T. M. LOTHROP.

STEEL SHELVING.

APPLICATION FILED JAN. 19, 1914.

1,135,970.

Patented Apr. 13, 1915.

2 SHEETS—SHEET 1.

Fig. 1.

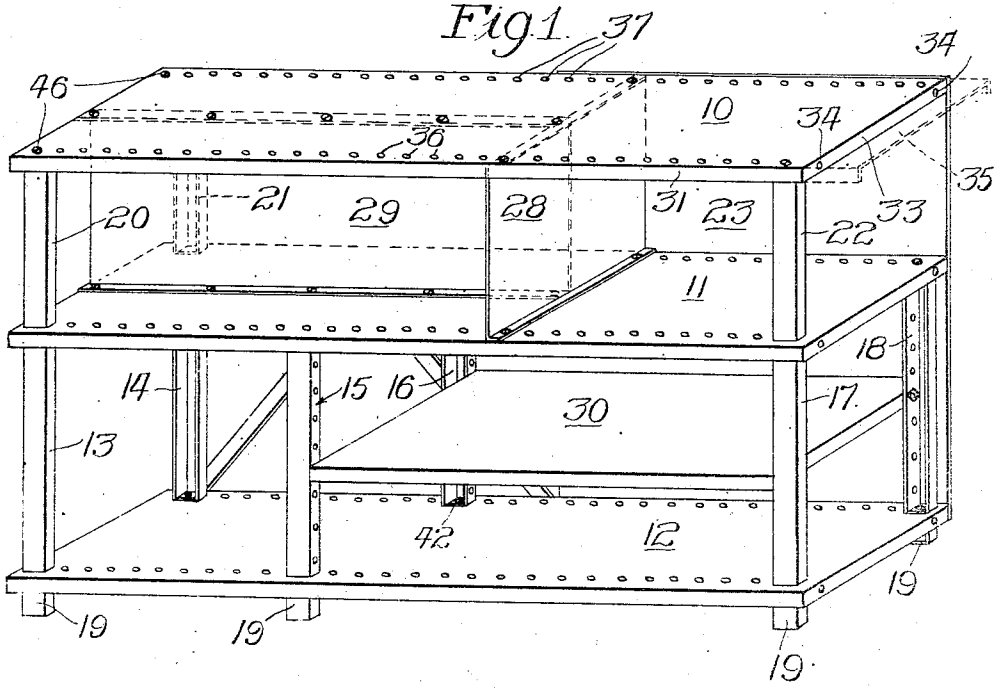
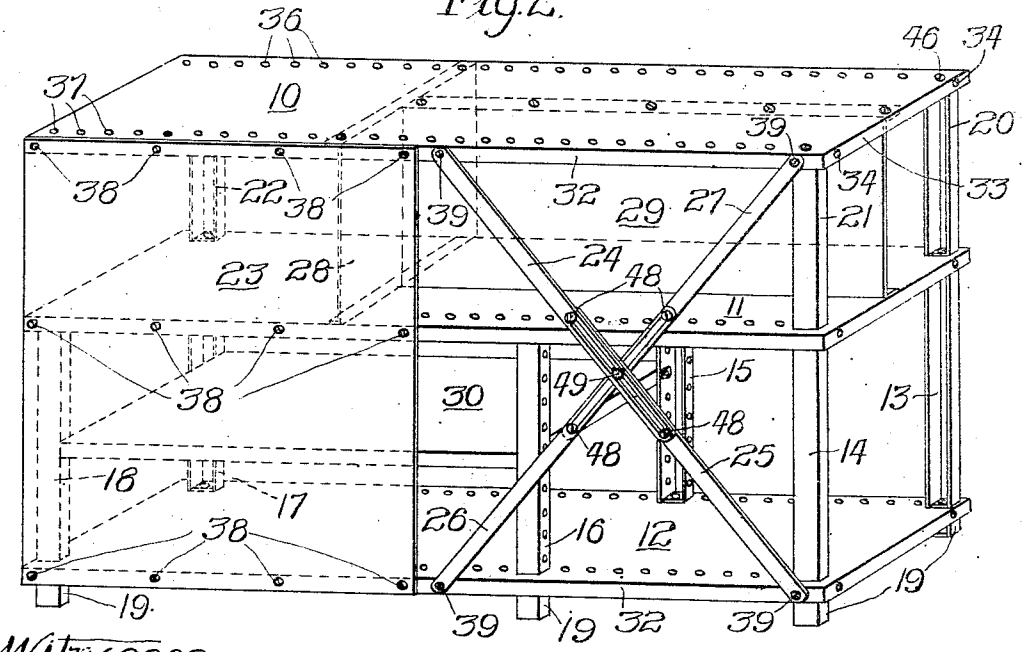


Fig. 2.



