

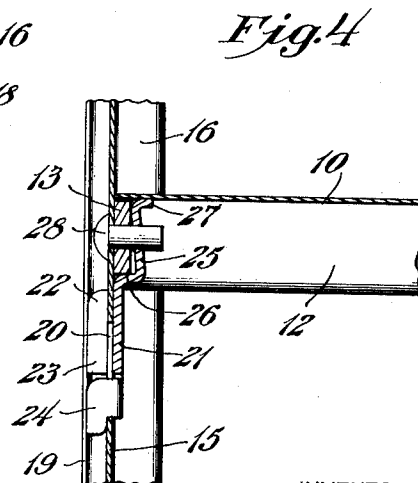
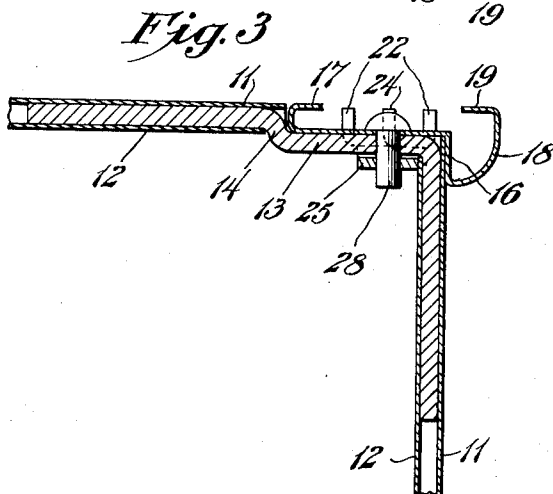
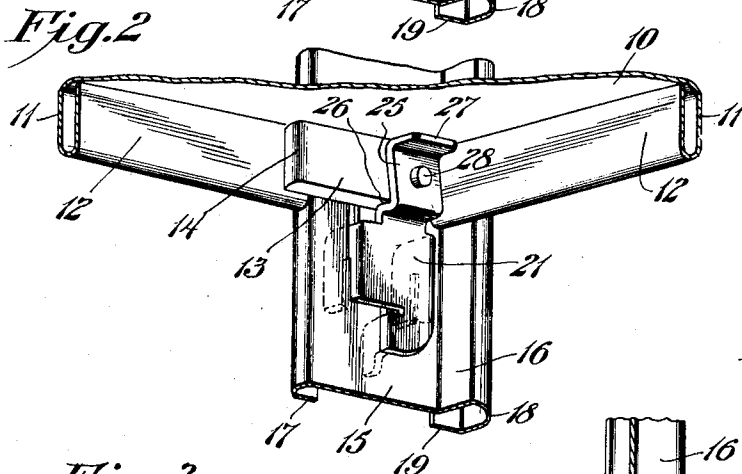
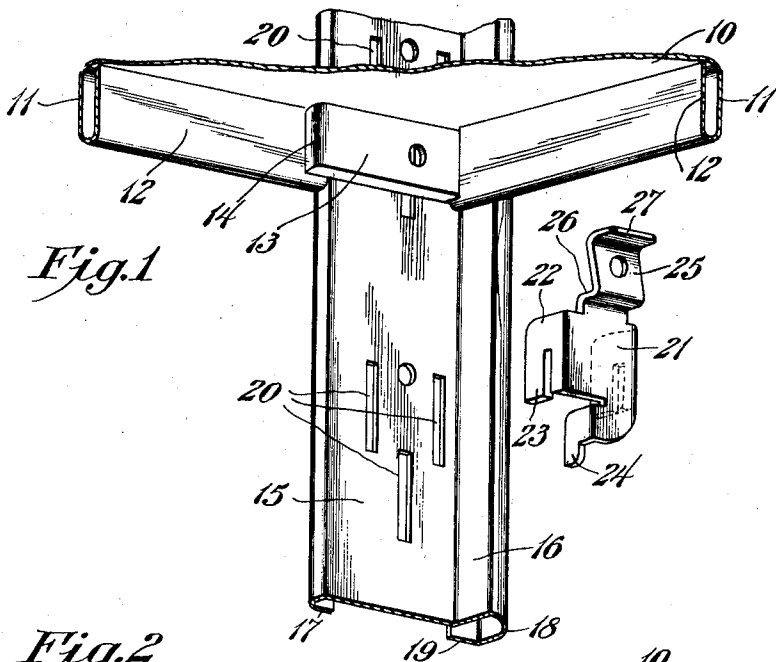
June 12, 1934.

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1,962,396

METAL SHELVING STRUCTURE

Filed May 22, 1930



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UNITED STATES PATENT OFFICE

1,962,396

METAL SHELVING STRUCTURE

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Newark, N. J.

Application May 22, 1930, Serial No. 454,655

9 Claims. (Cl. 211-136)

This invention relates to metal furniture, more particularly to metal shelving units and, among other objects, aims to provide an improved shelf and supporting elements, including novel posts or uprights to which a series of shelves are adapted to be removably connected. The main idea is to provide a very strong and durable construction wherein the shelves can be very quickly and easily assembled and will not sag under relatively heavy loads. Also, the invention contemplates the provision of specially shaped uprights or posts presenting rounded corners which will not damage merchandise.

