W. N. VANCE.

METAL SHELVING.

APPLICATION FILED JUNE 12, 1915.

1,213,304.

Patented Jan. 23, 1917.

2 SHEETS—SHEET 1.

Fig. 1

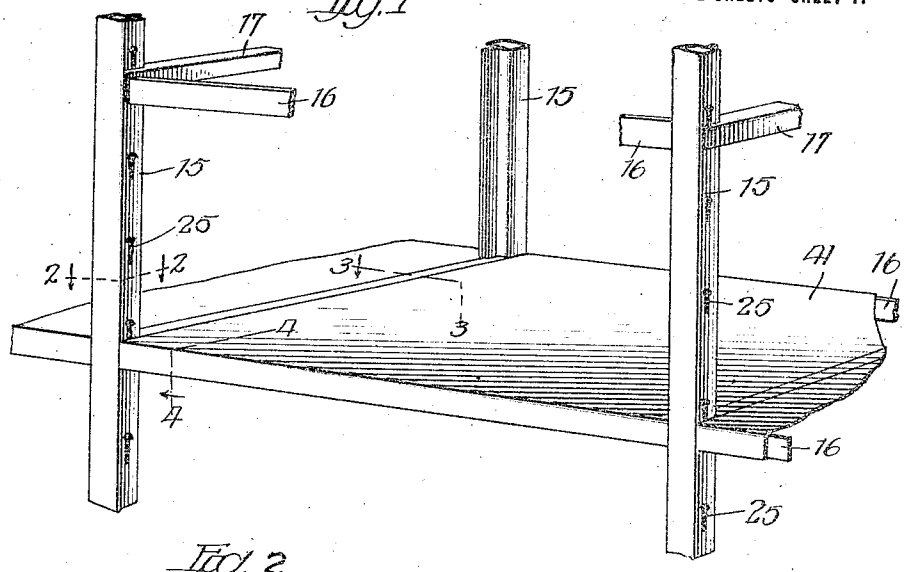


Fig. 2

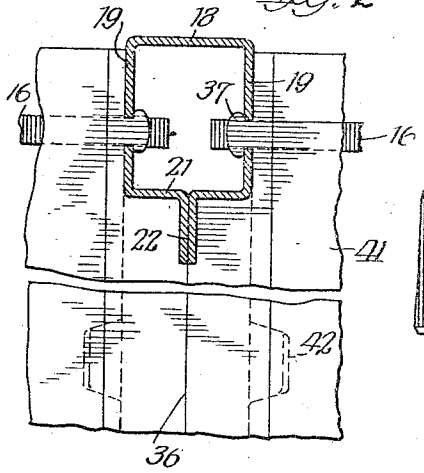


Fig. 3

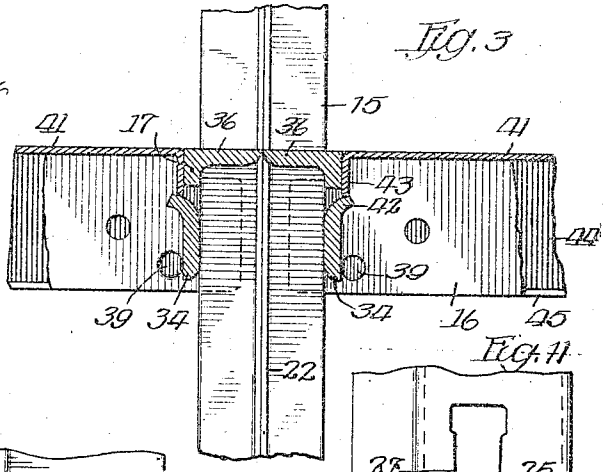


Fig. 4

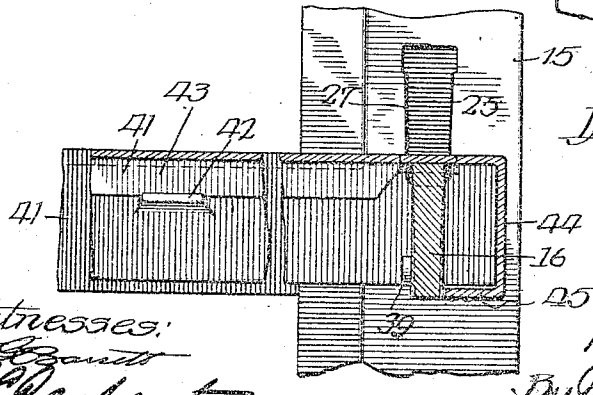
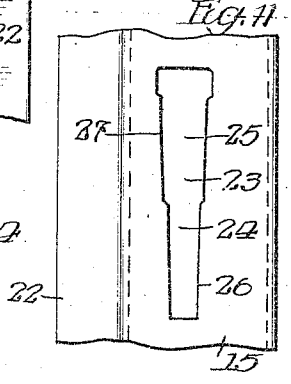


Fig. 11



Witnesses:

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2 SHEETS—SHEET 2.

