Dec. 7, 1926. 1,609,355

J. HOLLE

METAL SHELVING

Filed Nov. 27, 1922 2 Sheets-Sheet 1

Fig. 1.

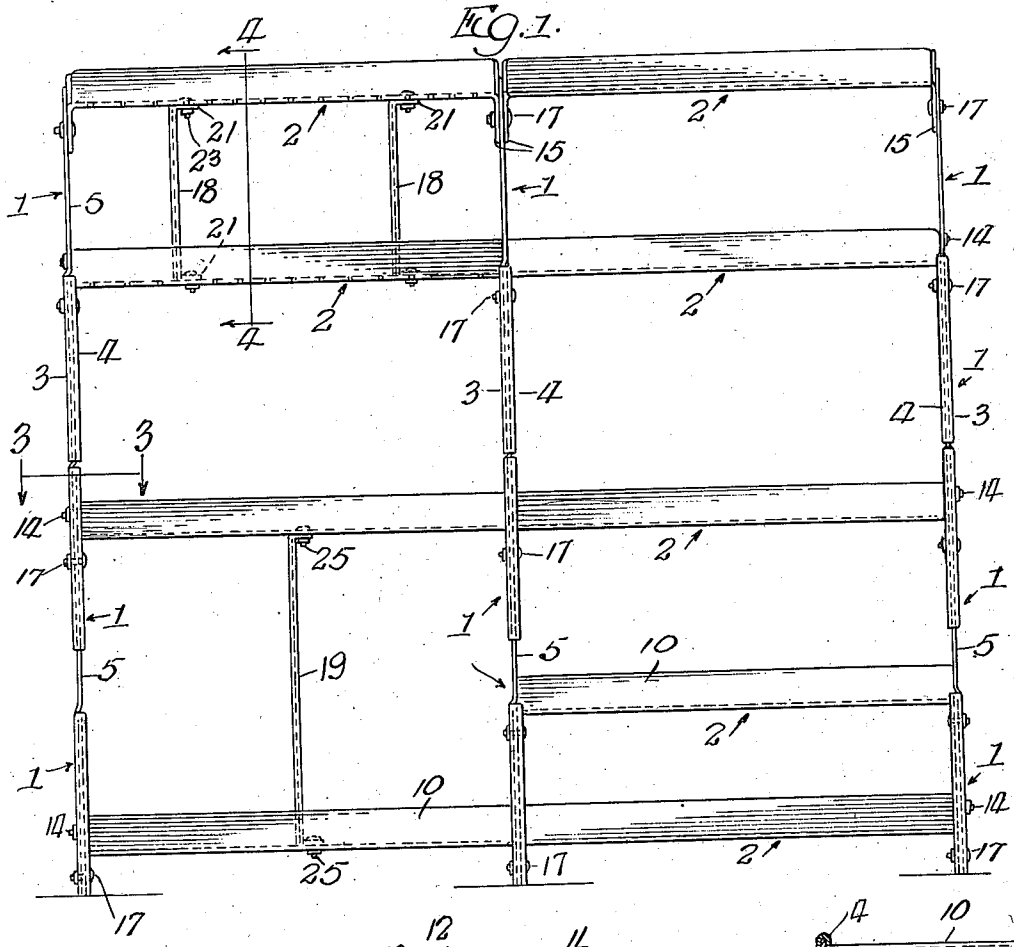


Fig. 2.

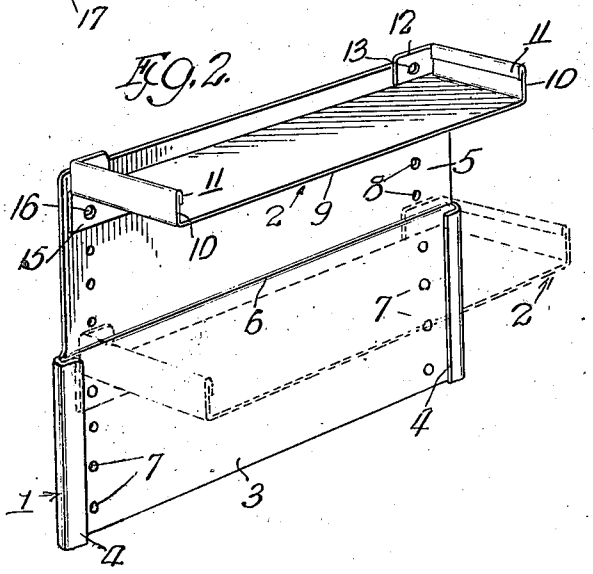
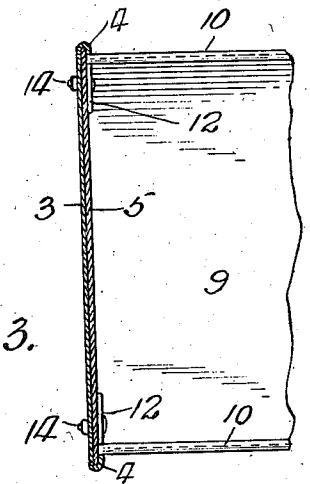


Fig. 3.



