K. E. HUMBERT.

METAL SHELVING.

APPLICATION FILED JAN. 24, 1921.

1,403,961.

Patented Jan. 17, 1922.

3 SHEETS—SHEET 1.

Fig. 1.

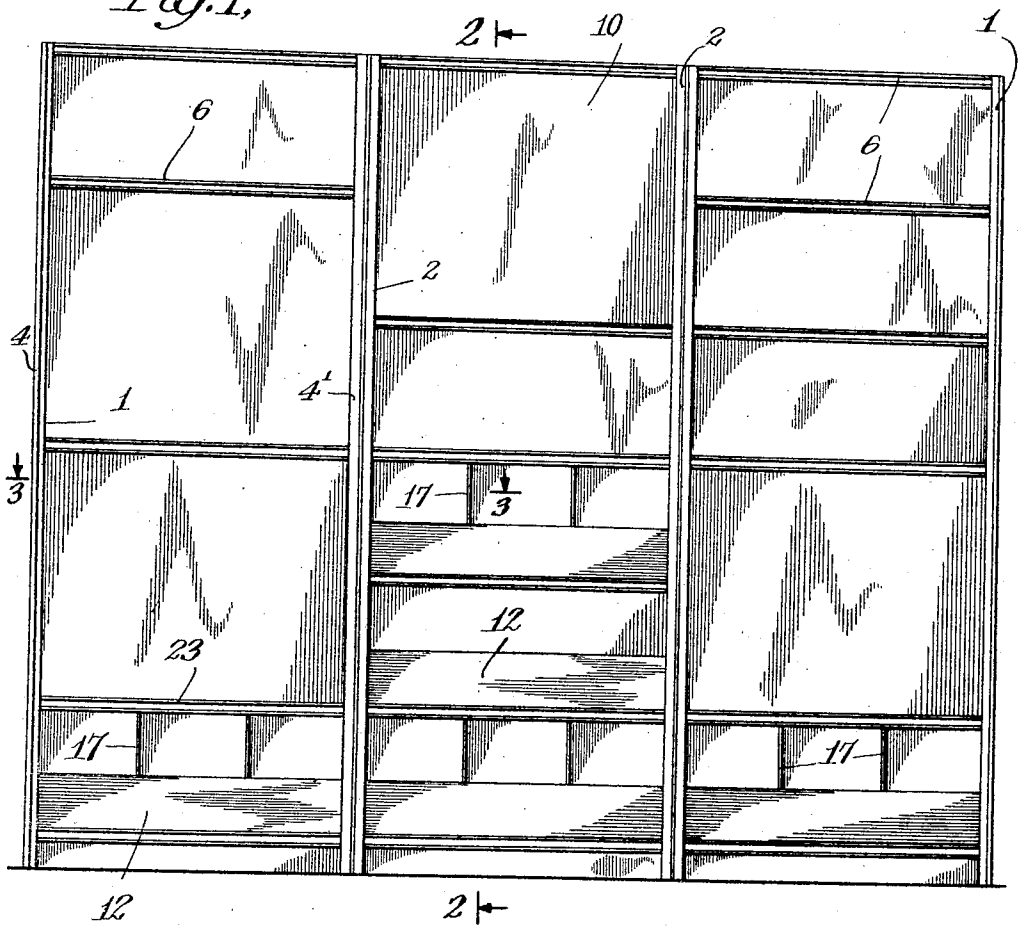


Fig. 4.

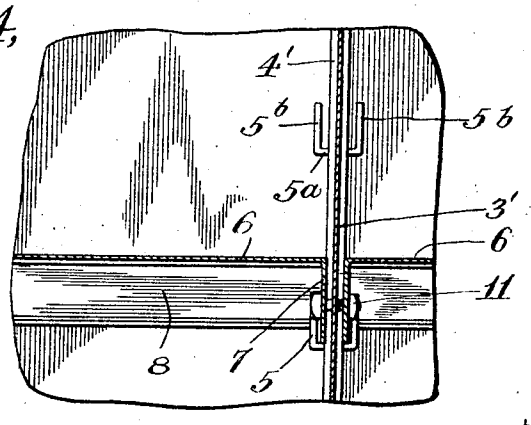
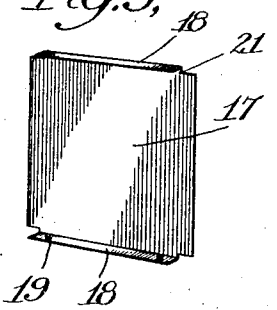


Fig. 5.



