

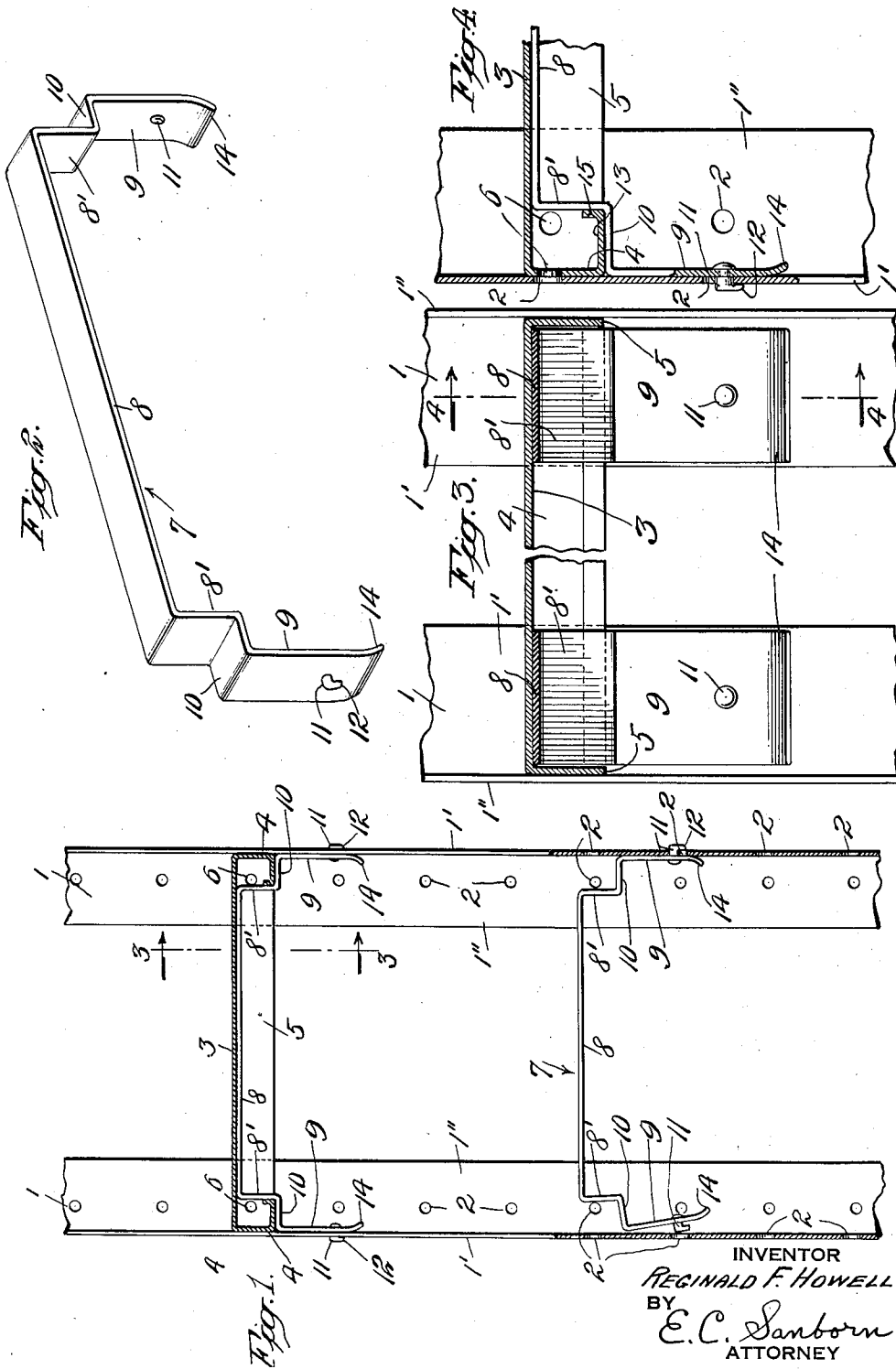
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SHELF SUPPORTING MEANS

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SHELF SUPPORTING MEANS

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This invention relates to shelving. It is more particularly concerned with the provision of novel means for effectively supporting shelves, and at the same time enabling them to be removed, replaced, or adjusted to different positions with marked facility. The invention further provides shelf supporting means which eliminates the necessity of special reinforcing provisions at the ends of the shelves, and also imparts added rigidity to the framework, obviating the need for sway braces and similar frame reinforcements. In addition, my improved shelf supporting means is of simple construction, and is readily applicable to shelves and frames of standard types. Other features and advantages of the invention will be hereinafter more particularly described and claimed.