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Fig. 4.

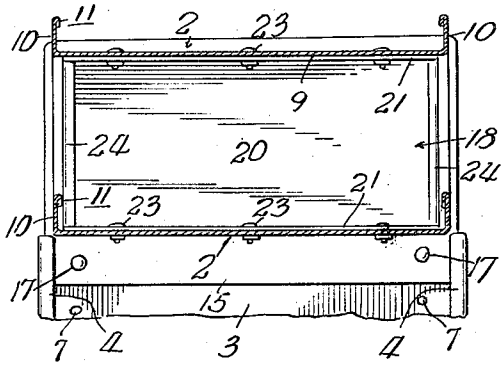


Fig. 5.

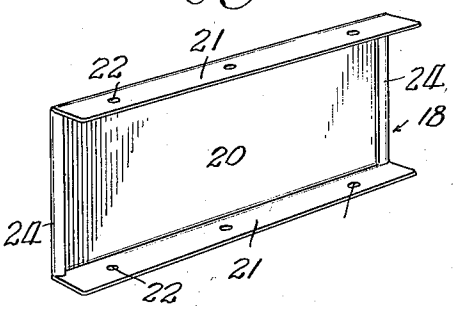


Fig. 9.

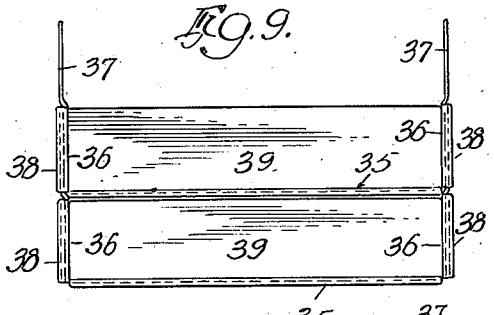
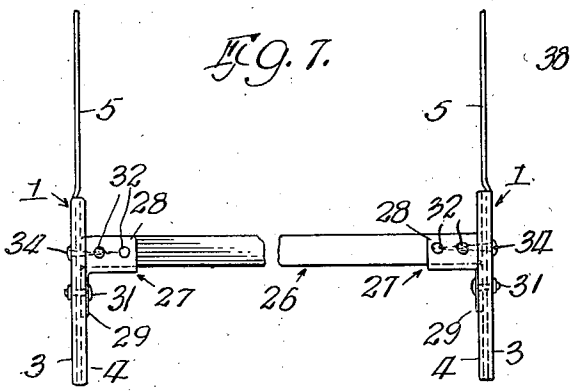


Fig. 7.



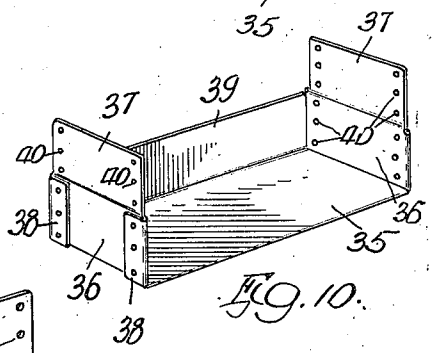
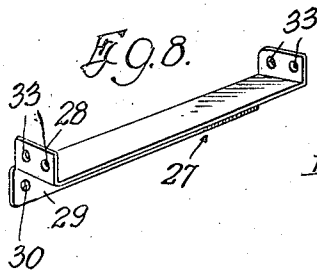


Fig. 10.

Fig. 8.



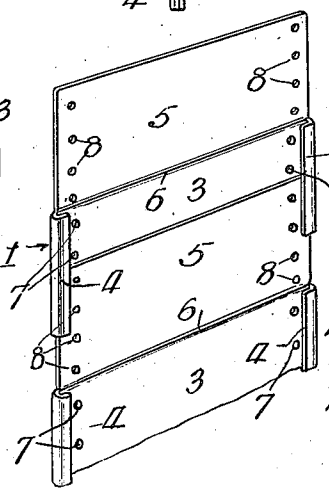


Fig. 6.