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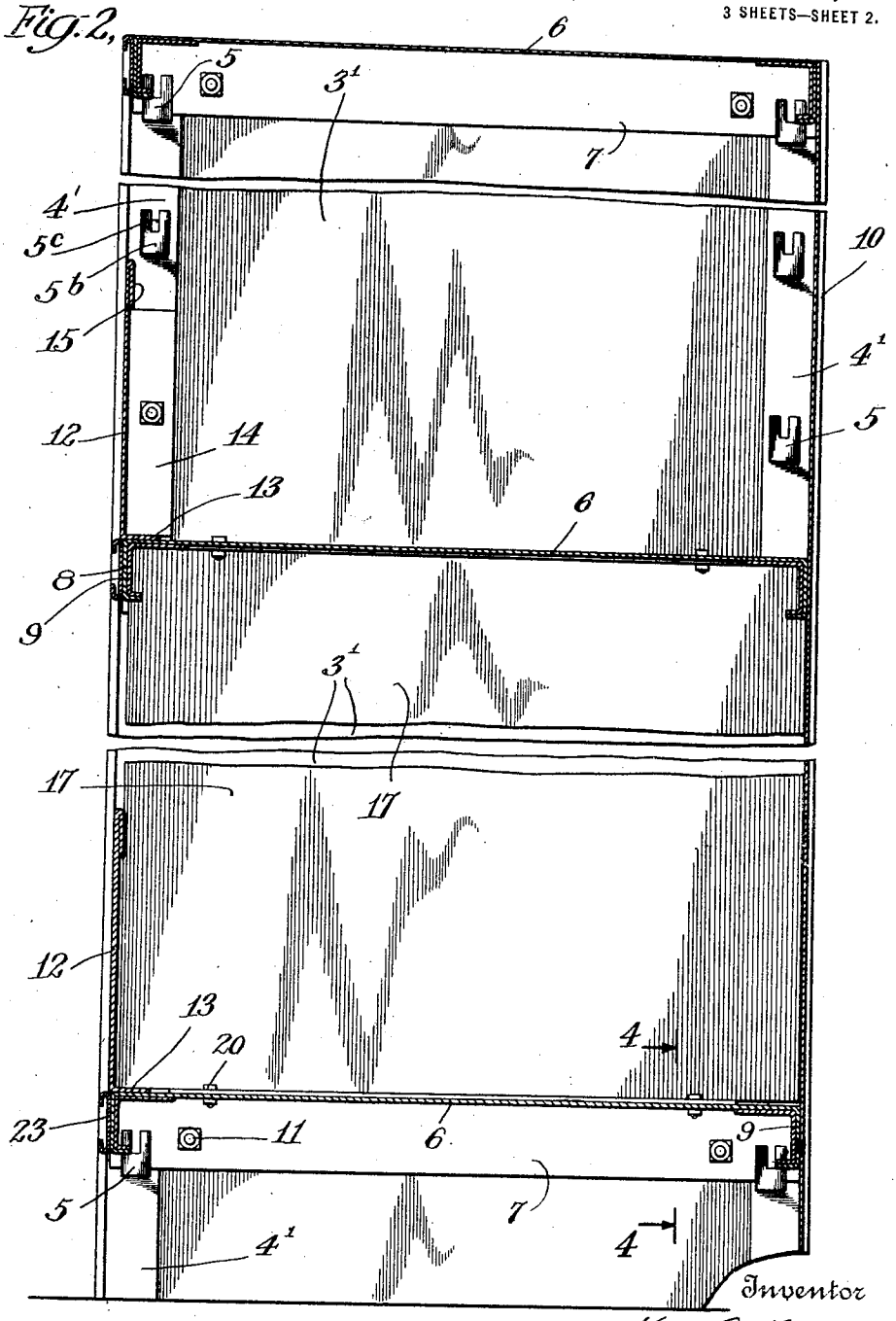
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3 SHEETS—SHEET 2.