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2 SHEETS—SHEET 2.

Fig. 3.

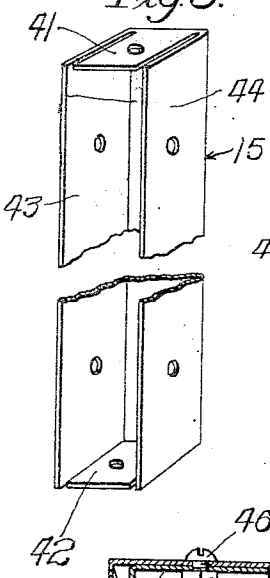


Fig. 4

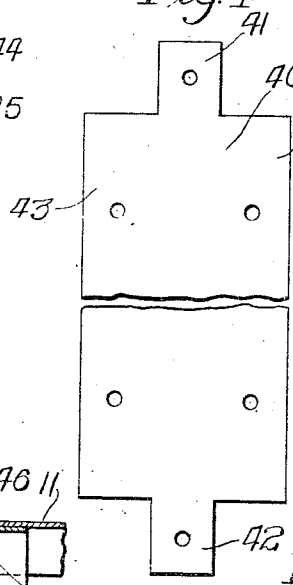
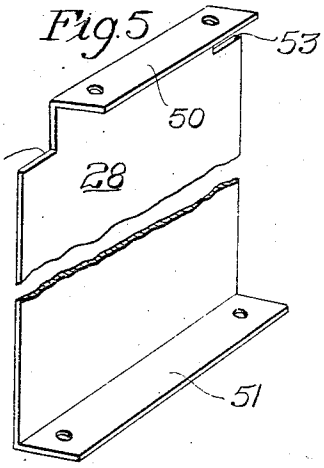


Fig. 5



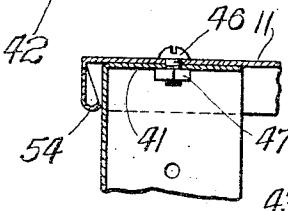


Fig. 6.

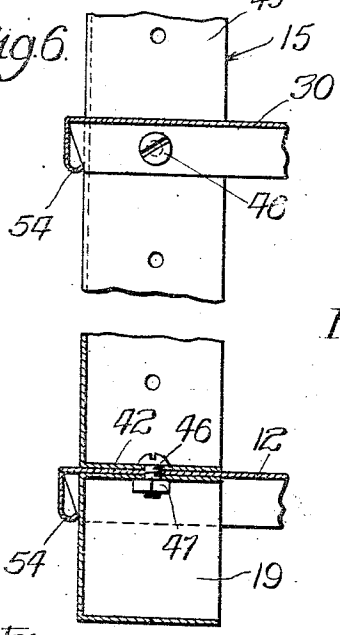


Fig. 7.

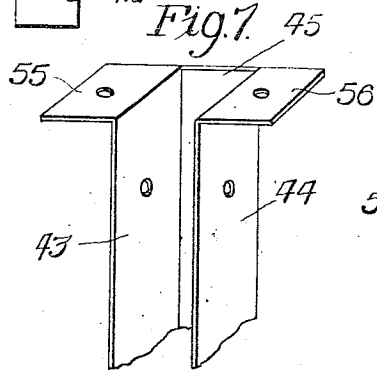


Fig. 8.

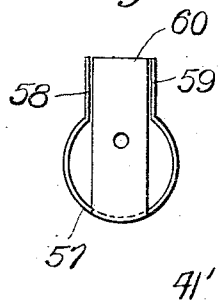


Fig. 9.

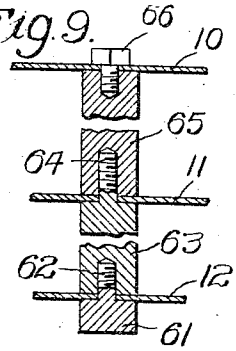
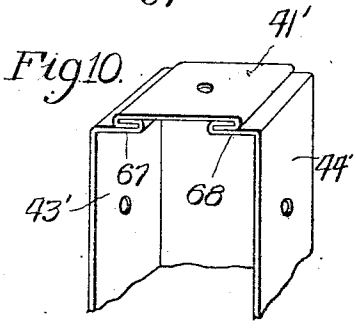


Fig. 10.