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Patented Dec. 7, 1926. 1,609,355

UNITED STATES PATENT OFFICE.

JOSEPH HOLLE, OF NEWARK, NEW JERSEY.

METAL SHELVING.

Application filed November 27, 1922. Serial No. 603,416.

This invention relates to shelving made of sheet or other metal sections or units of relatively small size to facilitate ready and convenient handling and with the units adjustable and in interfitting engagement with each other to facilitate erecting and taking down the structure and further permit expanding of it vertically and laterally by adding additional units from time to time.

One object of my invention is to have the units or sections support each other and thus avoid the use of a separate framework for that purpose.

Another object of my invention is to provide a vertically adjustable connection between the sections or units so that the height of the spaces between the shelves may be varied to suit the uses to which the shelving is placed.

A further object is to provide a construction permitting the sections or units to be stamped from sheet metal in flat blank form and then be bent or folded into the shape required.

A still further object is to provide a construction, not only simple and inexpensive to make and install, but one which is an improvement in shelving generally and which may be made from metal usually considered as of scrap value by manufacturers of various metal stampings, etc.

The invention consists further in the matters hereinafter described and more particularly set forth in the appended claims.

In the accompanying drawings—

Figure 1 is a front elevational view of an assembled metal shelving constructed in accordance with my invention;

Fig. 2 is a vertical sectional view, in perspective, taken through a portion of the structure shown in Fig. 1;

Figs. 3 and 4 are horizontal and vertical sectional views, respectively, taken on lines 3—3 and 4—4 of Fig. 1;

Fig. 5 is a perspective view of the sheet metal partition member shown in Fig. 4;

Fig. 6 is a perspective view of two of the interfitting upright members; the horizontal shelves being omitted for the purpose of illustration;

Fig. 7 is a front elevational view showing a wooden shelf in the structure in place of a metal one;

Fig. 8 is a perspective view of one of the metal members or brackets used with a wooden shelf;

Fig. 9 is a front elevational view of two assembled sections or units of a modified form; and

Fig. 10 is a perspective view of one of the modified sections or units.

In Fig. 1, I have shown an assembled shelving constructed in accordance with my invention and comprising a plurality of vertical rows of laterally spaced uprights consisting of a plurality of members or sections 1, 1, between which extend a plurality of horizontal shelves 2, 2. The members 1, 1 in each row have interfitting and adjustable connection with each other so that the height of the shelving may be varied as desired to meet the requirements of the construction. The horizontal shelves 2, 2 extend between the rows of members 1, 1 and there is a row of such members common to each two rows of horizontal shelves 2, 2, thus permitting the length of the assembled shelving to be expanded as required by adding additional horizontal shelves and rows of upright members to support them, as apparent.

The members or sections 1, 1 are made alike and each is formed from a flat blank of sheet metal having a rectangular body portion 3, as shown in Fig. 2. Said body portion 3 has preferably integral side flanges 4, 4 folded over on the body portion 3 toward each other to provide between them and the body portion a vertical channel-way, as shown. Said body portion 3 is also provided with an integral, upwardly extending part 5 extending the full length of the body portion and offset bodily along the line 6 of junction between the body portion 3 and the upwardly extending part 5 to be in line with the center of the channel-way formed by the flanges 4, 4, as shown in Figs. 2 and 6. This permits the upwardly extending part 5 of one section 1 to enter and be received in the channel-way formed by the flanges 4 and the body part 3 of the section 1 thereabove, as shown in Figs. 1, 3, and 6, and as the sections 1 are made alike throughout the entire shelving structure, it follows that said sections 1 in each row will have interfitting engagement, as described, and also allow the use of said sections in any of the vertical rows.

As shown, the uprights are at the ends of the shelves 2, and the upper and lower offset portions 3 and 5 of the members 1 extend the full depth of the shelves (Fig. 3).

The body portion 3 of each section 1 is provided with a purality of vertically arranged bolt holes 7, 7, and the upright flange 5 of each section is provided on each side with a plurality of bolt holes 8, 8 also vertically arranged and aligned with the bolt holes 7, 7. These bolt holes 7 and 8 in each section 1 are furthermore spaced apart equal distances on each side of the section so that they may be brought into registration with the bolt holes in the interfitting sections and permit the fastening of the sections together in their adjusted positions, and further enable the horizontal shelves 2 to be secured to the rows of sections between which the shelves extend.