Fig. 2.



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3 SHEETS—SHEET 3.

Fig. 3,

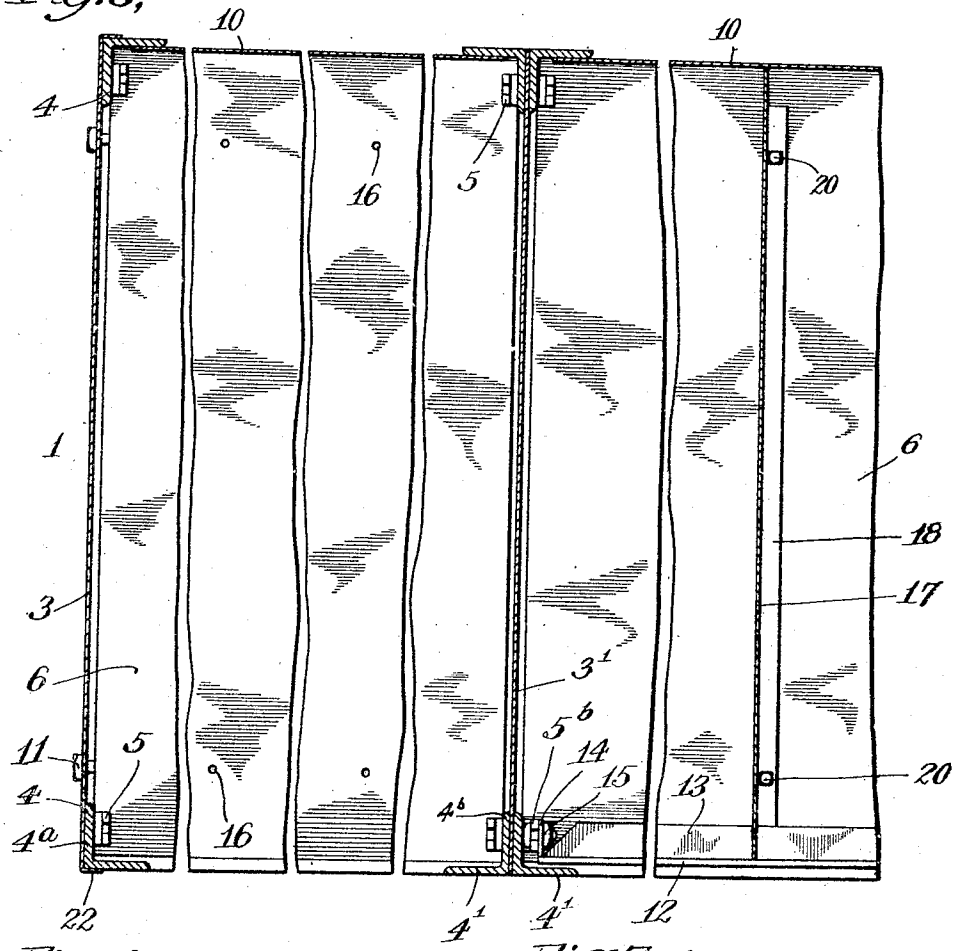


Fig. 6,

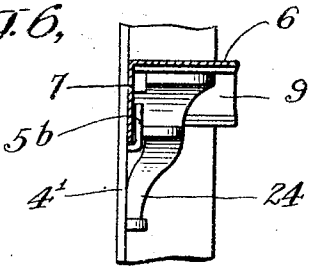
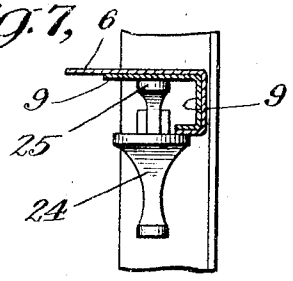


Fig. 7,



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UNITED STATES PATENT OFFICE.