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UNITED STATES PATENT OFFICE.

THOMAS M. LOTHROP, OF GLENCOE, ILLINOIS, ASSIGNOR TO THOMAS M. LOTHROP & CO., OF CHICAGO, ILLINOIS, A COPARTNERSHIP.

STEEL SHELVING.

1,135,970. Specification of Letters Patent. Patented Apr. 13, 1915.

Application filed January 19, 1914. Serial No. 812,888.

To all whom it may concern:

Be it known that I, THOMAS M. LOTHROP, a citizen of the United States, residing at Glencoe, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Steel Shelving, of which the following is a specification.

The present invention relates to shelving and the principal object of the invention is to provide shelving of such construction and arrangement that it may be readily assembled or taken apart, economically manufactured, of long life in service, capable of being built up to different heights and numbers of shelves, with or without backs, readily adaptable to the insertion of additional intervening shelves and compartment dividers, and also capable of ready extension or contraction by the addition or removal of parts. In carrying out these objects, I provide one or more continuous shelves, each made up of one or more shelf sections, and support and space them by posts of simple and economical construction. A novel arrangement of braces may be employed to hold the assembled parts in position, or this function may be performed by the backs themselves, where the latter are employed. Simple uniform fastening means secure the various parts together. The added intervening shelves are readily secured to the posts and the added partitions or dividers are similarly secured to the adjacent shelves.

The various features of my invention will be more fully understood upon reference to the following detailed description taken in connection with the accompanying drawing, and the scope of the invention will be particularly pointed out in the appended claims.

In the drawing Figure 1 is a perspective view of a section of shelving constructed and assembled in accordance with the present invention; Fig. 2 is a similar view of the section taken from the rear; Fig. 3 is a perspective view of the post employed in the structures of Figs. 1 and 2; Fig. 4 is a view of the blank employed in making the post of Fig. 3; Fig. 5 is a perspective view of a compartment divider; Fig. 6 is an elevation, part being in section and part being broken away, of the middle front post of the structure of Fig. 1, illustrating the manner of securing the posts to the continuous shelving and the intermediate shelf to the post; Fig. 7 is a view similar to Fig. 3 of a modified form of post; Fig. 8 is a top view of a second modified post; Fig. 9 is a vertical section, parts being broken away, of a third form of post construction, showing also how the posts and shelves are to be secured together; and Fig. 10 is a view similar to Fig. 3 of a fourth form of post construction.

Throughout these views like characters refer to like parts.

Referring to the drawing in detail, 10, 11 and 12 designate three shelf sections of the section of shelving illustrated. Posts 13, 14, 15, 16, 17 and 18, of the same length, support the former upon the latter. Short posts 19 below the shelf 12 may be employed to support the entire structure upon the floor or other surface upon which the shelving rests. Or these posts 19 may be omitted and the shelf 12 allowed to rest directly upon the floor or other support.

In the particular arrangement illustrated in Fig. 1, posts 20, 21 and 22, of the same length, are positioned between the shelves 10 and 11 to properly space them and to support the former upon the latter. In this assembly of parts, posts corresponding to the posts 16 and 18 are omitted between shelves 10 and 11, and the required spacing of shelves 10 and 11, and the supporting of shelf 10, are provided by the back 23. In addition to these functions the back 23 also serves to brace the shelves 10, 11 and 12 against displacement. In the particular assembly illustrated, a portion of the structure is assembled by means of intersecting telescopic braces, comprising the brace sections 24, 25 and 26, 27. In this assembly also, a compartment divider 28 and a longitudinal partition or divider 29 are positioned between the shelves 10 and 11. An additional shelf 30 is also interposed between the shelves 11 and 12 and is secured at its ends to the posts 15, 16, 17 and 18.

