

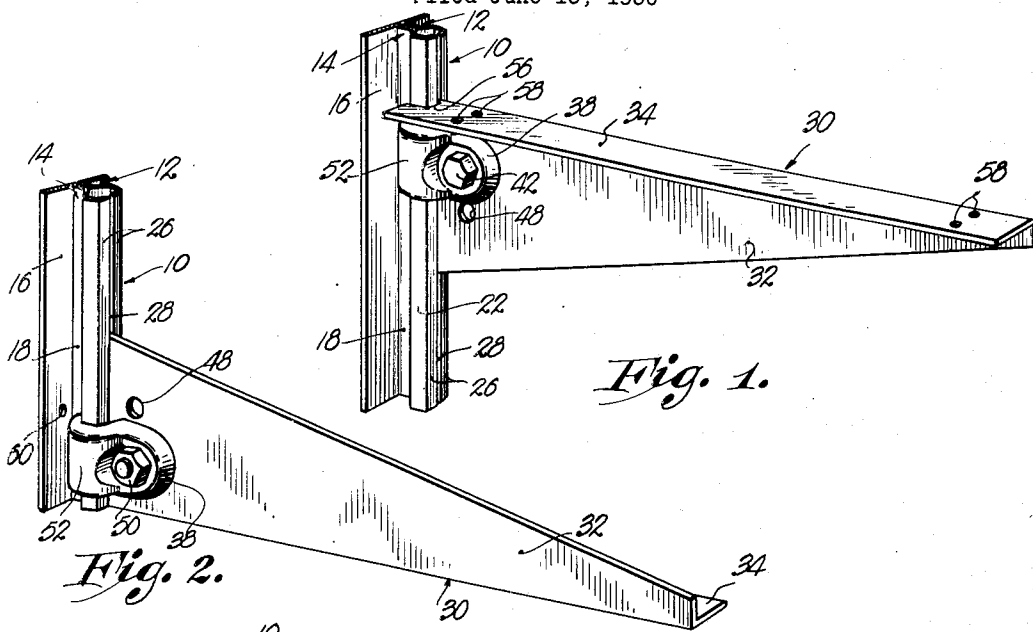
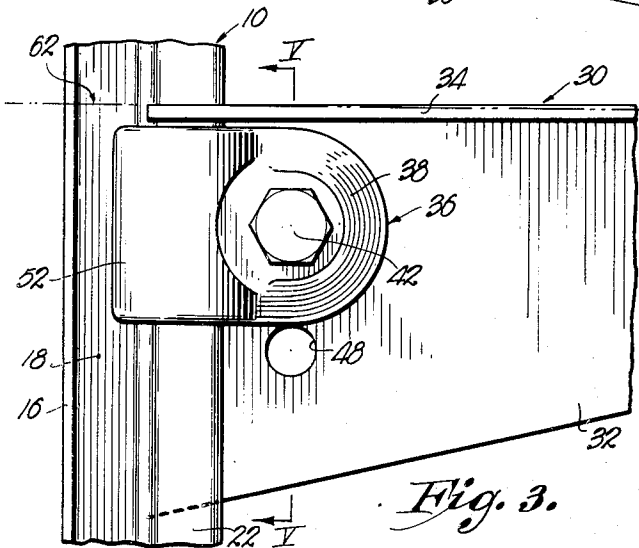
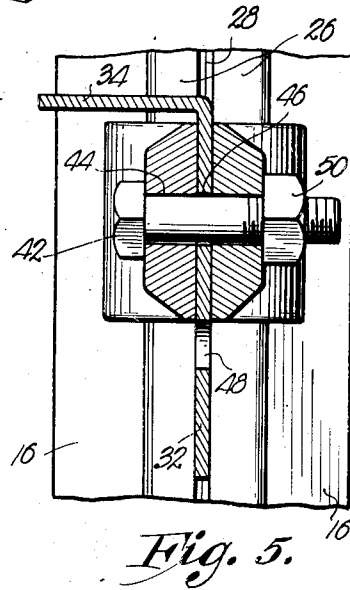
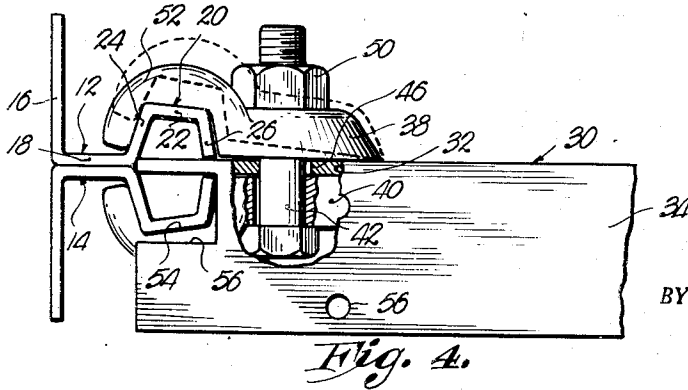
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PORTABLE FRAMEWORK FOR SHELVING

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PORTABLE FRAMEWORK FOR SHELVING

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5 Claims. (Cl. 248—245)

This invention relates to supports for shelves and the like, the primary object being to provide improved combination bracket and mounting construction so formed as to positively present a releasable and adjustable, tight clamping interconnection between the bracket and its mounting means.