KARL E. HUMBERT, OF RYE, NEW YORK, ASSIGNOR TO C. P. PERIN-S. M. MARSHALL-FRANK L. ESTEP, OF NEW YORK, N. Y., A COPARTNERSHIP.

METAL SHELVING.

1,403,961. Specification of Letters Patent. Patented Jan. 17, 1922.

Application filed January 24, 1921. Serial No. 439,662.

To all whom it may concern:

Be it known that I, KARL E. HUMBERT, a citizen of the United States, residing at Rye, in the county of Westchester and State of New York, have invented certain new and useful Improvements in Metal Shelving, of which the following is a specification.

This invention relates to metal shelving and means for supporting the same. The object of the invention is to provide an improved form of unit shelving which can readily be extended when desired and which is so arranged that the parts may quickly be taken apart and reassembled when different requirements are to be met.

A further object of the invention is to provide a construction in which a finished and desirable appearance is presented and in which few bolts or the like are used.

In accordance with the invention upright members are used as end or intermediate members, these preferably being formed of sheet metal reinforced along the inside vertical edges by angle irons. Tongues are provided, which extend inwardly of the shelving from the upright members to receive the shelves, which latter are formed with downwardly turned end flanges which are adapted to be received by the supporting tongues, in desired horizontal positions. A back plate or plates are provided, if desired, preferably being screwed into position against the rear flanges of the rear angle iron reinforcements of the upright members, back plates being screwed into position from the face of the shelving. Longitudinal and transverse partitions, termed bin strips and shelf division strips, are provided and may be secured in desired positions by improved means hereinafter described. A rigid construction is preferably provided by means of several suitably positioned bolts which are adapted to draw certain ones of the shelves firmly into position against the angle iron reinforcements of the upright members between which the same are positioned.

In order that a clearer understanding of the invention may be had attention is hereby directed to the accompanying drawings forming part of this application and illustrating one embodiment of the invention. In the drawings Fig. 1 represents a front elevation of shelving comprising the invention, Fig. 2 is an enlarged vertical section taken on line 2—2 of Fig. 1, Fig. 3 is an enlarged horizontal section taken on line 3—3 of Fig. 1, Fig. 4 is a vertical section taken on line 4—4 of Fig. 2 representing a detail of construction, Fig. 5 is a perspective view of one of the shelf division strips, Fig. 6 represents a modified form of detail construction, the same representing a side view of a shelf support intended for heavy loads, a portion of the shelf being shown in section, and Fig. 7 represents a front elevation of the same, a portion of the shelf being shown in section.

Referring to the drawings the shelving makes use of a pair of end uprights 1, 1, and may make use of a number of intermediate uprights such as those shown at 2, 2. Each of these uprights is formed of a sheet 3, 3′ of a suitable metal preferably steel, varying in width according to the depth of shelves required and of such height as to extend from the floor to the top of the uppermost shelf. The end uprights 1, 1 are so constructed as to have smooth and finished surfaces on their outer sides and means for supporting the shelves on their inner sides. The intermediate uprights 2, 2 are provided on each side with supporting means for the shelves. The intermediate uprights are identical, so that any of these members may be interchanged in position, rights and lefts not being necessary. The end uprights are also identical.

Angle members 4, 4 are secured, preferably by welding, to the inner surfaces of end sheets 3, adjacent the front and rear edges of the same. Similar angles 4′, 4′ are secured to the front and rear edge-portions of both sides of the metal sheets 3′ comprising the intermediate uprights 2, 2.

Tongues 5 are provided to extend inwardly from the end flanges 4^a of the angle members 4, and similar tongues 5 are provided to extend toward each end from the transverse flanges 4^b of the intermediate uprights 4′. These tongues 5 are preferably provided by slotting the metal and punching or pressing the same to position as indicated. These tongues are formed to provide a horizontal bottom portion 5^a and a vertical portion 5^b extending upwardly therefrom parallel to the flange 4^a from which the same is punched.

