Feb. 4, 1964 H. L. KOLSTER ETAL 3,120,199

DISPLAY RACK

Filed Jan. 15, 1962

2 Sheets-Sheet 1

Fig. 4.

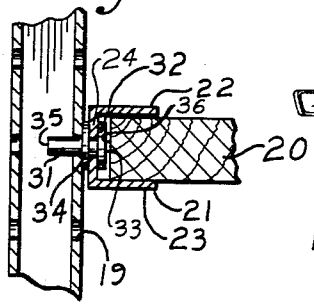


Fig. 1.

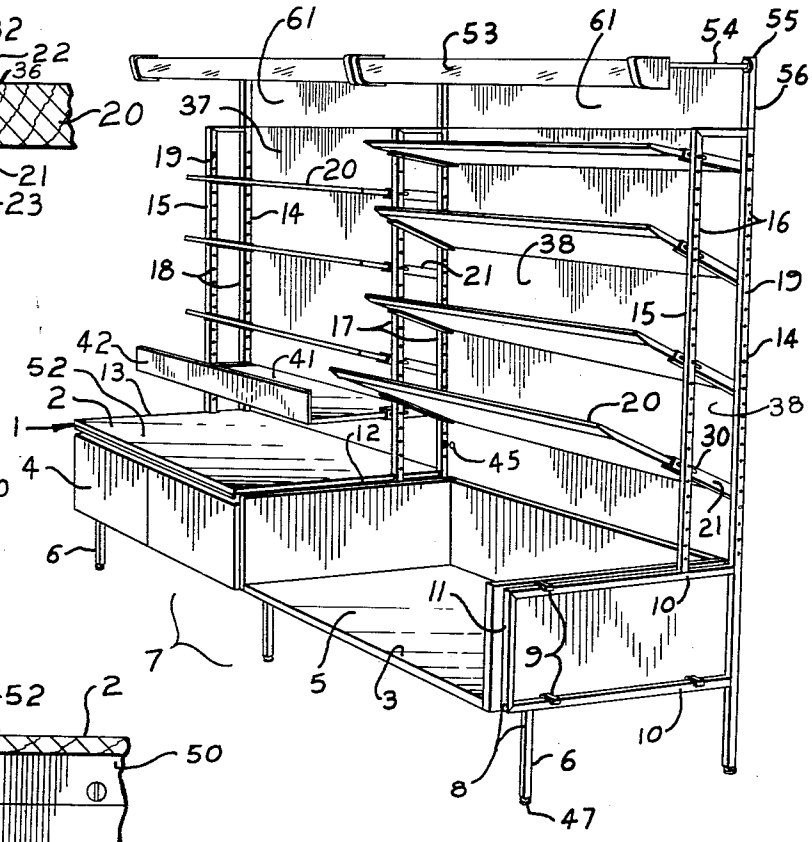


Fig. 3.

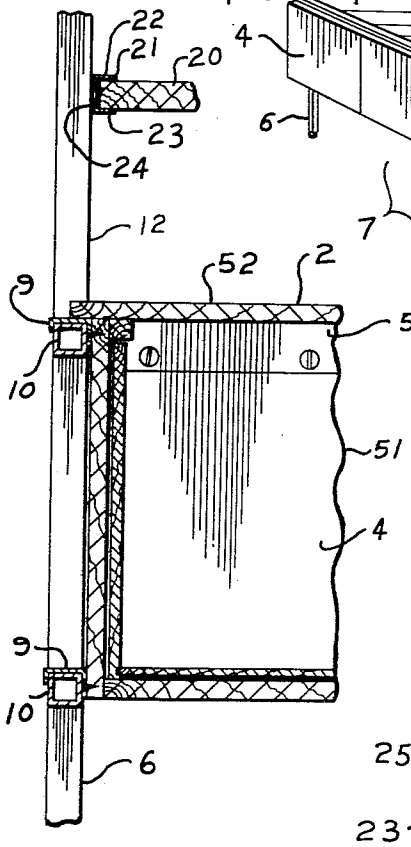
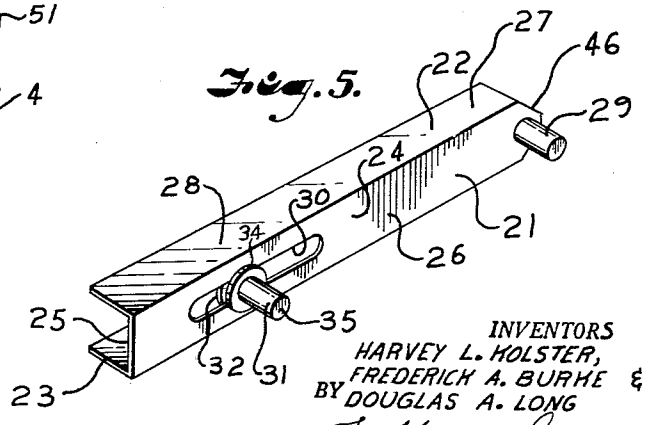


