

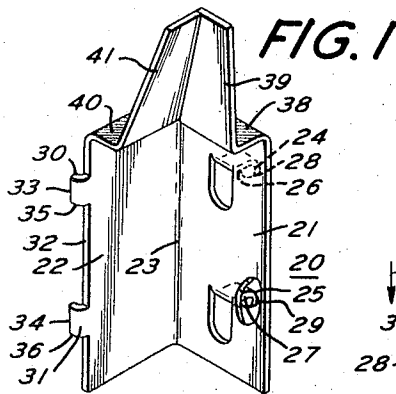
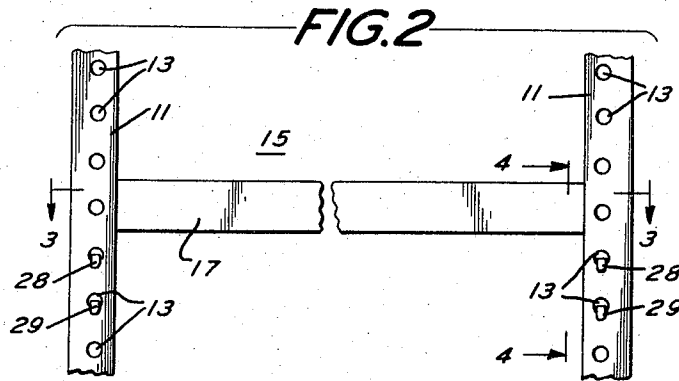
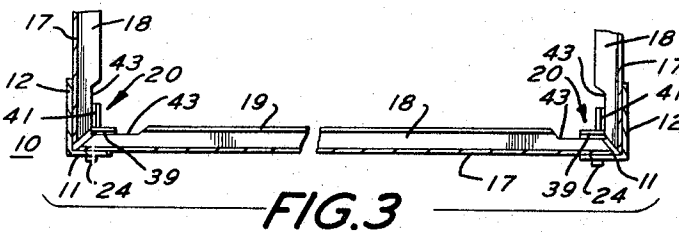
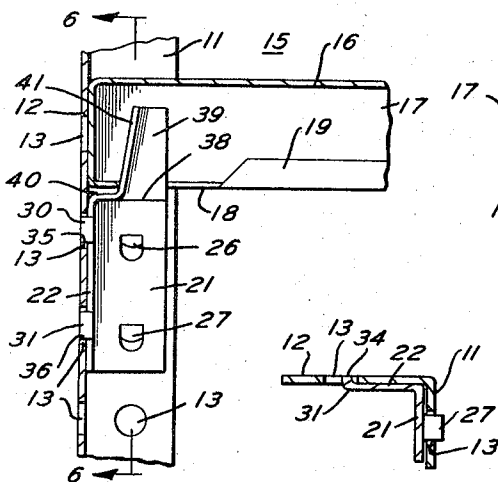
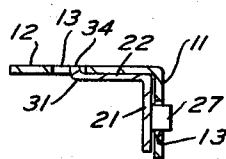
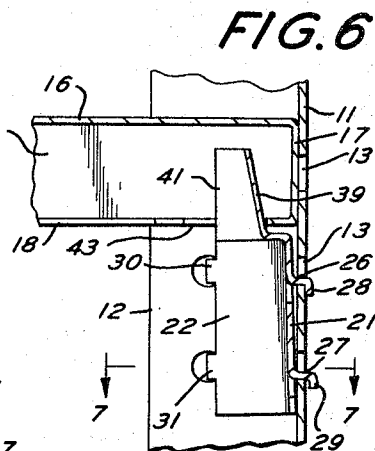
Feb. 28, 1967

J. S. LISTON

3,306,466

METAL SHELVING

Filed Aug. 9, 1965



INVENTOR
JOHN S. LISTON

BY B. T. Wobensmith

ATTORNEY

1

3,306,466

METAL SHELVING

John S. Liston, Philadelphia, Pa., assignor to American Metal Works, Inc., Philadelphia, Pa., a corporation of Pennsylvania

Filed Aug. 9, 1965, Ser. No. 478,249

8 Claims. (Cl. 211-148)

This invention relates to metal shelving and more particularly to clips for assembling metal shelves and vertical frames.

