March 25, 1924. 1,487,856

E. F. HAUSERMAN ET AL

METALLIC BIN, SHELVING, AND THE LIKE

Filed June 27, 1919 4 Sheets-Sheet 1

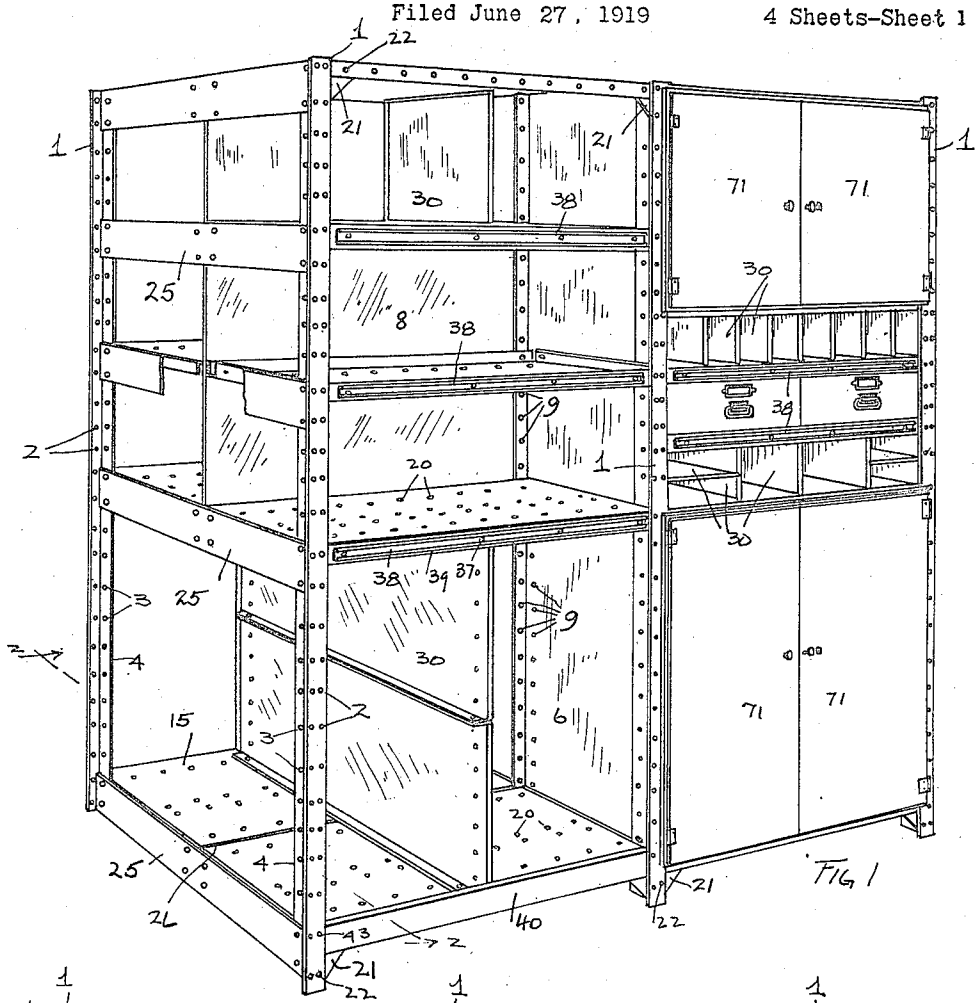


FIG. 1

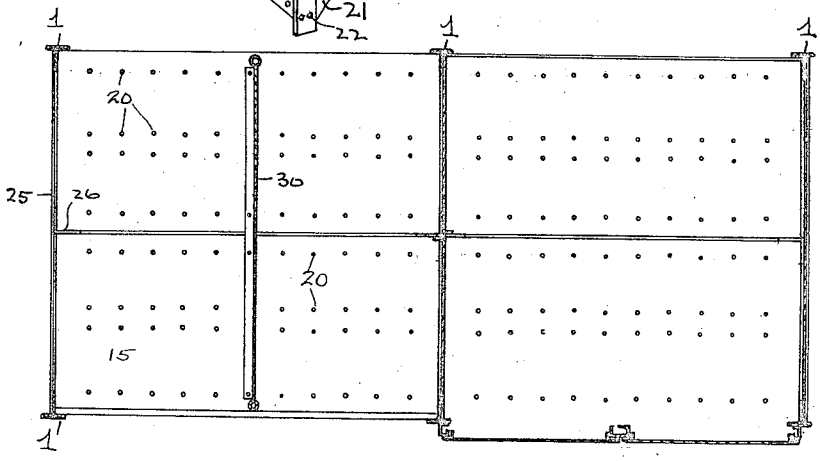


