March 17, 1964 D. L. MAPSON 3,125,042

MERCHANDISE DISPLAY SHELF

Filed Aug. 23, 1961 2 Sheets-Sheet 1

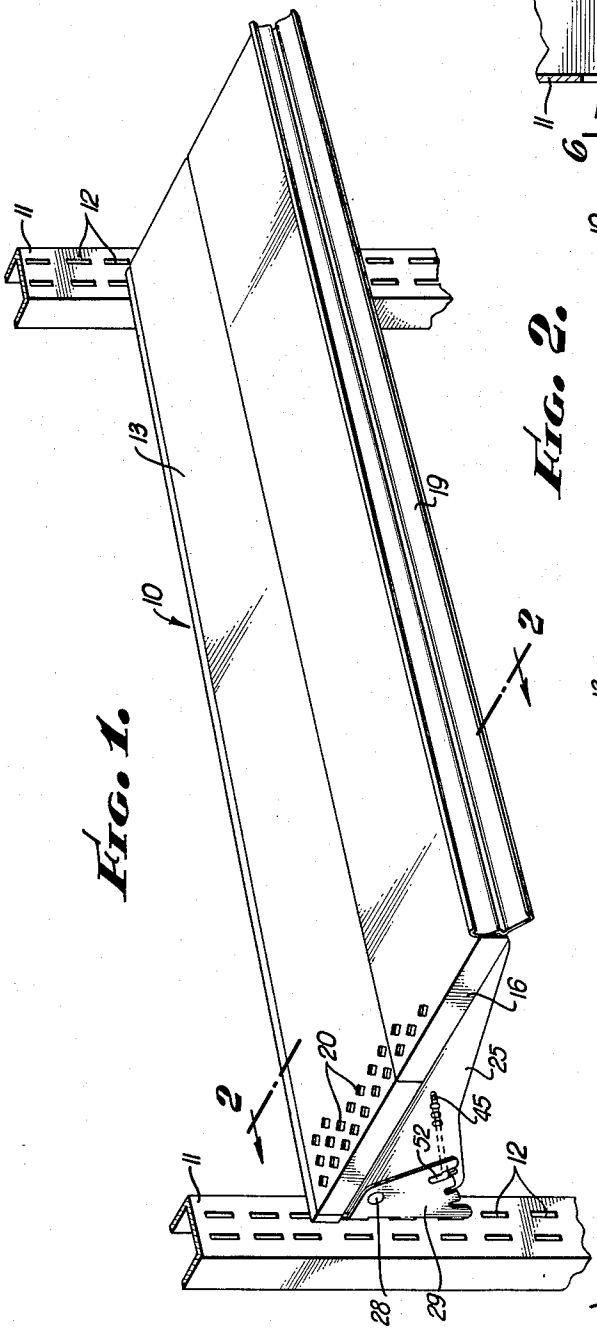


FIG. 1.

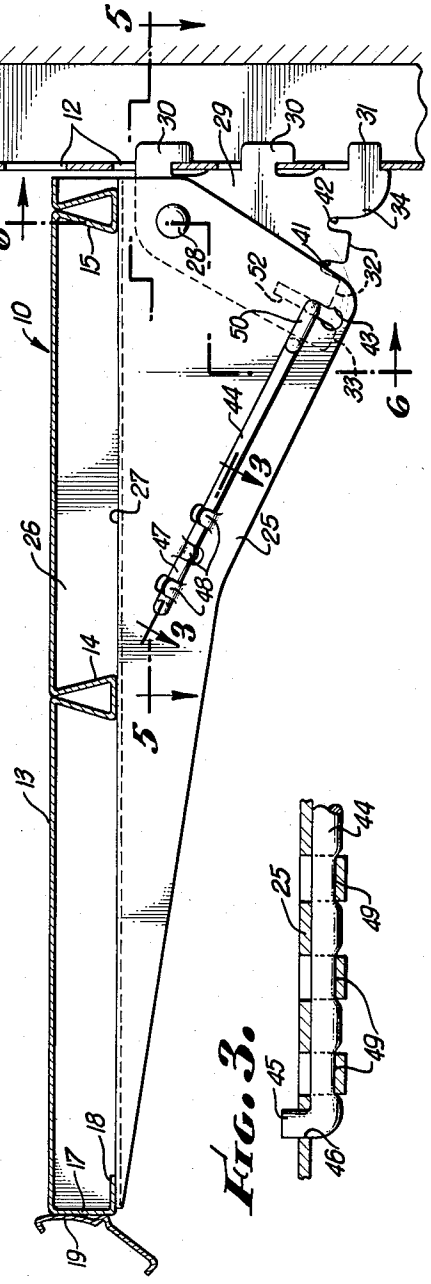


FIG. 2.