Fig. 5.



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2 Sheets-Sheet 2

Fig. 2.

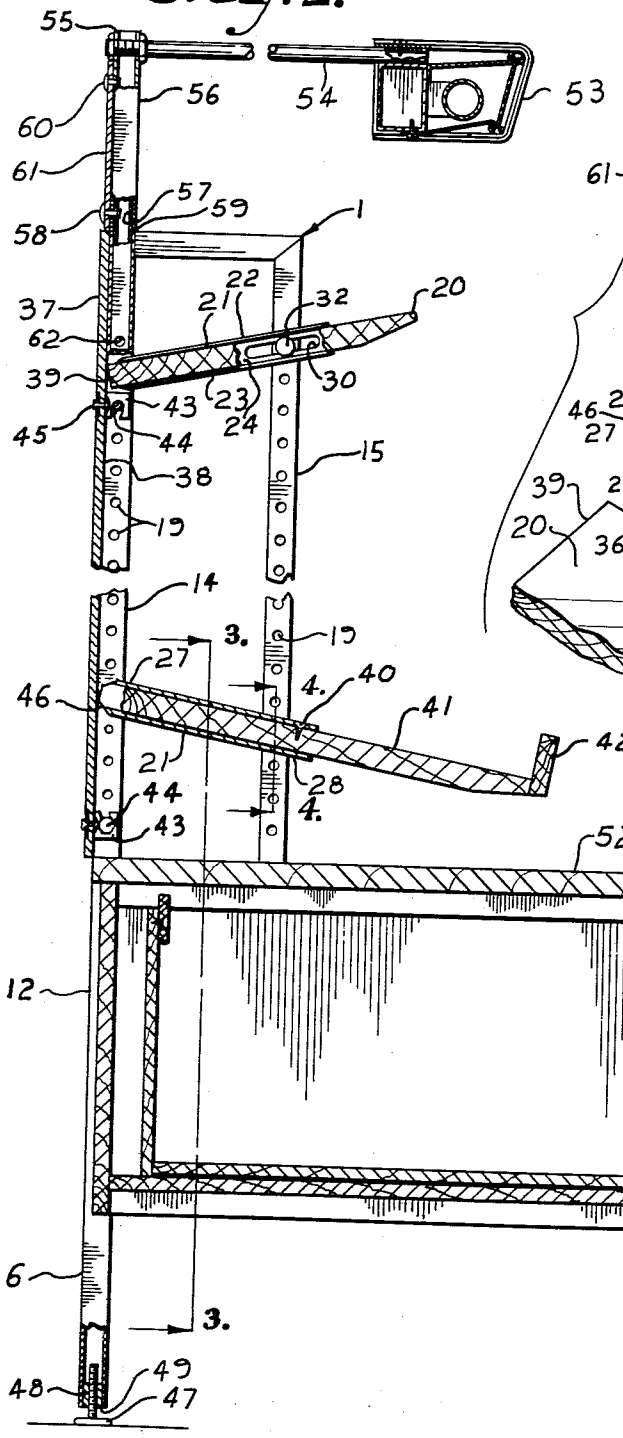
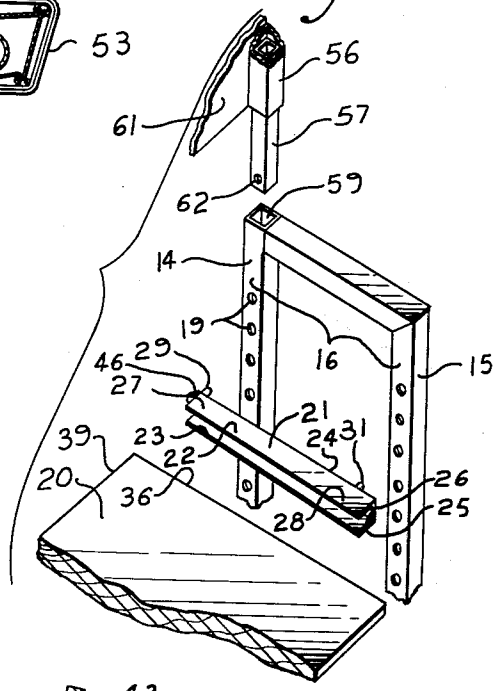