FIG. 2

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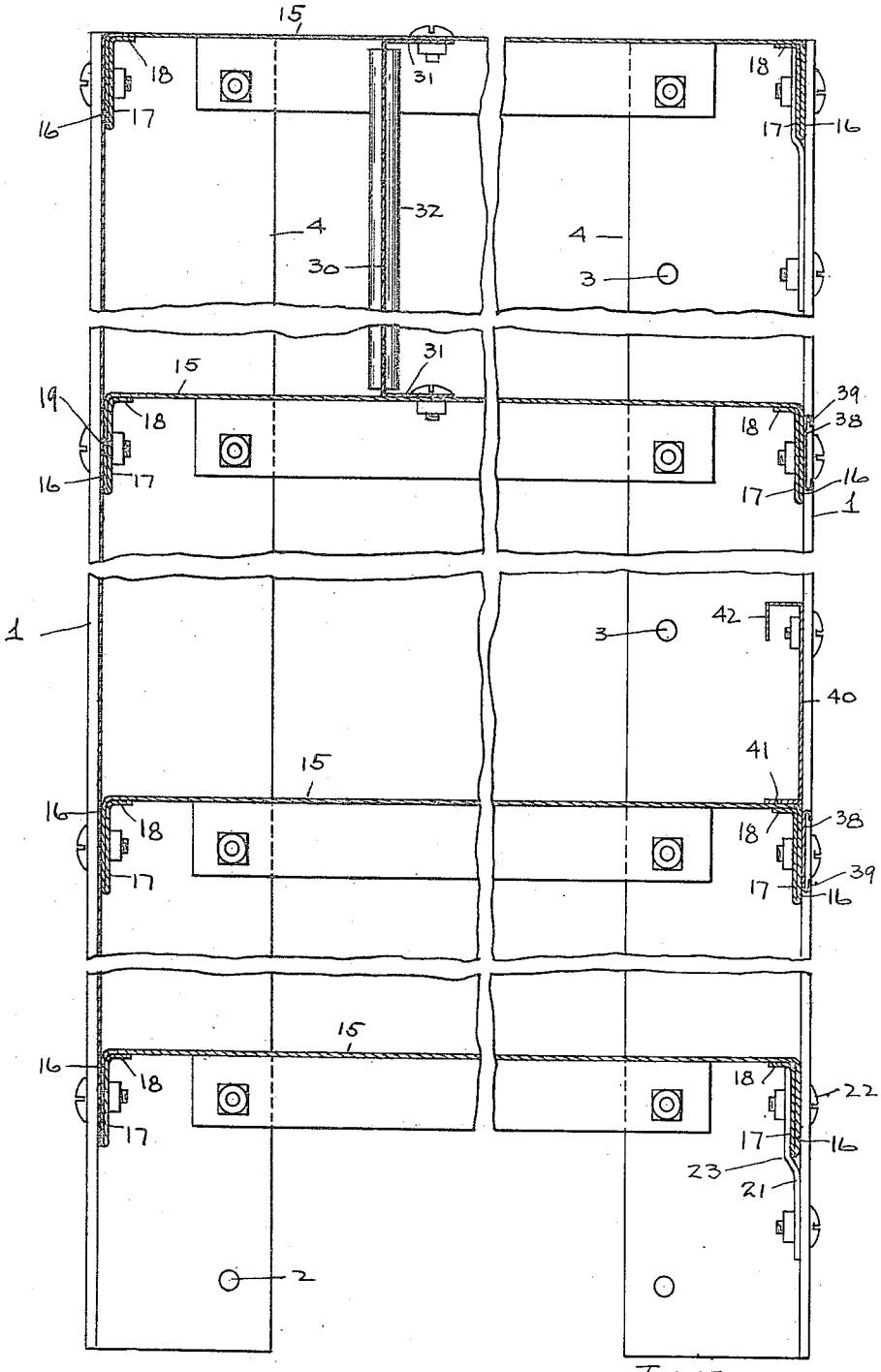


FIG. 5

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METALLIC BIN, SHELVING, AND THE LIKE

