

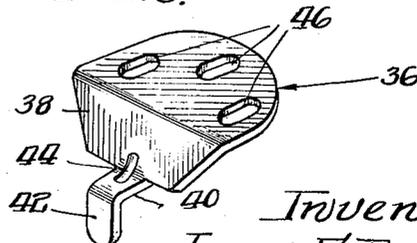
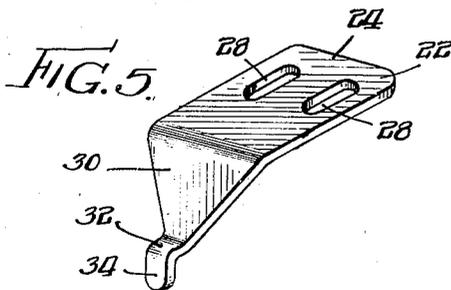
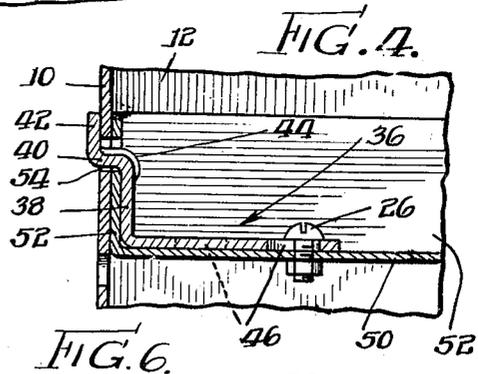
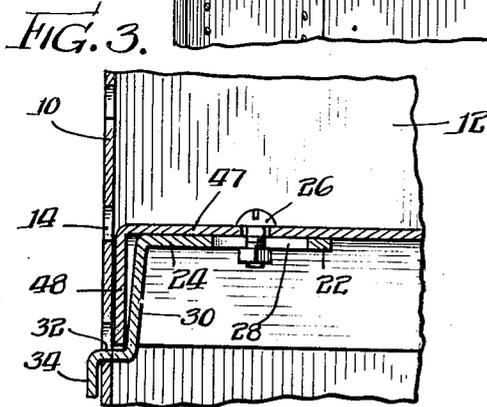
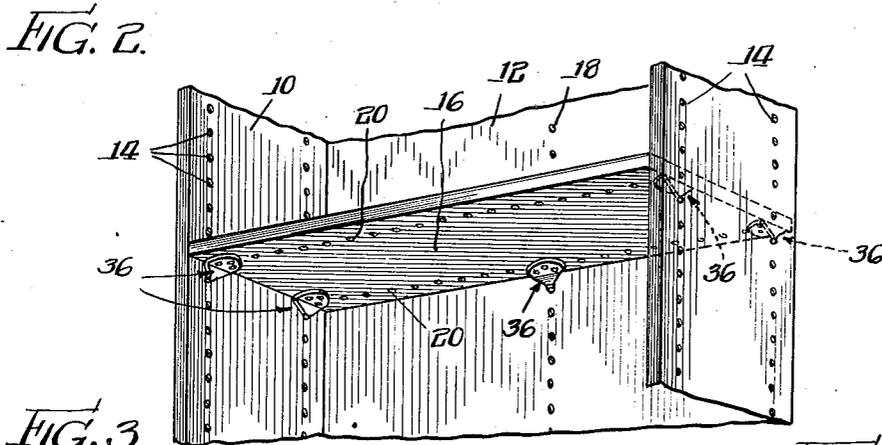
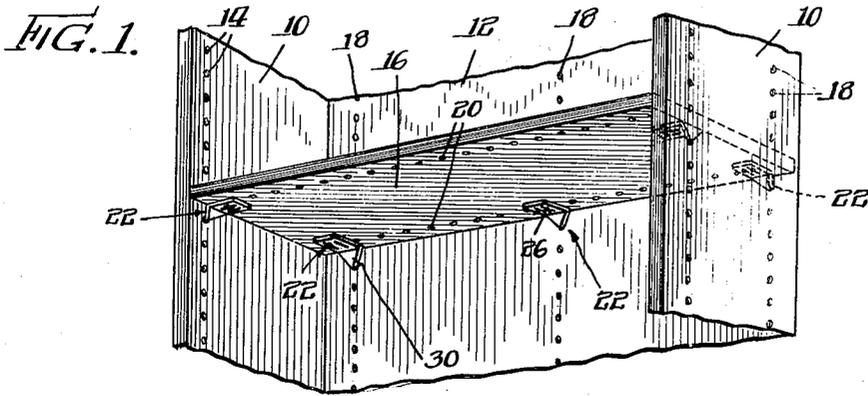
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SHELVING