Many attempts have heretofore been made to present a simple, inexpensive and adjustable cantilever type shelf support but without full success because of the fact that minute adjustments were not made possible and the interconnection between the bracket and its support was not as positive and as sturdy as is essential and desirable.

Accordingly, it is the most important object of the present invention to provide shelf construction that includes a normally upright support having an elongated slot formed therein, together with a bracket provided with a web that is in turn slidable to selected positions at any point along the length of the slot.

Another important object of this invention is the provision of combination support and bracket as just above set forth, wherein the web of the bracket has one end each thereof in abutting relationship to the support throughout the length of the edge and is additionally provided with a novel clamp so formed as to force such edge against the support and to hold the same thereagainst at all times during use.

Another object of this invention is to provide a clamping assembly for shelf brackets that cooperates with the support for the bracket as the clamp is drawn tight to in turn clamp portions of the support against the web of the bracket, thereby presenting a further rigid joinder between the bracket and its support.

It is a further object of this invention to provide a shelf bracket and support therefor wherein the aforesaid clamp that serves to releasably interconnect the said members is complementally contoured with the support so as to prevent displacement of the bracket in any direction when a load is imparted thereto.

Many additional, more minor objects will be made clear as the following specification progresses, reference being had to the accompanying drawings, wherein:

Figure 1 is a fragmentary, perspective view of portable framework for shelving, made pursuant to the present invention and illustrating one manner of use thereof.

Fig. 2 is a perspective view similar to Fig. 1 illustrating the bracket of the shelving construction in an inverted position.

Fig. 3 is a fragmentary, side elevational view on an enlarged scale showing the bracket in the position of Fig. 1.

Fig. 4 is a fragmentary, top plan view of the bracket mounted as in Fig. 1, parts being broken away and in section to reveal details of construction; and

Fig. 5 is a transverse, vertical, cross-sectional view taken on line V—V of Fig. 3.

In the interests of economy, ease of manufacture, lightness and to facilitate the clamping action about to be

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described, an elongated standard or support for the shelf bracket of this invention is constructed as illustrated in the drawing and broadly designated by the numeral 10. The entire construction hereof is preferably of a suitable metallic material and the support 10 is, therefore, formed from flat sheet metal stock.

Supporting standard 10 comprises a pair of identical sections 12 and 14 that are rolled, stamped or otherwise formed into the cross-sectional contour illustrated most clearly in Figs. 1, 2 and 4. Sections 12 and 14 each include an elongated back flange portion 16, a laterally extending leg 18 substantially perpendicular to flange 16, and a substantially U-shaped portion 20 constituting an integral extension of the leg 18 at that edge thereof opposite to flange 16. Accordingly, there is presented in the portion 20 of each section 12 and 14, a bight portion 22 and a pair of opposed legs 24 and 26 that converge as bight 22 is approached.

The sections 12 and 14 are interconnected through the use of rivets and/or spot-welding along the legs 18 thereof that are disposed in face-to-face relationship in the manner clearly shown in Fig. 4 of the drawing. When the sections 12 and 14 are thus joined as a composite unit to form the support 10, the outermost free edges of the opposed legs 26 are in spaced-apart relationship presenting an elongated slot 28 extending the entire length of the elongated supporting standard 10. It is noted that the legs 24 of the U-shaped portions 20 are angularly disposed with respect to the corresponding legs 18 and diverge from the proximal faces of the flanges 16 as the bight portions 22 are approached.

Fig. 4 of the drawing also illustrates the way in which the bight portions 22 of the sections 12 and 14 converge as the legs 26 thereof are approached. Bight portions 22 therefore, are at an angle with respect to a plane passing between the abutting faces of legs 18 and through the slot 28. Consequently, the legs 24 of the U-shaped portion 20 are slightly wider than the width of the legs 26 and both legs 24 and 26 are at an angle with respect to the aforesaid plane.

The bracket illustrated in the drawing and formed to advantageously cooperate with standard 10 such as just described, is broadly designated by the numeral 30 and includes a substantially triangular web portion 32 of a plate-like nature and normally disposed in a vertical plane. One edge of the web 32 has an elongated, laterally extending flange 34 integral therewith. The thickness of the plate 32 is normally less than the width of the slot 28, whereby when the bracket 30 is mounted upon the support 10, it can be freely positioned at a desired point with respect to the support 10 by sliding of the web 32 within the slot 28. Fig. 4 of the drawing illustrates clearly the way in which the wider end of the web 32 extends into the slot 28 between the U-shaped portions 20 of support 10 and into abutting relationship with the sections 12 and 14 at the point of merger between legs 18 and 24 thereof.