Filed June 27, 1919 4 Sheets-Sheet 3

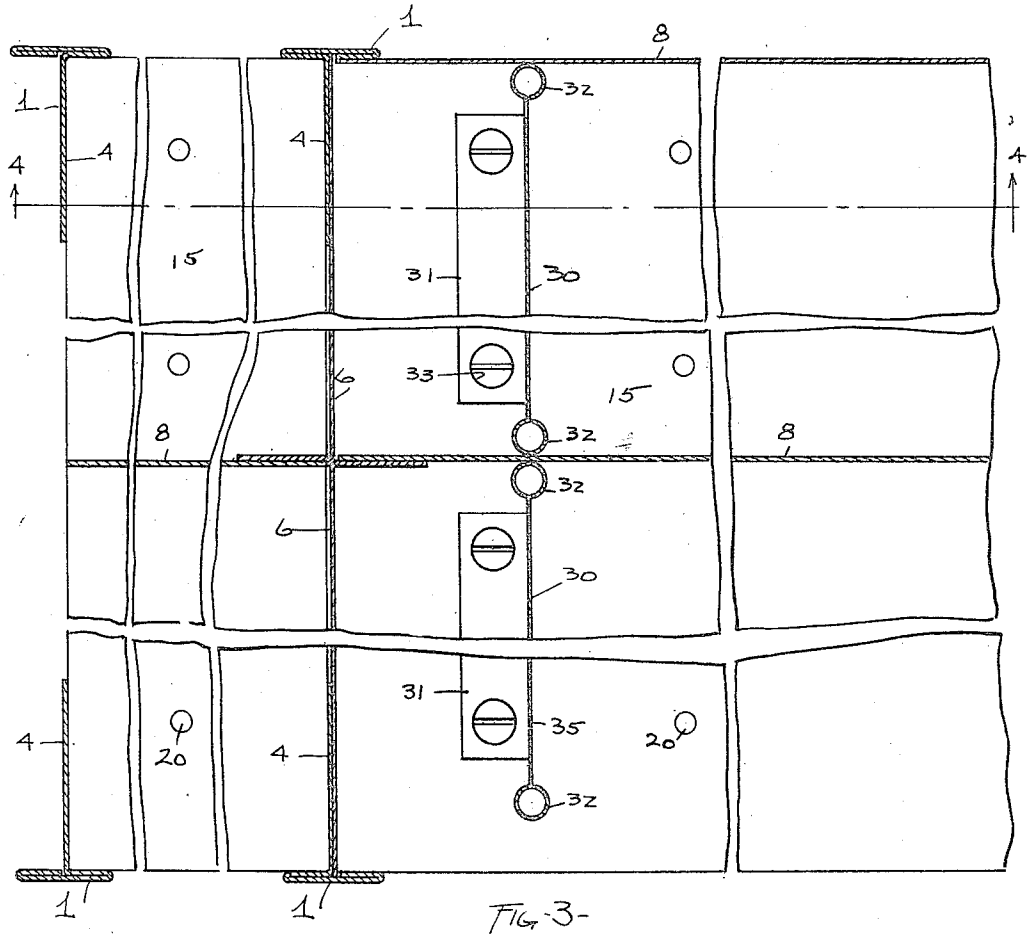


FIG. 3.