FIG. 3.

INVENTOR.
DONALD L. MAPSON
BY
ATTORNEY.

March 17, 1964 D. L. MAPSON 3,125,042

MERCHANDISE DISPLAY SHELF

Filed Aug. 23, 1961 2 Sheets-Sheet 2

FIG. 4.

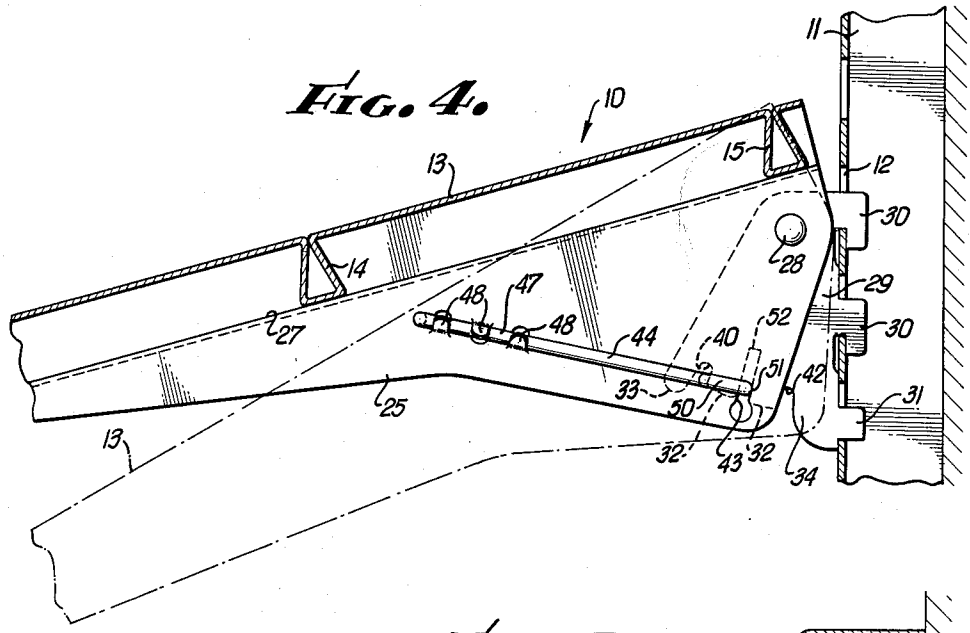
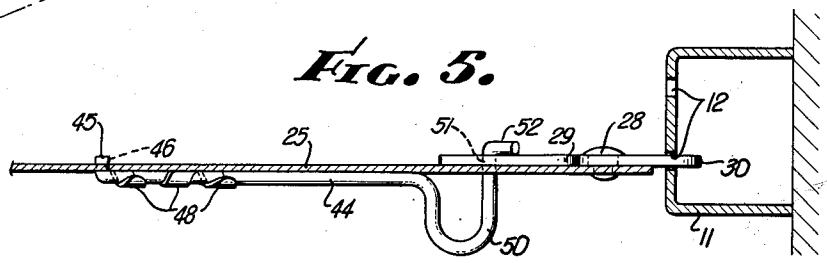


FIG. 5.