Various arrangements have heretofore been proposed for mounting metal shelves in vertical frames but these have had serious shortcomings. A common mode of assembly is by the use of bolts extending through the frames and horizontal flanges of the shelves. This character of construction is very slow to erect and change of location of a shelf after assembly is difficult. Various clips have heretofore been proposed for interposition between the frame and the shelves but these have been difficult to position, lacked adequate strength, did not provide adequate retention of the shelf, or had other disadvantages.

It is the principal object of the present invention to provide metal shelving which can be quickly and easily assembled by the use of a simple but effective clip.

It is a further object of the present invention to provide metal shelving, and more particularly a shelf supporting clip therefor with which a better support will be provided than heretofore and which will removably retain the shelf in place, and with which a wedging action is effected.

It is a further object of the present invention to provide metal shelving and more particularly a shelf supporting clip therefor which will engage the upright frame at a plurality of locations in perpendicular planes.

Other objects and advantageous features of the invention will be apparent from the description and claims.

The nature and characteristic features of the invention will be more readily understood from the following description taken in connection with the accompanying drawings forming part thereof, in which:

FIGURE 1 is an inside perspective view of a clip employed in connection with the invention of one hand;

FIG. 2 is a fragmentary front elevational view of shelving in accordance with the invention;

FIG. 3 is a horizontal sectional view taken approximately on the line 3-3 of FIG. 2;

FIG. 4 is a fragmentary vertical sectional view taken approximately on the line 4-4 of FIG. 2;

FIG. 5 is a fragmentary vertical sectional view taken approximately on the line 5-5 of FIG. 4;

FIG. 6 is a fragmentary vertical sectional view taken approximately on the line 6-6 of FIG. 5; and

FIG. 7 is a horizontal sectional view taken approximately on the line 7-7 of FIG. 6.

It should, of course, be understood, that the description and drawings herein are illustrative merely, and that various modifications and changes can be made in the structure disclosed without departing from the spirit of the invention.

Like numerals refer to like parts throughout the several views.

Referring now more particularly to the drawings a frame 10 is shown comprising vertical angles of steel with flanges 11 and 12 perpendicularly disposed. The flanges 12, of greater horizontal dimension than the flanges 11, are disposed at the sides with the flanges 11 being along the front and back. The flanges 11 and 12 are provided with openings 13, of a diameter of the order of $\frac{5}{16}$ inch, and with their centers vertically spaced on one inch centers. A shelf 15 is employed having a horizontal top wall 16 and vertical side rims 17 with hori-

2

zontal stiffening flanges 18 and vertical stiffening margins 19 along the longer sides of the shelf 15.

Such frames 10 and shelves 15 are well known in the art.

In accordance with the invention clips 20 are provided of opposite hand, a clip 20 of one hand being shown in FIGS. 1 to 7, inclusive and clips 20 of the other hand being shown in FIGS. 2 and 3.

The clips 20 are preferably formed as metal stampings and each clip 20 includes plate portions 21 and 22 disposed perpendicularly and joined together at 23 along meeting edges.

The plate portion 21 has upper and lower hooks 24 and 25 struck outwardly therefrom with downwardly inclined portions 26 and 27 and vertically downwardly disposed ends 28 and 29. The hooks 24 and 25 are vertically spaced at the same distances as the center to center distances of the openings 13.

The plate portion 22 has upper and lower fingers 30 and 31 extending from the outer edge 32 thereof. The fingers 30 and 31 are hooked and have ends 33 and 34 which extend at right angles to the edge 32 and outwardly beyond the plane of the outer face of the plate portion 22. The fingers 30 and 31 are vertically spaced at the same distances as the center to center distances of the openings 13 and have their lower margins 35 and 36 slightly below the lower margins of the hooks 24 and 25 for purposes to be explained.

