United States Patent [19]

Bofferding et al.

[11] **3,710,734**

[45] **Jan. 16, 1973**

[54] **SHELVING SYSTEM**

[75] Inventors: **Richard H. Bofferding,** Laguna Beach; **Frederick C. Mead,** Anaheim; **Richard L. Hendershot,** Orange, all of Calif.

[73] Assignee: **Zero Cold, Inc.,** Anaheim, Calif.

[22] Filed: **Aug. 21, 1970**

[21] Appl. No.: **66,001**

[52] **U.S. Cl.** **108/108,** 248/246, 248/250

[51] **Int. Cl.** **A47b 9/10**

[58] **Field of Search**.....248/246, 248, 357, 250; 182/135, 133; 52/243; 108/108, 106, 152

[56] **References Cited**

UNITED STATES PATENTS

3,473,774	10/1969	Riblet	248/246
3,274,741	9/1966	Neagle	52/243
1,034,365	7/1912	Hauser	248/246
2,216,912	10/1940	Hoitsma	182/136
3,207,100	9/1965	Peacock	248/250 X

Primary Examiner—James T. McCall
Attorney—Jessup & Beecher

[57] **ABSTRACT**

A shelving system is provided which comprises a pair of cantilever-type support brackets mounted on vertical support posts. Each of the support brackets has a pair of pins extending transversely between its sides, and in position such that when the support bracket is turned upwardly, it can be slipped up and down the corresponding support posts, but when it is swung down to a horizontal position, the pins frictionally engage the side of the post to prevent the bracket from sliding. The support brackets can, in this manner, be set to any vertical position on the posts. The posts themselves are conveniently held in place between brackets mounted on the ceiling and floor of the room in which the shelving is installed, this being achieved by slipping the upper end of each post around its ceiling bracket, moving the post upwardly around the ceiling bracket, and then dropping the lower end of the post down over the floor bracket. A wire shelf is provided which is clipped, in a unique manner to be described, over the support brackets and securely held in place.