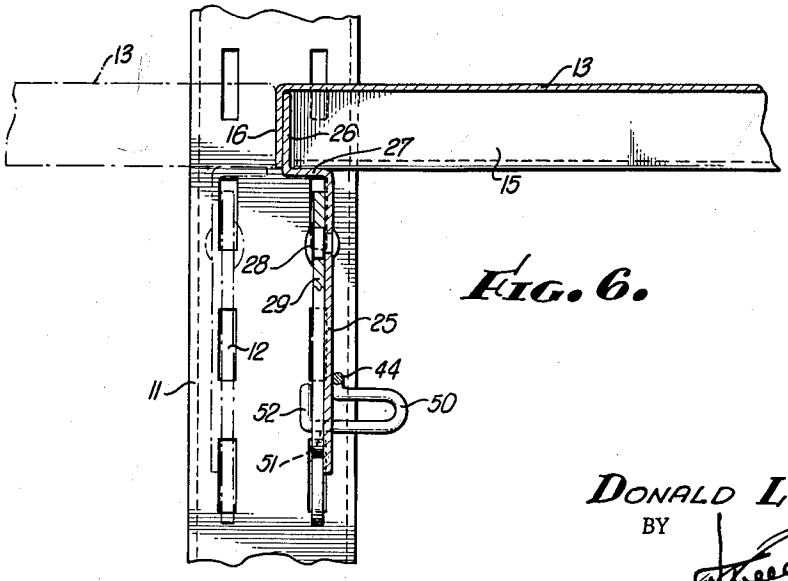


FIG. 6.

INVENTOR.
DONALD L. MAPSON
BY
ATTORNEY.

United States Patent Office 3,125,042 Patented Mar. 17, 1964

3,125,042

MERCHANDISE DISPLAY SHELF

Donald L. Mapson, La Habra Heights, Calif., assignor to M & D Store Fixtures, Inc., a corporation of California

Filed Aug. 23, 1961, Ser. No. 133,342
4 Claims. (Cl. 108—135)

This invention relates to merchandise display shelves and particularly to sheet metal shelves supported by end brackets through the latter interlocking with perforations provided in vertical metal posts.

Heretofore, the general practice in the manufacture of such shelves has been either to just rest the shelf loosely on top of the brackets with such interengagement as would prevent horizontal shifting of the shelf without lifting the latter, or horizontal flanges have been formed on the end brackets which were secured to the shelf as by bolts or thread-cutting screws. In my copending application Serial No. 50,907, now Patent No. 3,082,880, an improved sheet metal shelf is disclosed which is reinforced by a plurality of longitudinal ribs formed from the metal of the shelf by downward deformation of the latter, and rigidity of the opposite ends of the shelf is attained by spot welding to the body of the shelf horizontal flanges of special sheet metal angles made to fit around said ribs. The shelf there disclosed has notches formed in said reinforcing ribs to receive the shelf supporting brackets so as to position the shelf on the brackets and cut down the overall vertical depth of the shelf and the brackets.

It is an object of the present invention to provide a novel sheet metal merchandise display shelf having longitudinal reinforcement and adequately stiffened end edges and end brackets for supporting said shelf which will be made up of fewer parts than heretofore required in the manufacture of such a shelf, thereby reducing the cost of manufacture, while at the same time improving the quality of the product.

Some displays of merchandise are best effected where the shelf is in horizontal position whereas other displays of goods using the same shelf require that the latter be inclined forwardly to get the best effect. Various expedients have therefore been provided for rendering the shelf supporting brackets adjustable so that the shelf may be supported by the brackets optionally either in horizontal or in a forwardly inclined position. In some cases provision is made for supporting the shelf horizontally or inclined forwardly at either of two different angles.

It is another object of the present invention to provide such an angularly adjustable merchandise display shelf having an improved adjustment mechanism which is ruggedly constructed so as to be free from accidental damage and adapted to be easily operated by the thumbs of the two hands extended underneath the shelf.

The manner of accomplishing the foregoing objects as well as further objects and advantages will be made manifest in the following description taken in connection with the accompanying drawings in which:

FIG. 1 is a perspective view of a preferred embodiment of the shelf of the present invention with the latter supported in horizontal position.

FIG. 2 is an enlarged vertical sectional view taken on the line 2—2 of FIG. 1.

FIG. 3 is an enlarged fragmentary detail sectional view taken on the line 3—3 of FIG. 2.

FIG. 4 is a fragmentary view similar to FIG. 2 showing the shelf of the invention in full lines in a forwardly inclined position at a given angle and showing said shelf in broken lines in a forwardly inclined position at a greater angle.

FIG. 5 is an enlarged detail sectional view taken on the line 5—5 of FIG. 2.

FIG. 6 is an enlarged vertical detail sectional view taken on the line 6—6 of FIG. 2.