The manner of releasably joining the bracket 30 with the support 10 and of holding the innermost edge of web 32 tightly against the support 10 within the U-shaped portions 20 thereof, is of extreme importance and includes a clamp broadly designated by the numeral 36.

Clamp 36 includes a pair of identical sections 38 and 40 disposed on opposite sides of the web 32 and held thereon by means of a bolt 42 passing through an opening 44 in each clamp section 38 and 40 respectively and through either opening 46 or 48 of web 32.

A nut on bolt 42 cooperates therewith in holding the sections 38 and 40 of clamp 36 upon bracket 30. Clamp sections 38 and 40 are each provided with a substantially U-shaped jaw 52 adapted to embrace a corresponding U-shaped portion 20 of standard 10 and formed complementally therewith as is clear in Fig. 4 of the drawing. In

other words, each jaw 52 is provided with a cavity 54 having three inner walls that are angled relatively in substantially the same manner as the angularity of bight 22 and legs 24 and 26 of the U-shaped portions 20 as above described.

It is noted that the innermost end of the flange portion 34 of bracket 30 is cut-away as at 56 to clear the proximal U-shaped portion 20. When the bracket 30 is mounted upon the normally vertical support 10 and disposed at a desired horizontal position, the innermost end of web 32 extends into slot 28 as above set forth and as shown in Fig. 4, and the opposed jaws 52 of clamp sections 38 and 40 are in embracing relationship with the opposed U-shaped portions of support 10. As nut 50 is manipulated to draw the sections 38 and 40 together from the dotted line position of Fig. 4 to the full line position thereof, such jaws 52 will positively impart a clamping action to the support 10. Simultaneously, with the imparted movement of portions 20 together to bring the outermost free edges of legs 26 against the proximal faces of web 32, clamp 36 will force the innermost edge of the web 32 into tight abutting engagement with the legs 24 at the point of merger thereof with legs 18, and throughout the entire length of said innermost edge of web 32. Such last mentioned action is caused by the complementary angularity of legs 24 and the corresponding legs of the jaws 52.

It is noted that when the jaws 52 are fully clamped with respect to the support 10, the outermost free end of the jaws 52 are styled in spaced relationship to the outermost faces of legs 18. It is noted also that even after the jaws 52 are in a fully clamped position with respect to support 10, a space exists between the outermost faces of legs 26 and the proximal inner faces of jaws 52. Accordingly, these last mentioned faces will not come into interengagement to prevent the action of clamp 36 in forcing the inner edge of web 32 tightly against the support 10. It is also noteworthy and of high significance, that even after jaws 52 are fully clamped with respect to support 10, a space is provided as shown in Fig. 4 between the faces of web 32 and the clamp sections 38 and 40 adjacent the jaws 52. There is therefore, no interference with the desired gripping action that is imparted to the faces of the web 32 by the innermost edges of legs 26 forming slot 28.

Another feature of noteworthy importance lies in the polygonal cross-sectional contours of the U-shaped portions and of the jaws 52. These jaws cannot accordingly, tip or rotate with respect to the U-shaped portions 22 and in combination with the clamping or gripping actions above mentioned, serves to positively hold the bracket 30 against displacement relative to the support 10.

It is well to point out at this time that the material forming the sections 12 and 14, while relatively strong and sturdy, have a certain degree of resiliency to permit the springing action of the U-shaped portions 20 toward and away from the web 32 as clamp 36 is placed into operation.

One manner of use of the bracket 30 with respect to the support 10, is illustrated in Figs. 1 and 3 to 5 inclusive, with the flange portion 34 thereof overlying the clamp 36 and in a plane entirely above the web 32. When the bracket 30 is in such position, it is preferred that the opening 46 of web 32 be utilized for receiving the bolt 42. Bracket 30 can accordingly be used to support a shelf or any other desired article which may be rigidly affixed to the flange portion 34 through any suitable fastening means passing through openings 58. It is of course, to be understood that the support 10 will be rigidly mounted upon a wall or other framework to hold the same in a vertical position and holes 60 are provided in flange portions 16 to accommodate suitable fastening elements. Manifestly, a plurality of the supports 10 will be used in side-by-side series in accordance with the length of the shelving, and furthermore, it is clear that any number of brackets 30 may be positioned upon each of the supports

10 in spaced-apart relationship to accommodate a number of superimposed shelves.