The horizontal shelves 2 are made alike. Each shelf 2 is formed from a flat blank of sheet metal having a flat body portion 9 forming the bottom of the shelf when in position between the rows of upright members 1, 1. The front and rear edges of each shelf 2 are flanged upward, as at 10, 10, not only to strengthen the shelf, but also to make the shelf somewhat tray-like in shape and retain articles placed thereon. These flanges 10, 10 furthermore have their upper margins bent or folded inward on themselves, as at 11, 11, to strengthen the flanges and to provide folded margins for the upper edges thereof to avoid the formation of sharp corners.

Each of the flanges 10, 10 has at its ends inwardly extending short flange sections 12, 12, designed to bear flatwise against the portion of the upright sections 1, 1 between which the shelf 2 extends. Each flange 12 is provided with a bolt hole 13 to register with one of the bolt holes in the adjacent upright section 1 and to be secured thereto by a bolt 14 (Fig. 1) for holding the flange 10 against lateral bending during the use of the shelf.

The body portion 9 of each shelf 2 is further provided at each of its ends with a depending marginal flange 15 having at each side a bolt hole 16 to register with any one of the bolt holes in the adjacent upright section 1 and to be secured to that section by a bolt 17, as shown in Fig. 1. These bolts 14 and 17 at the ends of the shelves 2 also extend through the registering bolt holes in the interfitting parts of the sections 1, 1 and secure the same together. Thus, only one set of bolts is required for the sections and the shelves, as the bolts securing the sections together are also used for securing the shelves in place and thus the bolts are these associated parts.

In the assembled structure, any of the spaces between the shelves 2, 2 in each of the rows may be divided vertically into a number of compartments by the use of upright partition members 18, 19, as shown in Fig. 1. As illustrated, the partition members 18, 18 are located between the uppermost shelves in one of the rows, and the partition member 19 is located between the lowermost shelves in the same row.

Each partition member 18 is formed from a blank of sheet metal and has a flat body portion 20, as shown in Figs. 4 and 5. Said body portion 20 has horizontally arranged flanges 21, 21 along its upper and lower edges, and these flanges extend on the same side of the partition member and are provided with a number of bolt holes 22 to receive bolts 23 for attaching the partition member 18 to the shelves 2, 2 between which the partition member extends. These shelves may be provided with a plurality of transverse rows of bolt holes to permit lateral adjustment of the partitions 18, 18. To avoid sharp edges along the front and rear edges of the partition member 18, the body portion 20 is folded inward on itself to provide folded marginal sections 24, 24, as shown. These also serve to strengthen the partition member 18 vertically and, being inside of the flanges 21, 21, also hold them against inward bending.

The partition member 19 is made like the one 18, only it has a greater dimension vertically to fit the space between the two lower shelves 2, 2, which are spaced apart vertically a greater distance than the two top shelves. The partition 19 is secured in place by bolts 25, 25, as shown.

Also in Fig. 1, I have shown the shelves 2 in the two rows at different vertical distances apart. This is accomplished by attaching the shelves to the upright sections 1, 1 at the place desired to secure the required distance between the shelves, or by adjusting the sections 1, 1 vertically.

In Fig. 1, I have also shown the space between the two bottom shelves 2, 2, in the right-hand row, divided horizontally into a plurality of spaces by an interposed shelf 2 secured to the upright end members 1, 1 between which it extends. This is made possible by the bolt holes in said members or sections 1, 1.

In the shelving described, all of the shelves 2, 2, are formed from sheet metal. In some installations it may be desirable to use wooden shelves, and to permit that being accomplished, I have provided the structure shown in Figs. 7 and 8. As there shown, the wooden shelf 26 is supported at its ends by sheet metal brackets 27, 27, both having the general shape shown in Fig. 8. Each bracket 27 has a rectangular body portion provided at its ends with upturned flanges 28, 28, and also a depending flange 29 having a bolt hole 30 adjacent each end to receive bolts 31 for fastening the bracket 27 to the inside of the adjacent upright sections 1, 1, as shown in Fig. 7.

The brackets 27 are secured to the sections 1, 1 in horizontal alignment and between

them extends the wooden shelf 26 having its ends resting on the bottoms of said brackets and secured thereto by nails or wood screws 32, 32 driven into the wooden shelf through holes 33, 33 in the end flanges 28, 28, as shown. As additional means for securing the wooden shelf 26 in place, I employ nails or screws 34, 34 driven into the ends of the wooden shelf through bolt holes in the sections 1, 1 at the ends of the shelf, as shown in Fig. 7.

