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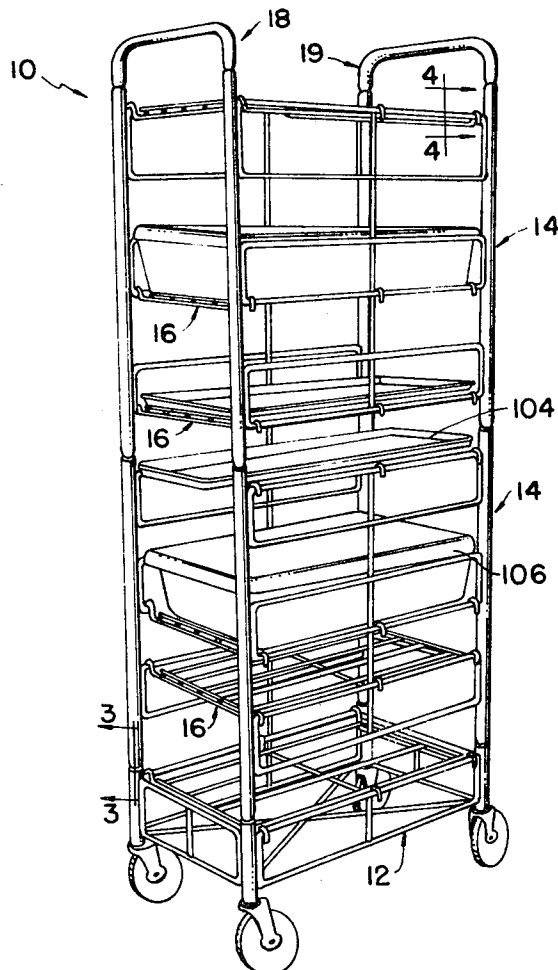
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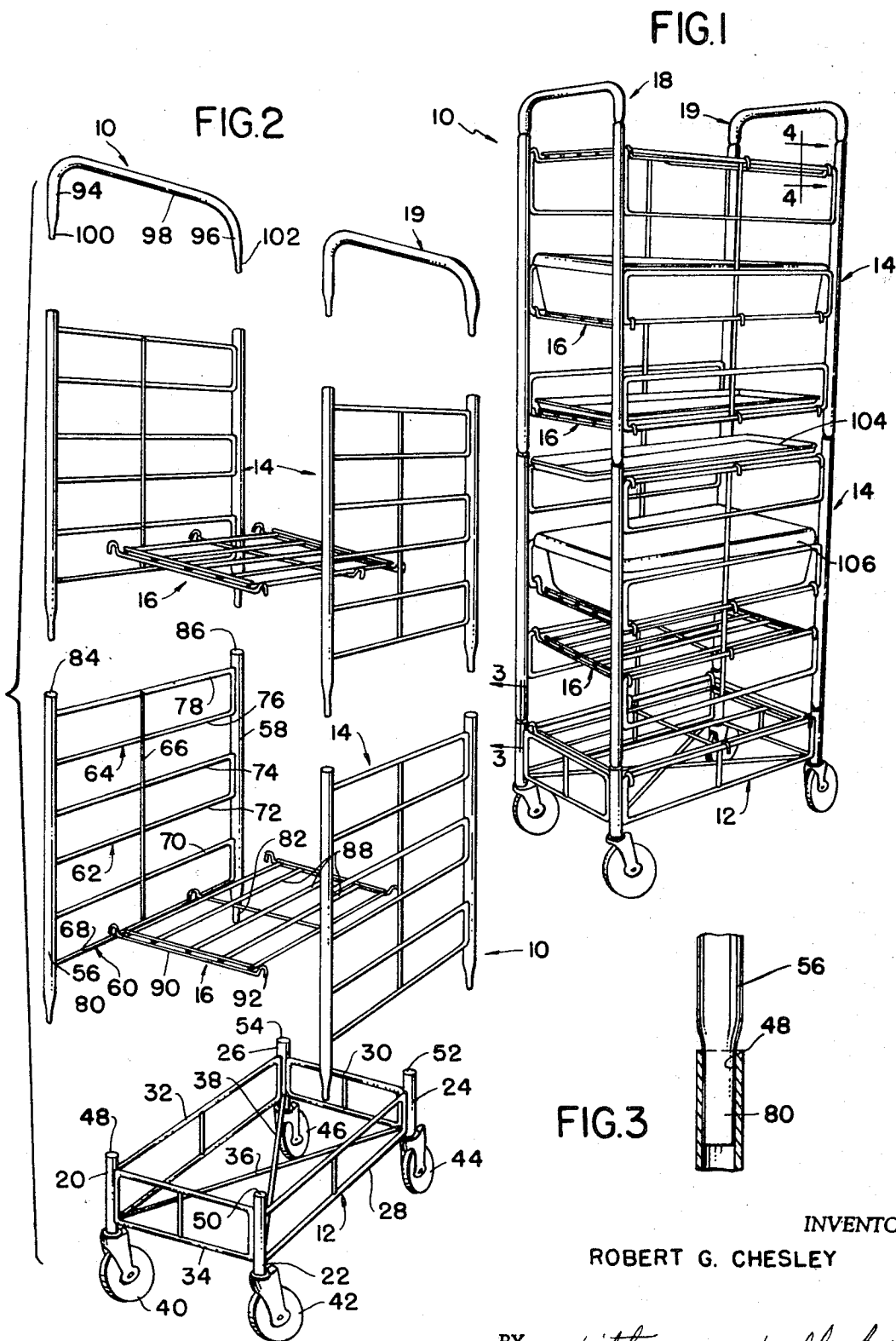
[54] **SHELF STRUCTURE**
1 Claim, 7 Drawing Figs.