Fig. 5.

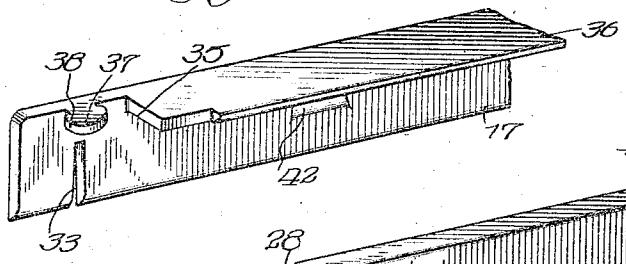


Fig. 6

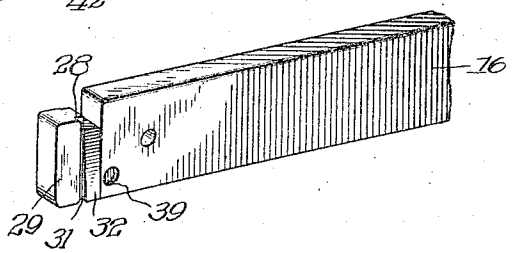


Fig. 7

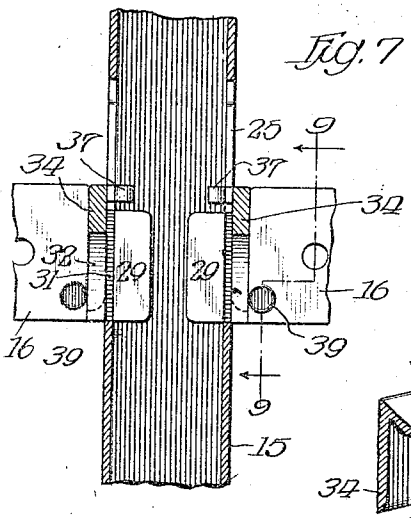


Fig. 8

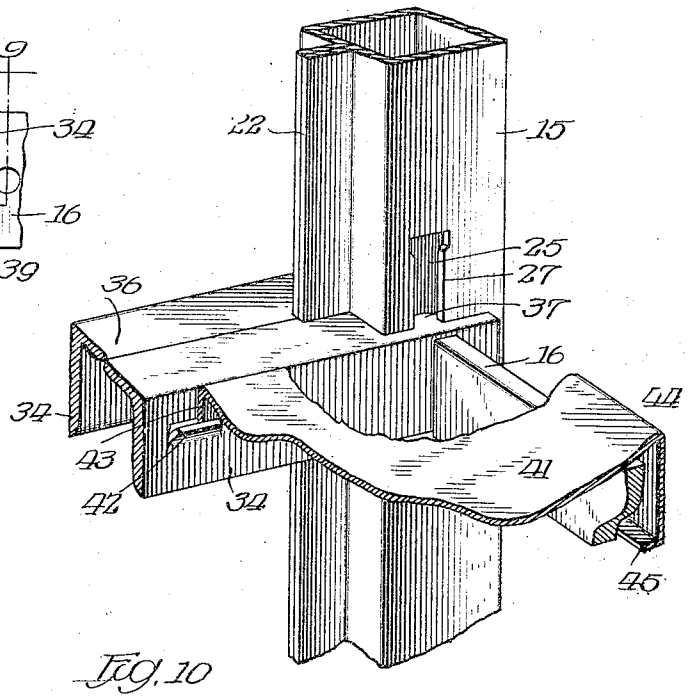


Fig. 9

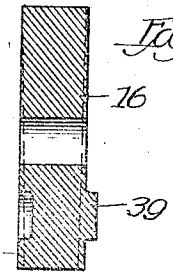
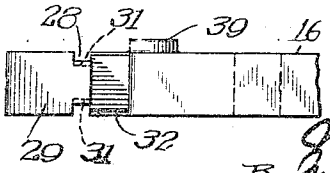


Fig. 10



Witnesses

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UNITED STATES PATENT OFFICE.