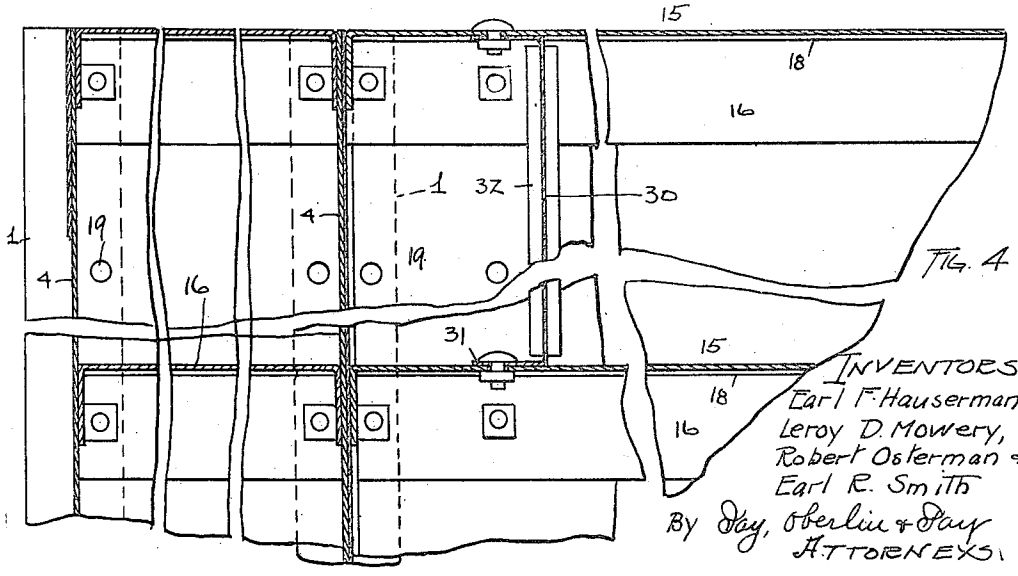


FIG. 4.

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Filed June 27, 1919 4 Sheets-Sheet 4

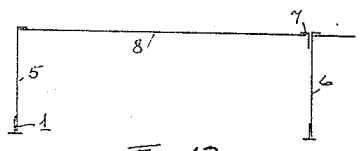


FIG. 13.

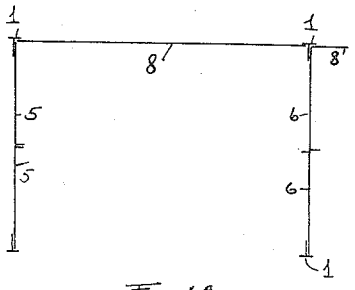


FIG. 14.

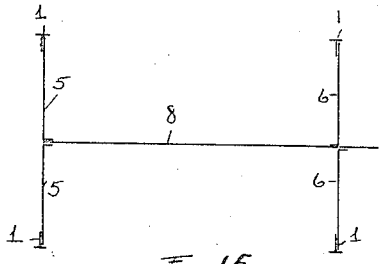


FIG. 15.

