Sept. 29, 1953

D. E. LINDSAY

2,653,783

DISPLAY DEVICE

Filed May 25, 1949

Fig. 1.

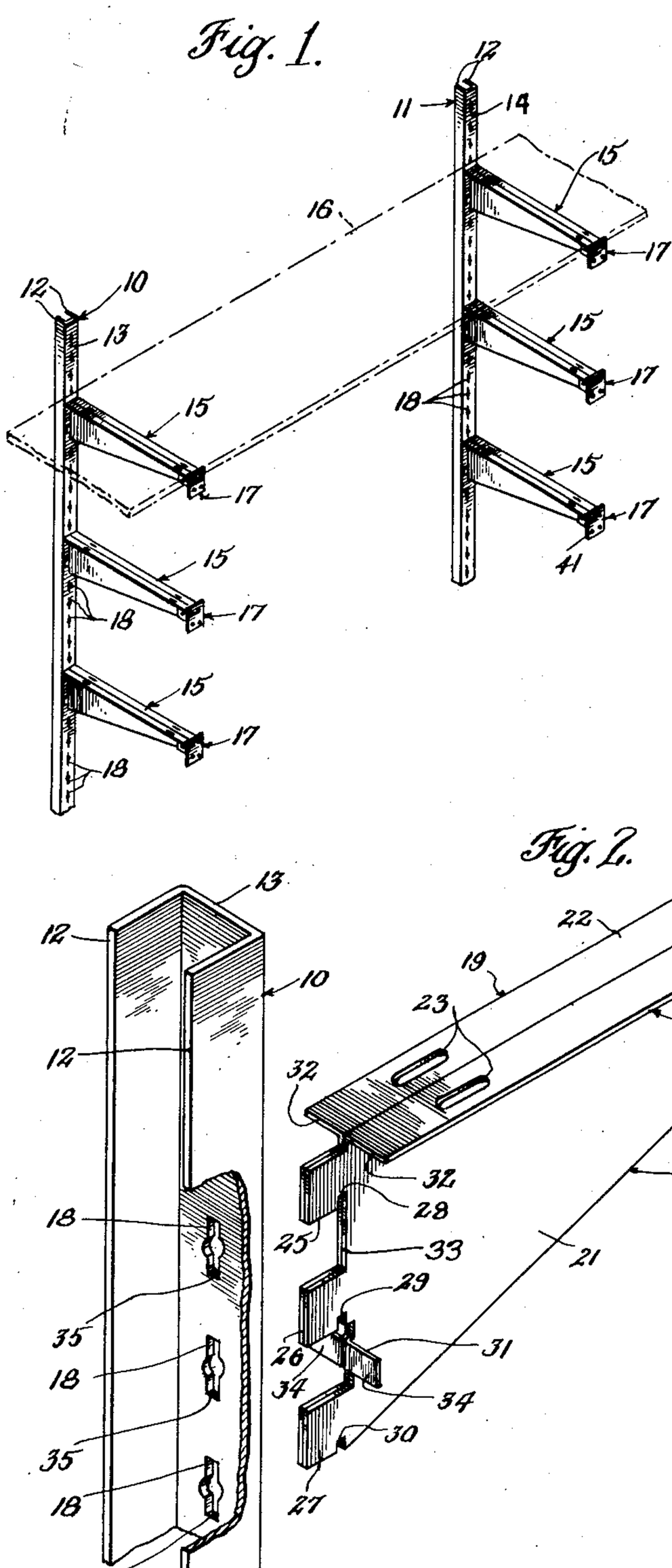


Fig. 3.