Fig. 6.



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DISPLAY RACK

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This invention relates to a display rack, and more particularly to a shelving construction which is easily adjustable to various angular and elevated positions.

The principal objects of the present invention are to provide a shelving construction adapted to display merchandise for sale in a store or the like; to provide a display rack having easily mountable and demountable shelves; to provide such a device wherein the shelves are easily angularly adjustable; to provide a shelving construction wherein the shelves are easily varied in distance from each other and in vertical distance from the surface upon which the device is supported; to provide shelf-supporting channels which can be quickly mounted and accurately aligned with respect to support posts or struts; to provide such a device which can be shipped unassembled and readily assembled and adjusted without the use of skilled labor; and to provide such an assembly which is made up of simple, inexpensive parts and is rigid and reliable in use.

Other objects and advantages of this invention will become apparent from the following description taken in connection with the accompanying drawings wherein are set forth by way of illustration and example certain embodiments of this invention.

FIG. 1 is a perspective view of a display rack embodying the features of this invention.

FIG. 2 is a vertical sectional view through the display rack on an enlarged scale, particularly showing the shelf adjusting and mounting features.

FIG. 3 is a fragmentary sectional view on an enlarged scale taken on the line 3—3, FIG. 2, particularly showing details of the display rack base construction.

FIG. 4 is a fragmentary sectional view on an enlarged scale taken on the line 4—4, FIG. 2, showing the forward pin of a channel engaging with a support strut.

FIG. 5 is a perspective view on an enlarged scale of a channel having supporting pins extending laterally therefrom.

FIG. 6 is an exploded fragmentary perspective view on an enlarged scale showing the relationship between a channel, a pair of support struts and a shelf.

Referring to the drawings in more detail:

The reference numeral 1 generally indicates a display rack embodying the features of this invention. In the illustrated example, the display rack is divided into two sections designated 2 and 3, the section 2 being characterized by a drawer assembly 4 adapted to contain merchandise or the like and the section 3 being characterized by a forwardly and upwardly open storage bin 5 adapted to contain merchandise of the type desired to display. The drawer assembly 4 and storage bin 5 are respectively supported above the ground on legs 6 forming an integral part of a support frame or base generally designated by the numeral 7. The base 7 is preferably fabricated of structural members 8 which are square in cross-section and welded together at the ends thereof. Suitable clips 9 are secured to the drawer assembly 4 and storage bin 5, which clips rest on the upper side of horizontally extending base members 10 for receiving vertical support therefrom.

The support frame or base 7 is characterized by three side portions designated 11, 12 and 13. It is to be understood that a minimum of two side portions are required, but any number of side portions may be furnished without departing from the scope of this invention.

Elongated rear support struts or posts are secured to or form an integral part of each of the side portions 11, 12 and 13 and extend upwardly therefrom. Elongated forward support struts or posts are secured to the top of each of the side portions 11, 12 and 13 forwardly of the rear struts 14 and extend upwardly from the respective side portions. The respective rear support struts 14 and forward support struts 15 are spaced apart, forming mutually oppositely disposed pairs 16, 17 and 18 of support struts respectively associated with the side portions 11, 12 and 13.

The several support struts 14 and 15, in the illustrated example, are formed of structural members which are square in cross-section and contain vertically spaced mutually aligned pin-receiving bores 19 therein. Certain bores 19 which are in the pairs 16 and 17 of support struts open inwardly of the portion of the base 7 supporting the storage bin 5 and certain bores 19 which are in the pairs 17 and 18 of support struts open inwardly of the portion of the base 7 supporting the drawer assembly 4, whereby shelves 20 may be supported respectively between the pairs 16 and 17 as well as between the pairs 17 and 18 in a manner described hereinafter.

