Jan. 4, 1966 E. F. HAMILTON 3,227,110

SHELF CONSTRUCTION

Original Filed Dec. 10, 1962 3 Sheets-Sheet 1

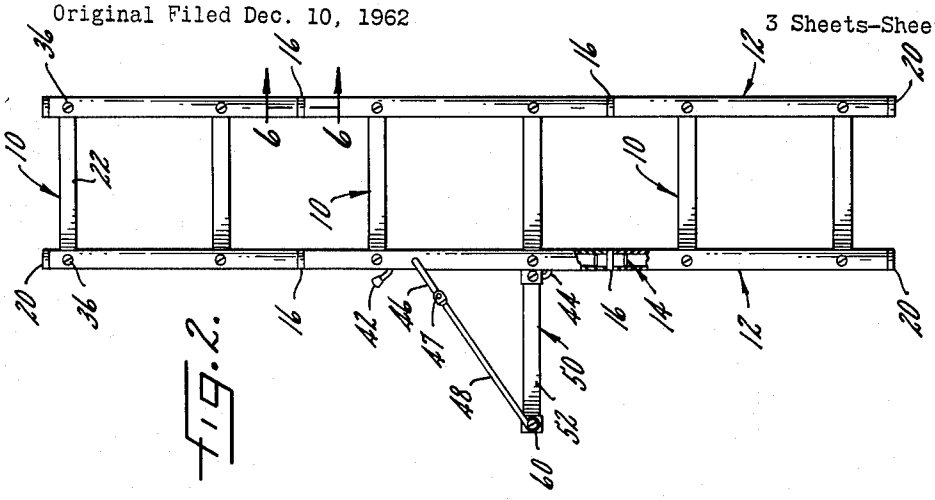


FIG. 2.

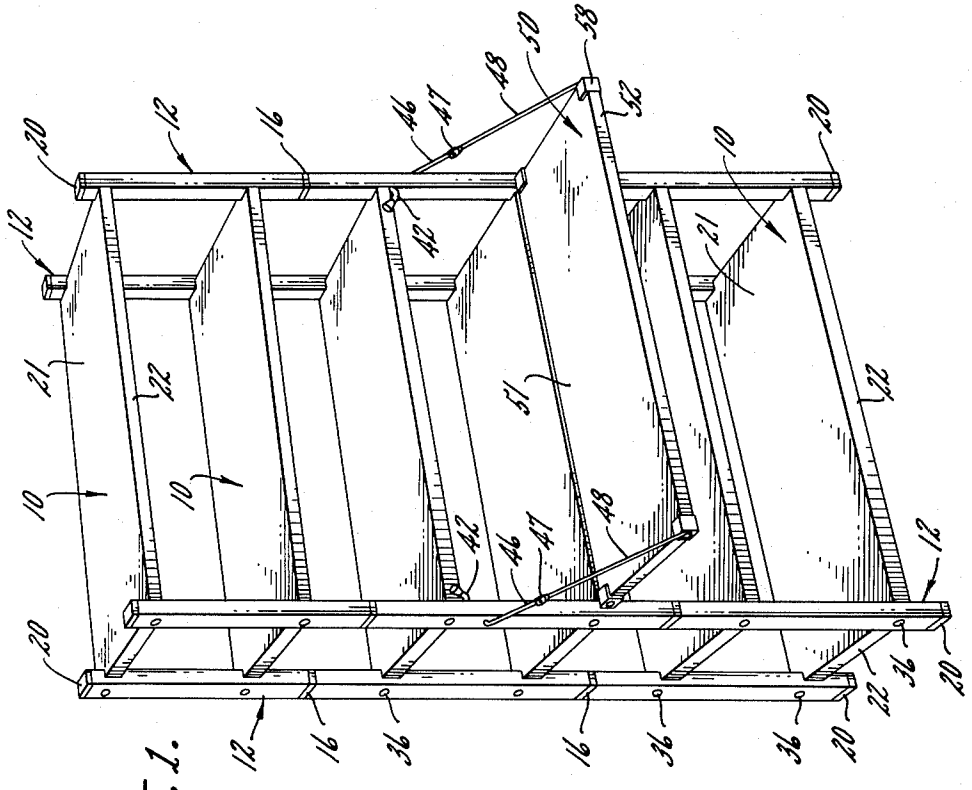


FIG. 1.

