 22 of the U, bears first against the rear surface of the rear member 26 and presses it forwardly and upwardly, as the rear member pivots about the cross support 27. In so doing, the forward end of the bottom member 25 is likewise urged forwardly and upwardly, and the rear ends of the link members 30 are subject to the same urging. Under these circumstances, the link members 30 control the movement of the forward end of the bottom member 25, and raise that forward end as it is moved forward, to the position indicated in phantom outline, and designated by the numerals 25b, 26b, and 30b, corresponding to the elements indicated in solid outline and designated by the numbers 25, 26, and 30, respectively.

At this point, the forward cart 10 has had its lower shelf raised and flattened, as indicated by the phantom outline showing of the bottom member 25b and the rear member 26b, and the second cart 10a has its generally horizontal member 25a in its normal position. When the third cart (not shown) is then placed in nesting engagement with the second cart 10a, the same action of the lower shelf structure is repeated, this time with the structure of the second cart 10a. The bottom member 25a of the second cart 10a is moved forwardly and upwardly so that it rests just beneath the raised member 25b of the first cart 10, and as additional carts are nested, the process is repeated.

To separate the carts, the end cart on either the forward or rearward end is pulled away from the remainder of the nested carts and if the cart is removed from the rear end of the line, it is in condition for immediate use by the shopper. If, on the other hand, it is removed from the forward end, as the cart is separated from the remainder of the carts, the lower shelf falls into normal position as the base 22 of the next cart is removed from beneath the bottom member 25b and rear member 26b. By the time that the cart is completely separated from the remainder of the carts, it is in position for immediate use.

It will be appreciated that the bottom member 25 and the rear member 26 may be formed of any suitable material, and while they have here been indicated as formed of wire grill or mesh, they may be formed of sheet metal or other suitable imperforate material if so desired. The solid construction is generally not favored, since it tends to add to the weight of the cart, but where small articles

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are likely to be placed on the lower shelf and might drop through the meshes of the open type construction, the solid construction is to be preferred.

It will be appreciated that the mesh of the bottom member 25 and rear member 26, or the spacing between the wires forming those members, can be reduced so that smaller articles will be firmly supported by the lower shelf structure. However, it will be realized that with the bottom member 25 and rear member 26 in their normal position, indicated in Figure 2, there is a space between them and the lower edge of the arms 20 of the horizontal projection 17, this space permitting objects to fall from the lower shelf. Where this is an important consideration, the alternate form of construction illustrated in Figures 5 and 6 may advantageously be used.

As indicated in those figures, a lower shelf construction is provided that is generally similar to that illustrated in Figures 1 to 4, but with the bottom member 25 and the rear member 26 provided with sides to assist in retaining small articles.

Considering first the shelf structure alone, as illustrated in Figure 5, it will be seen that there is provided a bottom 45, generally similar to the bottom member 25 previously described, and like that member, preferably formed of wires or rods arranged in an open mesh construction. However, where the bottom member 25 is plane, the bottom member 45 has a central flat portion, with an upwardly projecting wing 52 along each longitudinally extending edge. Similarly, a back or rear member 46 is provided with wings 53 on each end, and when the shelf structure is in its normal position, the wings 52 and 53 meet to form sides that retain the articles placed upon the shelf.

As in the case of the previously described form, the bottom member 45 is hingedly connected at its rear end to the rear member 46, and the latter in turn is hingedly connected to the cross support 27 that extends between the uprights 21 of the frame 11. At its forward end, the bottom member 45 is hingedly connected to links 50 that in turn are hingedly connected to the forward end of the horizontal projection 17, below and slightly rearwardly of the base 22 of that projection, and above and slightly forward of the caster wheels 13. Preferably, the links 50 are joined by transverse members 54, and longitudinally extending members 55 are located between these transverse members to provide an extension for the bottom member 45. If desired, the forward edge of the extension thus formed may be provided with a lip 56 that aids in retaining articles placed upon the lower shelf, the lip and the extension being pivoted out of the way when the carts are nested.

As best seen in Figure 6, in its normal position the bottom member 45 is located between the arms 20 of the projection 17, between the rear wheels 12 and the front wheels 13. As in the case of the first described form, the bottom member 45 slopes downwardly from the front wheels 13, and the rear member 46 extends upwardly and rearwardly from the rear end of the bottom member 45. Additionally, the wings 52 extend from the flat or plane portion of the bottom member 45 to a point substantially aligned with the arms 20 of the projection 17 to enclose the sides of the lower shelf, the wings 53 of the rear member 46 cooperating with the wings 52 to complete the enclosure.