It will be noted that these vertical flanges

5^b of the tongues are provided at their upper end portions with vertical slots 5^c, to provide means for securing the bin strips in position as will be more fully described hereinafter. Each of the shelves is formed of a metal sheet 6 preferably of steel, having its end portions bent downwardly at an angle of 90 degrees to form end flanges 7 which are adapted to rest on the horizontal portions 5^a of tongues 5. The shelves are suitably stiffened, preferably by having their side edge portions bent downwardly and then inwardly to form channeled side flanges 8. Additional reinforcement is provided by channel members 9, preferably of steel, which channel members fit within the inside of the channeled flanges 8 of the shelves, channel members 9 preferably being welded in position. The shelves may be made of various widths and lengths to suit requirements.

The shelves are positioned on opposite tongues 5 of the transverse upright members between which the same are to be positioned, such as between an end upright 1 and end intermediate upright 2 or between a pair of intermediate uprights 2, between the front and rear flanges of the front and rear reinforcing members of the uprights.

A back plate or back plates may be provided as indicated at 10, these being formed from steel sheets varying in width to suit the length of section required. These plates are provided with holes along each vertical edge at intervals for fastening to the uprights. Preferably the back plates are secured against the forward surfaces of the rear flanges of the rear angle member reinforcements of the transverse upright members, the back plates preferably being secured in position by means of screws. By this means it is possible to screw the back plates in position from the front of the shelving so that the necessity of screwing up bolts from the rear is avoided, this being objectionable when the shelving is to be erected in position against a wall.

The end flanges 7 of the shelves 6 are provided with holes therethrough and similar holes are provided through the sheets 3, 3′ comprising the upright members, approximately in line with the tops of some of the tongues 5 and adjacent to the vertical transverse flanges from which the tongues 5 are punched. Bolts 11 are inserted through the aligned holes in the uprights and some of the end flanges of the shelves and nuts tightened thereon to bring these shelves snugly against the legs of the angle members secured to the uprights. Preferably the top shelf, the bottom shelf and at least one intermediate shelf are thus drawn up tightly against the upright members, for each section of a unit, so as to make the whole unit rigid.

Longitudinal division strips, which may be referred to as bin strips, are provided, these being made from sheets of metal of lengths suitable for the shelves with which they are to be used. Each bin strip 12 is provided with a bottom flange 13 and with end flanges 14, these flanges being formed at right angles to the faces of the strips. The top edges 15 of the strips are preferably bent back against the inside surface of the strips to form smooth upper edges.

The bottom flanges 13 of the strips are adapted to rest on desired shelves, adjacent to and parallel with the front edges of the same with the end flanges 14 of the strips adjacent to the upwardly turned portions 5^b of the tongues 5 on the adjacent upright members next above said shelves. These end flanges 14 of the bin strips have openings therethrough in alignment with the slots 5^c of the said tongues 5 next above the shelves on which the bin strips are mounted. Bolts 15^a are extended through the aligned openings in flanges 14 and the slots 5^c. The spaces between the upwardly extending portions 5^b of the tongues and the flanges of the angle members from which these tongues are punched provides recesses in which the heads of the bolts may be received.

The shelves 6 are provided with vertical openings 16 therethrough to enable the shelf division strips 17 to be secured in position. These strips are formed of sheet metal with top and bottom flanges 18 which are provided with holes 19 extending therethrough adapted to align with holes 16 in the shelves. Division strips may be mounted in position to extend rearwardly from the front surfaces of desired shelves and secured in position by extending bolts 20 through the aligned openings. The flanges 18 of the shelf division strips are preferably notched at the ends or cut away as indicated at 21, to accommodate the flanges 13 of bin strips which may be used in connection with the shelf division strips.

The front and rear edges of the sheets 3 of the upright end members are preferably turned at an angle as shown at 22 to overlap the front and rear surfaces of the front and rear angle members 4, so as to eliminate the possibly wavy edges of sheets 3. The front flanges 8 of the shelves have punched openings therethrough to enable label holders 23 to be secuerd thereto. These label holders may be formed of channeled strips of metal having openings therethrough adapted to align with the openings in the flanges 8 of the shelves so that bolts may be extended therethrough.