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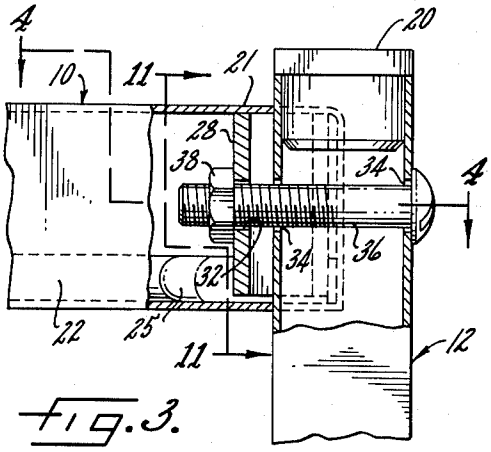


Fig. 3.

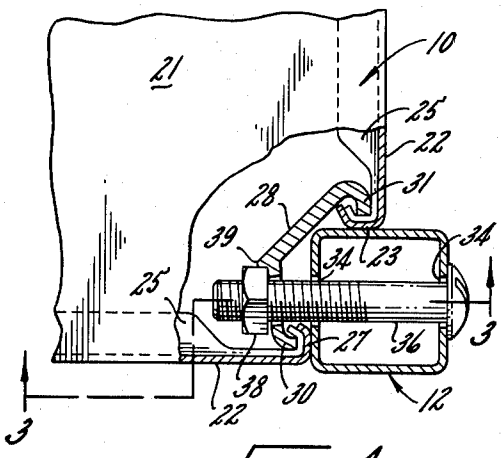


Fig. 4.

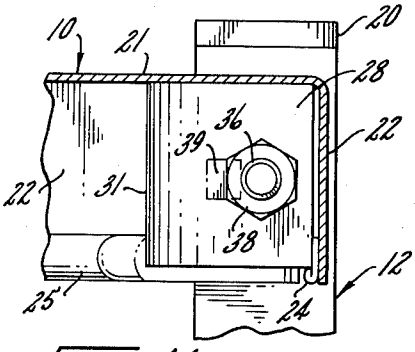
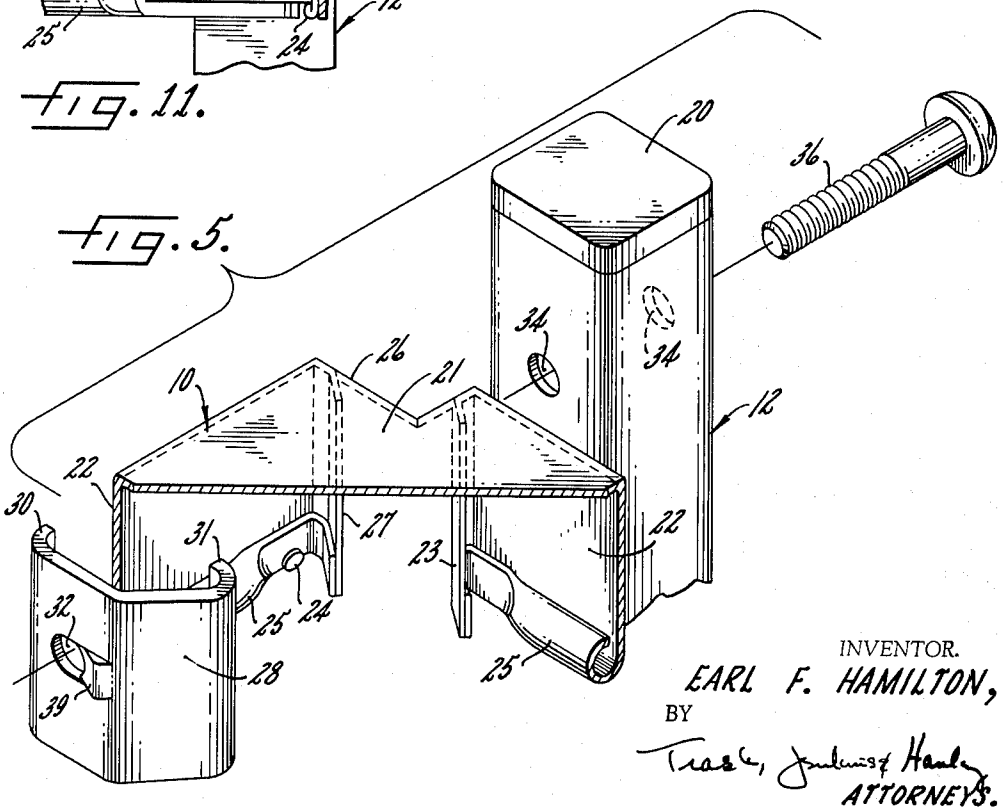


Fig. 11.

