Dec. 24, 1929. W. N. VANCE 1,740,754

SHEET METAL RACK

Filed June 23, 1928

Fig. 1

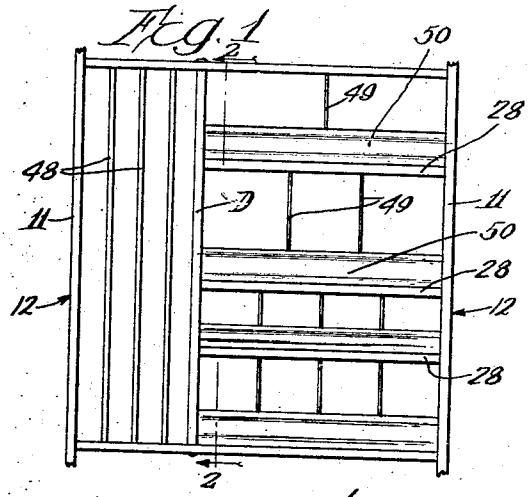


Fig 4

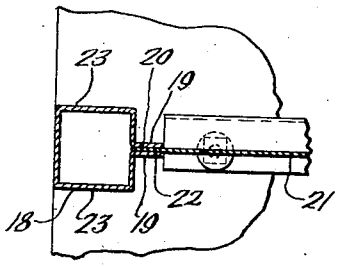


Fig 2

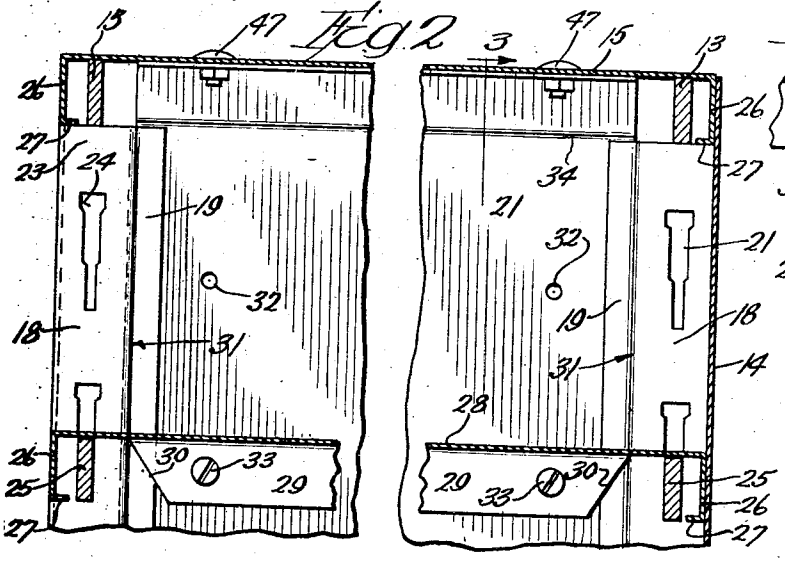
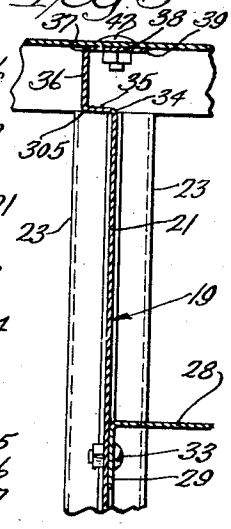
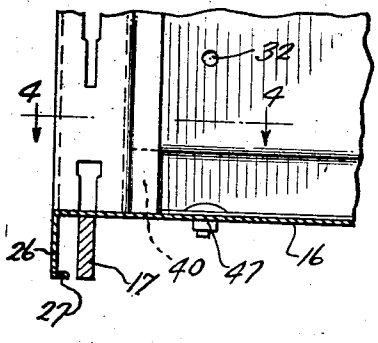
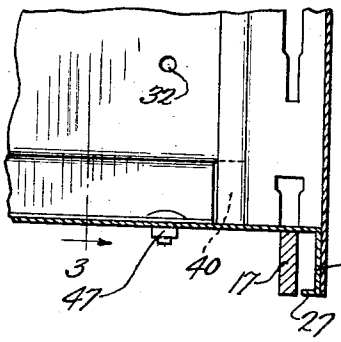
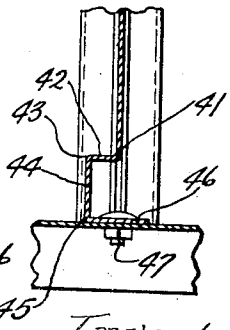