3 Claims, 4 Drawing Figures

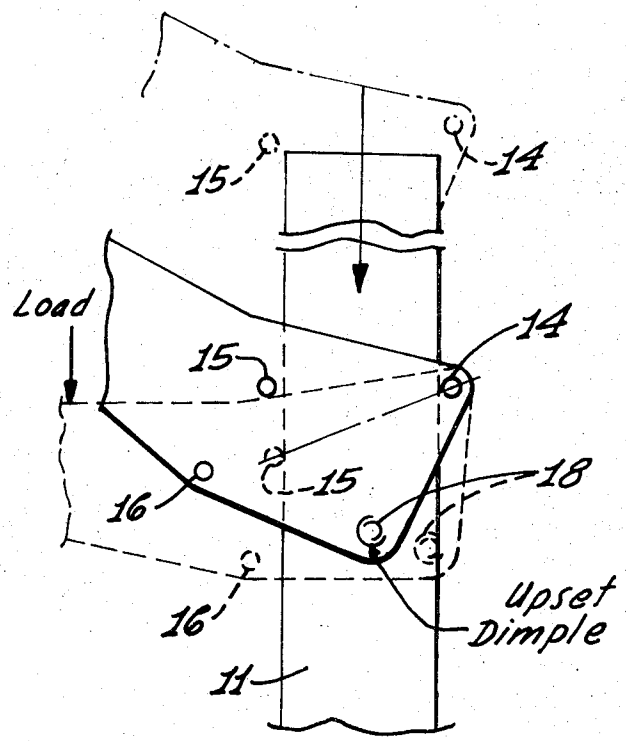


Fig. 1

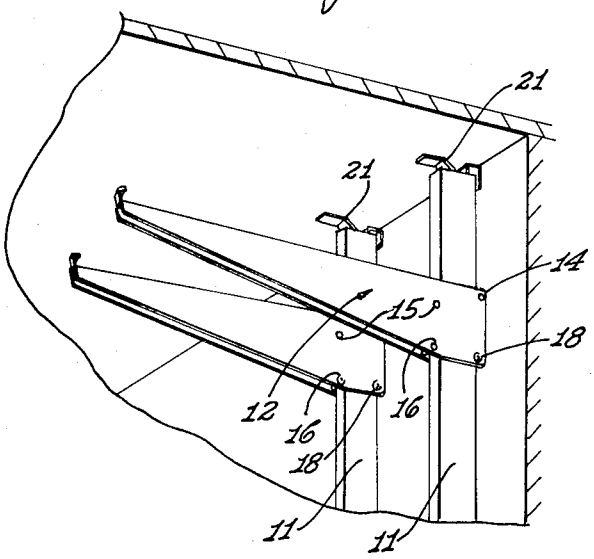


Fig. 4

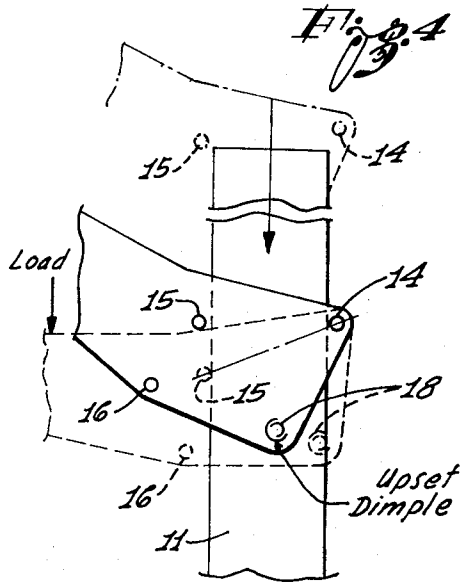


Fig. 2

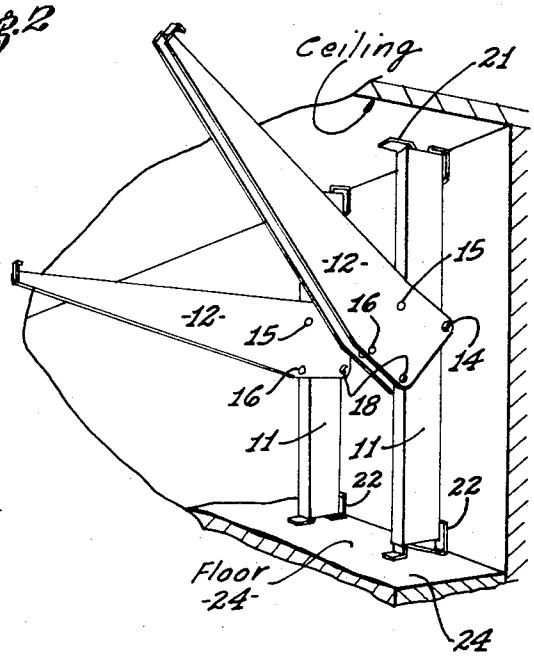
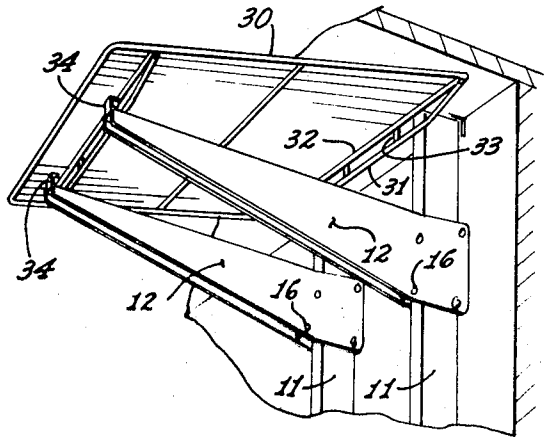


Fig. 3



INVENTOR:
Richard H. Bofferding
Richard L. Hendershot
Frederick C. Mead
Jessup and Beecher
By Warren T. Jessup
ATTORNEYS

SHELVING SYSTEM

BACKGROUND OF THE INVENTION

The shelving system of the invention finds particular utility for cold and dry storage in supermarkets, restaurants, and the like. The shelving in food establishments is commonly supported from brackets extending from slotted uprights. Where the shelving is located at a point spaced from the walls of the room, the uprights form part of a shelf-supporting structure, the uprights contacting the floor to form points of support for the structure. The uprights in the prior art shelving systems are usually provided with forwardly projecting leg units which form additional points of support for the uprights spaced from the uprights. These leg units commonly have horizontally forwardly extending elevated portions welded to the bottom portions of the associated uprights and terminating in depending front portions which contact the floor. Horizontal frame members extend between the uprights and between the front and middle portions of the leg units in the prior art system to provide a stable and rigid support structure.

The improved shelving system of the present invention is advantageous in that it is self-supporting and is made of relatively compact parts which can be readily assembled without the need for screws, bolts or the like, and with a minimum of effort. Moreover, the improved shelving system of the present invention is conceived to include upright posts, supporting brackets, and shelving members, all of which may be readily stored in a minimum of space, and which may be shipped and handled with a minimum of effort.

Another important advantage in the shelving system and structure of the present invention is the fact that the support brackets for any particular shelf may be originally adjusted to any desired vertical position on the corresponding upright posts, and then set to be rigidly held in the selected position, all without the need for extraneous tools, and with a minimum of effort and in a relatively short time. Moreover, from time to time the support brackets in the structure of the invention may be adjusted as desired with respect to the upright posts to any different vertical position.