Fig. 5.



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SHELF CONSTRUCTION

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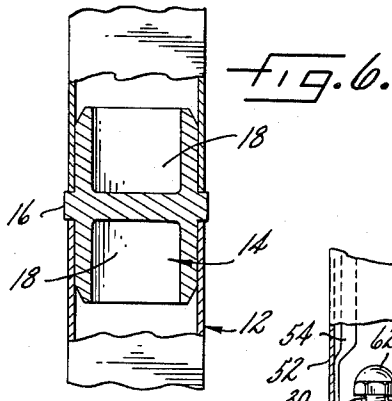


Fig. 6.

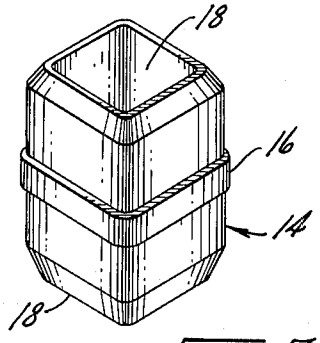


Fig. 7.

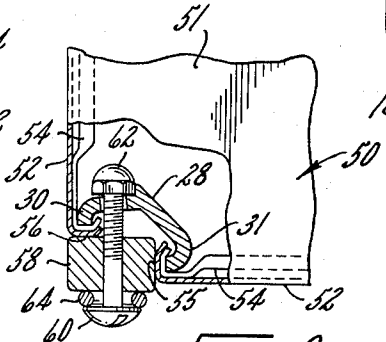


Fig. 9.

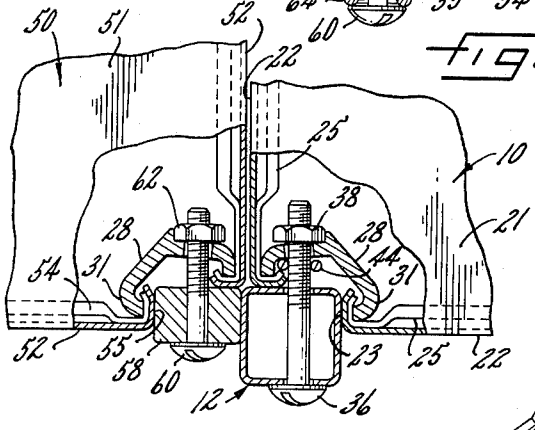


Fig. 10.

Fig. 8.

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United States Patent Office 3,227,110 Patented Jan. 4, 1966

3,227,110

SHELF CONSTRUCTION

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Original application Dec. 10, 1962, Ser. No. 243,502. Divided and this application Feb. 17, 1964, Ser. No. 345,285

2 Claims. (Cl. 108—111)

This application is a division of my copending application Serial No. 243,502, filed December 10, 1962.

This invention relates to a shelf construction, and more particularly to a shelf construction adapted to be used as a bookcase, room divider, and the like.

It is an object of my invention to provide a shelf construction of attractive appearance which can be economically manufactured largely from inexpensive sheet-metal and metal-tubing, which will permit the rapid addition or subtraction of shelves, which will provide an extensible shelf surface, which can be easily assembled from a compact knocked-down condition, and which will prove sturdy and durable in use.

In accordance with the preferred form of my invention, there is provided a plurality of shelves each having a top wall and a substantially continuous border skirt. A plurality of vertical extending legs are connected to said shelves at the corners thereof for supporting said shelves in parallel vertically spaced relationship. The top wall and skirt on each shelf are offset inwardly at each shelf corner to provide a recessed mounting seat for the adjacent leg. The ends of the skirt at each mounting seat abut the adjacent leg and are interlockingly connected to a bracket connected to said adjacent leg by fastening means extending through said leg and bracket.