Fig 3









Inventor:
Walter N. Vance
John C. Carpenter
Attorney

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UNITED STATES PATENT OFFICE

WALTER N. VANCE, OF CHICAGO HEIGHTS, ILLINOIS, ASSIGNOR, BY MESNE ASSIGNMENTS, TO LYON METAL PRODUCTS, INCORPORATED, OF AURORA, ILLINOIS, A CORPORATION OF ILLINOIS

SHEET-METAL RACK

Application filed June 23, 1928. Serial No. 287,778.

This invention relates to sheet metal shelving or racks, and has for a general object to provide for such shelving an improved divider or partition construction, permitting rapid and accurate adjustment and assembly of the shelving in various arrangements.

Numerous other objects and advantages of the invention will be apparent as it is better understood from the following description, which, taken in connection with the accompanying drawings, discloses a preferred embodiment thereof.

Referring to the drawings:

Figure 1 is a diagrammatic front elevation of a rack showing one arrangement of shelving permitted by the improved divider or partition construction of the invention;

Fig. 2 is an enlarged vertical section taken from front-to-rear through the shelving on the line 2—2 of Fig. 1, showing the details of construction of the divider;

Fig. 3 is a vertical section taken longitudinally of the shelving and crosswise of the divider on the line 3—3 of Fig. 2; and

Fig. 4 is a horizontal section taken on the line 4—4 of Fig. 2.

The illustrative sheet metal rack shown in Figure 1 is constructed of the usual front and rear end uprights 11 of square or rectangular tubular form. These end uprights 11 provide a supporting framework for the usual vertical end panels indicated at 12, which extend from front to rear of the shelving, for the front and rear lengthwise bearers 13 located at the top and bottom for the support of the top and bottom shelves 15 and 16 and for the lengthwise rear panel 14. The parts of the rack or shelf construction, including the uprights 11, the closed ends, the top and bottom shelves and the rear panel, are all secured together in any suitable or well-known manner to provide a strong rigid frame for the support of the dividers or partitions and other shelving. The inside faces of the uprights 11 are provided each with a series of double T-slots or sockets, such as those shown at 24 in the uprights 18 of the dividers D to receive and support the ends of the shelf bearers of those intermediate shelves which may extend to the end uprights.

The construction of the dividers D is best shown in Figs. 2 to 4 inclusive of the drawing. Each divider comprises a front and a rear upright 18 of square or rectangular tubular form. These uprights 18 are formed respectively with rearwardly and forwardly projecting vertical flanging 19 located on opposite sides of the central front-to-rear vertical planes of the uprights. The arrangement of the flanging 19 of the uprights 18 provides slots 20 which receive the front and rear ends 22 of the divider plate 21. In order to secure the divider plate to the uprights 18, the inwardly projecting portions 22 of the plate 21 may be spot-welded at suitable intervals to the flanging 19. According to this construction and arrangement, the divider plate 21 lies in the central front-to-rear vertical plane of the upright 18. Thus, the divider plate 21 is located symmetrically in the central or median plane wholly within planes of the outside faces or surfaces 23 of the uprights 18. These faces or surfaces 23 lie in planes which extend horizontally widthwise of the rack and parallel to the divider plate 21.

In their outside faces or surfaces 23, both front and rear uprights 18 are provided with vertical series of double T-slots or sockets 24 of the usual configuration. The slots 24 are arranged in horizontal alinement with each other and with the corresponding series of like sockets in the front and rear end uprights 11. Thus, the horizontally alined sockets 24 of any front and rear pairs of divider uprights 18, or of any front and rear divider uprights with either of the front and rear end uprights, permit adjustable mounting of the ends of the intermediate front and rear shelf bearers 25, which may be inserted in the sockets 24 in the usual manner.