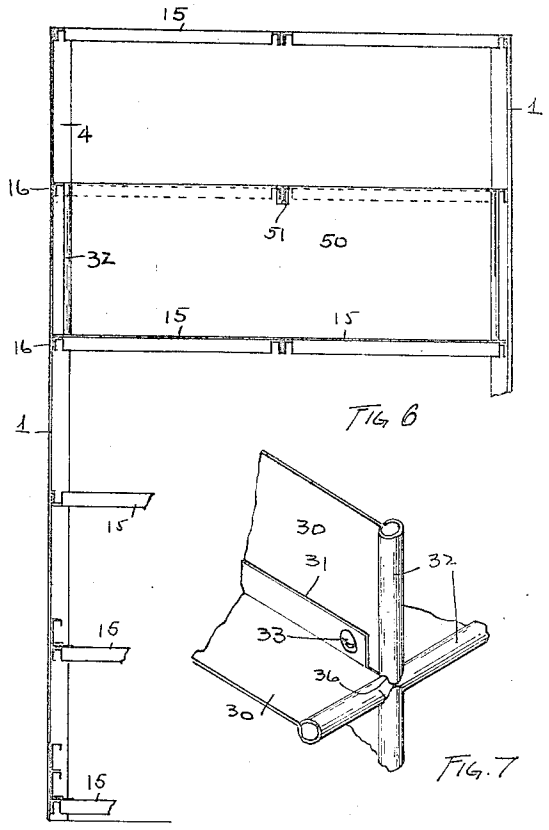


FIG. 6

FIG. 7

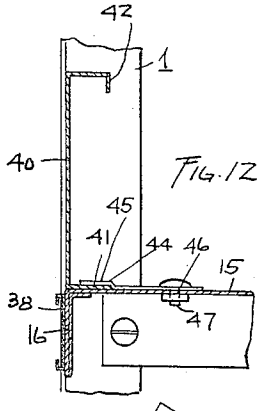


FIG. 12

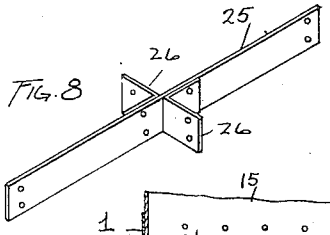


FIG. 8

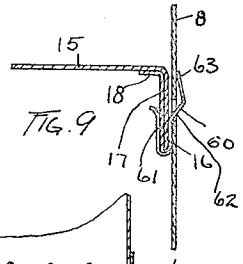


FIG. 9

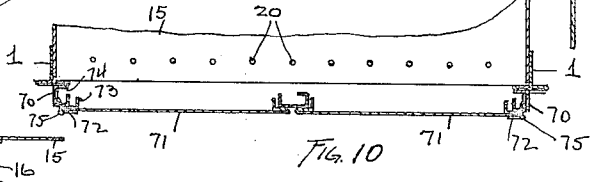


FIG. 10

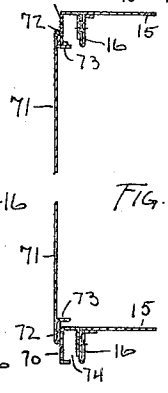


FIG. 11

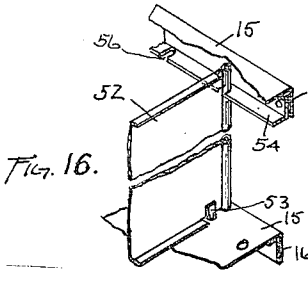


FIG. 16.

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Patented Mar. 25, 1924. 1,487,856

UNITED STATES PATENT OFFICE.

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METALLIC BIN, SHELVING, AND THE LIKE.

Application filed June 27, 1919. Serial No. 307,096.

To all whom it may concern:

Be it known that we, EARL F. HAUSERMAN, LEROY D. MOWERY, ROBERT OSTERMAN, and EARL R. SMITH, all citizens of the United States, and residents of Cleveland Heights, Cleveland, Cleveland, and Lakewood, respectively, all of the county of Cuyahoga and State of Ohio, have jointly invented a new and useful Improvement in Metallic Bins, Shelving, and the like, of which the following is a specification, the principle of the invention being herein explained and the best mode in which we have contemplated applying that principle, so as to distinguish it from other inventions.

The present invention relates to metal bins and shelving of the type suitable for factory use. The construction and arrangement of parts is of particular interest. The parts are constructed so as to be readily assembled into units of any desired size and may quickly and easily be assembled and rearranged to suit varying conditions. Units may be added or the arrangement changed with a minimum of time and the various parts fit readily into place. Another advantage is the particular construction of various parts whereby shelving of great strength is obtained. To the accomplishment of the foregoing and related ends, said invention, then, consists of the means hereinafter fully described and particularly pointed out in the claims.

The annexed drawing and the following description set forth in detail certain mechanism embodying the invention, such disclosed means constituting, however, but one of various mechanical forms in which the principle of the invention may be used.

In said annexed drawing:—

Figure 1 is a perspective view of a shelving unit; Figure 2 is a horizontal section on the line 2—2, Figure 1; Figure 3 is a broken horizontal section through the upper left-hand side of the unit shown in Figure 1; Figure 4 is a section on the line 4—4, Figure 3; Figure 5 is a broken vertical section showing the arrangement of parts of the shelving; Figure 6 is a diagrammatic section showing the construction of double depth shelving; Figure 7 is a perspective view of the joint between a vertical and horizontal divider; Figure 8 is a perspective view of a tie-bar; Figure 9 is a section showing a method of supporting a shelf; Figure 10 is a horizontal section showing door construction; Figure 11 is a vertical section showing door construction; Figure 12 is a section showing the bin front construction; Figures 13, 14 and 15 are diagrammatic sections showing a single face case with single uprights, a single face case with double uprights, and a double face case, respectively; and Figure 16 is a perspective view of a detail.

In the present device Figure 1 illustrates a shelving or bin unit in which the parts have been arranged to show some of the various combinations which may be obtained as well as the construction of certain of the parts which are shown in detail in the other figures. The present device is so constructed that the assembly and the arrangement of parts may be quickly accomplished and the construction is such that units may be added or the entire arrangement changed rapidly and easily.

The shelving consists of T-shaped uprights 1 which as shown in Figure 3 are formed from a single piece of material, thus forming rounded corners along the outer surfaces of the shelving. These uprights are provided with a series of spaced apertures 2 which are preferably spaced on three inch centers. There are other aligned spaced apertures 3 in the extending portion 4 of the uprights.