Conveniently, to provide an extensible shelf surface, two pairs of vertically spaced hooks are mounted on the legs with the lower of said pairs of hooks desirably located adjacent the planes of one of said plurality of shelves. Link arms are swingably connected to a pair of the legs adjacent the upper of said pairs of hooks and are swingably connected to an extensible shelf. Said extensible shelf is movable with and with respect to said link arms between an operative position in which it is supported on said link arms and the lower of said pairs of hooks in generally coplanar relationship with said one of said plurality of shelves and a retracted position in which it is supported on the upper of said pairs of hooks generally normal to said plurality of shelves.

Other objects and features of my invention will become apparent from the more detailed description which follows and from the accompanying drawings, in which:

FIG. 1 is a perspective view of a shelf construction embodying my invention;

FIG. 2 is a side elevation of the shelf construction shown in FIG. 1;

FIG. 3 is a vertical section taken on the line 3—3 of FIG. 4 and showing the shelf-leg interconnection;

FIG. 4 is a horizontal section taken on the line 4—4 of FIG. 3;

FIG. 5 is an exploded perspective view of the shelf-leg interconnection shown in FIGS. 3 and 4;

FIG. 6 is a fragmentary vertical section taken on the line 6—6 of FIG. 2;

FIG. 7 is an enlarged perspective view of the connector shown in FIG. 6;

FIG. 8 is a fragmentary side-view of the shelf construction shown in FIG. 1, but showing the extensible shelf in dotted line in its retracted position;

FIG. 9 is a horizontal section taken on the line 9—9 of FIG. 8;

FIG. 10 is a horizontal section taken on the line 10—10 of FIG. 8; and

FIG. 11 is a vertical section taken on the line 11—11 of FIG. 3.

As shown in the drawings, my shelf construction comprises a plurality of vertically spaced shelves 10 mounted on a plurality of legs 12. Conveniently, each of the legs 12 is formed from vertically aligned sections of metal-tubing. The adjacent ends of adjacent sections of tubing are joined by connectors 14, each of which comprises an outwardly projecting shoulder 16 interconnecting a pair of opposed hollow ends 18 having cross-sectional configurations corresponding to the configuration of the inner wall of the tubing sections. The connector ends 18 are inserted into the ends of a pair of tubing sections and bindingly abut the inner walls thereof. The shoulder 16 projects outwardly between the adjacent end faces of said tubing sections to act as a stop for locating the connector between the sections and giving the interconnection a precise fixed length. The desired number of tubing sections are joined together on each leg 12 to give the legs the desired length, and end caps 20 are inserted in the remote ends of the remote sections on each leg to close the ends thereof.

Conveniently, each of the shelves 10 is formed from sheet-metal and comprises a top wall 21 having a substantially continuous skirt 22 projecting downwardly from its periphery. The lower edge of the skirt 22 is rolled inwardly to provide a stiffening bead 25 along each shelf edge. As shown in FIG. 5, the top wall 21 is offset inwardly at each shelf corner, as at 26. The skirt 22 is also interrupted at each shelf corner with the ends of said skirt being bent to form a pair of channels 23 and 27 normal to each other. Desirably, the inner legs of the channels 23 and 27 are at obtuse angles to their associated webs and are disposed in parallelism with each other. The webs of the channels 23 and 27 lie in the vertical planes of the edges of the top wall offset 26 and act in combination therewith to form a recessed mounting seat for the adjacent leg 12. As shown in FIG. 5, the beads 25 are flattened against the inner faces of the skirt 22 to provide the channels 23 and 27 with double thicknesses. For reasons that will become apparent hereinafter, the flattened portion of the bead 25 is provided with an inwardly extending projection 24 adjacent one of the channels 23 or 27.

A generally C-shaped bracket 28 is provided for each corner of the shelf. Each of said brackets has one of its ends 30 bent generally normal to the adjacent portion of the bracket and its opposite end 31 bent into an acute angle to the adjacent portion of the bracket with the ends 30 and 31 being normal to each other. The bracket ends 30 and 31 are received in the channels 27 and 23, respectively, with said bracket being lockingly retained in such position as by one of its edges engaging the lower face of the top wall 21 and its opposite edge being received under the offset 24. The brackets 28 have openings 32 formed therein adjacent the bracket ends 30 and adapted to receive bolts 36 projecting through the openings 34 in the legs 12. Bosses 39 are provided on the brackets 28, and the nuts 38 for the bolts 36 are disposed against said bosses along one of their sides. This tilts the nuts 38 with respect to the planes of the openings 34 so that as the bolts 36 are drawn up, the bracket ends 30 will be drawn against the webs of the channels 27 and the bracket ends 31 will be forced against the webs of the channels 23, with the webs of said channels bearing against the legs 12 to rigidly interconnect said legs and the shelves.