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SHELVING

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This invention relates to shelving and more particularly to supporting clips for use in removably securing the shelves to the upright members.

It is an object of this invention to provide shelf-supporting clips which may be inserted in assembled relationship with a minimum of effort and which will, not only support the shelves with respect to the uprights, but will positively resist transverse displacement in any direction.

A further object of this invention is to provide a shelf-supporting clip which is particularly useful in connection with sheet metal shelving and bins and which will cooperate with conventional flange constructions.

Another object of this invention is to provide a removable and adjustable shelf-supporting clip which is normally positively secured to the upright members and shelves and is capable of adjustable securement, not only at a variety of fastening stations, but at various positions with respect to each station.

It is an additional object of this invention to provide an adjustable shelf which may be readily clipped into position with respect to upright supports to provide a shelf which will give additional strength and rigidity to the entire structure.

Numerous other objects and advantages will more fully appear during the course and progress of the following specification.

Figure 1 is a perspective view of a section of shelving assembled in accordance with the present invention.

Figure 2 is a perspective view showing an alternative form of construction.

Figure 3 is a sectional elevational detail view showing the manner of securing a shelf to the uprights in a yet further embodiment.

Figure 4 is a sectional elevational detail view showing the manner of securing a shelf to the uprights in a still further embodiment.

Figure 5 is a perspective view of a supporting clip made in accordance with the present invention.

Figure 6 is a perspective view of an alternative form of supporting clip.

The shelving shown herein for purposes of illustration, comprises upright side members 10 and a back upright 12. The sides project forwardly from the rear upright and may be supported in any desirable manner with respect to the floor. Each side upright is provided with a plurality of spaced apertures 14 for the purpose of permitting vertical adjustment of the shelves 16 and similar apertures 18 for the same purpose are situated in linear order on the back upright 12. Similar

corresponding rows of openings 20 in the shelf permit rigid attachment of the clips 22.

The preferred form of clip comprises an upper, relatively flat base flange portion 24 which normally resides adjacent the surface of the associated shelf and is secured thereto by a bolt 26 passing through one of the apertures 28 and through one of the openings 20. Adjacent one end thereof is a downwardly depending flange 30 which converges gradually away from the base flange to a point spaced therefrom where it is bent to form a supporting arm 32. In turn the supporting arm is again bent downwardly and terminates in an outer arm or flange 34. It will be seen that the flange 30 extends from the attachment flange 24 laterally and at a substantial angle. In other words, flange 30 projects downwardly progressing in a direction substantially vertical to the attachment flange 24 so that the arm 32 and the flange 24 are perpendicularly disposed. It is to be noted also that the arm 32 is generally parallel to the attachment flange 24 by which is meant that it extends in the same general direction so that it is capable of passing through one of the openings 20 in the upright side member 10.

In structures employing the type of clip shown in Figure 5, the line of apertures 20 adjacent the edge of the shelf is slightly offset from the corresponding line of apertures 14 in the side upright members 10 a distance equal to half the distance between the apertures 28. In use, therefore, with the shelf maintained generally in position, the end flange 34 of the clip is passed through the appropriate aperture in the adjacent upright until the supporting arm 32 rests upon the lower wall of the aperture and the flange 24 is situated adjacent the lower face of the shelf, as illustrated in Figure 3. The bolt 26 is then passed through the appropriate opening 28 and the closest aperture 20 and tightened to rigidly maintain the assembly at the position shown. The rearmost supporting clips are assembled in the same manner. Here, likewise, the vertical lines of apertures 18 normally reside intermediate the two closest openings 20 in the shelf 16. The bolt for fastening the clip to the shelf may, therefore, pass through either or both of the apertures 28. It may be found preferable in assembling the present type of shelf, to first secure to the rear side of the shelf the three clips (Figure 1) corresponding to the three vertical lines of apertures 18, whereupon the three clips may be inserted coincidentally into the proper apertures. As-

sembly is then completed by inserting and bolting the opposed side clips into position.