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108/53
[51] Int. Cl. **A47b 3/06,**
B65d 19/38
[50] Field of Search 108/110,
111, 58, 59, 114, 107; 211/174, 177, 181, 184

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ABSTRACT: The shelf structure is particularly adapted for handling perishable foods in a grocery store. It is constructed as a module type. A pair of oppositely disposed side wall members are mounted on a base. Each side wall comprises a pair of spaced apart post elements interconnected by a plurality of vertically spaced, horizontally extending wire elements. The lower end of each post is a reduced section and is received in a socket provided in the base. The wire elements which interconnect the posts serve as mounting means for shelves which extend between the side wall members. The shelves have hook structures for attachment to the wire elements. A plurality of shelves may be mounted on each pair of side wall members. The shelves may be arranged at different levels as desired.





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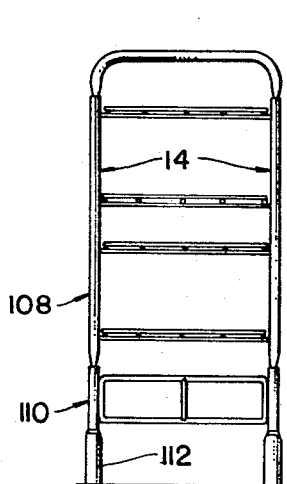