The top shelf 15 is supported upon the front and rear top shelf bearers 13 and the bottom shelf 16 upon the front and rear bottom shelf bearers 17. Both the top and bottom shelves 15 and 16 are provided at their front and rear extremities with depending vertical flanges 26, the lower edges of which are re-bent inwardly into the relatively narrow horizontal flanges 27.

This flanging 26—27 of the top and bottom shelves extends preferably the full lengthwise dimension of the shelving and provides at both front and rear smooth finished surfaces on which sharp corners are eliminated. At the rear the vertical flanges 26 furnish adequate surfaces for the attachment of the rear closure plate 14. As shown in Fig. 2, the horizontal flanging 27 of the bottom shelf 16 may rest on the flooring thereby to increase the supporting surface contact of the rack as a whole.

The intermediate shelves 28 may be provided at the front and rear with lengthwise flanging 26—27 similar structurally and functionally to that of the top and bottom shelving and also at each side with widthwise or front-to-rear extending depending vertical flanges 29. The front and rear ends of the flanges 29 may be bevelled off downwardly and inwardly as at 30, so that the greatest length of the flanges 29 lies wholly within the uncovered area of the divider plate 21, as shown in Fig. 2.

In addition to bracing the intermediate shelves 28, the front-to-rear flanging 29 provides surfaces which may be secured to adjacent divider plates 21, or if the shelves 28 so extend, to the end plates 12. For this purpose, the plates 21 or 12 may be provided with horizontal rows of holes 32, properly located so as to aline with corresponding holes in the flanging 29 in the various levels of adjustment permitted by the slots 24 in the uprights 11, or 18. Bolts and nuts 33, or other fastening means may be applied with respect to the alined holes 32 of the flanging and divider or end plates to secure the same rigidly together. When secured to the divider plates 21, the flanges 29 of the intermediate shelves lie flat against the surfaces of the divider plates and are located between the plane of the divider plate and the plane connecting the faces 23 of the uprights 18. Hence, the flanges 29 are positioned in a location protected against the possibility of articles on the intermediate shelves engaging or being caught by the corners or edges of the flanges 29, with resulting damage to the articles or shelves.

As shown in Figs. 2 and 3, the uprights 18 of the dividers or partitions extend down to the top surface of the bottom shelf 16 but terminate at their tops below the bottom surface of the top shelf 15 a distance approximately equal to the height of the top shelf bearers 13. At or above the tops of the uprights 18 of any divider, the plate 21 thereof is bent along its widthwise or front-to-rear dimension, at 34, into a horizontal flange 35 (see Fig. 3) which projects from the plane of the plate in the lengthwise dimension of the shelving or rack, but terminates short of the plane of the widthwise faces 23 of the uprights 18. The plate 21 is then rebent, at 305, to form a widthwise extending vertical flange 36 which is disposed between the main central plane of the plate 21 and uprights 18, and those faces 23 of the latter that are on the same side of the plate 21 as the horizontal flange 35. The vertical flange 36 projects upwardly towards the top shelf 15 and the divider plate 21 is then rebent, at 37, parallel with the bend 305, into a horizontal flange 38. The flange 38 extends widthwise of the rack beneath the bottom of the top shelf and projects across the front-to-rear central planes of the plate 21 and the uprights 18, but terminates short of the plane of the faces 23 of the uprights, so that the long free edges 39 of the flange 38 is disposed between the aforesaid central plane and the other faces 23 of the uprights.

The bottom of the divider plate 21 is cut away rectangularly at both its front and rear, as shown at 40, to provide clearance for the bottom widthwise flanging, in respect of the upright flanges 19 to which is secured the main body portion of the divider plate. This bottom flanging of the divider plate terminates at front and rear short of the inner edges of the upright flanges 19, and is constructed similarly to the top flanging hereinbefore described. The plate 21 is first bent from its main central plane on the line 41 into the horizontal flange 42, next on the line 43 into the depending vertical flange 44 and finally on the line 45 into the horizontal flange 46 which overlies the top surface of the bottom shelf 16. Like the top flanging, the bottom flanging is wholly within the vertical planes of the faces 23 of the uprights 18.