Other aims and advantages of the invention will appear in the specification, when considered in connection with the accompanying drawing, wherein:—

Fig. 1 is a fragmentary perspective view showing parts of a shelving structure embodying the invention;

Fig. 2 is another fragmentary perspective view showing a corner post assembly;

Fig. 3 is a horizontal sectional view through the assembled parts shown in Fig. 2; and

Fig. 4 is a vertical sectional view.

Referring particularly to the drawing, the improvements are there embodied in a shelving structure of the type wherein shelf units are adapted to be removably secured to a series of uprights or corner posts by means of supporting clips or brackets. Since shelving of this character may be embodied in metal furniture of many different designs, such as book sections, merchandise racks, tables, etc., it is deemed unnecessary here to disclose a complete structure. However, it will be understood that the shelves are usually rectangular or square and are supported by four uprights or corner posts.

In Figs. 1 and 2, there is shown a sheet metal shelf 10 which has down-turned side and end marginal flanges 11 and reversely bent or up-turned flanges 12 whose upper edges preferably contact with the lower face of the shelf. The arrangement is such that the flanges provide very strong reinforcing edges for the shelf and they are spaced to provide a substantially rectangular channel between them. At the corners, the flanges on one side are shown as being cut away to provide post-receiving notches and corner reinforcing bars 13 are secured between the flanges 11 and 12, being exposed in the notches. These bars are conveniently made of strap metal and bent at 14 as shown in Fig. 3 so as to provide for a connection to the corner posts, about to be described.

While the flanges and reinforcing corner bars may be assembled in any suitable manner, the shelf units are preferably formed on a suitable die and the legs of the reinforcing bars are secured in place during the die forming operation. This provides a very substantial, rigid construction without necessitating special securing bolts or rivets for the bars. Furthermore, the lengths of the legs of the reinforcing bars are such as to distribute the load transmitted to a corner post over a substantial portion of the shelf, thereby preventing the shelf from sagging at the corner where the bending strain is the greatest.

A shelf unit is here shown as being connected to a specially shaped corner post having folded or rounded edges. In this example, the corner post presents a wide flange or web portion 15 and a relatively narrow angular flange portion 16, these parts being somewhat similar to an ordinary structural angle. The width of the flange 15 is such as to fit in the cut-away corner portion of the shelf. At the left hand edge of the post, as viewed in Figs. 1, 2 and 3, is provided a reversely bent narrow flange 17, which is spaced outwardly from the flange or web 15 so as to provide adequate strength and so that the outer face will lie flush with the outer face of the marginal down-turned flange 11 of the shelf (Fig. 3). At the other edge of the post there is shown a relatively wide reversely bent and rounded flange or molding section 18 having its marginal edge bent rearwardly as viewed in Fig. 3, providing a flange 19 lying in the same plane as the flange 17. It will be understood that the bent flanges 18 and 19 may be variously shaped to correspond with ornamental moldings of different styles. These moldings will ordinarily be arranged at the front of a series of the shelf sections and when several sections are arranged, end-to-end, the molded edges will be adjacent to each other with the flanges 19 in contact so that one molded edge is complementary to the other. This will provide a very attractive and ornamental mold of approximately semicircular shape. Moreover, the rounded edges of the posts are smooth so that they will not damage articles which strike against them upon being placed on or removed from the shelves. While all of the corner posts may be conveniently made of the same general cross section so that they may be used to assemble a single four-legged shelf structure, it will be understood that some of the posts may be T-shaped, so that one post may be utilized for supporting two adjacent sections of shelves.

Referring to Figs. 1 and 2, the web or flange

15 of the corner post is shown as having a series of vertical slots 20 suitably spaced to provide for supporting the shelves at different heights, depending upon the size or dimensions of the articles to be displayed. Herein, there are three slots in each group or set and they are arranged to provide a three-point support for specially shaped shelf-supporting brackets 21 adapted to be cut and stamped out of sheet metal. One notch is here arranged below the other two. In this example, the brackets are substantially U-shaped, presenting notched flanges 22 which provide hooks 23 adapted to co-operate with two of the slots 20 in the web 15. A projection 24 is also formed at the lower end of the bracket to co-operate with the lowermost notch in the corner post. The arrangement is such that the brackets may be easily inserted in the notches or slots 20 and slid down into interlocking engagement with their lower edges.

At the upper edge of each bracket, there is shown a bar-engaging flange or arm 25 presenting a shoulder or ledge 26 against which the lower edge of one of the reinforcing bars 13 is adapted to rest. The upper end of the flange is bent slightly outwardly so as to guide the reinforcing bar 13 and hold it against the inner face of the flange or web 15, and the end is bent at right angles to the plane of the web portion of the bracket so as to present a supporting shelf 27 against which the lower face of the shelf is adapted to rest. Thus, the confining flanges 25 serve the two-fold purpose of preventing displacement of the shelves relative to the corner posts and providing two supporting surfaces for the shelves, as clearly shown in Fig. 4.