Where a single face case is used such as is shown in Figure 13, two T uprights are used in front. To the outside upright a flanged sheet 5 is attached, while to the inner upright a second flanged sheet 6 is attached. An angle upright 7 is used at the rear and is connected to the flanged sheet 6 to form a T joint at this point. A back 8 will be attached to the uprights forming a closed-in case. The uprights, sheets and back are all bolted together, the sheets and back being provided with apertures 9 along their edges so spaced as to meet with the apertures in the uprights.

In the case shown in Figure 14 which is of double depth, uprights are used at the corners and two flanged sheets are employed on each side, the sheets on the outside of the case having their flanges turned inwardly,

while the sheets between sections have one flange turned one way and the other flange in the opposite direction. The back 8 is here attached to the rear uprights.

In the double face case shown in Figure 15 the arrangement is similar to Figure 14 except that the back 8 is placed between the flanges of the sheets so as to form a case open on both sides, as will be readily seen. It is of course understood that the flanged sheets and uprights are all provided with spaced apertures so that bolts may be used to hold the same together.

The construction of the shelves 15 is of particular interest, as they are formed of a single sheet of metal having their edges 16 bent at right angles to the plane of the shelf, and these edges are then doubled back upon themselves as at 17 and extend under the shelf proper as at 18 to give a very stiff strong shelf. These bent over edges or flanges 16 are provided with suitable apertures 19 which are adapted to be aligned with the apertures in the uprights, side sheets and backs. The shelves are also provided with spaced apertures 20 over their surfaces.

The shelves fit in between the uprights, being bolted thereto through the apertures in the shelf flanges. At the center of the case in double depth construction the transverse shelf flanges are bolted to the flanges of the uprights. The adjacent flanges of two shelves are also bolted together. By bolting the transverse flanges of the shelves to the flanges of the uprights and the side flanges of the shelves to the side portions of the uprights the entire case is tied securely together. By turning the flanges of the uprights in opposite directions, each shelf is secured at the corners to one of the flanges of the uprights by means of its own transverse flanges, giving a very stiff, rigid unit.

To make the corners of the open-type shelving firm, gussets or corner angles 21 are employed, the gussets being apertured and held by bolts 22 to the uprights, the upper bolts passing through the gussets, shelf flanges and the uprights tying the entire structure securely together, as shown in Figure 5. These gussets are offset slightly as at 23 to allow them to lie inside of the shelf flanges and fit the shelf flanges and the uprights closely.

When the side of the case is to be open as shown in Figure 1 at each shelf, there is provided a tie bar 25 having a cross member 26, the bar fitting between the uprights, and the cross member fitting between the two shelves, the bar and member being apertured and being bolted to both the uprights and the shelves to stiffen the unit. When used, the cross member of the tie bar acts in the same way as the flanges on the uprights which have been previously described.

The space between the shelves may be divided vertically and horizontally by means of dividers. These dividers 30 are sheets of metal provided with flanges 31 along two sides and having rounded ends 32. The flanges 31 are provided with spaced apertures 33 which will align with the apertures in the shelves to which they will be bolted. Where a double height shelf is employed, as in the lower portion of Figure 1, two dividers will be used and will have their intermediate flanges bolted together. These dividers will fit the back closely and will be so made as to fit close to the front flange of the shelf or a divider 35 may be employed as shown in Figure 3 which is spaced rearwardly of the front face of the shelving.

The dividers may also be arranged horizontally to divide the bin into small compartments as shown in one of the sections in the right hand unit of Figure 1. In this case the two dividers will be bolted together, the flange of one lying flat against the face of the other divider, and being bolted thereto. The ends of the dividers are cut away to form semi-circular grooves 36 and these grooves fit around the rounded ends where the dividers join to form a neat smooth joint, as is shown in Fig. 7.

The shelves have label holders 38 along their front edges, these label holders having recurved edges 39 and centrally spaced apertures 37 adapted to be aligned with the apertures in the flanges of the shelves so that suitable bolts may be passed through to hold the same together.

Bin fronts 40 are provided, these bin fronts having a turned-in flange 41 at the bottom and an inwardly and downwardly extending flange 42 at the top. These bin fronts have apertures 43 near their ends so spaced as to be aligned with one of the apertures in the uprights when the fronts rest upon the shelves. To secure the bin front down upon the shelf a clip 44 is provided having a raised or offset portion 45 and an aperture 46 which will be aligned with one of the apertures in the shelf; the raised portion fitting over the bottom flange 41 of the bin front as shown in Fig. 12. A bolt 47 is used to hold the clip to the shelf and thus secure the bin front also to the shelf.