The upright posts themselves may be easily and quickly installed in support brackets fastened to the floor and ceiling by any appropriate means. The shelving in the embodiment to be described is constructed so that it may be easily and quickly hooked in place on a pair of support brackets.

An important feature of the present invention is the fact that the support brackets are mounted in a cantilever manner on the upright support posts, and may be turned up and slipped up and down the corresponding support posts until a desired vertical position is achieved. At that time, the support brackets are turned down to a horizontal position, and are held in that position by transverse pins which extend across the support brackets, as will be described. Dimples are formed in the support brackets, as will also be described, and these dimples serve to lock the brackets to the corresponding upright posts as the brackets are brought into their horizontal position. Additional rigidity is provided by a slight deformation of the upright posts by the transverse pins as the brackets are brought to their horizontal positions, as will be described in detail herein.

In the embodiment of the invention to be described, wire shelving is provided with transverse trusses extending across the lower face of the shelf adjacent each of the ends. The truss at the forward end of the shelf, for example, serves not only to provide structural strength to the shelf, but it also serves to be engaged by hooks at the ends of the support brackets which serve securely to hold the shelf in place. In the construction to be described, the aforesaid transverse trusses hold the actual wire shelf in position spaced up from the top surfaces of the corresponding support brackets, and this factor facilitates the cleaning of the apparatus, since it permits cleaning implements to be inserted between the shelf and the brackets so that the structure may be easily and thoroughly cleaned with a minimum of effort.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 is a perspective view showing one embodiment of the invention supported in place on upright posts, but without the shelf, the view of FIG. 1 being taken slightly from below the plane of the support brackets of the structure;

FIG. 2 is a view like FIG. 1, likewise with the shelf component removed, and with one of the support brackets tilted upwardly to illustrate further operating components of the bracket;

FIG. 3 is a view like FIG. 1, with a wire shelf component tilted upwardly to reveal the details of one of the transverse trusses extending across the lower surface of the shelf; and

FIG. 4 is a fragmentary view showing in elevation the manner in which a support bracket component is mounted on a corresponding upright post.

DETAILED DESCRIPTION OF THE ILLUSTRATED EMBODIMENT

The shelving system shown in FIGS. 1–4 comprises, for example, a pair of hollow upright posts **11** composed of steel, or other appropriate material, and which supports a pair of support brackets **12**. Each of the support brackets has an inverted channel configuration, and each consists of a pair of tapered side flanges and integral interconnecting upper web portion. Three separate pins **14**, **15** and **16** extend across the side flanges of each of the brackets **12** in the positions shown, for example, in FIGS. **1** and **2**. The interconnecting web portion of each of the side brackets terminates at a position displaced in from the rear end of the support brackets, as designated **17** in FIG. **2**.

When a support bracket **12** is cocked upwardly, as shown in FIGS. **2** and **4**, the horizontal spacing between the pins **14** and **15** is greater than the width of the corresponding upright post **11**, so that the support bracket may be slipped freely up and down the post. After a desired position has been achieved on the post **11**, the bracket **12** is turned downwardly with a pivotal movement about the line of contact between the pin **14** and the adjacent rear edge of the corresponding upright **11**. The support bracket is then pivoted downwardly to a horizontal position, such as shown in FIGS. **1**, **3** and **4**.

In the horizontal position the pins **14** and **15** bind against the respective edges of the post **11** and frictionally clamp the support brackets firmly to the post **11**. In this way, the support bracket is prevented from

sliding down the corresponding upright post 11. The greater the load on the cantilevered support bracket 11, the greater is the binding action in which the upright post 11 is pinched between the pins 14 and 15. The pinching may become sufficiently great so that the pins 14 and 15 actually form corresponding support grooves in the edges of the upright posts 11.

Likewise, a dimple 18 (FIGS. 1 and 4) may be provided at the lower corner of the support bracket 12, the dimple 18 forms a protuberance on the inner surface of the side wall of the bracket 12, which snaps in front of the post 11 when the support bracket is in the elevated position shown in FIG. 2, and which snaps behind the post 11 when the support bracket is horizontal, as shown in FIGS. 1 and 4.

By the structure described above, the support brackets 12 may be adjusted to any desired height on the upright post 11 in a continuous manner, and it may then be clamped easily and simply to the upright support post merely by swinging the support bracket down to its cantilevered horizontal position, as shown in FIGS. 1 and 3. The pin 16 does not actually contact the edge of the upright support post in the illustrated embodiment, and its function is to serve as a spacer for the side flanges of the support bracket 12, and to provide a back-up locking device should excessive loads cause a deformation of pins 14 or 15.