Referring specifically to the drawings, the shelf 10 illustrated therein is shown as supported on a pair of vertical posts 11 which are formed of sheet metal channels and provided with vertical rows of lug receiving perforations 12.

The shelf 10 includes a rectangular flat body 13 which is die-formed from a rectangular blank of relatively thin sheet metal by correspondingly notching opposite end edges of the blank and providing the shelf body with downwardly disposed reinforcing ribs 14 and 15 in axial alignment with said notches by downward deformation of the material of the blank and then bending the material of the blank between said notches along the opposite ends of the shelf downwardly at a right angle to form stiffening end flanges 16. At the same time the shelf blank was notched as aforesaid, other notches, not heretofore mentioned, were formed at the two front corners of the blank and the marginal material along the front edge of the blank is die-formed downwardly and inwardly to form a front wall 17 which stiffens the front edge of the shelf body 13 and is itself strengthened by an inturned lip 18 along its lower edge.

A die-formed sheet metal price tag holder 19 is spot welded to the front face of the wall 17 to permanently unite this with the shelf body.

The shelf 13 may be manufactured with a smooth upper surface or the blank from which the shelf is made may be provided with a uniform pattern of perforations 20 such as merely suggested at the left hand end of the shelf shown in FIG. 1. This is done, as explained in said copending application, by a progressive die stamping operation accomplished on the blank prior to the deformation of the latter to form ribs 14 and 15, end flanges 16 and the front wall 17.

In the formation of the shelf body 13 as above described the end flanges 16 lie parallel with and a short distance from opposite ends of the shelf stiffening ribs 14 and 15 as well as the lip 18. In fact the spacing between the flanges 16 and said ribs and lip is only a few thousandths of an inch greater than the thickness of the sheet metal forming a pair of shelf supporting end brackets 25 which are permanently united with opposite ends of the shelf body 13.

Each of the brackets 25 is disposed substantially vertically in its assembly with the shelf body 13 and has a profile as shown in FIG. 2. An upper portion of each bracket is subjected to a Z-bending operation to form a flange 26 which is coextensive in length with the bracket and extends upwardly vertically from the outer edge of a web 27 which connects the flange 26 with the balance of the bracket 25.

In assembling the brackets 25 upon the shelf body 13 the flanges 26 of these brackets are extended upwardly between the lip 18 and ribs 14 and 15 (on the inside of the shelf) and the end flanges 16 forming the external end faces of the shelf so as to bring the webs 27 into load bearing relation with the ribs 14 and 15, whereupon the end flanges 16 and the bracket flanges 26 are spot welded together thus permanently uniting the brackets 25 with the shelf body 13.

The brackets 25 are provided with coaxial bearing shoulder pivot rivets 28 which pivotally unite the respective brackets 25 with bracket bases 29 so as to hold these bases, which are made of sheet metal, flat against the outer faces of the brackets 25. These bases are provided along their rear vertical edges with locking lugs 30 and guide lugs 31 which, when received into an adjacent series of the perforations 12 in the posts 11, interlock with these posts and provide support for the shelf 10.

Each of the brackets 25 has a middle section 32 of

its lower edge in the general shape of an arc inscribed about the axis of the pivot rivets 28 this edge section terminating at its opposite ends in downwardly extending stop shoulders 33 and 34 and having three locking notches 40, 41 and 42 formed upwardly in said edge section, the notches 40 and 42 being directly adjacent respectively to the stop shoulders 33 and 34. Formed in brackets 25 and approximately bisected by edge sections 32 is a pair of relatively short closed slots 43 which are elongated radially with respect to the axis of the pivot rivets 28 and lie approximately half above and half below the arc of the lower edge section 32 of the bases 29. The lower half of each of the slots 43 is slightly enlarged for a purpose which will be made clear hereinafter.