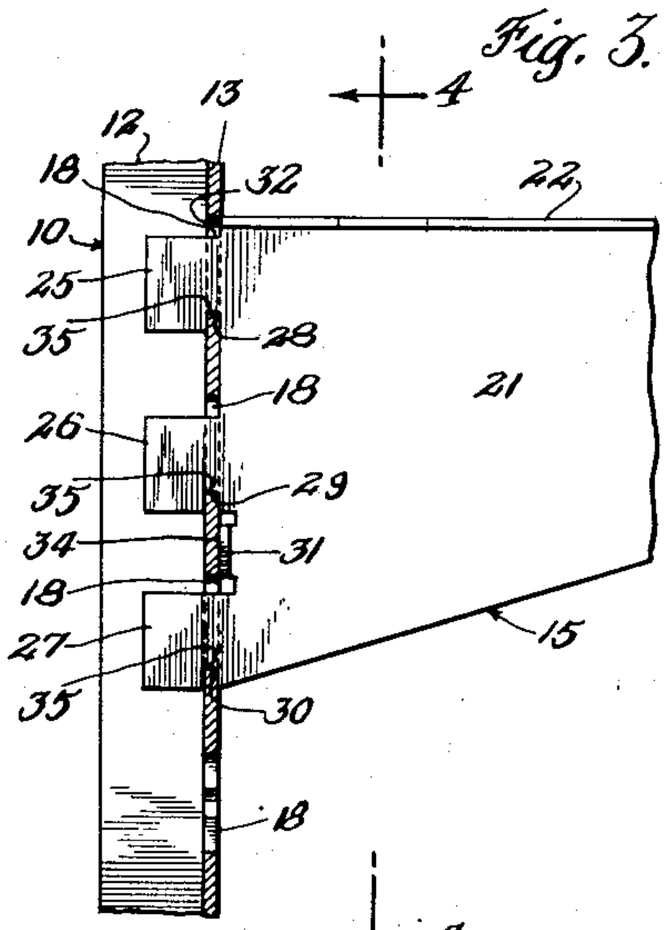


Fig. 2.

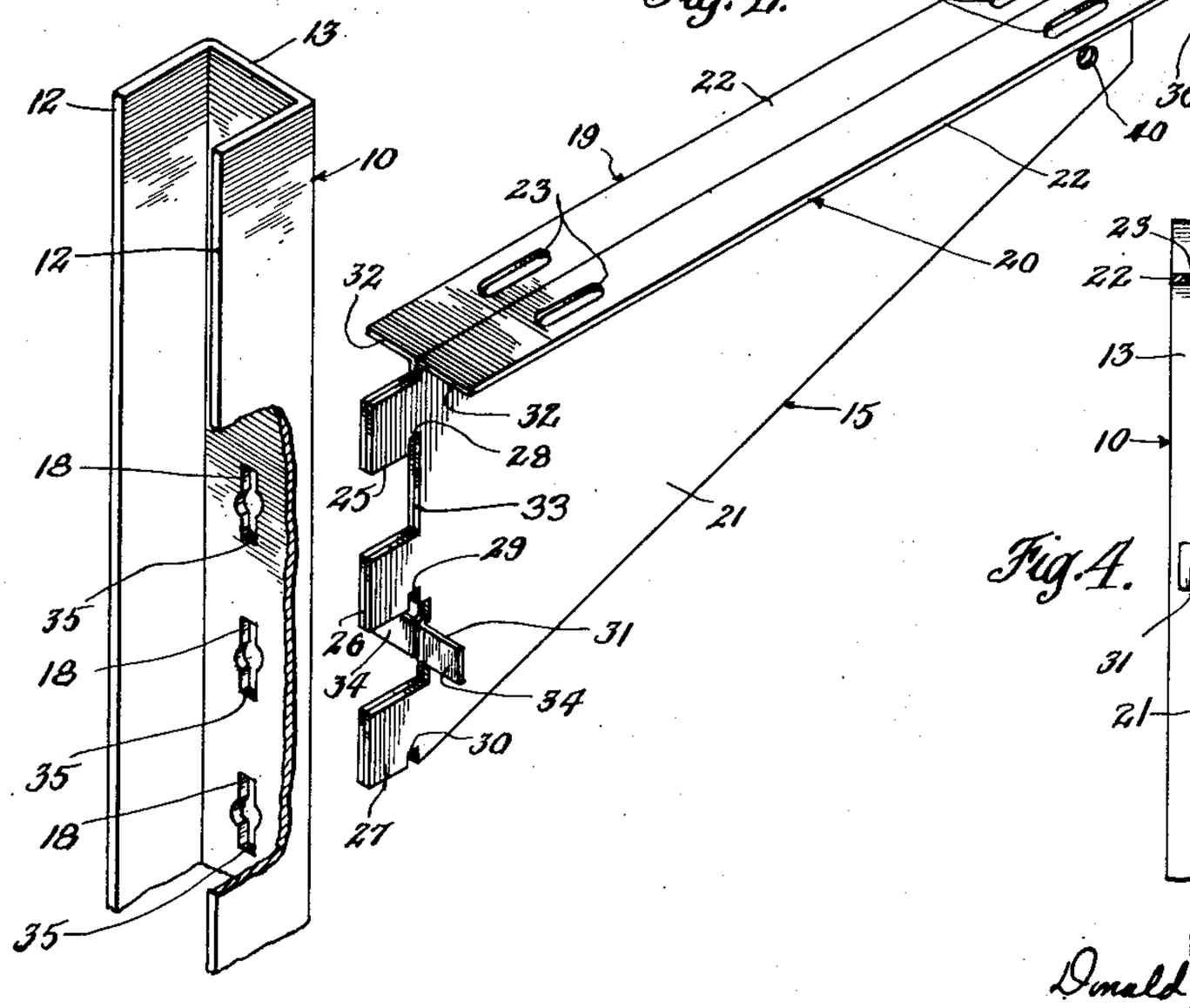
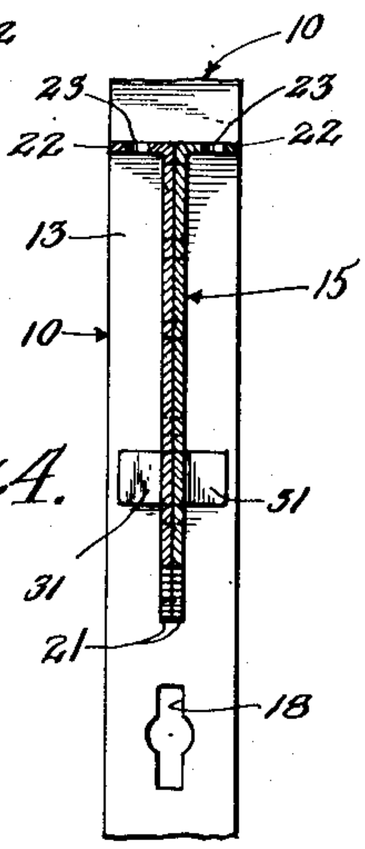