The alternative preferred type of supporting clip 36 shown in Figures 2 and 6 comprises an upper shelf attaching flange 36 which has a curved or semi-circular periphery. A generally downwardly projecting flange 38 converges to a horizontally bent supporting arm 40 and terminates in an outer downwardly projecting flange 42. A depressed rib portion 44 provides additional strength and resistance against bending and distortion. It will be seen that the rib 45 extends longitudinally of the supporting arm 32 and continues over a portion of the upright flange 33. In other words, it will be seen from the consideration of the figures that the depressed rib portion is located transversely of the inner section of the supporting arm and the adjacent flange portion extending from the supporting arm to the shelf attachment flange. The apertures 46 in the base flange 24 are three in number and any one or more may accommodate a bolt for attachment to the shelf in the manner described above.

This type of clip may be employed in structures, either where the lines of apertures intersect, or where they are offset in the manner described in connection with the previous embodiment. Thus, for instance, where the front line of apertures 20 intersects the corresponding vertical lines of apertures 14, it will be preferable to insert the fastening bolt through the central opening 46. On the other hand, where the rear line of apertures 20 is closely adjacent the back upright 12, or in the event that the vertical line of apertures 13 passes between the nearest apertures in the rearmost line 20, then it will be found more desirable to fasten the bolt through either of the side apertures 46. As in the previous embodiment, preferably five clips are provided to each shelf. However, as shown in Figure 2, the shelf is preferably supported at each end by two clips engaging apertures in each upright 10. Alternatively only two side clips may be employed with three of the clips engaging in the back upright in the manner shown in Figure 1.

The present invention is particularly useful in the case of sheet metal shelving, especially in connection with shelves which have flanged edge portions. The shelf 47 in Figure 3, having a flanged edge 48, is bolted to the supporting clip 22 in the manner previously described, the supporting arm 32 of the clip passing through one of the apertures 14 in the upright 10 (see Figure 3). It will be apparent that the flange 48 is accommodated between the flange 30 and the inner surface of the upright 10. In such a device the elongated apertures 28 in the clip permit adjustment to properly permit the clip to engage and accommodate the shelf flange. Conversely the supporting clip may be reversely positioned on the upper surface of the shelf.

Referring to Figure 4, there is disclosed a sheet metal shelf 50 having a vertically extending edge flange 52. This latter flange in this embodiment is deeper than the adjacent corresponding flange 30 of the clip support wherefore an aperture 54 is provided in the former flange and positioned to accommodate the supporting arm 32. The base flange is bolted to the upper surface of the shelf by means of a bolt 26 with the supporting arm 32 extending through the flange 52 and a suitable aperture in the upright.

The present type of shelf support, not only maintains the shelf in position against vertical stresses when heavily loaded, but actually serves

to properly space and confer additional rigidity upon the entire assembly. The two vertically extending flange portions of the clip engage opposite surfaces of the upright with which they are associated, thus preventing displacement transversely of the upright and tending to lock all of the vertical members in assembled position. The shelves are, under all circumstances, prevented from being pulled out of position by the outer transverse flanges 42. At the same time the necessary structural resiliency and flexibility is readily permitted. Thus, as the shelf is heavily loaded and deflection occurs, the supporting clips may tend to pivot very slightly about their plane of support in the upright members without tending to distort the remainder of the structure. This is particularly true of the embodiments wherein the supporting clip is positioned below the shelf.

It is thought that the invention and numerous of its attendant advantages will be understood from the foregoing description and it is obvious that numerous changes may be made in the form, construction and arrangement of the several parts without departing from the spirit or scope of the invention, or sacrificing any of its attendant advantages, the form herein described being a preferred embodiment for the purpose of illustrating the invention.