Where a double shelf is employed special dividers 50 will be used. These dividers extend the full depth of the case, and are provided with notches 51 adapted to receive the two depending flanges of the shelves, the dividers otherwise being formed as before. This construction is best shown in Fig. 6.

Removable dividers 52 are also provided, these dividers having fingers 53 formed

along their lower edges, which are adapted to engage in the apertures in the shelves. To hold these dividers in place divider clips 54 are used. These clips are angle-pieces which are adapted to be bolted to the flanges of the shelves, and the angles are notched as at 56, to receive the rounded ends of the dividers to maintain them in position, as shown in Fig. 16. These dividers will be used for temporary purposes where it is desired to make smaller compartments for temporary uses when the shelving has already been erected.

In order to facilitate the mounting of shelves, particularly where the case is mounted against a wall, shelf clips 60 have been provided, as illustrated in Fig. 9. These clips have a hook portion 61 adapted to receive the shelf flange, and a short angular portion 62 which passes through the apertures and then have a bent-in portion or finger 63 adapted to contact the wall of the case. The finger 63 forces the clip tightly against the case and the flange of the shelf is held by the hook. The angular portion 62 is long enough to pass through not only the back but also the uprights, thus making it available in all positions. Where used, these clips take the place of the usual bolts, as will be readily understood.

If desired, doors 71 may be hung before any of the openings to which it is desired to apply them, and are constructed as follows. Strike bars 70, approximately rectangular in cross-section, are provided which are adapted to be bolted to the flanges of the shelves and uprights by means of the spaced holes therein, as is shown in Figs. 10 and 11, and are adapted to be engaged by the outer edges 72 of the doors, forming a stop therefor. The edges of the doors are folded back on themselves, the outer edge of this fold being further bent at right angles to the plane of the door forming an integral reinforcing angle 73 therewith. By means of this construction a light and strong door is provided. Hinges 75 are provided for supporting the doors and may be bolted thereto in a number of different ways, although the proposed manner of doing so is best shown in Fig. 10. The hinges are passed through slots in the strike bars and are then bolted to inner faces of the bars. As shown in the drawing, the lower innermost edge of the strike bar 74 is left open, thereby facilitating easy access to the bolts for assembling and in no way detracting from the strength of the bar.

The present shelving presents a very strong, substantial unit which can be readily assembled and changed to suit conditions of use. The shelves with the flanges, which are double and overlap under the shelf proper, make an extremely substantial construction. The shelves are thus reinforced along their edges in such a way as to give additional strength and yet cut down the weight to a minimum. The dividers which bolt to the shelves add stiffness to the unit, and these may be readily removed and changed around to suit particular conditions.

Another feature is the use of T uprights and the flanged and angle uprights by which units may be added together to form double depth cases, where two or more shelves may be used together. This construction reduces the number of sizes of shelves and uprights necessary for any given number of depths of cases, and yet insures a sturdy substantial case when completed. By turning the flanges of the uprights in opposite directions, along the interior walls of the casing, the entire unit is rigidly secured together because the transverse shelf flanges of each of the double shelves are secured to one of the flanges on the uprights. The shelves are also secured to the uprights proper, and where the shelves are at the same height the bolts extend through both shelves and the upright or the flange. By this present construction the case may be made of any desired depth by merely adding the flanged uprights and connecting the shelves together and to the flanges on the uprights. The case may also be made any desired length and still be made in the form of a single unit as the interior joints at the center of the case are all interconnected by means of the shelves and the bolts.

Other modes of applying the principle of our invention may be employed instead of the one explained, change being made as regards the mechanism herein disclosed, provided the means stated by any of the following claims or the equivalent of such stated means be employed.

We therefore particularly point out and distinctly claim as our invention:—

1. In shelving the combination of T-shaped front uprights having spaced apertures, flanged uprights having complementary spaced apertures adapted to be fastened to said T uprights to form the side walls of a shelving unit and providing angle uprights at the rear of the unit, and shelves having flanges with spaced apertures adapted to fit within said uprights, the apertures in said uprights and such shelf flanges being adapted to be aligned to receive retaining bolts.