When a second cart 10a is nested within a first cart 10, the base member 22a of the second cart bears against and pivots upwardly the rear member 46 of the first cart, this motion of the rear member resulting in the forward and upward motion of the bottom member 45 and the links 50 to the position indicated in phantom outline, the part so designated being given the same numeral with a b thereafter. When a third cart (not shown) is nested within the second cart, the lower shelf of the second cart is raised in a manner comparable to that of the raising of the lower shelf of the first cart. Similarly, when one of

the end carts is removed, the lower shelf structure returns to its normal position.

It will be apparent that the lower shelf structure may take varying forms in addition to those herein disclosed. Also, as indicated, the shelf structure may be an open grillwork as disclosed, or may be formed of a solid imperforate material, or some intermediate type of material may be used.

From the foregoing, it will be seen that there has been provided a market cart construction capable of achieving the objects and securing the advantages heretofore set forth. While a preferred and an alternate form of construction have been set forth, it is apparent that many modifications may be made in the construction, such as those heretofore suggested, and consequently the present invention is not to be limited to the particular form or arrangement of parts herein described and shown, except as limited by the claims.

We claim:

1. In a telescoping market cart the combination of: a frame; wheels supporting said frame; a basket supported by said frame; and a lower shelf comprising a bottom member, a rear member hingedly connected to said bottom member, means connecting said rear member to said frame for movement forwardly and upwardly with respect thereto, and other means connecting the forward end of said bottom member to said frame for movement forwardly and upwardly with respect thereto, whereby said bottom member and said rear member are moved upwardly and forwardly with respect to said frame when said rear member is urged forwardly by engagement with another cart.

2. A lower shelf construction for a telescoping market cart having a frame, which includes: a bottom member; a rear member hingedly connected to the rear end of said bottom member; means hingedly connecting the upper end of said rear member to said frame for pivotal movement of said rear member in an upwardly and forwardly direction with respect to said frame; and supporting means connected to the forward end of said bottom member and supporting said end from said frame, said supporting means preventing substantial sideways movement of said bottom member while permitting longitudinal and pivotal movement thereof with respect to said frame.

3. A lower shelf construction for a telescoping market cart having a frame, which includes: a bottom member; a rear member hingedly connected to the rear end of said bottom member; means connecting said rear member to said frame for movement forwardly and upwardly with respect thereto; and other means connecting the forward end of said bottom member to said frame for movement forwardly and upwardly with respect thereto, the forward and upward movement of said bottom member and said rear member being accompanied by the hinging movement of those members with respect to each other.

4. A lower shelf construction for a telescoping market cart having a frame, which includes: a bottom member; a rear member hingedly connected to the rear end of said bottom member; means hingedly connecting the rear end of said rear member to said frame for movement forwardly and upwardly with respect thereto; and link means pivotally connected to said frame and to the forward end of said bottom member to insure forward and upward movement of the forward end of said bottom member with respect to said frame when said rear member is moved forwardly and upwardly, said bottom and rear members hinging with respect to each other as said movements occur.

5. A lower shelf construction for a telescoping market cart having a frame with spaced side members and a transversely extending member at the forward end of said side members, said shelf construction including: a rigid bottom member located between said spaced side members; a rigid rear member located between said spaced side members and having its lower end hingedly con-

nected to the rear end of said bottom member; means hingedly connecting the upper end of said rear member to said frame for pivotal movement of said rear member upwardly and forwardly with respect to said frame; and link means pivotally connected to said frame and to the forward end of said bottom member to insure forward and upward movement of the forward end of said bottom member with respect to said frame when said rear member is moved forwardly and upwardly, said bottom and rear members hinging with respect to each other as said movements occur.

6. A lower shelf construction for a telescoping market cart having a frame with spaced side members and a transversely extending member at the forward end of said side members, said shelf construction including: a rigid bottom member located between said spaced side members; a rigid rear member located between said spaced side members and having its lower end hingedly connected to the rear end of said bottom member; means hingedly connecting the upper end of said rear member to said frame for pivotal movement of said rear member upwardly and forwardly with respect to said frame, the upper end of said rear member being located above said transversely extending member of said frame, and the lower end of said rear member normally being located below said transversely extending member; and link means pivotally connected to the forward end of said frame and to the forward end of said bottom member and causing upward movement of said forward end of said bottom member as said bottom member is moved forwardly, whereby, in the nesting of one cart within another, the transversely extending member of the rear cart bears against the said rear member of the forward cart to swing said rear member forwardly and upwardly, thereby moving said bottom member of said forward cart forwardly and upwardly and admitting the transversely extending member of said rear cart beneath said bottom and rear members of said forward cart.