The invention is hereby claimed as follows:

1. In an article of the class described, an upright member adapted for supporting a shelving in spaced relation to the floor, a shelf associated with said upright member and having a peripheral flange in parallel juxtaposition to said upright member, a supporting clip secured to said shelf, said clip having a projecting supporting arm passing through said upright member and said peripheral flange, and upright flange portions adjacent either side of said upright member and said juxtaposed peripheral flange to inhibit displacement of the supporting arm with relation thereto.

2. In an article of knock-down shelving of the class described, an upright member adapted for supporting a shelf in spaced relation to the floor, a shelf associated with said upright member and having a peripheral flange disposed in parallel juxtaposition to said upright member, a supporting clip having a portion rigidly attached to said shelf, said clip having a horizontally extending arm passing through said upright member and laterally through the plane of the shelf flange and residing in juxtaposition to an edge of said shelf flange for engaging the flange in direct supporting relationship, an outer upright flange portion extending laterally from the arm and residing against the outer surface of the upright member, an inner upright flange integral with the inner portion of said arm and extending in juxtaposition to the inner surface of said shelf flange, said inner upright flange being disposed on one lateral side only of said arm, said outer upright flange extending laterally from said arm in the opposite direction to said inner upright flange.

3. In an article of knock-down shelving of the class described, an upright member adapted for supporting a shelf in spaced relation to the floor, a shelf associated with said upright member and having a peripheral flange disposed in parallel juxtaposition to said upright member, a supporting clip having a portion rigidly attached to said shelf, said clip having a horizontally extending arm passing through said upright member and

laterally through the plane of the shelf flange and residing in juxtaposition to an edge of said shelf flange for engaging the flange in direct supporting relationship, an outer upright flange portion extending laterally from the arm and residing against the outer surface of the upright member, an inner upright flange integral with the inner portion of said arm and extending in juxtaposition to the inner surface of said shelf flange, said inner upright flange being disposed on one lateral side only of said arm, said shelf attachment portion of said clip comprising a flange residing in flatwise engagement with a horizontal shelf surface and adapted for permanent attachment thereto.

4. A shelf clip comprising a horizontal shelf attachment flange adapted for supporting a shelf having a transverse peripheral edge portion, a second flange projecting laterally adjacent one edge thereof and adapted to lie adjacent the said peripheral edge portion in operative position and being substantially shorter in lateral extent, a transverse supporting arm adjacent the outer end of said second flange, and an outer flange laterally projecting from the end of said transverse supporting arm extending in the same direction as said second flange.

5. A sheet metal shelf clip comprising a shelf attachment flange adapted to be rigidly secured to a shelf having a flanged edge, a relatively narrow supporting arm substantially parallel to said attachment flange and adapted for engagement with an upright support for supporting the clip and the shelf, and opposite flange portions adapted to oppositely engage the upright support and the inner surface of the shelf flange to position the clip transversely with respect to said support and

said shelf flange, one of said flange portions extending between the shelf attachment flange and the supporting arm only and extending substantially perpendicularly to the attachment flange whereby to permit the shelf flange to extend adjacent the surface thereof for positioning the shelf flange, the other of said opposite flange portions being of about the same width as the supporting arm and extending in a direction generally perpendicular to that of the supporting arm.

6. A sheet metal shelf clip comprising a shelf attachment flange adapted to be rigidly secured to a shelf having a flanged edge, a relatively narrow supporting arm substantially parallel to said attachment flange and adapted for engagement with an upright support for supporting the clip and the shelf, and opposite flange portions adapted to oppositely engage the upright support and the inner surface of the shelf flange to position the clip transversely with respect to said support and said shelf flange, one of said flange portions extending between the shelf attachment flange and the supporting arm only and extending substantially perpendicularly to the attachment flange whereby to permit the shelf flange to extend adjacent the surface thereof for positioning the shelf flange, the other of said opposite flange portions being of about the same width as the supporting arm and extending in a direction generally perpendicular to that of the supporting arm, and said shelf clip including a depressed rib portion located transversely of the inner section of the supporting arm and the flange portion extending from the supporting arm to the shelf attachment flange.

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