WALTER N. VANCE, OF CHICAGO HEIGHTS, ILLINOIS, ASSIGNOR TO DURAND STEEL LOCKER COMPANY, OF CHICAGO, ILLINOIS, A CORPORATION OF ILLINOIS.

METAL SHELVING.

1,213,304. Specification of Letters Patent. Patented Jan. 23, 1917.

Application filed June 12, 1915. Serial No. 33,675.

To all whom it may concern:

Be it known that I, WALTER N. VANCE, a citizen of the United States, residing in Chicago Heights, in the county of Cook and State of Illinois, have invented a new and useful Improvement in Metal Shelving, of which the following is a specification.

My invention relates in general to shelving and has more particular reference to shelving constructed in part or wholly of metal.

The invention has for its object broadly the improvement in shelving of this character.

A principal object of the invention is the provision of a metal shelving or rather a frame-work therefor of unusual strength so that the shelves can sustain large quantities of heavy articles.

A further object of the invention is the provision of such a shelving which may be readily assembled without the use of permanent fastening means and without requiring any special tools or equipment.

A still further object of the invention is the provision of such a shelving in which the arrangement of the shelves may be readily changed at will and which, while consisting of few and simple parts, will, when assembled, present a finished and pleasing appearance.

Other objects and advantages of the invention will be apparent as it is better understood from the following description when considered in connection with the accompanying drawing illustrating a preferred embodiment thereof.

Referring to the drawings, Figure 1 is a partial perspective view of shelving embodying my invention; Fig. 2 is a section taken substantially in the plane defined by the lines 2—2 of Fig. 1; Fig. 3 is a partial section taken substantially in the plane defined by the lines 3—3 of Fig. 1; Fig. 4 is a similar view taken substantially in the plane defined by the lines 4—4 of Fig. 1; Figs. 5 and 6 are partial perspective views of the cross shelf supports; Fig. 7 is a section taken vertically and from front to back through one of the uprights shown in Fig. 1; Fig. 8 is an enlarged partial perspective view showing certain details of construction; Fig. 9 is a section taken substantially on the line 9—9 of Fig. 7; Fig. 10 is a top plan view of an end of one of the front or back cross supports; and Fig. 11 is a side elevation of a portion of an upright showing the formation of one of the double T slots with which it is provided.

For the purpose of illustrating my invention I have shown on the drawing a portion of shelving comprising uprights 15 arranged appropriately, front and back cross supports 16 extending between the uprights at the front and back, and front to rear cross supports 17. Each of the uprights 15 consists of a hollow metal post of square or rectangular cross section. In the present instance each such upright is constructed of a single sheet of metal formed to provide an outer imperforate wall 18, side walls 19, slotted as will be later described, and an inner wall 21 formed by bringing together the edges 22 of the sheet, these edges being extended in the present instance and spot-welded together.

The side walls 19 are slotted as seen at 23 at regular intervals. Each of the slots 23 is of double T connected form; that is to say, the lower part 24 opens into the upper part 25, the upper part being larger than the lower part and providing the T or head portion therefor to permit positioning of the cross supports, as will be later described. The sides of both parts 24 and 25 are inclined as seen at 26 and 27.

The front and rear cross supports and the front to rear cross supports are both engaged in these slots, and in the present instance the front and back supports are positioned in the lower parts 24 of the slots and the front to rear cross supports in the upper parts 25, although it will be manifest that this arrangement may be varied within wide limits without departing from the spirit and scope of the invention.

As shown on the drawing, each cross support 16 is provided with a necked or reduced portion 28 which provides a headed tongue adapted to seat in the part 24, the head 29 of the tongue being of appropriate dimension to pass through the part 25 and permit engagement of the reduced or necked portion 28 in the part 24. The side faces of the necked portion 28 are inclined with respect to each other as indicated in dotted lines at 31 in Fig. 10. The inclination of these faces is substantially that of the faces

26 of the part 24 of the slot, so that when connected these parts are wedged together through mutually inclined faces.