In Figs. 9 and 10, I have shown a modified form of construction wherein the horizontal shelves and the adjacent upright members are made in one piece. As shown in said figures, each section or unit comprises a flat body portion 35, which forms the bottom wall of the horizontal shelf. Said body portion 35 is provided at each end with an upturned section or flange 36 which continues upward into a portion 37 offset outward from the inner face of the section 36 and constitutes the same part of the structure as the upright flange 5, heretofore described.

Each section 36 is further provided along its sides with inturned flanges 38, 38, which provide vertical channels to receive the tongue member 37 of the section therebelow, in the same manner as heretofore described in connection with the upright sections 1, 1. Along the rear edge of the body portion 35 there is an upright flange 39, which has the same height as the end flanges 36 and forms the rear or back wall of the horizontal shelf unit, as shown in Fig. 10. The structure made as described and shown in Figs. 9 and 10 provides a complete sheet metal section or unit for each horizontal shelf and its upright members at the ends thereof.

To assemble these sections or units, the tongue members 37 are slid into the channels formed by the flanges 38 of the sections thereabove, as shown in Fig. 9 to support the various sections one on the other in each vertical row. The end portions of each section may be provided with a plurality of bolt holes 40, 40 arranged in vertical rows in the same manner as heretofore described, so that the assembled structure may be bolted together through the sides of the several rows of sections.

The shelving described, whether made like that shown in Figs. 1 to 6, inclusive, or like that shown in Figs. 7 and 8 or in Figs. 9 and 10, is an improvement on sheet metal shelving heretofore made. It permits setting up the shelving on the job by engaging the upright sections with each other and bolting the horizontal shelves between them, and further enables the shelving to be expanded either vertically or laterally to take care of the capacities required. This is done by adding new sections or units to the assemblement and, by avoiding the use of a framework for holding the various parts, the extent to which the shelving may be expanded is not limited or defined by any supporting framework.

Furthermore, the shelving being made of sheet metal will resist fire and is also light in weight, yet strong and durable, and moreover the sections may be formed from scrap metal, such as the scrap metal pieces which are produced in the punching out of the centers of the shells of automobile radiators in the manufacture thereof. This allows the shelving to be made at a reduced cost and furthermore utilizes metal which heretofore has been sold for scrap.

Through the registration of the bolt holes in the shelves 2 and the upright members or sections 1, 1, any one or all of the shelves 2 may be secured in place with the side flanges 10, 10 extending downward rather than upward, as shown in the drawings. This allows the use of the shells for boxes, cartons, and so forth, which might extend beyond the front of the shelves.

In the form of structure covered by Figs. 1 to 4, the channel forming flanges 4, 4 terminate short of the adjacent row of bolt holes 7. The shelves 2 fit between these flanges, as shown in Fig. 3. In Figs. 9 and 10, the flanges 38 extend beyond the row of bolt holes 40 in the tongue 37 and themselves are provided with bolt holes to register with those in the end parts 36. Of course the flanges 38 could terminate short of the bolt holes as in Figs. 2 and 3. I have mentioned that the shelving described is formed from sheet metal. That is preferable but not necessarily a limitation, as I could cast or otherwise form the channel members 1, 1. In making the parts relatively small, they occupy small space and may be stored and kept in stock and also facilitate shipping by cartonizing.

While I have shown and described herein in detail shelving constructed in accordance with my invention, it is of course to be understood that the details of construction may be variously changed and modified without departing from the spirit and scope of my invention.

I claim as my invention:

1. Shelving, comprising a plurality of laterally spaced vertical rows of upright members, each row consisting of a plurality of said upright members, the upright members in each row having interfitting flange and channel portions permitting vertical adjustment of said upright members, said upright members in each row having registering bolt holes, shelf members extending between said rows of upright members, said shelf members having end flanges with bolt holes to register with the bolt holes in said upright members, and bolts for adjustably connecting said upright and shelf mem-

bers together by engaging the registering bolt holes thereof.

2. Shelving, comprising a plurality of laterally spaced vertical rows of upright members, each row consisting of a plurality of said upright members, the upright members in each row being of sheet metal and formed to have interfitting flange and channel portions permitting vertical adjustment of said upright members, said upright members having registering bolt holes, shelf members extending between said rows of upright members, each shelf member being of sheet metal and formed to have a bottom wall and end flanges with bolt holes to register with the bolt holes in said upright members, and bolts for adjustably connecting said upright and shelf members together by engaging the registering bolt holes thereof.