The top and bottom flanging of the divider plate 21 permits attachment of the same to the top and bottom shelves by bolts and nuts 47, or other suitable fastening means, located in respect of rows of alined holes provided respectively in the top shelf and flange and in the bottom shelf and flange.

As shown in Figs. 3 and 4, the construction of the flanging provides clearance for the fastening means both above and below the main body portion of the divider plate. This construction also permits the location of the lines of centers of the fastening means so that they all substantially coincide with the aforesaid central plane of the plate 21 and uprights 18. Hence, the distance between any two rows of bolt holes in both top and bottom shelves corresponds with proper allowance for the thickness of the metal substantially with the lengthwise dimension of the intermediate shelves. Inasmuch as the intermediate shelves are made preferably in lengths that are whole multiples of a fixed minimum length, the alinement of the fastening means with the central plane of the divider plate to which the shelves are secured, greatly facilitates the location of the bolt holes in the top and bottom shelves. These

rows of bolt holes may be located in both top and bottom shelves distances apart approximately equal to the length of the shortest shelf employed. This simple expedient avoids any necessity for making complicated calculations in providing for the adjustment of the dividers to accommodate shelving of various standard lengths.

Moreover, the construction and arrangement, in which the flanging of the divider 21 as well as the fastening means 47 are wholly within the space enclosed by the planes of the faces 23 of the uprights 18, provide protected, out-of-way locations for these parts Both the flanging and the fastening means are positioned so as to render engagement of them unlikely by articles moving or shifting on the shelves, thereby avoiding mutual or individual damage because of such engagement.

Figure 1 shows one arrangement of the shelving permitted by the improved divider construction. On one side of the divider D the space is subdivided by the vertical partitions 48 into vertical compartments which are convenient for the storage of long articles. On the other side of the divider, a number of intermediate shelves 28 are located at different heights and the shelf space thus provided is subdivided vertically by the subdividers 49. If desired the compartments provided by the shelves may be equipped with bin fronts 50, which prevent articles stored on the shelf from accidentally falling off. The arrangement shown in Figure 1 represents however only a single instance permitted by the divider construction; obviously, the arrangement of the divider and shelving may be varied as use or desire may require.

It is thought that the invention and many of its attendant advantages will be understood from the foregoing description, and it will be apparent that various changes may be made in the form, construction and arrangement of the parts without departing from the spirit and scope of the invention or sacrificing all of its material advantages, the form hereinbefore described being merely a preferred embodiment thereof. Moreover, it is not indispensable that all features of the invention be used conjointly, as they may be advantageously employed in various subcombinations and other combinations.

I claim:

1. In a sheet metal rack construction, the combination with a rack frame including, front and rear end uprights and top and bottom shelving supported thereby, of a divider including, front and rear uprights of rectangular tubular form and having respectively rearwardly and forwardly extending vertical flanging located on opposite sides of the central plane between said uprights which extends widthwise of the rack, and a divider plate supported by said upright flanging in said central plane, the divider plate having top and bottom widthwise-extending flanging, each comprising a horizontal flange bent from the main central plane of the plate, a vertical flange disposed between said main central plane and the plane common to the widthwise faces of said uprights and another horizontal flange projecting across said main central plane but terminating short of the plane common to the other widthwise faces of the uprights, said last-mentioned horizontal flanges being secured respectively to the top and bottom shelves by fastening means located in said main central plane, and other shelving adjustably supported by said divider uprights and having widthwise flanging secured to said divider plate.

2. In a sheet metal rack construction, the combination with a rack frame including, front and rear end uprights and top and bottom shelving supported thereby, of a divider including, front and rear uprights of rectangular tubular form and having repectively rearwardly and forwardly extending vertical flanging located on opposite sides of the central plane between said uprights which extends widthwise of the rack, and a divider plate supported by said upright flanging in said central plane, the divider plate having top and bottom widthwise-extending flanging, each comprising a horizontal flange bent from the main central plane of the plate, a vertical flange disposed between said main central plane and the plane common to widthwise faces of said uprights and another horizontal flange projecting across said main central plane, said last-mentioned horizontal flanges being secured respectively to the top and bottom shelves by fastening means located in said main central plane, and other shelving adjustably supported by said divider uprights and having widthwise flanging secured to said divider plate.