It is sometimes advisable to provide additional support for the shelves in case the latter are to carry heavy loads. Such support may be provided by means of brackets 24 which may suitably be secured to transverse flanges of the angle members of the

uprights between which the shelves are to be carried. Such brackets are shown in Figures 6 and 7 as provided with suitable bearing surfaces 25 upon which the channel reinforcing members 9 at the side edges of the shelves may rest when the shelves are mounted in position with their end flanges resting on the horizontal portions 5^a of tongues 5.

It will be noted that the construction described provides strong and durable parts which may be manufactured in duplicate at a minimum of expense and used interchangeably. It will be obvious that shelves may be positioned at desired horizontal levels by mounting the same on the tongued supports 5 at desired heights and also that bin strips and shelf division strips may be used in connection with shelves for forming bins or inclosures as desired, the bin strips extending part way between the shelves above and below the same and the shelf division strips extending entirely from an upper shelf to the shelf next above the same. It will also be obvious that the back plates may be omitted and the construction used as open shelving when desired. It should be understood that the invention is not limited to the exact form of construction described but is as broad as is indicated by the accompanying claims.

It should be understood that the phrase "transverse uprights" in the claims includes both the end and intermediate uprights, if the latter be used. Also that the phrase "extending inwardly therefrom", in the claims, should be understood as indicating a direction from one upright toward the next adjacent upright.

What I claim is:

1. In shelving, the combination with vertical angle members provided with tongues having a horizontal bottom portion and a vertical flange extending upwardly therefrom parallel to the angle members, and shelves supported on said angle members, of a slot at the upper portion of one of said vertical flanges, a bin strip having a bottom flange adapted to rest on a shelf and having an end flange provided with an opening aligning with said slot in said tongue flange, and a bolt extending through said opening and said slot whereby said bin strip is secured to one of said angle members.

2. In shelving, the combination with a pair of spaced front uprights each provided with inwardly extending tongues having a horizontal bottom portion and a vertical flange extending upwardly therefrom parallel to an upright, and shelves supported on said uprights, of a slot at the upper portion of each of said vertical flanges, a bin strip having a bottom flange adapted to rest upon a shelf and having end flanges each provided with an opening, the opening of one end flange aligning with a slot of a tongue on one of said uprights, and the opening of the other end flange aligning with a slot of a tongue on the other of said uprights, and bolts extending through aligned openings and slots.

3. In shelving, the combination of metal transverse uprights having spaced tongues extending inwardly therefrom, arranged adjacent the front and rear edges of said uprights, shelves having downwardly turned end flanges adapted to rest on any horizontal aligned ones of said tongues, said shelves having vertical openings therethrough, bin strips having bottom flanges adapted to rest on said shelves, parallel to the front thereof, and end flanges, means including slots in said tongues and openings in said bin strip end flanges for securing said bin strip end flanges to horizontally aligned ones of said tongues above the shelves on which said bin strips rest, and shelf division strips adapted to extend rearwardly from the front of desired shelves, said division strips having top and bottom flanges provided with openings adapted to align with said openings in the shelves immediately above and below the same, and bolts extending through aligned openings whereby said division strips are secured to said shelves.

4. In shelving, the combination of sheet metal transverse uprights having vertical angle bar reinforcements along their front and rear inner edge portions, the end flanges of said reinforcements having spaced inwardly and upwardly projecting tongues, shelves having vertical openings therethrough, and downwardly turned end flanges mounted on said tongues, bin strips adapted to extend along the front of desired shelves, having bottom flanges adapted to rest on said shelves and end flanges adapted to be secured to said tongues, and shelf division strips adapted to extend rearwardly from the front of desired shelves, said division strips having top and bottom flanges provided with openings adapted to align with said openings in the shelves immediately above and below the same, and bolts extending through aligned openings whereby said division strips are secured to said shelves.

This specification signed and witnessed this 7th day of January, 1921.

KARL E. HUMBERT.

Witnesses:
ANNA OATES,
I. MCINTOSH.