If desired, the shelves may be positively locked to the corner posts. For this purpose, the flange 25, the bar 13 and the web 15 present aligned openings adapted to receive a pin or rivet 28 (Figs. 2, 3 and 4). It will thus be seen that the rivet prevents the bracket from being lifted out of its slots and disengaged from the post and also holds the shelf in engagement with the bracket flange or clip.

From the foregoing description, it will be seen that the improved shelving elements can be made of standard parts; that the corner posts are so designed that they may be formed by one or more rolling or stamping operations; that the shelves and the brackets or clips can be formed of sheet metal by die-stamping and cutting operations. Furthermore, the reinforcements at the corners of the shelves afford adequate strength to resist bending or sagging under heavy loads. Also, all of the parts can be manufactured very cheaply and can easily be assembled by an unskilled workman.

Obviously, the present invention is not restricted to the particular embodiment thereof herein shown and described. Moreover, it is not indispensable that all the features of the invention be used conjointly, since they may be employed advantageously in various combinations and sub-combinations.

What I claim is:—

1. In a shelving structure of the character described, a sheet metal corner post presenting rounded edges; a sheet metal shelf having corner reinforcing bars; said corner post having groups of bracket-receiving slots consisting of three disaligned vertical slots in each group; and shelf-supporting brackets each having three integral locking members inserted in said slots and integral means co-operating with said reinforcing bar

to support the corner of the shelf and prevent displacement thereof relative to the corner post.

2. In a shelving assembly of the character described, a sheet metal corner post; a sheet metal shelf having a reinforced and offset corner portion; a bracket having three-point supporting engagement with said corner post; an arm on said bracket presenting a supporting ledge co-operating with said corner reinforcement of the shelf; and a locking pin projecting through said corner post, said reinforcing member and said arm to prevent displacement of the shelf and the bracket with respect to said corner post.

3. In a shelving structure of the character described, a rolled, sheet metal corner post; a sheet metal shelf having downturned flanges and flat metal corner reinforcements secured to said flanges; and a removable shelf supporting bracket having three-point supporting engagement with said corner post and engaging with the bottom edge and inner face of the corner reinforcement at said corner post.

4. In a metal shelving structure of the character described, a sheet metal corner post; a sheet metal shelf; and a shelf supporting bracket comprising a substantially U-shaped sheet metal member presenting a pair of hooks inserted through slots and engaging the web or flange of a corner post; an integral projection formed on one end of said U-shaped portion inserted in a third slot provided in a corner post; and an arm formed on the opposite end of said member to co-operate with a corner portion of the shelf.

5. A metal shelving structure comprising, in combination, a metal corner post having a reversely bent flange at one edge and a molding flange at the other edge; said molding flange having a wall which is at right angles to the main body of the post; a metal shelf having downturned marginal flanges which are cut away at the corners; metal reinforcements secured at the corners of said shelf to adjacent marginal flanges; one flange of the shelf being flat against said wall; the other flange substantially abutting at its end against said reversely bent flange; the intermediate portion of each metal reinforcement being flat against the main body of the post; and means secured to the post upon which said reinforcements rest to support the shelf upon the post.

6. A corner post for metal shelving units comprising a single piece of sheet metal bent to provide a perfectly flat body and one longitudinal edge bent to provide an L-shaped flange, the terminal portion of which is parallel to the flat body and is inturned; the other longitudinal edge being bent to provide a molding, having a portion at right angles to the flat body, another portion curved, and a terminal flange which is inturned and parallel to the flat body and in the same plane as the first-named terminal flange.

7. A corner post for metal shelving units comprising a single piece of sheet metal bent to provide a perfectly flat body and one longitudinal edge bent to provide an L-shaped flange, the terminal portion of which is parallel to the flat body and is inturned; the other longitudinal edge being bent to provide a molding, having a portion at right angles to the flat body, another portion curved, and a terminal flange which is inturned and parallel to the flat body and in the same plane as the first-named terminal flange; said flat body portion having elongated, narrow slots arranged in groups of three, one slot in each group being below and between the other two,

which are on the same level, and also having a perforation between the two aforesaid slots.

8. A bracket for shelving units comprising a single piece of sheet metal having a flat body portion; a pair of notched flanges providing hooks substantially at right angles to the flat body portion; a projection formed at the lower end and also substantially at right angles to the flat body portion; said projection lying substantially in the medial plane of the bracket; and a flange at the upper end of the body portion which is offset relative thereto, providing a shoulder by which a shelf may be supported.

9. A bracket for shelving units comprising a single piece of sheet metal having a flat body

portion; a pair of notched flanges providing hooks substantially at right angles to the flat body portion; a projection formed at the lower end and also substantially at right angles to the flat body portion; said projection lying substantially in the medial plane of the bracket; a flange at the upper end of the body portion which is offset relative thereto, providing a shoulder by which a shelf may be supported; said flange having its upper extremity bent outwardly to provide a shoulder which the shelf may rest upon, and also having a perforation through which a locking pin or stud may be thrust.

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25	100
30	105
35	110
40	115
45	120
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60	135
65	140
70	145
75	150