As shown, each of the upright support posts 11 is held in place between a pair of brackets 21 and 22 mounted respectively on the ceiling 23 and floor 24 of the room in which the system is installed. In mounting either of the upright posts in its brackets 21 and 22, it is first pushed upwardly around the ceiling bracket 21 to the position shown by the right-hand post in FIG. 2 with the lower end of the post being displaced just above the lowermost bracket 22. The post 11 is then dropped down over the bracket 22 to the position shown by the left-hand bracket in FIG. 2. The upright posts 11 are thereby held firmly in position by gravity over and around the floor bracket 22, with the upper end of the post 11 being held in place by the upper bracket 21. However, the posts may be removed from the brackets 21 and 22 merely by reversing the process described above, specifically, by raising the post 11 up to the position shown by the right-hand post in FIG. 2, and then removing it first from the bracket 22 and then from the bracket 21.

The assembly includes a wire shelf 30 as shown in FIGS. 1 and 3, although other types of shelves may be supported on the support brackets. In the illustrated embodiment, the shelf 30 is made up of a usual grid of wires, and it includes a front truss and a rear truss extending transversely across its bottom adjacent the forward and rear ends thereof. Each of the trusses comprises a relatively heavy lower cross-wire 31 and upper cross-wire 32, the wires being held displaced from one another by a series of spherical spacers 33 welded to the truss wires which, in turn, are welded to the wires of the shelving itself. The truss structures give increased strength against bending for the wire shelving, since a beam-like structure is created thereby with relatively high bending strength.

The wire 31 of the forward truss also serves as a convenient means for permitting the shelf to be clamped in place on the support brackets 12. For this purpose, a U-shaped hook 34 is provided at the outer extremity of each of the support brackets, and to mount the shelf, and as shown in FIG. 3, the forward end is tilted down so that the lower wire 31 of the forward truss may be hooked under the U-shaped hooks 34, and then the shelf is allowed to drop to a horizontal position, such as shown in FIG. 1, with the forward end firmly held in place by the hooks.

The invention provides, therefore, an improved shelving system that may be readily installed in a supermarket or the like, and which permits any number of shelves to be placed at any desired height on corresponding pairs of upright support posts. The shelving system of the invention is rugged and sturdy in its construction, and yet is relatively inexpensive. Moreover, the shelving system, as described above, may be readily and quickly assembled and disassembled, and with a minimum of tools.

It will be appreciated that although a particular embodiment of the invention has been shown and described, modifications may be made. It is intended in the following claims to cover all modifications which fall within the scope of the invention.

What is claimed is:

1. A bracket support frame structure including:
laterally spaced floor-engaging upright support posts;
a support bracket removably attached to each of said support posts and extending forwardly therefrom in a cantilever engagement therewith, said support bracket having an inverted channel-like configuration defining side flanges and providing a space between said side flanges to receive the corresponding one of said upright posts, means at the lower rear corner of said side flanges defining inwardly extending protuberances which engage the edges and sides of the corresponding support posts when the bracket is turned down to a horizontal position, a pair of pins extending across said space between said side flanges in displaced positions to engage respectively the rear and front edges of the corresponding one of said upright posts when said support bracket is turned down to a horizontal position, the one of said pins engaging the front edge of said corresponding upright post being displaced down from the other of said pins which engages the rear edge of said upright post when said bracket is in a horizontal position, said support bracket having a U-shaped hook member secured to its forward end, and a shelf having means adjacent the forward end thereof for pivotally engaging said hook member to permit said shelf to be turned down around said hook member to be held in place thereby on said support bracket.

2. A bracket support frame structure including:
laterally spaced floor-engaging upright support posts;
a support bracket removably attached to each of said support posts and extending forwardly therefrom in a cantilever engagement therewith, said support bracket having an inverted channel-like configuration defining side flanges and providing a space between said side flanges to receive the corresponding one of said upright posts, a pair of pins extending across said space between said side flanges in displaced positions to engage respectively the rear and front edges of the corresponding

one of said upright posts when said support bracket is turned down to a horizontal position, the one of said pins engaging the front edge of said corresponding upright post being displaced down from the other of said pins which engages the rear edge of said upright post when said bracket is in a horizontal position, said support bracket having a U-shaped hook member secured to its forward end, and a shelf having means adjacent the forward end thereof for pivotally engaging said hook member to permit said shelf to be turned down around said hook member to be held in place thereby on said support bracket, said shelf having a wire-formed configuration and including transverse wire trusses extending across its lower surface adjacent the forward and rear ends thereof, said trusses including a wire member spaced down from the lower surface of said shelf, and the wire member of the truss adjacent the forward end of said shelf engaging the aforesaid hook member.

3. The frame structure defined in claim 1, in which said upright support posts each have a hollow configuration, and which includes upper and lower bracket means mounted on the floor and ceiling of the room in which the frame structure is installed for receiving said upright support posts, the length of said upright support posts being such as to permit each of said posts to be lifted up and off said lower bracket while surrounding said upper bracket.

* * * * *