A wedging connection is also provided between the front to rear cross supports 17 and the front and rear cross supports 16. This connection, in the present instance, is effected by providing inclined surfaces 32 on opposite sides of the supports 16 and forming a correspondingly shaped slot 33 in the support 17. In the present instance each support 17 consists of an angle iron in the vertical flange 34 of which is cut or otherwise provided the slot 33. The horizontal flange is cut away at 35 to fit around the upright, the depth of the flange being preferably such as to cause the edge 36 to be disposed at the front to back center of the uprights. Two front to back cross supports are provided at each pair of posts and this arrangement closes approximately the space between them. The front to back support is provided in the cut-away part 35 with a tongue 37 adapted to engage in the upper part 25 of the slot and to have a wedging action therewith by reason of the inclination of the faces 27 of this part, and by reason also of a similar inclination of the face 38 of the tongue 37. The parts are preferably so constructed that the upper surface of the horizontal flange of the front to back supports will in the assembled structure be disposed above the upper face of the front and back supports a distance equal to the thickness of a shelf. Adjacent the end of the front and back supports 16 a lug 39 is provided which serves to hold the lower edge of the flange 34 against the upright, this lug being formed in the present instance by partially punching or pressing the material of the front or back support as seen in Fig. 9.

The shelf 41, when in position, rests upon the front and back supports 16 and upon lips 42 pressed outwardly from the flanges 34 of the front to rear supports. The lip 42 is preferably located at the neutral axis of this flange, and support is received by the shelf therefrom through a flange 43 extending downwardly from the body of the shelf. The lip 42 is preferably inclined so that when the flange 43 engages behind it, it will be pushed back against the adjacent face of the flange 34 and wedgingly held in place. In assembling the structure it is only necessary to position the uprights either before or after the front and rear supports are locked in their part of the slots 23 and to thereafter engage the front to rear support to finish the construction of the frame-work, after which the shelves may be laid in place. Weight upon the shelves causes the connection between the various parts to become more firm and rigid. The shelves may be readily taken down or readjusted as to height by simple reversal of the process. If desired a flange 44 may be provided on the forward edges of the shelves and this flange turned in at its bottom 45 to give a more finished appearance. The flange 43 of the shelf prevents it slipping forwardly out of place.

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 any of its material advantages, the form hereinbefore described being merely a preferred embodiment thereof.

I claim:

1. A frame comprising uprights slotted to receive the ends of cross supports, and a cross support having an end engageable behind the slotted material of the uprights, said end being set off from the body of the cross support by a necked portion the side walls of which are inclined and wedgingly held in said slot.

2. A frame comprising uprights having perforations of tapering form, and a cross support having an end disposed through a perforation, said end being set off by a necked portion tapering mutually with the taper of said perforation.

3. A frame comprising uprights and cross supports, said uprights and cross supports having tongue and slot connections, the portion of the cross support engaging the upright being narrower than said end and spaced inwardly an appreciable distance from said end and this portion and the part of the upright engaging therewith having mutually inclined engaging faces.

4. A frame comprising slotted uprights and a pair of cross supports engaged in a single slot one above the other.

5. A frame comprising slotted uprights, and a pair of cross supports engaged in a single slot one above the other and extending angularly with respect to each other.

6. A frame comprising uprights, cross supports connected to said uprights, and other cross supports wedgingly engaging the first mentioned cross supports.

7. A frame comprising uprights, cross-supports extending between said uprights, and engaging the same, and other cross supports wedgingly engaging both said first mentioned supports and said uprights.

8. A frame comprising uprights provided with slots of double T connected form, and a cross support engaged in each part thereof.

9. A frame comprising uprights provided with slots of double T connected form, and a cross support engaged in each part thereof, said cross supports being interlocked independently of said uprights.

10. A frame comprising uprights, and

connected cross supports, the connection between said cross supports providing wedging faces disposed adjacent said upright, one of said cross supports having means independent of said wedging faces for wedging the other cross support against said upright.

11. A frame comprising uprights, and cross supports, one of said cross supports being an angle iron positioned with one flange disposed vertically, said flange being cut at or about its neutral axis to define a lip and said lip being bent outwardly to receive a flanged shelf, and a shelf resting upon an adjacent support and having a flange resting upon said lip.

12. A frame comprising uprights, and cross supports, one of said cross supports being an angle iron positioned with one flange disposed vertically, said flange being cut at or about its neutral axis to define a lip and said lip being bent outwardly to receive a flanged shelf, and a shelf resting upon an adjacent support and having a flange resting upon said lip, said lip being inclined to hold said flange against the adjacent face of the support provided therewith.

Signed in the presence of two subscribing witnesses.

WALTER N. VANCE.

Witnesses:
J. C. CARPENTER,
JOHN W. MUNDAY.