In order to maintain the shelves substantially horizontal, irrespective of any tendency to sag by virtue of the load thereon, an obtuse angle is formed at that corner of the web 32 defined by its innermost vertical edge and that edge thereof having flange 34 thereon. The uppermost face of flange 34 will accordingly be tipped upwardly as the outermost free end thereof is approached and with respect to a horizontal plane shown in Fig. 3 of the drawings and designated by the numeral 62.

The bracket 30 may also be utilized as a supporting or reinforcing foot for the mounting member 10 when inverted as illustrated in Fig. 2 of the drawing. It is noted in this inverted position that the flange 34 of bracket 30 is disposed in underlying relationship to the proximal section of clamp 36 and in a plane entirely underlying the web 32. When the bracket 30 is used in this manner, the flange 34 will rest upon the floor or other flat horizontal surface and it is also to be preferred that the bolt 42 pass through the opening 46.

This inverted position of the bracket 30 may also be conveniently employed if desired, in supporting shelving on that face of the flange 34 proximal to the web 32. In this instance, the bolt 42 is moved to the opening 48 thereby presenting sufficient clearance between the clamp 36 and the flange 34 to receive the shelving. Furthermore, positioning of the clamp 36 as close as possible to the uppermost edge of web 32 irrespective of the manner of use of the bracket 30, tends to hold the uppermost end of the inner edge of web 32 against the support 10, thereby withstanding a tremendous load on the bracket 30.

It is now clear that a combination bracket support and clamping assembly has been presented that is extremely strong, fully effective in preventing relative displacement between the bracket and the support and highly adjustable within any demands of a user. The bracket 30 can be positioned with accuracy at any point along the entire length of the support 10 and minute changes can be made as desired to positively assure perfect alignment and horizontal positioning of the shelves or any other object to be supported by the assembly. Each time the clamp 36 is loosened for re-positioning of the brackets 30, the legs 26 are released, making the web 32 fully slidable within slot 28. Through use of a single tool acting upon the nut 50, assembling, adjustment and disassembling can be accomplished quickly and easily by the most unskilled workman. Finally, the cost of manufacture is relatively small, not only because of the saving of materials but through the simplicity of the necessary manufacturing processes.

Many additional advantages will emanate from the use of the shelving construction hereof and it is therefore, desired to be limited only by the spirit of this invention as defined by the scope of the appended claims.

Having thus described my invention, what I claim as new and desire to secure by Letters Patent is:

1. In a support, an elongated member; a pair of opposed, longitudinally-extending clamping elements on the member and movable toward and away from each other; a bracket disposed laterally of the member and extending between the elements; a jaw for each clamping element respectively, the bracket and the elements being between the jaws and each jaw having a socket receiving its clamping element; take-up means extending through the jaws and the bracket for attaching the jaws to the bracket and drawing the jaws toward each other to clamp the elements against the bracket; and interengaging surfaces on the jaws and elements respectively for drawing the jaws, the take-up means and the bracket toward the member as the jaws are drawn toward each other, whereby to force the bracket into tight abutting engagement with the member, each element being substantially U-shaped presenting a bight and a pair of spaced legs, the legs proximal to said member converging as said member is approached presenting said surfaces on the elements and further presenting a vertex

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for receiving the bracket in partial, laterally confining engagement when the latter is forced into abutting relationship with the member.

2. In shelf mounting structure of the kind described, a support having a pair of opposed channel portions of resilient material disposed in facing relationship and each provided with a rear leg and a front leg, the rear legs being interconnected and the front legs having spaced, longitudinal edges, presenting a slot therebetween; a bracket between said edges and extending laterally from the support, said bracket being provided with a rearmost end within said portions and engaging the rear legs thereof; and a clamp including a pair of opposed sections embracing the bracket, a jaw on each section respectively, and take-up means connecting the sections with the bracket, said rear legs diverging as said rearmost end of the bracket is approached, said jaws embracing the channel portions and having cavities complementally receiving the channel portions whereby the said edges are drawn tightly against the bracket, said rearmost end of the bracket is drawn tightly against said rear legs, and said sections are drawn tightly against the bracket, all simultaneously as the take-up means is tightened to spring said channel portions toward each other.

3. In shelf mounting structure as set forth in claim 2 wherein said take-up means is spaced forwardly of said

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front legs of the channel portions whereby, upon loosening of the take-up means, the bracket and the clamp are freely shiftable as a unit with respect to the support as the bracket and the jaws slide along the channel portions and while the sections remain connected with the bracket.

4. In shelf mounting structure as set forth in claim 2 wherein said take-up means is common to the sections and traverses the bracket, whereby as the take-up means is tightened the bracket is shifted thereby with respect to the support and within said slot toward the rear legs of the channel portions.

5. In shelf mounting structure as set forth in claim 4 wherein said take-up means comprises a bolt and a nut on the bolt, there being aligned openings in said sections and in said bracket receiving the bolt.

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