Fig. 4.



INVENTOR
Donald E. Lindsay
BY
Symmestedt & Lechner
ATTORNEYS

Patented Sept. 29, 1953

2,653,783

UNITED STATES PATENT OFFICE

2,653,783

DISPLAY DEVICE

Donald E. Lindsay, Bala-Cynwyd, Pa., assignor to Murlin Manufacturing Co., Philadelphia, Pa., a corporation of Pennsylvania

Application May 25, 1949, Serial No. 95,259

2 Claims. (Cl. 248—243)

1

This invention relates to devices for supporting articles in display, and is particularly concerned with a novel shelf-supporting structure.

The shelf-supporting structure of the invention comprises a pair of spaced apart vertical channel members characterized by slots equally spaced along the length thereof, a plurality of shelf brackets having lugs adapted to engage the slots of the channel members, and, according to a modification of the invention, a plurality of angle clips adapted to be mounted on the unsupported ends of the shelf brackets.

The channel member of the invention may desirably be of U-section, and the slots therein are desirably of generally rectangular outline, the longitudinal axis of the rectangular slots being generally parallel to the longitudinal axis of the channel member, although, in the interest of simplifying manufacture, the outline of the slots may depart from a strictly rectangular form.

According to the invention, the shelf bracket is formed from sheet material, each shelf bracket comprising two members which are mirror images one of the other. Each such member comprises a web of sheet material, along one edge of which a flange is bent to assume a position normal to the plane of the web. Along a second edge adjacent the first and normal thereto, are developed a plurality of lugs adapted to engage the slots in the channel member. At least two, and desirably three lugs are so formed.

Between two adjacent lugs, a tab is bent on an axis parallel to the lugged edge of the web to a position normal to the web, the tab being bent in the direction in which the flange of the same member is bent.

In the assembled device, a pair of the members aforesaid are assembled and connected, as by spot welding, with their webs in parallel engagement one with the other, and the juxtaposed pairs of lugs are inserted and locked in position in the slots of the channel member. When the bracket is in the locked position, the tabs engage the web of the channel member and thereby introduce rigidity into the system in two senses, namely, as against direct thrust incident to the imposition of loads on the top of a shelf bracket, which would otherwise impose a strain on the lugs, and, second, as against rocking motions about the axis represented by the line of contact between the webs of the shelf bracket and the web of the channel member. In addition, the flanges on the shelf bracket are defined by end surfaces disposed to intimately engage the surface of the web of the channel member when

2

the bracket is in locked position, thus adding to the system additional rigidity as against motions in the sense last above mentioned.

Finally, the construction of the invention includes an angle clip adapted to engage the end of the shelf bracket, where it serves to anchor the exposed edge of a shelf supported by the bracket and/or to engage a structural member in the form of a stringer extending from one bracket to another either vertically or horizontally.