The continuous shelves which go to make up a complete assembly are preferably made up of sections like the shelf sections 10, 11 and 12. These sections are composed of

sheet-metal provided with front flanges 31, rear flanges 32, and end flanges 33. The end flanges are perforated as at 34 so that two shelf sections may be abutted end to end and their end flanges secured together through these holes. Such an assembly of shelf sections is indicated in Fig. 1 by the shelf section 10 and the fragment of shelf section 35, shown in dotted lines. Each of these shelf sections is also preferably provided with a row of holes 36 along its front edge and a similar row 37 along its rear edge, in each case adjacent to the flanges. The front and rear flanges 31 and 32 may also be perforated as occasion may require. In the particular assembly illustrated, the rear flange of each of the shelves 10, 11 and 12 is perforated at a plurality of points, designated 38, so that the back 23 may be properly secured in position. The rear flanges 32 of the shelves 10 and 12 are also perforated at additional points 39, 39, for the proper securing of the diagonal bracing. Where an intermediate shelf section, such as 30, is employed, its end flanges are perforated the same as the other shelf sections, but, in this case, the holes in the flanges are used to secure the shelf to the sides of the supporting posts.

The particular posts illustrated in Figs. 1 and 2 are constructed as shown in Fig. 3. Each post is formed out of a blank 40. The end portions 41 and 42 and the side portions 43 and 44 are bent up into the form illustrated in Fig. 3, so as to provide a box-like structure whose end portion 41 is adapted to bear against the underside of the shelf above and whose end portion 42 is adapted to bear against the upper side of the shelf below. With this construction the ends of the webs 43 and 44 also bear against the corresponding sides of the adjacent shelves. In illustrating this construction of post, the post 15 of the structure of Fig. 1 has been taken. Accordingly, the holes in the webs 43 and 44 are those provided for use in securing intermediate shelf sections, such as 30. In assembling the posts of the shelf sections, the central web 45 of the post is preferably located on the outside of the assembled structure, although this, of course, is not necessary. In Fig. 6 we have this same post 15 and the foot-post 19 shown connected to the shelves 11, 30 and 12. In assembling these parts, threaded bolts 46 and nuts 47 of uniform size are employed. Indeed, it is preferable to use bolts and nuts of uniform size throughout the entire assembly. In securing the post 15 to the shelf 11, the hole in the portion 41 is brought opposite a hole in the shelf 11 and a bolt 46 is passed through the two openings and a nut 47 securely applied. A similar bolt and nut secure the foot of the post 15, the shelf 12 and the foot-post 19. In this case the bolt passes through holes in the engaging portions of these members. A similar connection is provided between the end flange of the intermediate shelf 30 and the adjacent web 43 of the post. In this case, as before, holes in the flange and web are brought into alinement and the bolt passed through and secured.

The diagonal bracing illustrated in Figs. 1 and 2 comprises two intersecting braces. One of these includes sections 24 and 25 and the other sections 26 and 27. Sections 24 and 27 are each provided with holes at their upper ends for connection to the rear flange 32 of the upper shelf 10. Similarly, sections 25 and 26 are provided with holes in their lower ends for connection to the rear flange 32 of the lowermost shelf 12. Each pair of sections is slotted at their inner ends so that the complete brace may be adjusted to different lengths. When this is done, bolts 48 and coöperating nuts secure the two sections together in adjusted position. These bolts and nuts are the same as the ones previously described as used in securing the posts and shelf sections. A similar bolt 49, having a coöperating nut, extends through the slots of the two braces at the point of intersection and the nut is screwed down when the various shelf parts have been assembled and brought into their proper final position.

As before pointed out, compartment dividers, such as 28, may be employed between adjacent shelves when desired. These dividers preferably consist of a single sheet of metal having upper and lower flanges 50 and 51 suitably perforated so that they may be secured to the adjacent shelves by bolts and nuts like those heretofore described. As shown in Fig. 5, the upper portion of the divider is notched at 52 and 53 so that the front edge of the divider may come flush with the front edge of the shelves without cutting away the flanges on the shelf above, which are preferably turned in at their lower edge, as indicated at 54, to provide a neat finish to the shelves and give extra strength.

Where desired, longitudinal partitions or dividers 29 may be employed. These are provided with flanges at their upper and lower edges, and these flanges are suitably perforated to register with perforations in the adjacent shelves, so that the divider may be secured in place by bolts and nuts like those previously described.

Obviously, in practising the present invention, various modifications of the parts and various changes in details of construction may be made without departing from the spirit and scope of the invention.

In Fig. 7 I have illustrated a modified

post construction. This modification is similar to the form of post illustrated in Fig. 3, but here horizontal portions 41 and 42 are replaced by wings or extensions 55 and 56 upon the webs 43 and 44, respectively. These wings are perforated with perforations having a distance between them such that they will register with the perforations in the front and rear edges of the shelf sections. As before, flanges 43 and 44 may be perforated or not, as circumstances require.