In the accompanying drawing:

Figure 1 is a fragmentary end elevational view, partly in vertical section, of a shelf supporting framework, showing shelf supporting members constructed in accordance with my invention and illustrating their cooperation with the framework and shelving.

Figure 2 is a perspective view of one of said shelf supporting members.

Figure 3 is a longitudinal vertical sectional view taken on line 3—3 of Fig. 1.

Figure 4 is a vertical sectional view on line 4—4 of Fig. 3.

My invention is illustrated in conjunction with a shelf supporting frame of well-known type comprising uprights 1 of standard construction, each formed as an angle bar having holes 2 at spaced intervals in the respective flanges 1', 1'' thereof. Within such frame there are mounted shelves, one of which is shown at 3. Each shelf is of standard box formation, comprising flanges 4, 4' depending from the front and rear sides respectively, and flanges 5, 5' depending from the respective ends. As will be understood the frame referred to comprises four uprights suitably spaced from each other and receiving the respective corners of each shelf. In the type of shelving illustrated it has heretofore been customary to bolt each shelf to the uprights 1, for which purpose each shelf is provided with eight bolt holes 6, two in each corner for cooperating with a corresponding pair of holes 2 in the adjacent upright. The holes 2 in the uprights are suitably spaced so as to enable the number and spacing of shelves to be widely varied. Customarily one shelf is secured to the uprights near the bottom ends thereof, and another at the top, while intermediate shelves spaced as desired are secured to the uprights between the top and bottom shelves aforesaid. It will be noted that removal, reinsertion, or adjustment of a shelf from one position to another in the standard construction above described requires operation of eight bolts.

My invention not only eliminates the necessity of bolts but also possesses other outstanding advantages hereinafter to be further pointed out.

In carrying out my invention, I provide a bracket element 7 of substantially U-shaped formation, comprising a main horizontal body portion 8 and two depending leg portions 9, 9'. The main body portion is turned down at its ends to provide depending extensions 8', 8'', while each leg portion 9 is off-set laterally from the associated extension 8' and is joined thereto by horizontal portion 10. The bracket 7 may be conveniently formed from a single band or plate of metal. Riveted or otherwise suitably secured in the lower part of each leg 9 is a stud 11 having an extension or lip 12 at its outer end. A pair of brackets 7 is provided for each shelf, each bracket constituting a support for an end of the shelf.

As shown in connection with the lower bracket in Fig. 1, each bracket 7 may be applied with facility to a pair of the standards or uprights 1 by engaging one of the pins 11 with the proper opening 2 in the adjacent upright, meanwhile springing the opposite leg 9 inwardly slightly as shown in Fig. 1, and then releasing said leg 9, permitting it to spring outwardly to project its stud or pin 11 into the adjacent hole 2. The bracket is then moved down to engage the lips 12 with the outer sides of the uprights. After a pair of said brackets (Fig. 8) have been applied to opposite pairs of uprights 1, a shelf 3 is positioned within the frame formed by said uprights, with the end portions of the shelf supported on said brackets. The top of each end portion of the shelf rests upon the main body portion 8 of the associated bracket, while horizontal portions 10 of each bracket form seats for the lower horizontal flanges 13 which customarily project inwardly from the flanges 4.

The portions of the studs 11 that are received in the holes 2 are of slightly less diameter than said holes, permitting the bracket to move downwardly, and the downwardly projecting lips 12 to overlap the adjacent side walls or flanges of the uprights 1. Opposite sides of flange 1' are thus engaged by lip 12 and the portion of leg 9 that extends below the stud 11, as shown particularly clearly in Fig. 4. The bracket is thus firmly retained in place.

The lower ends of the legs 9 are flared inwardly as indicated at 14, facilitating manipulation thereof by the operator when removal of the bracket is desired. To remove the bracket it is necessary merely to first raise the same slightly, bringing the lips 12 into line with the corresponding openings 2, and then to spring one of the legs 9 inwardly, disengaging its stud 11 and lip 12 from the associated opening. The bracket can now be readily shifted to remove the other stud 11 and lip 12 from the corresponding hole, and thence with-

drawn from the upright. It will be noted that my brackets not only enable bolts to be eliminated but also permit the adjustment of shelves without any work on the exterior of the frame or withdrawal of any parts therefrom, the brackets being readily shiftable within the frame from one position to another.