It is a primary object of the invention to provide a shelf-supporting structure which is exceedingly rugged and yet is capable of the simplest manufacture and is susceptible of extremely rapid assembly and disassembly.

A more specific object of the invention is to increase the rigidity of a structure of the type described by reducing the freedom for angular displacement between a shelf bracket and the vertical structural member by which it is supported.

According to this aspect of the invention, unusual rigidity is obtained as against angular displacement between the shelf bracket and the vertical structural member supporting it, occurring on horizontal axes as well as on vertical axes.

Yet another object of the invention is to provide, in a shelf-supporting structure of the type described, a novel element for interconnecting the outer extremities of the several shelf brackets one with another or with a shelf supported thereby, or both.

How these objects and others within the scope of the invention are attained will be more clearly understood upon reference to the detailed description which follows hereinbelow and upon reference to the drawings, in which:

Figure 1 is a view of the shelf-supporting structure of the invention in assembled condition;

Figure 2 is an exploded view illustrating the adaptation of the component parts to interengagement one with the other;

Figure 3 is a fragmentary sectional view showing the interengagement between the shelf bracket and the vertical channel member of the invention, taken in the vertical mid-plane of the vertical channel member; and

Figure 4 is a transverse sectional view taken along the line 4—4 of Figure 3.

Turning now to the drawings and considering first the assembled structure illustrated in Figure 1, it will be seen that the invention embodies a pair of vertical channel members of U-sec-

tion, generally indicated at 10 and 11, each member comprising a pair of flanges 12 interconnected by webs 13 and 14 respectively.

Affixed to each of the channel members 10 and 11 is a plurality of shelf brackets generally indicated at 15, the brackets being arranged in pairs disposed at equal heights for the purpose, for example, of supporting a shelf such as that indicated in dotted outline at 16.

Further inspection of Figure 1 will disclose that each shelf bracket 15 carries at its outer extremity a clip 17, more fully described hereinbelow.

Finally, it will be noted that each of channel members 10 and 11 is characterized by slots 18 cut in webs 13 and 14 respectively, and extending at equally spaced intervals throughout so much of the length of channel members 10 and 11 as is illustrated in Figure 1.

Turning now to Figure 2, it will be seen that the slots 18 are of generally rectangular outline, with the longitudinal axis of each slot aligned with the longitudinal axis of the channel member. In the interest of manufacturing efficiency, slots 18 may depart from strictly rectangular form, for example, where it is desired to start each slot by drilling a circular hole to receive the tool which is to cut the slot itself. The slots 18, as illustrated in the drawings, are typical of those resulting from such an operation.

Each shelf bracket 15 comprises two sheet metal members generally indicated at 19 and 20, the members 19 and 20 being mirror images one of the other and being secured to one another in the relative positions indicated in Figure 2 by any convenient means, as, for example, by spot welding.

Each of members 19 and 20 comprises a web portion 21 and a flange 22, which last may be slotted as at 23 and 24 to receive bolts or other securing means adapted to interconnect a shelf such as 16 and shelf bracket 15.

In addition, each member 19 and 20 comprises three lugs 25, 26 and 27 formed on a vertical edge of web 21 and lying in the plane of the web. Each lug 25, 26 and 27 is further characterized by an undercut 28, 29 and 30, respectively, whereby to constitute each lug a hook which, as will appear hereinbelow, is adapted to interengage with the slots 18 in channel members 10 and 11.

Corresponding parts of lugs 25, 26 and 27 are separated by intervals equal to the intervals separating corresponding parts of slots 18, as a result of which bracket 15 may be mounted anywhere along the slotted portion of channel members 10 and 11.

Each of members 19 and 20 is further characterized by a tab 31 disposed between lugs 26 and 27 and extending normal to web 21 in the same direction as the extension of flange 22.

In addition, each flange 22 is defined by an end surface 32 which surface lies in a plane containing edge 33 of web 21 and also containing the outer surface 34 of tab 31. Thus, when lugs 25, 26 and 27 are inserted in the three slots 18 until edge 33 abuts web 13 of channel member 10, end surfaces 32 of flanges 22 and surfaces 34 of tabs 31 will also engage the surface of web 13 of channel member 10.

Upon reference to Figure 3, it will be seen that the engaging movement is completed by a downward motion of shelf bracket 15 such that the lower edges 35 of slots 18 enter undercuts 28, 29 and 30 of lugs 25, 26 and 27.