In Fig. 8 another modification of post construction is shown. Here the main web 57 is circular in outline and terminates in parallel webs 58 and 59. These may be perforated or not, just as in the case of webs 43 and 44 of the previously described posts. A horizontal portion 60, similar to the portion 41 in the case of Fig. 3, forms an extension of the web 57 and lies between the flanges 58 and 59. A perforation in this portion serves the same function as the perforation in the portion 41 of the post of Fig. 3.

In Fig. 9 a fourth form of post is illustrated. Here the bottom post 61 terminates in a threaded extension 62 which enters a threaded socket in the lower end of post 63. Similarly, a threaded extension 64, upon post 63, enters a socket in post 65. In assembling the parts, the extension 62 is passed through a hole in shelf 12 before being screwed home into the socket in post 63. Similarly, the extension on post 63 passes through a hole in shelf 11 before being screwed into the socket in the post 65. Finally shelf 10 is placed upon the top of post 65 and a bolt 66 passed through an opening in the shelf into threaded engagement with a socket in the upper end of the post 65.

A still further modification is illustrated in Fig. 10, wherein the horizontal portion 41′, the web 43′, and the web 44′ are interlocked in the process of manufacture. This is clearly illustrated in this figure. The sides of the portion 41′ are bent back upon themselves. Similarly, the inwardly projecting extensions 67 and 68 of the webs 43 and 44 are bent back upon themselves. The bent back portions in each case are hooked into each other and the same are compactly pressed together so as to make a tight box-like structure. Posts of this construction may be readily made upon machines such as are employed in manufacturing cans of sheet tin and similar material. The end portion and the webs are perforated in this case as in previous ones for the purpose of connection with coöperating parts.

In the practice of my invention it will be apparent that many alterations and modifications may be made in addition to those herein indicated without departing from the spirit and scope of the invention. Such alterations and modifications I aim to cover by the terms of the appended claims.

What I claim as new and desire to secure by Letters Patent of the United States is:—

1. Shelving comprising continuous sheet-metal shelves each composed of one or more sections having one or more longitudinal flanges for giving supporting strength and rigidity to said shelves and each having holes positioned at intervals along its length, sheet-metal posts having a plurality of vertical webs each web operating as a thrust member when the shelves are loaded and each post being of a length such as to fit between adjacent shelves at any desired point throughout their length, and devices separate from said posts coöperating with the holes in said shelves to fasten the ends of said posts to said shelves at different positions whereby the position of any post may be shifted as desired without moving any of the other parts.

2. Shelving comprising continuous sheet-metal shelves each composed of one or more sections having one or more longitudinal flanges for giving supporting strength and rigidity to said shelves and each having holes positioned at intervals along its length, sheet-metal posts having a plurality of vertical webs each web operating as a thrust member when the shelves are loaded and each post having a horizontal flange at each end adapted to bear against the adjacent shelf and provided with a hole for coöperating with the holes in the adjacent shelf and each post being of a length such as to fit between adjacent shelves at any point throughout their length, and bolts and nuts for coöperation with the registering holes in said flanges and shelves for securing the posts in desired positions between said shelves.

3. Shelving comprising continuous sheet-metal shelves and sheet-metal posts for supporting and spacing said shelves, each post comprising a plurality of substantially vertical webs meeting along one or more substantially vertical lines and extending from shelf to shelf and each post having a horizontal flange at each end secured to the ends of one or more of said webs and extending at right angles thereto in position to bear against the surfaces of the coöperating shelves.

4. Shelving comprising continuous sheet-metal shelves, sheet-metal posts for supporting and spacing said shelves, each post including a plurality of substantially vertical webs meeting along one or more substantially vertical lines and extending from shelf to shelf and each post having a horizontal flange at each end secured to the ends of one or more of said webs and extending

at right angles thereto in position to bear against the surfaces of the coöperating shelves, and a short bolt passing through a hole in each said horizontal flange and through a coöperating hole in the associated shelf and provided with a nut for securing the parts together.

In witness whereof I hereunto subscribe my name this 17th day of January, A. D. 1914.

THOMAS M. LOTHROP.

Witnesses:

EDWARD A. DICKER,

I. E. LABSEN.