It will further be seen that my brackets effectively reinforce the shelving and framework. In prior practice, wherein the shelves were secured to the uprights by bolts or clips, it has frequently been found necessary to provide special reinforcement members in the ends of the shelves. It has been ascertained in this connection that buckling of the shelves is most likely to occur in the end portions thereof between the uprights. Through my invention, however, the need for special reinforcing members is obviated since the brackets extend between the uprights, and the ends of the shelves rest upon the brackets. Standard shelves are also frequently provided with return flanges extending inwardly from their flanges 5 for reinforcing purposes, but such return flanges may be omitted when my invention is employed. Furthermore, in the prior constructions, sway braces, or other reinforcements such as partitions and backs between the uprights, have not infrequently been found advisable to prevent swaying or weaving of the framework. The bracket members which I have provided, however, serve as reinforcements for the framework, and render unnecessary the provision of sway braces or similar special reinforcing members.

It may be particularly noted that my brackets effectively tie the uprights of the framework together, and that the rigidity of the framework is increased with increase of the weight applied to the brackets. The extended bearing between the legs 9 and the uprights 1 contributes substantially to the prevention of weaving. From Fig. 3 it will also be seen that the edge of each leg portion 9 adjacent the associated flange 1" further serves to limit relative movement between the bracket and frame, and it will be apparent that the space between said edge and said flange may be as small as desired; as, for example, by increasing the width of the leg 9.

In the embodiment illustrated, the brackets are shown as of such dimension that when the studs thereof are engaged with a pair of holes 2 in adjacent uprights, the shelf supported thereon is in the same position as though bolted to the holes immediately above the holes engaged by said studs. The relation of the shelf to the holes aforesaid may, of course, be varied if desired. Also, if desired, the shelves at the top and bottom of the uprights may be bolted thereto in the customary manner, and the intermediate shelves supported from the uprights through my brackets 7. Any desired number of intermediate shelves may, of course, be provided depending upon the height of the uprights and spacing of the holes 2.

The terms and expressions which I have employed are used as terms of description and not of limitation, and I have no intention, in the use of such terms and expressions, of excluding any equivalents of the features shown and described or portions thereof, but recognize that various modifications are possible within the scope of the invention claimed.

I claim:

1. Shelving supporting means comprising a pair of angle uprights having apertures therein,

bracket means for supporting a shelf between said uprights and comprising a flat bar of metal bent throughout its entire width intermediate its ends to provide a flat horizontal shelf-receiving portion, said bar comprising flat portions extending upwardly and downwardly respectively from opposite ends of said horizontal shelf-receiving portion, the downwardly extending portion aforesaid bearing with its flat side against a side of the associated angle upright, said downwardly extending portion having a projection engaging one of the said apertures in the associated upright, the portion of said projection received in said aperture being of less width than said aperture, and said projection having an extension adapted to overlie a portion of the upright adjacent said aperture, said downwardly extending portion further projecting below said projection for engagement with a side of said angle upright below said aperture and opposite that engaged by the extension of said projection.

2. Shelving supporting means as defined by claim 1, wherein said apertures are round holes adapted for receiving bolts and said projection being adapted to be cammed laterally by the edge of the cooperating hole during the descent of the projection therein.

3. In combination, an angle upright having apertures therein, a bracket element comprising a flat bar of metal bent throughout its entire width intermediate its ends to provide a flat horizontal shelf-receiving portion, and comprising flat vertical portions extending upwardly and downwardly respectively from opposite ends of said horizontal shelf-receiving portion, the downwardly extending portion aforesaid bearing with its flat side against a side of said angle upright, a projection from said downwardly extending portion of said element engaging one of said apertures and provided with an extension adapted to overlie a portion of the upright adjacent said aperture, said downwardly extending portion further projecting below said projection for engagement with a side of said angle upright below said aperture and opposite that engaged by the extension of said projection.

4. Shelving supporting means comprising a pair of angle uprights having apertures therein, bracket means for supporting a shelf between said uprights, said means comprising downwardly extending members parallel to said uprights and contiguous thereto, each of said members being formed of metal bent throughout its entire width intermediate its ends to provide a flat horizontal shelf-receiving portion, each of said members also comprising flat portions extending upwardly and downwardly respectively from opposite ends of said horizontal shelf-receiving portion, the downwardly extending portion aforesaid bearing with its flat side against a side of the associated angle upright, said downwardly extending portion having a projection engaging one of the said apertures in the associated upright, the portion of said projection received in said aperture being of less width than said aperture, and said projection having an extension adapted to overlie a portion of the upright adjacent said aperture, said downwardly extending portion further projecting below said projection for engagement with a side of said angle upright below said aperture and opposite that engaged by the extension of said projection.

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