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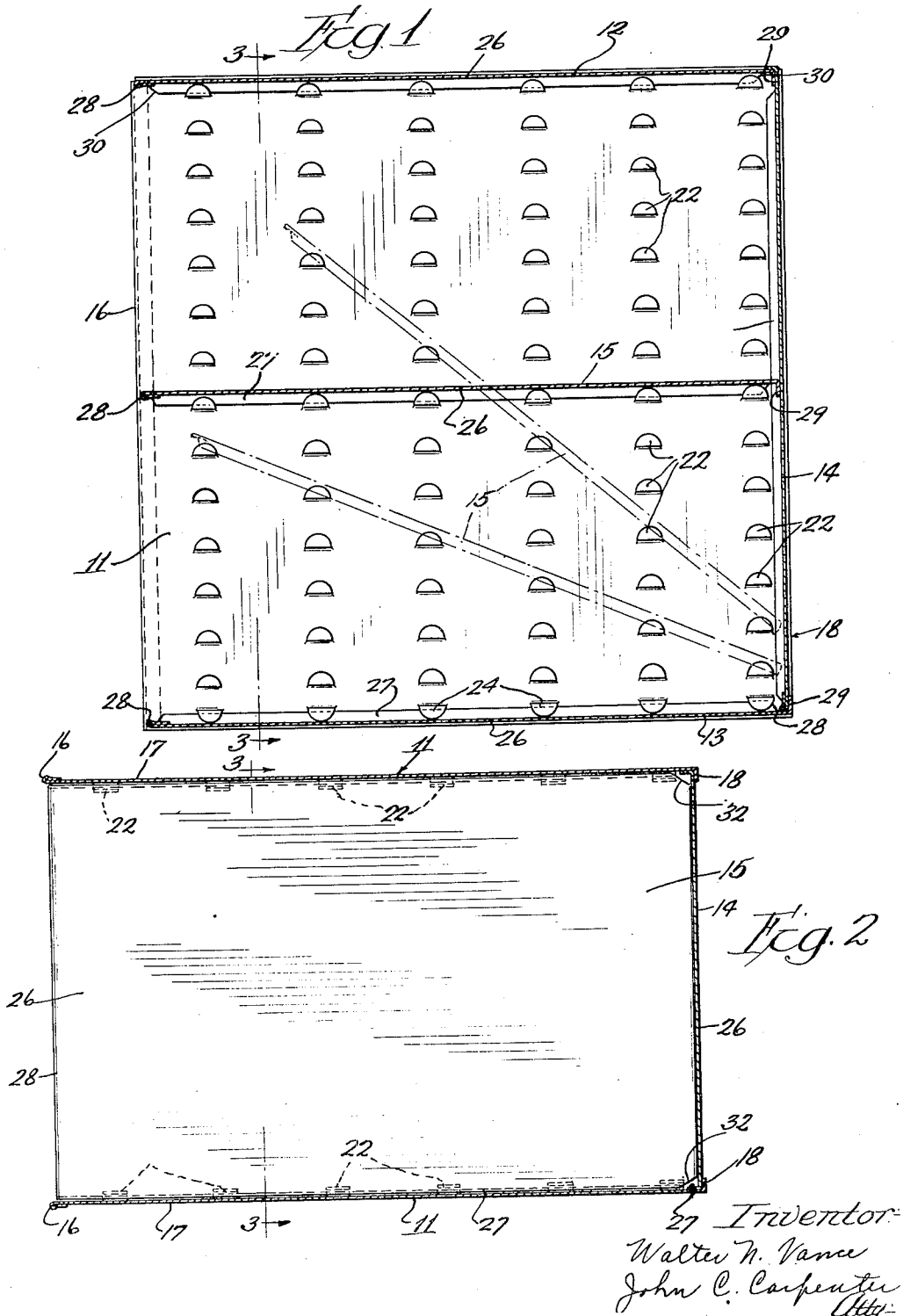
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1,742,976