3. In a sheet metal rack construction, the combination with the rack frame and shelving, of a divider including, front and rear uprights of rectangular tubular form and having respectively rearwardly and forwardly extending vertical flanging located on opposite sides of the central plane between said uprights which extends widthwise of the rack, and a divider plate supported by said upright flanging in said central plane, the divider plate having widthwise-extending flanging comprising, a horizontal flange bent from the main central plane of the plate, a vertical flange disposed between said main central plane and the plane common to widthwise faces of said uprights and another horizontal flange projecting across said main central plane and secured to said shelving by fastening means located in said main central

plane, and other shelving adjustably supported by said divider uprights and having widthwise flanging secured to said divider plate.

4. In a sheet metal rack construction, the combination with the rack frame and shelving, of a divider including, front and rear uprights of rectangular tubular form and having respectively rearwardly and forwardly extending vertical flanging located on opposite sides of the central plane between said uprights which extends widthwise of the rack, and a divider plate supported by said upright flanging in said central plane, the divider plate having width-wise-extending flanging comprising, a horizontal flange bent from the main central plane of the plate, a vertical flange disposed between said main central plane and the plane common to widthwise faces of said uprights and another horizontal flange projecting across said main central plane and secured to said shelving by fastening means located in said main central plane.

5. In a sheet metal rack construction, the combination with the rack frame and shelving, of a divider including spaced uprights of rectangular tubular form and a relatively thin divider plate supported by said uprights in substantially the median plane thereof and having top and bottom horizontally and vertically projecting flanging lying between the planes of the outside faces of said uprights, and fastening means for securing said flanging to said shelving, said fastening means lying in said median plane of said divider plate.

6. In a sheet metal rack construction, the combination with the rack frame and shelving, of a divider including spaced uprights of rectangular tubular form and a relatively thin divider plate supported by said uprights in substantially the median plane thereof and having top and bottom horizontally and vertically projecting flanging lying between the planes of the outside faces of said uprights, fastening means passing through some of said flanging and said shelving for holding said divider plate in position, said fastening means lying in the same median plane as said divider plate, intermediate shelving arranged between said first named shelving, and means for adjustably supporting said intermediate shelving to said divider uprights.

7. In a sheet metal rack construction, the combination with the rack frame and shelving, of a divider including spaced uprights of rectangular tubular form and a relatively thin divider plate supported by said uprights between said shelving and in substantially the median plane of said uprights horizontally and vertically projecting flanging on said divider plate lying between the planes of the outside faces of said uprights and fastening means for securing said flanging to said shelving and lying in said median plane, and other shelving adjustably supported by said divider uprights.

8. In a sheet metal rack construction, the combination with the rack frame and shelving, of a divider comprising, spaced uprights, a divider plate supported by said uprights and having flanging extending across the plate, said flanging being relatively narrower than said uprights, and fastening means for securing said plate to said shelving, said fastening means lying in the median plane of the divider plate.

9. A sheet metal rack divider construction comprising, spaced relatively wide uprights, integral flanges at the median plane of said uprights, a relatively thin divider plate supported by said flanges flanging on said plate extending across the plate and relatively narrower than said uprights, whereby said divider plate may be secured in position by means lying in the median plane of said divider plate.

10. In a sheet metal rack construction, the combination with the rack frame and shelving, of a divider including spaced uprights and a relatively thin divider plate supported by said uprights in substantially the median plane thereof, the top and bottom of said divider plate having horizontally and vertically projecting flanges, the horizontal portion of said flanges providing means for supporting shelving, said flanges extending substantially the full length of the divider plate, whereby a longitudinal recess is presented, and fastening means passing through said flanges within said recess, said fastening means being substantially in the median plane of said divider plate.

WALTER N. VANCE.