My shelf construction may be provided with an extensible shelf surface. To this end, I mount two pairs of vertically spaced hooks 42 and 44 on two pairs of hori-

zontally aligned bolts 36. As shown in FIGS. 8 and 10, the hooks 42 and 44 have one of their ends apertured for reception on the bolts 36 between brackets 28 and legs 12. The hooks are bent to extend below the adjacent shelf skirt 22 and then upwardly and inwardly. Swingably mounted on the pair of the legs 12 intermediate the hooks 42 and 44 are a pair of link arms 46 swingably connected at 47 to a longer pair of link arms 48 having their ends remote from the arms 46 swingably connected to an extensible shelf 50.

The shelf 50 is identical in construction to the shelves 10 and comprises a top wall 51 having a substantially continuous border skirt 52 terminating in an inwardly rolled stiffening bead 54. At the shelf corners, the top wall 51 is recessed and the skirt 52 is bent to form a pair of channels 55 and 56 normal to each other and corresponding to the channels 23 and 27, respectively. One of the brackets 28 is carried at each corner of the shelf 50 with its ends 30 and 31 lockingly received in the channels 56 and 55, respectively. An end cap 58 is carried in each recessed corner of the shelf 50 on a bolt 60 extending through the bracket 28 and received in a nut 62. As shown in FIG. 9, the link arms 48 have their ends remote from the arms 46 bent into loops 64 which swingably are received around a pair of the bolts 60.

The shelf 50 is supported in an operative position generally coplanar with one of the shelves 10 on the link arms 46 and 48 and on the pair of hooks 44. In such operative position, the hooks 44 extend in under and against the skirt 52 for supporting the rear stretch of said skirt immediately adjacent the front skirt stretch 22 on the adjacent shelf 10. To move the shelf 50 into its retracted position shown in dotted line in FIG. 8, it is merely necessary to lift the rear edge of said shelf from the hooks 44. The arms 46 and 48 can then be swung about their interconnections to each other and to the legs 10 and shelf 50 to permit the rear edge of said shelf to be swung upwardly for reception of the skirt stretch extending along said rear edge over the hooks 42. In such retracted position, the shelf top wall 51 is presented forwardly to provide a decorative panel extending across the front of the structure.

I claim:

1. A shelf construction, comprising

(a) a plurality of vertically spaced shelves rigidly mounted on a plurality of vertically extending legs,

(b) a first pair of horizontally aligned hooks projecting outwardly from said shelves,

(c) a second pair of horizontally aligned hooks projecting outwardly from said shelves below said first pair of hooks,

(d) a pair of link means swingably connected to a pair of said legs within the vertical extent of said two pairs of hooks, and

(e) an extensible shelf swingably connected to said link means for movement between an operative position

parallel to said plurality of shelves and projecting outwardly therefrom in which it is supported on said link means and said second pair of hooks and a retracted position generally normal to said plurality of shelves in which it is supported on said link means and said first set of hooks,

(f) said pair of link means being collapsible intermediate their lengths to lie within the vertical extent of said extensible shelf when said shelf is in its retracted position.

2. A shelf construction, comprising

(a) a plurality of vertically spaced shelves rigidly mounted on a plurality of vertically extending legs,

(b) a first pair of horizontally aligned hooks projecting outwardly from said shelves,

(c) a second pair of horizontally aligned hooks projecting outwardly from said shelves below said first pair of hooks,

(d) a pair of link means swingably connected to a pair of said legs intermediate said two pairs of hooks,

(e) an extensible shelf swingably connected to said link means for movement between an operative position parallel to said plurality of shelves and projecting outwardly therefrom in which it is supported on said link means and said second pair of hooks and a retracted position generally normal to said plurality of shelves in which it is supported on said link means and said first set of hooks,

(f) said extensible shelf having a substantially continuous border skirt, and

(g) said first and second pairs of hooks being received against the inwardly presented face of the stretch of said skirt extending along one edge of said extensible shelf when said shelf is in its retracted and operative positions.

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