FIG. 5

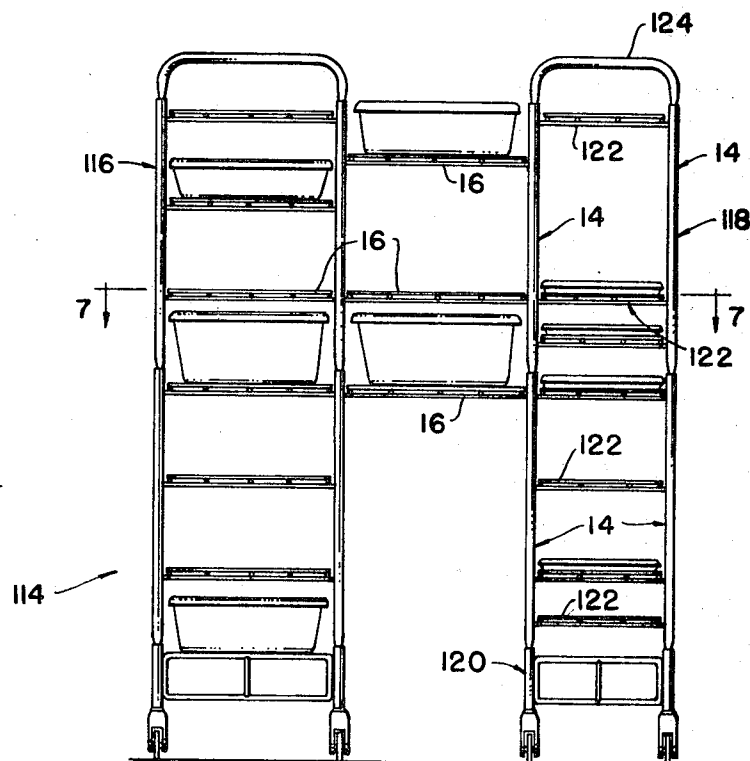


FIG. 6

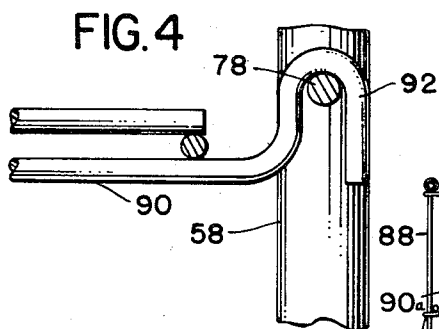


FIG. 4

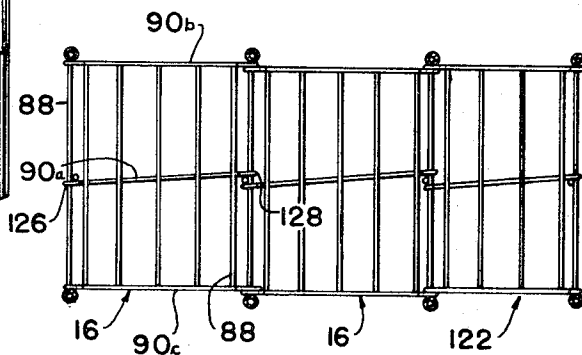


FIG. 7

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SHELF STRUCTURE

A second pair of side wall members may be mounted on the upper ends of the first pair of side wall members. The upper ends of the posts of the side wall members define sockets for receiving the reduced ends of the posts of a superadjacent wall member. A pair of locking members is received at the upper end of the posts of the uppermost pair of side wall members. The locking members extend between each pair of oppositely disposed posts and rigidify the structure. The locking members have portions of reduced section which are received in the sockets defined by the upper ends of the posts.

A pair of spaced apart shelf structures as above described may be connected together by means of shelves which extend therebetween to form a unitary structure. The hook structures on horizontally aligned shelves are staggered with respect to each other to avoid interference of the hooks with hooks of shelves secured to the same wire element of a side wall.

The base may be provided with casters whereby the shelf structure becomes a mobile cart. Alternately, the base may have ground engaging feet whereby the shelf structure is stationary.

BACKGROUND OF THE INVENTION

The present invention is particularly adapted for use in the handling of meat and produce in retail food stores. It is customary in retail food stores to store produce in a cooler, produce is taken from the cooler and placed on display for purchase as needed. Similarly, meat is cut and stored and placed on display in a meat counter as the stock on the counter diminishes.

Various shelf structures have been proposed for temporarily storing produce and meat and for moving these products from the storage facility to the display counters. There are a number of problems which have been encountered in providing a satisfactory shelf structure. A suitable structure should be easily cleaned, should provide ventilation for the comestibles loaded thereon and should provide flexibility in shelf width and in the vertical spacing of shelves.

The present invention provides a shelf structure which incorporates features directed to satisfying the above design requirements. Firstly, the unit is basically an openwire design. Consequently, the unit is easily cleaned because all of the surfaces are accessible. Further, the use of an openwire construction as opposed to a construction having solid walls and shelves results in less surface area to become dirty. A further advantage of the openwire construction is that the shelf structure is vented from all sides.