Associated with each of the brackets 25 and lying against the inner face thereof is a spring wire latch 44, each of which has a short tit 45 bent at right angles from one end thereof this tit extending outwardly through a hole 46 provided in the bracket so that portions 47 of the latches 44 lie flat against inner faces of the brackets 25 and are rigidly secured to the brackets by outstruck fingers 48 which are die-forced into clamping relation with the wire forming the latches 44 so as to form flattened faces 49 on said wire over which the fingers 48 are clamped thus rigidly uniting the latches 43 with the brackets 25 and preventing rotation of the latches 43 about the axis of the portions 47 thus secured to the brackets. A substantial portion of each of the spring latches 44 lies between the restrained portion 47 thereof and the slots 43 provided in the brackets 25 and these portions are entirely free from restraint so that they may be flexed parallel with the brackets 25 by the application of pressure from the thumbs of the two hands against thumb loops 50 bent in the wire forming the latches 44. These loops extend horizontally from said latches and terminate in portions 51 which are normal with the planes of the brackets 25 and the bracket bases 29 and extend outwardly through the slots 43 and just beyond the thickness of the bracket bases 29 where the material of the spring latches 44 is bent at right angles to the portions 51 thereof to form guide arms 52 which extend upwardly from the portions 51 a sufficient distance so as to always overlie portions of the bracket bases 29 whereby the guide arms 52 cooperate with the pivot rivets 28 in securely holding the two bases 29 in close pivotal sliding relation with the brackets 25.

The portions 51 of the spring latches 44 which extend through both the brackets 25 and bracket bases 29 normally rest in one or the other of the pairs of locking notches 40, 41 and 42 so that these portions 51 constitute latch bars. When the shelf 10 is mounted on the posts 11, the engagement of the lugs 30 and 31 with these posts holds the bracket bases 29 in rigidly spaced coextensive relation with each other and the shelf 10, if not in horizontal position, is brought into this by depressing the thumb loops 50 to remove the latch bars 51 from any of the notches 41 or 42 in which they may have rested, swinging the shelf 10 into horizontal position and then releasing pressure from the thumb loops 50. The latch bars 51 are then opposite the locking notches 40 of the bases 29 and the release of pressure on the thumb loops 50 allow said latch bars to be spring extended by the spring action of the spring latches 44 into the notches 40 as shown in FIGS. 1 and 2.

It is readily observable that the adjustment mechanism of the shelf 10 above described permits the attitude of this shelf to be changed from horizontal to either of two forwardly inclined angles by depressing the thumb loops 50 and after swinging the shelf downwardly either into the full line position shown in FIG. 4 or the broken line position shown therein, releasing pressure on the thumb loops 50 thus permitting the latch bars 51 to spring upwardly, either into the notches 41 which will lock the shelf in its full line position shown in FIG. 4, or into notches 42 which will lock the shelf in its broken line position shown in this view.

Owing to the fact that the downward swinging of the thumb loops 50 is limited by engagement of the latch bars 51 with the bottoms of the closed slots 53, the upper end portions of the arms 52 still overlie the solid material of the bracket bases 29 so as to act as guides holding the respective brackets 25 and their bases 29 in closely spaced sliding relation about the pivot rivets 28 which unite these members.

While only two posts 11 are shown in the drawings each of these posts is provided with a double row of shelf supporting perforations 12 and these two posts are adapted to be combined with other posts set up in a straight line so that a series of shelves 10 may be supported by said posts to form one continuous shelf. Adjacent shelves 10 thus assembled on the same level are in abutment with one another and all the shelves 10 forming a continuous line of shelving are ordinarily adjusted so as to be supported in the same angular position relative to their bracket bases 29. FIG. 6, in which one shelf 10 is shown in full lines and another adjacent shelf 10 is shown in broken lines, illustrates the contiguous relationship of shelves thus united to form a single relatively long shelf. This view also shows how the thumb loops 50 formed in the spring wire latches 44 so as to extend horizontally inwardly into the space beneath the shelf 10 on which these loops are provided, may be readily engaged by thumbs of the two hands and depressed to facilitate changing the angular position of this shelf. The depression of thumb loops 50 is of course against the spring tension of the spring latches 44 which is normally operative to hold the spring bars 51 upwardly into a corresponding pair of notches 40, 41 and 42. Having thus disengaged the latch bars 51 from a given pair of said notches and slightly rotated the shelf 10 about the pivot rivets 28, the thumb loops 50 may be released to allow the latch bars 51 to ride on the edge sections 32 of the bases 29 after which the shelf may be swung a little further in the same direction until the latch bars 51 come opposite the next corresponding pair of notches in said bases, this resulting in the spring latches 44 snapping the latch bars 51 into the last mentioned pair of notches.