7. A lower shelf construction for a telescoping market cart having a frame with spaced side members and a transversely extending member at the forward end of said side members, said shelf construction including: a rigid bottom member located between said spaced side members; a rigid rear member located between said spaced side members and having its lower end hingedly connected to the rear end of said bottom member; means hingedly connecting the upper end of said rear member to said frame for pivotal movement of said rear member upwardly and forwardly with respect to said frame, the upper end of said rear member being located above said transversely extending member of said frame, and the lower end of said rear member normally being located below said transversely extending member; and support means at the forward end of said bottom member and engaging said frame to guide said forward end as said bottom member is moved forwardly, whereby, in the nesting of one cart within another, the transversely extending member of the rear cart bears against the said rear member of the forward cart to swing said rear member forwardly and upwardly, thereby moving said bottom member of said forward cart forwardly and admitting the transversely extending member of said rear cart beneath said bottom and rear members of said forward cart.

8. A lower shelf construction for a telescoping market cart having a frame with spaced side members and a transversely extending member at the forward end of said side members, said shelf construction including: a rigid bottom member located between said spaced side members and extending substantially from one side member to the other, and from said transversely extending member toward the rear of said frame; a rigid rear member located between said spaced side members and extending substantially from one side member to the other,

and generally upwardly from the rear end of said bottom member to the rear of said frame, the lower end of said rear member being hingedly connected to the rear end of said bottom member; a cross support extending from one side member to the other and located at the rear of said frame, said rear member being hingedly supported from said cross support for pivotal movement forwardly and upwardly with respect to said frame; and link means pivotally connected to the forward end of said frame and to the forward end of said bottom member and causing upward movement of said forward end of said bottom member as said bottom member is moved forwardly, whereby, in the nesting of one cart within another, the transversely extending member of the rear cart bears against the said rear member of the forward cart to swing said rear member forwardly and upwardly, thereby moving said bottom member of said forward cart forwardly and upwardly and admitting the transversely extending member of said rear cart beneath said bottom and rear members of said forward cart.

9. A lower shelf construction for a telescoping market cart having a frame with spaced side members and a transversely extending member at the forward end of said side members, said shelf construction including: a rigid bottom member located between said spaced side members and extending substantially from one side member to the other, and from said transversely extending member toward the rear of said frame; a rigid rear member located between said spaced side members and extending substantially from one side member to the other, and generally upwards from the rear end of said bottom member to the rear of said frame, the lower end of said rear member being hingedly connected to the rear end of said bottom member; a cross support extending from one side member to the other and located at the rear of said frame, said rear member being hingedly supported from said cross support for pivotal movement forwardly and upwardly with respect to said frame; and support means at the forward end of said bottom member and engaging said frame to guide said forward end as said bottom member is moved forwardly, whereby, in the nesting of one cart within another, the transversely extending member of the rear cart bears against the said rear member of the forward cart to swing said rear member forwardly and upwardly, thereby moving said bottom member of said forward cart forwardly

and admitting the transversely extending member of said rear cart beneath said bottom and rear members of said forward cart.

10. A lower shelf construction for a telescoping market cart having a frame with spaced side members and a transversely extending member at the forward end of said side members, said shelf construction including: a rigid bottom member located between said spaced side members and extending substantially from one side member to the other, and from said transversely extending member toward the rear of said frame, said bottom member having generally upwardly extending walls along each side thereof; a rigid rear member located between said spaced side members and extending substantially from one side member to the other and generally upwardly from the rear end of said bottom member to the rear of said frame, said rear member having generally forwardly extending walls along each side, cooperating with said walls of said bottom member, the lower end of said rear member being hingedly connected to the rear end of said bottom member; a cross support extending from one side member to the other and located at the rear of said frame, said rear member being hingedly supported from said cross support for pivotal movement forwardly and upwardly with respect to said frame; and link means pivotally connected to the forward end of said frame and to the forward end of said bottom member and causing upward movement of said forward end of said bottom member as said bottom member is moved forwardly, whereby, in the nesting of one cart within another, the transversely extending member of the rear cart bears against the said rear member of the forward cart to swing said rear member forwardly and upwardly, thereby moving said bottom member of said forward cart forwardly and upwardly and admitting the transversely extending member of said rear cart beneath said bottom and rear members of said forward cart.

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