The wirework construction is further advantageous in that the wire elements of the side wall members permit a wide latitude in the spacing between the shelves. The unit may be provided in different widths by using different sized bases and shelves. The side wall members may be used with any width structure.

The wirework construction and the provision of removable shelves simplifies cleaning. All of the components may be easily sponged off, wiped down, or steam cleaned as the case may be.

An additional advantage of the design resides in the knockdown construction. A considerable saving in freight charges results from this construction. Further, the maintenance cost is reduced because parts which are damaged may be replaced individually. This eliminates the need to purchase an entire unit when only one part is damaged.

SUMMARY OF THE INVENTION

The shelf construction comprises a base having at least one pair of oppositely disposed side wall members mounted thereon. Each of the side wall members comprises a pair of spaced apart upright post elements interconnected by a plurality of generally horizontal vertically spaced apart wire elements. The base has attaching means which releasably receive the lower ends of the upright post elements. The upright post elements have attaching means on the upper ends thereof for

releasably receiving the lower end of the post elements of superadjacent side wall members. A plurality of wirework shelves extend between the side wall members. Each shelf has fasteners on opposite sides thereof in releasable engagement with a pair of oppositely disposed wire elements of the side wall members.

A pair of the shelf structures may be connected together to form a modular unit. The shelf structures are connected by means of shelves interconnecting adjacent side wall members. The fasteners on the shelves are staggered to avoid interference with fasteners of adjacent shelves.

IN THE DRAWINGS

FIG. 1 is a view in perspective of a shelf structure in accordance with one embodiment of the present invention.

FIG. 2 is an exploded view in perspective of the shelf structure of FIG. 1.

FIG. 3 is a perspective view taken substantially along the line 3-3 of FIG. 1 looking in the direction of the arrows.

FIG. 4 is a sectional view taken substantially along the line 4-4 of FIG. 1 looking in the direction of the arrows.

FIG. 5 is a front elevational view of a shelf structure of a lower vertical height than the structure illustrated in FIG. 1.

FIG. 6 is a front elevational view of a pair of shelf structures joined together by a plurality of shelves to form a unitary structure.

FIG. 7 is a sectional view taken substantially along the line 7-7 of FIG. 6 looking in the direction of the arrows.

Referring to FIGS. 1, 2, 3 and 4, it will be noted that the shelf structure 10 comprises a base 12, side wall members 14, shelves 16 and locking members 18, 19.

The base 12 comprises tubular corner posts 20, 22, 24, 26. The posts are connected together to form a rectangular structure by rectangular wire elements 28, 30, 32, 34. Wire elements 36, 38 extend between diametrically opposed corners to reinforce the structure. A caster 40, 42, 44, 46 is mounted on the lower end of each of the corner posts. The upper ends 48, 50, 52, 54 of the corner posts are open and define the sockets for reception of the lower ends of posts defining the side wall members 14.

The shelf structure 10 employs four side wall members 14. Each side wall member is of identical construction and may be used on either side of the base 12. The side wall members 14 comprise a pair of upright tubular post elements 56, 58. The post elements are interconnected by vertically spaced apart rectangular wire members 60, 62, 64. A vertical reinforcing wire element 66 is secured centrally of the wire members to reinforce the side wall member. It will be noted that each of the wire members 60, 62, 64 includes a pair of horizontally extending wires 68, 70, 72, 74, 76, 78. Adjacent wires of the three wire members are spaced from each other a distance substantially equal to the spacing of each pair of wires forming a wire member.

The lower end 80, 82 of each post element 56, 58 is of reduced diameter. The portions of reduced diameter are received in the sockets defined by the upper ends of the base corner posts. As shown in FIG. 3, end 80 of the post 56 is received in the upper end 48 of the corner post 20. Similarly, the upper ends 84, 86 of the side wall posts receive the portions of reduced diameter of the posts of the superadjacent side wall member.

The shelves 16 each comprise a plurality of spaced apart longitudinally extending wire elements 88 and a plurality of spaced apart transversely extending wire elements 90. The ends of the transverse wire elements are bent to form hooks 92 for engagement with one of the wire elements of wire members 60, 62, 64 as shown in FIG. 4.