A plurality of pairs of oppositely disposed elongated channels 21 are maintained between respective pairs of support struts 16 and 17 and between 17 and 18 in a manner now described. Each of the channels 21 has an upper leg 22 and a lower leg 23 spaced from the upper leg and a web 24 connecting the legs 22 and 23. The web 24 has an inner side 25 and an outer side 26. When assembled, as hereinafter described, the channels 21 open inwardly of the respective portions of the base 7 defined by the sections 2 and 3 or, in other words, away from the strut pair to which they are respectively associated. The channels 21 each have a rear portion 27 adjacent the associated rear support strut 14 and a forward portion 28 adjacent the associated forward support strut 15.

A rear pin 29 is secured to the web 24 at each of the channel rear portions 27 in the illustrated example by welding and extends outwardly of the outer side 26 of the web. The rear pin 29 is adapted for insertion into a selected pin-receiving bore 19 in the rear support strut 14 associated therewith. A longitudinally extending slot 30 is formed in the web 24 at the channel forward portion 28. A forward pin 31 extends outwardly of the base 7 and engages in the slot 30. The forward pin 31 has a diameter slightly smaller than the width of the slot 30 for freedom of movement therealong. A head 32 is formed on the inner end 33 of the forward pin 31 and is of greater diameter than the width of the slot 30 to prevent translation therethrough longitudinally of the pin. The head 32 is maintained adjacent the inner side 25 of the web 24. An annular disc 34 of greater diameter than the width of the slot 30 is secured to the forward pin 31 intermediate the outer end 35 thereof and the head 32. The disc 34 is located adjacent the outer side 26 of the web 24 and is spaced from the head 32 a distance sufficient to permit a sliding movement of the forward pin 31 longitudinally of the slot 30. The head 32 and disc 34 cooperate with the web 24 to provide support against substantial movement of the forward pin 31 transversely of the channel 21.

The shelves 20 each have lateral end portions 36 respectively adapted to be slidably received or preferably slightly gripped or clamped between the upper leg 22 and lower leg 23 of each channel 21.

By way of operation, the channels 21 are assembled with their associated pairs of support struts by aligning

two of said channels 21 in facing relation, as illustrated in FIG. 1. The rear pins 29 are inserted into selected bores in the rear support struts 14 and the forward pins 31 are inserted into selected bores in the forward struts 15, the bores being selected to render the channels 21 either horizontal or tilted with respect to the horizontal as desired. It is to be understood that the forward pin 31 will be slid forwardly in the slot 30 when a tilted position with respect to the horizontal is desired, and the forward pin 31 will be slid rearwardly in the slot 30 for changing the channels from tilted to horizontal. The shelf 20 is slid between the respective upper and lower legs of the facing channels which provides a cooperation whereby the shelf 20 is supported and the respective channels are firmly engaged with the associated pairs of support struts.

A rear panel 37 of suitable material such as pegboard, plywood or the like, is secured to the back side and between the rear support struts 14 for the dual purpose of providing a forward surface 38 which is viewed from the front of the display rack 1 and to provide an abutment against which the rear edge 39 of the shelf 20 may rest to prevent sliding rearwardly of the display rack 1 when the shelf is sloping downwardly to the rear. To prevent a shelf from sliding out of the channels in the event that it is desired to slope same downwardly toward the forward portion, a stop member such as a screw 40 is provided, FIG. 2. The screw 40 extends through the upper leg 22 of the channels 21 and into the respective lateral end portions 36 of a shelf 41 to prevent said shelf from sliding forwardly in the channels 21. The shelf 41 includes a forward abutment 42 in the form of a wood strip extending across the front portion thereof to prevent merchandise from sliding forwardly and off the shelf. In the case of the rearwardly tilting or level shelves 20, a forward abutment is not needed since the merchandise will tend to slide rearwardly against the rear panel 37 or remain in a level condition without the tendency to slide.

Suitable angle brackets 43 include bolts 44 extending through selected pin-receiving bores 19 of the rear support struts 14 and are also riveted at 45 to the side edges of the rear panel 37 to maintain same in abutting relationship with the rear support struts 14.

The rear portion 27 of the channels 21 are beveled at 46 to permit an angular adjustment about the rear pin 29 without the channel 21 contacting the forward surface 38 of the rear panel 37.