3. Shelving, comprising a plurality of laterally spaced vertical rows of upright members, shelf members extending between and supported by said upright members, each row consisting of a plurality of said upright members, each upright member being of sheet metal and formed to have a body portion with inturned flanges forming a vertical channel-way and an integral offset flange portion aligned with the center of said channel-way, the upright members in each row having their offset flanges fitting in the channel-ways of adjacent members to allow vertical adjustment thereof, and means for adjustably connecting said upright members together.

4. Shelving, comprising a plurality of laterally spaced vertical rows of upright members, shelf members extending between and supported by said upright members, each row consisting of a plurality of said upright members, each upright member being of sheet metal and formed to have a body portion with inturned flanges forming a vertical channel-way and an integral offset flange portion aligned with the center of said channel-way, the upright members in each row having their offset flanges fitting in the channel-ways of adjacent members to allow vertical adjustment thereof, said upright members having registering bolt holes inside of said inturned flanges, and bolts for adjustably connecting said upright members together by engaging the registering bolt holes thereof.

5. Shelving, comprising a plurality of laterally spaced vertical rows of upright members, each row consisting of a plurality of said upright members, the upright members in each row being of sheet metal and formed to have a body portion with inturned flanges forming a vertical channel-way and an integral offset flange portion aligned with the center of said channel-way, the upright members in each row having their offset flanges fitting in the channel-ways of adjacent members to allow vertical adjustment thereof, shelf members extending between said rows of upright members, each shelf member being of sheet metal and formed to have a bottom wall and end flanges to fit against said upright members, and means for adjustably connecting said upright and shelf members together.

6. Shelving, comprising a plurality of laterally spaced vertical rows of upright members, each row consisting of plurality of said upright members, the upright members in each row having interfitting flange and channel portions permitting vertical adjustment of said upright members, said upright members having registering bolt holes, shelf members extending between said rows of upright members, each shelf member being of sheet metal and formed to have a bottom wall with upturned flanges along its front and rear edges and end flanges projecting above and below said bottom wall, said end flanges having bolt holes to register with the bolt holes in said upright members, and bolts for adjustably connecting said upright and shelf members together by engaging the registering bolt holes thereof.

7. Shelving, comprising a plurality of laterally spaced vertical rows of upright members, each row consisting of a plurality of said upright members, the upright members in each row having interfitting flange and channel portions permitting vertical adjustment of said upright members, said upright members having registering bolt holes, shelf members extending between said rows of upright members, each shelf member being of sheet metal and formed to have a bottom wall with upturned flanges along its front and rear edges and end flanges projecting above and below said bottom wall, the end flanges extending below said bottom wall being integral therewith and the end flanges extending above said bottom wall being integral with said upturned flanges, said end flanges having bolt holes to register with the bolt holes in said upright members, and bolts for adjustably connecting said upright and shelf members together by engaging the registering bolt holes thereof.

8. Shelving having laterally spaced uprights and horizontal shelves between and supported thereby, said uprights being at the ends of the shelves and consisting of a plurality of members having overlapping upper and lower offset portions for vertical adjustment and extending the full depth of the shelves, the offset portions of each member being rigidly connected, said members in each upright being arranged with their upper portions in alignment, and means for adjustably connecting the overlapping portions of the members together.

9. Shelving having laterally spaced upright and horizontal shelves between and supported thereby, said uprights being at the ends of the shelves and consisting of a plurality of members having interfitting flange and channel portions for vertical adjustment and extending the full depth of the shelves, each member having its flange and channel portions vertically disposed and integrally connected with the flange portion offset over the channel of the other portion, and means for adjustably securing the flange and channel portions of said members together.

10. Shelving having laterally spaced uprights, each upright consisting of a plurality of members having overlapping upper and lower offset portions for vertical adjustment and extending the full depth of the shelving, the offset portions of each member being integrally connected, said members being arranged with their upper offset portions in substantial alignment, horizontal shelves extending between and terminating at the inner sides of the uprights, and means for adjustably connecting the shelves and the members together.

11. Shelving having laterally spaced uprights and horizontal shelves extending between and supported thereby, said uprights being at the ends of the shelves and consisting of a plurality of sheet metal members extending the full depth of the shelves, said members being bent to provide upper and lower offset portions with inturned side flanges on one portion of each member to provide a channel to receive the other portion of an adjacent member, and means for adjustably connecting the members together.

In testimony that I claim the foregoing as my invention, I affix my signature, this 15th day of November, A. D. 1922.

JOSEPH HOLLE.