In Figures 3 and 4 it will further be seen that loads impinging upon flange 22 of bracket 15 are supported not only by virtue of the interengagement between undercuts 28, 29 and 30 with lower edges 35 of slots 18, but also by the abutment of the surfaces 34 of tabs 31 with the surface of web 13 of channel member 10.

In addition, it will be understood that lateral forces applied to shelf bracket 15 are resisted not only by the engagement of tabs 31 with web 13, but also by the interengagement of end surfaces 32 of flanges 22 with the surface of web 13.

Angle clip 17, as may best be seen in Figure 2, comprises a pair of angle brackets 36, spot welded or otherwise secured to a rectangular piece of sheet metal 37 which, as may be seen, extends upwardly above the upper surfaces 38 of angle brackets 36. Angle brackets 36 are pierced by aligned apertures 39, and when the clip is in the assembled position at the outer extremity of shelf bracket 15, apertures 39 are both adapted to be aligned with corresponding apertures 40 through webs 21 of shelf bracket 15, as a consequence of which the angle clip may be secured to the shelf bracket by a rivet or bolt passing through apertures 39 and 40. In addition, angle brackets 36 and rectangular member 37 are pierced by apertures 41, by means of which angle clips 17, and, hence, shelf brackets 15, may be interconnected by stringers running vertically or horizontally from one shelf bracket to another.

When angle clip 17 is in the assembled position, flanges 22 overlie angle irons 36 and the ends 42 of flanges 22 intimately engage the inner surface of rectangular member 37, which, however, extends somewhat above the upper surface of flanges 22, the elevation of the upper surface 43 of rectangular member 37 with respect to the upper surface of flanges 22 being sufficiently great to engage the outer edge of a shelf such as 16 supported by shelf brackets 15.

The invention, as illustrated in the drawings and described hereinabove, embodies unique advantages over the prior art. Among the features which should be particularly emphasized are the simplicity of construction and the superior rigidity which characterize my shelf-supporting structure. Basic to these two advantages is the construction of the shelf bracket from two sheet metal members. The composite shelf bracket of my invention is immeasurably stronger than any bracket which can be fabricated from a single thickness of sheet metal, and is at the same time much simpler and much less expensive to manufacture than a shelf bracket of comparable strength but fabricated in other ways.

In addition, the presence of two webs from which flanges and tabs may be bent contributes to the finished shelf bracket a symmetry of form which makes possible a symmetrical distribution of load, in turn resulting in enhanced rigidity.

Finally, the placement of the tabs, lugs, and the ends of the flanges relative to a common plane, as hereinabove described, provides for a remarkable and unexpected degree of locking and rigidity.

I claim:

1. In a shelf-supporting structure incorporating a vertical support having a plurality of slots equally spaced along at least a substantial portion of the length thereof, a shelf bracket comprising a pair of sheet metal members which are mirror images of each other, each of said mem-

bers comprising a web and an elongated flange extending horizontally from said vertical support along an edge of said web, the flanges being oppositely projecting and normal to said webs, each sheet metal member further having a plurality of spaced apart lugs projecting from a second edge of the web in the plane thereof, said second edge of the web being normal to the first mentioned edge of the web, said lugs being arranged in pairs with the lugs of each pair lying in abutting side-by-side relation, and each pair of lugs being proportioned to enter and engage a single one of the slots in the vertical support, the webs of said members being secured together in a plane defining a surface of said webs and said lugs, and the ends of the flanges adjacent the vertical support terminating in right edges in the plane of said flanges and in the plane containing said second edges of the webs and also containing a surface of said vertical support when the shelf bracket is in engagement with said vertical support to thereby provide for bracing of the bracket against horizontal side-to-side motion.

2. A construction according to claim 1 in which each of said sheet metal members further has a tab disposed between said lugs and extending normal to said web in the same direction as said flange, a surface of said tab lying in said plane containing said second edges of the webs and also containing a surface of said vertical support when the shelf bracket is in engagement with said vertical support to thereby provide additional bracing of the bracket against horizontal side-to-side motion.

DONALD E. LINDSAY.

References Cited in the file of this patent

UNITED STATES PATENTS

Number	Name	Date
723,677	Kode	Mar. 24, 1903
756,648	Kade	Apr. 5, 1904
836,045	Melchior	Nov. 13, 1906
870,439	Kade	Nov. 5, 1907
914,572	Holden	Mar. 9, 1909
1,983,470	Knape	Dec. 4, 1934