Referring to FIG. 2, the legs 6 of the side portions have longitudinally adjustable bottom supports 47 adapted to threadedly engage with nuts 48 secured in the lower end 49 of the legs 6 to adjust the display rack 1 to a level condition. The drawer assembly 4 has suitable recessed drawer pulls 50 secured at the upper edge of the front panel 51 thereof for convenience in withdrawing the drawer. The drawer assembly 4 includes a top panel 52 for covering the open drawer when in an inserted condition and, also, to provide extra storage space for displaying merchandise. If desired, the drawer assembly 4 and the storage bin 5 may be switched in position with respect to the rack sections 2 and 3, since the outside dimensions thereof and the positions of the clips 9 are similar.

A suitable lighting fixture, in the illustrated example a fluorescent bulb support 53, is maintained spaced upwardly and forwardly of the display rack 1 by forwardly extending rods 54 having their rear ends secured to the upper ends 55 of a square structural member 56 having a smaller square structural member 57 received thereinto and extending downwardly therefrom. The member 57 is suitably secured with respect to the member 56 by means of rivets 58. The external portion of the member 57 is adapted to be received into the open upper end 59 of the rear support struts 14 for providing firm support for the rods 54. The rivets 58 also support, together with rivets 60, a panel 61 adapted to receive advertising material or the like thereon describing the goods (not shown) on the shelves 20 and 41. A bore 62 in the member 57 is adapted

to align with one of the bores 19 in the rear support strut 14 whereby a pin (not shown) may be inserted, if desired, to prevent disassembly.

It is to be understood that while we have illustrated and described one form of our invention, it is not to be limited to the specific form or arrangement of parts herein described and shown except insofar as such limitations are included in the claims.

We claim:

1. In a demountable and angularly adjustable shelving construction,

(*a*) a base having spaced-apart side portions,

(*b*) spaced-apart means respectively extending upwardly from said side portions and having vertically and horizontally spaced pin-receiving bores therein,

(*c*) at least one pair of oppositely disposed spaced-apart channels respectively associated with said means, said channels each having a web and opening inwardly of said base and away from the associated means,

(*d*) said channels each having a rear portion and a forward portion,

(*e*) a longitudinally extending slot in the web of each of said channel forward portions,

(*f*) a rear pin secured to each of said rear portions and extending outwardly of said base and adapted for insertion into a selected receiving bore,

(*g*) a forward pin engaging in each of said slots and extending outwardly of said base and each adapted for insertion into a selected receiving bore,

(*h*) said forward pins having a diameter slightly smaller than the width of said slots,

(*i*) a head on the inner end of each of said forward pins of greater diameter than the width of said slots, an annular disc of greater diameter than the width of said slots secured to each of said forward pins, said disc and head being located on the opposite sides of the web of the channel and spaced apart a distance sufficient to permit sliding movement of said forward pins longitudinally of said slots and provide support against substantial movement of said forward pins transversely of said channels, and

(*j*) a shelf having lateral end portions respectively adapted to be received in said channels, whereby said shelf is adjustable to various angular and elevated positions with respect to said first-named means.

2. A shelving construction comprising:

(*a*) a pair of end frames having a plurality of bores therein located in forward and rear upwardly extending rows,

(*b*) a pair of elongated channel members having a web and opening toward each other and located between said end frames, said channel members each having a forward and a rear pin extending horizontally outwardly toward a respective end frame and respectively received in a forward and rear bore, said rear pins being fixed with respect to said channel members,

(*c*) slidable means cooperating between said respective channel members and said forward pins permitting the longitudinal movement of said forward pins with respect to said channel members but preventing lateral movement, and

(*d*) a shelf having opposite end portions simultaneously received in said channel members and preventing the movement of said channel members toward each other and the movement of said pins out of said respective bores, said slidable means being adapted to retain said forward pins with respect to said channel members after the receipt of said shelf in said channel members.

3. The apparatus as set forth in claim 2 wherein:

(*a*) said pins are cylindrical and said bores are circular.

4. The apparatus as set forth in claim 2 wherein:
(*a*) said slidable means includes a longitudinal slot in said channel webs.

5. The apparatus as set forth in claim 2 wherein:
(*a*) the outwardly extending portions of said pins are of substantially constant diameter.

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