Another important advantage of the present invention may be seen by reference to FIG. 6 wherein it is evident that the Z-bend formed in the upper portion of each bracket 25 coupled with the provision of a very narrow space between opposite ends of ribs 15 and end flanges 16 of the shelf body 13 and the formation of upper bracket flange 26 so that it is neatly received in this space while bringing the web 27 of the bracket into load bearing relation with the ribs 15 and then spot welding the flanges 16 to the flanges 26, produces a very rigid, economical end structure for the shelf 10. It is also to be noted that this structure eliminates the necessity for a separate sheet metal angle for stiffening opposite ends of the shelf body 13, this function now being performed by the upper flanges 26 of the end brackets 25. This constitutes a very measurable economy in the manufacture of the shelf 10 as well as producing a superior product.

The claims are:

1. An angularly adjustable shelf supported, when in use, on a pair of vertical posts having vertical rows of perforations, said shelf comprising a rectangular flat body; sheet metal brackets secured to said body across end portions thereof and extending downwardly from said body; coaxial pivot rivets provided on said brackets on an axis located beneath said body and close to the rear edge thereof, said brackets having short closed coextensive slots disposed near lower edges of said brackets said slots being elongated radially with reference to said pivot axis; sheet metal bracket bases pivotally mounted near their upper ends on said pivot rivets to lie flat against external vertical faces of said brackets, back edges of said bases being provided with lugs fitting into perforations in said posts to support said shelf on said posts, lower edges of said bases including central sections inscribed from said axis by a

radius reaching approximately to the middle of said slots, stop shoulders extending downward a greater distance than said radius from said axis being provided on said bases at opposite ends of said edge sections, there being a series of notches correspondingly spaced in said two bases and formed upwardly from said central edge sections thereof; and two spring wire latches comprising lengths of spring wire lying flat against inner faces of said brackets, with front end portions thereof rigidly attached to said brackets, said lengths extending substantial distances from their areas of such attachment toward upper portions of said slots and lying approximately normal to radii from said axis through said slots, horizontally extending thumb loops being formed from said wire lengths adjacent said slots, portions of said wire lengths extending outwardly from said loops through the slots of the brackets to form latch bars which also extend through a corresponding pair of said notches when said notches are opposite said bars, to lock said brackets and bases against relative rotation, said thumb loops being simultaneously engageable by the thumbs of both hands reaching under said shelf to depress said latch bars out of a given corresponding pair of notches to permit the slope of said shelf to be adjusted by rocking said shelf about said axis until another pair of notches are opposite said latch bars, the spring action of said wire lengths thereupon snapping said latch bars into said last mentioned pair of notches and locking said shelf in its adjusted position.

2. A shelf acocrding to claim 1 wherein outstruck teeth are formed on said brackets which tightly embrace the spring wire lengths forming said latches to rigidly attach said lengths to said brackets and in which short tits are

bent at right angles from the extremities of said wire lengths adjacent the end portions attached to said brackets, and holes are provided in said brackets for snugly receiving said tits whereby rotation of said wire lengths is prevented after their attachment as aforesaid to said brackets.

3. A shelf according to claim 1 wherein guide arms are bent from outer extremities of said spring latch bars to lie close to and parallel with said respective bases so that said arms always overlie some portions of said bases, said arms thus cooperating with said pivot rivets in holding said bases flat against said brackets in latch controlled rotatable relation therewith.

4. A shelf according to claim 2 wherein guide arms are bent from outer extremities of said spring latch bars to lie close to and parallel with said respective bases so that said arms always overlie some portions of said bases, said arms thus cooperating with said pivot rivets in holding said bases flat against said brackets in latch controlled rotatable relation therewith.

References Cited in the file of this patent

UNITED STATES PATENTS

1,705,237	Bulman	Mar. 12, 1929
1,995,774	Moore	Mar. 26, 1935
2,127,721	Erickson	Aug. 23, 1938
2,453,254	Odin	Nov. 9, 1948
2,790,559	Stephenson	Apr. 30, 1957
2,891,680	MacAleese	June 23, 1959
2,906,486	Bellon	Sept. 29, 1959
2,975,908	Huet	Mar. 21, 1961
2,993,603	Fohn	July 25, 1961