2. In shelving the combination of T-shaped front uprights having spaced apertures, flanged uprights having complementary spaced apertures adapted to be fastened to said T uprights to form the side walls of a shelving unit and providing angle uprights at the rear of the unit, a back adapted to fit within and adjacent the flanges of said last named uprights, said back having spaced apertures adapted to be aligned with the apertures in said flanged uprights, and shelves having flanges with complementary

spaced apertures, said shelves being adapted to fit within said uprights and said back, the apertures in said shelf flanges, said back and said uprights being adapted to be aligned to receive retaining bolts.

3. In shelving, the combination of T-shaped front uprights having spaced apertures, flanged sheets having similarly spaced apertures, each sheet being adapted to form the side wall of the shelving and being placed with the flange turned inwardly to form an angle upright for the rear of the shelving, and shelves having similarly apertured flanges, the shelves being adapted to fit within adjacent uprights and flanged sheets, the apertures on said uprights, flanged sheets and shelves being adapted to be aligned, and bolts adapted to pass through such aligned apertures to secure said uprights, sheets and shelves together.

4. In shelving, the combination of a plurality of T-shaped front uprights having spaced apertures, a flanged sheet at each end of said shelving, each sheet having similarly spaced apertures and being adapted to be fastened to one of said uprights, the flanges of said sheets being turned inwardly at the rear to act as angle uprights at the rear corners of the shelving, and other flanged sheets adapted to be fastened to the intermediate T-shaped uprights, each of said intermediate sheets being provided with an angle upright at the rear to form T-shaped uprights within the ends of the shelving, said angles being provided with similarly spaced apertures, shelves adapted to fit within said uprights, flanged sheets and angles, said shelves having similarly apertured flanges, and bolts adapted to be passed through aligned apertures to secure said shelves, flanged sheets, angles and T-shaped uprights together.

5. In shelving, the combination of T-shaped corner uprights having spaced apertures, flanged sheets provided with similarly spaced apertures and being adapted to be attached to said uprights, said sheets having their flanges abutting at the center of the shelving, shelves having downwardly turned flanges provided with similarly spaced apertures, said shelves being adapted to fit within the T uprights and the inturned flanges of said sheets, each full shelf being made up of two shelves having their inner flanges abutting, and bolts for removably fastening said sheets to said uprights and the flanges of said sheets to the shelf flanges.

6. In a shelving unit, the combination of T-shaped corner uprights, provided with spaced apertures, tie bars provided with similarly spaced apertures adapted to be adjustably connected to said uprights, said tie bars having an apertured cross member, shelves adapted to be removably mounted between the cross members and the corner uprights, said shelves having flanges with spaced apertures, each full shelf comprising two shelves with their interior flanges adjacent, and bolts for removably securing said shelves to said uprights and tie bars.

7. In a multiple depth shelving unit, the combination of T-shaped corner uprights, having spaced apertures, flanged sheets having similarly spaced apertures adapted to be connected to said uprights, the outer sheets having their flanges turned inwardly and adjacent each other along the center line of the case, the inner sheets being disposed with their flanges turned opposite to each other, shelves having apertured flanges, said shelves being adapted to fit within the uprights and flanges on said sheets, and bolts removably mounted through such apertures to secure said shelves and sheets to said uprights and said shelves to the flanges on said sheets along the center line of said case.

8. In a multiple depth shelving unit, the combination of T-shaped corner uprights, having spaced apertures, flanged sheets having similarly spaced apertures adapted to be connected to said uprights, the outer sheets having their flanges turned inwardly and adjacent each other along the center line of the case, the inner sheets being disposed with their flanges turned opposite to each other, shelves having apertured flanges, said shelves being adapted to fit within the uprights and flanges on said sheets, bolts removably mounted through such apertures to secure said shelves and sheets to said uprights and said shelves together and to the flanges on said sheets along the center line of said case, and dividers having flanged ends with spaced apertures, said dividers having a notch in their upper edge adapted to receive the two adjacent shelf flanges at the center of the case, said divider being adapted to be removably mounted between shelves.

9. In shelving, the combination of uprights, and flanged shelves carried by said uprights, said shelf and flanges having spaced apertures, shelf clips adapted to be fastened to the inside of the shelf flanges, said clips having an extending portion provided with notches, and removable dividers having top and bottom flanges, and fingers along the bottom edge, said dividers being adapted to be received in the notches in said clips, and the fingers on said dividers being adapted to fit within the apertures in said shelf to maintain the dividers in position.

Signed by us this 2nd day of June, 1919.

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EARL R. SMITH.