The assembly is completed by the locking members 18, 19. Each locking member is fabricated of a tubular element configured in a U-shape comprising downwardly extending portions 94, 96 interconnected by a cross member 98. The lower ends 100, 102 of each downwardly extending portion 94, 96 is

of reduced diameter for reception in the upper ends of the posts of the side wall members.

Referring to FIG. 1, it will be noted that the complete shelf structure comprises the base 12, which has mounted thereon a pair of side wall members 14. Each side wall member receives a superadjacent side wall member thereabove to result in a double-tiered construction. A plurality of shelves 16 are received on the side wall members. The shelves are illustratively mounted at varying vertical heights. Some of the shelves are spaced closely together to provide sufficient room to receive a shallow tray 104. Others of the shelves are mounted a greater distance apart to receive lugs 106 which are of greater height than the trays. It will be appreciated that the shelves 16 may be mounted at any desired vertical intervals.

FIG. 5 illustrates a shelf structure 108 which is of a different vertical height than the shelf structure 10. In the FIG. 5 construction, only a single pair of side wall members 14 are utilized thus reducing the height of the shelf structure by approximately one-half. The base 110 is modified in that the casters shown in FIG. 1 are replaced by ground engaging feet 112. The feet 112 are preferably fabricated of a slippery plastic material so that the unit may be slid along the floor.

FIGS. 6 and 7 illustrate a unitary shelf structure 114 which is formed by a pair of shelf structures 116, 118 interconnected by a plurality of shelves 16. The shelf structure 116 is substantially identical with the shelf structure 10 previously described. The shelf structure 118 is modified in that it is not as wide as the shelf structure 116. The base 120, shelves 122 and locking members 124 are narrower than the corresponding elements of the shelf structure 116. The side wall members 14 are the same.

The shelf structures 116, 118, as previously mentioned, are interconnected by means of shelves 16 to form the unitary resultant shelf structure 114. Referring to FIG. 6, it will be noted that the center transverse wire element 90a is secured to the longitudinally extending wire elements 88 at an angle. The outer transverse wire elements 90b and 90c are parallel to each other at substantially right angles to the longitudinally extending elements 88. One end 126 of the element 90a is offset from the center of the shelf towards the outer wire element 90c. The other end 128 is offset in the opposite direction towards the outer element 90b. Thus when a pair of shelves

are mounted on the same wire element of a side wall member, the hooks are offset from each other a distance which prevents interference and permits the mounting of two shelves on a single wire element. A similar result may be achieved by securing the center wire element of the shelves to the longitudinal wire elements 88 at right angles thereto and parallel to the outer wire element 90b and 90c. In such a case, the entire center element 90a is offset from the center of the shelf. With such a construction, it is only necessary to reverse each adjacent shelf so that the offsetting portions are in noninterfering relationship. As will be appreciated, the length of the side wall members 14 must be somewhat greater than that of the shelves 16 in order to accommodate the arrangement illustrated in FIG. 7.

It will be appreciated that more than two of the shelf structure 116, 118 may be connected in line by shelves 16. There is, of course, a practical limit to the size of the unitary shelf structure.

I claim:

1. A shelf structure comprising a base, at least one pair of oppositely disposed side wall members mounted on the base, each of said side wall members comprising a pair of spaced apart upright post elements interconnected by a plurality of generally horizontal, vertically spaced apart wire elements, attaching means on the base releasably receiving the lower ends of said upright post elements, said attaching means comprising a pair of sockets for each side wall member which receives the lower end of the upright post elements of the side wall members, attaching means on the upper ends of said upright post elements for releasably receiving the lower ends of the post elements of superadjacent side wall members, a pair of locking members extending between oppositely disposed posts of the uppermost oppositely disposed side wall members, said locking members each comprising an elongated tubular element extending between the respective posts, a downturned portion at each end thereof of reduced cross section received in the upper ends of the posts, and a plurality of wirework shelves interconnected between the side wall members, each shelf having fasteners on opposite sides thereof in releasable engagement with a pair of oppositely disposed wire elements of the side wall members.

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