The plate portion 21 has integral therewith an inwardly extending shoulder 38 from which an integral wedge plate 39 extends at an inward inclination with respect to the main plane of the plate portion 21, and preferably such that its main plane intersects the main plane of the plate portion 21 at or above the lower margin of the plate portion 21.

The plate portion 22 has integral therewith a shoulder 40 from which an integral wedge plate 41 extends at an inward inclination with respect to the main plane of the plate portion 22, and preferably such that its main plane intersects the main plane of the plate portion 22 at or above the lower margin of the plate portion 22.

The horizontal stiffening flanges 18 of the shelf 15 have edge faces 43 spaced from the side rims 17 a distance such as to engage the wedge plates 39 and 41 when the shelf 15 is moved downwardly and retain the clips 20 in locked position.

In use, and with the frame angles vertical, the clips 20 are assembled with respect thereto at the desired height for a shelf 15. To accomplish this the upper and lower hooks 24 and 25 of a clip 20 of proper hand are engaged in the desired openings 13 in the short front or back flanges 11 with the ends 33 and 34 of fingers 30 and 31 projecting into openings 13 of the long side flanges 12. Additional clips 20 are mounted at the same levels in the other frame angles in a similar manner, clips 20 of the proper hand being employed to effect the mounting. A shelf 15 is then lowered downwardly from above the clips 20 and the edge faces 43 engage the faces of the wedge plates 39 and 41.

The clips 20 are tilted slightly with a wedging action, the lower hooks 25 serving as fulcrums to permit the lower margins 35 and 36 of the fingers 30 and 31 to engage the bottoms of the openings 13 in which they are disposed. Support is provided for each shelf 15 by the upper and lower fingers 30 and 31 and the upper and lower hooks 24 and 25. The fingers 30 and 31 do not project beyond the flanges 12 in which they are carried and do not interfere with other shelving units being placed side by side.

Removal of a shelf 15 and change to a different level can be effected quickly and easily and independent of adjoining shelving units.

3

A firm and strong support for each shelf 15 is provided and a structure is provided with which the objects of the invention are attained.

I claim:

1. A shelf support for use with vertical angles provided with spaced openings comprising a clip having
 - a first plate portion with vertically spaced hooks extending outwardly from one face thereof for engagement in vertically spaced openings in one angle flange,
 - a second plate portion in a plane perpendicular to said first plate portion with vertically spaced fingers extending therefrom for engagement in vertically spaced openings in a contiguous angle.
2. A shelf support as defined in claim 1 in which said plate portions have shelf receiving portions thereabove.
3. A shelf support as defined in claim 1 in which said fingers extend from a marginal edge of said second plate portion.
4. A shelf support as defined in claim 1 in which said clip is a sheet metal stamping of a single piece of material.
5. A shelf support as defined in claim 1 in which said plate portions have shoulders thereabove, and said shoulders have wedge plates for shelf engagement.
6. A shelf construction comprising vertical frame angles having flanges with spaced vertical openings therein,

4

said angles being disposed to provide a frame with front, rear and side flanges, clips for engagement with said flanges, said clips each having

a first upright plate portion with vertically spaced hooks extending outwardly from one face thereof engaged in spaced vertical openings in one each of said flanges, a second upright plate portion with vertically spaced fingers extending therefrom engaged in spaced vertical openings in another flange of each of said angles, at least one of said plate portions having a shelf receiving portion thereabove, and a shelf supported by said shelf receiving portion.

7. A shelf construction as defined in claim 6 in which said shelf has a flange portion with a part in engagement with said shelf receiving portion.

8. A shelf construction as defined in claim 6 in which said shelf receiving portion is a wedge plate, and said shelf has a flange portion with a part in engagement with said wedge plate.

References Cited by the Examiner

UNITED STATES PATENTS

1,880,179	9/1932	Onions	248—243
2,226,763	12/1940	Geib et al.	46—28
2,990,067	6/1961	Bartlett	108—144

FOREIGN PATENTS

110,246	4/1940	Australia.
---------	--------	------------

CLAUDE A. LE ROY, *Primary Examiner.*

W. D. LOULAN, *Assistant Examiner.*