RACK

Filed June 23, 1928

2 Sheets-Sheet 1



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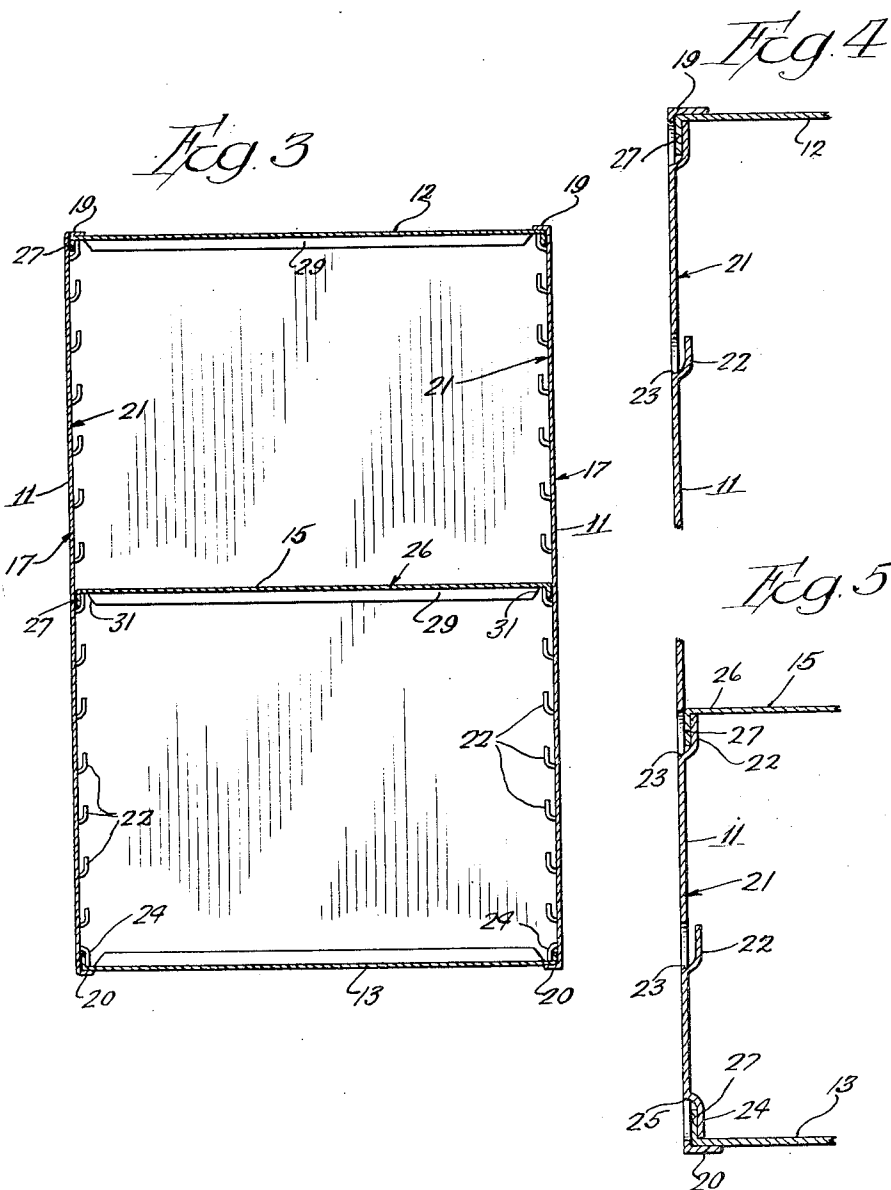
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2 Sheets-Sheet 2



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UNITED STATES PATENT OFFICE

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RACK

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This invention relates to sheet metal racks or shelving and has for its general object to provide an improved construction comprising a minimum number of parts, by which the shelving may be rapidly assembled into units of the desired size, or disassembled, while also providing for rapid adjustment of the shelving in a wide variety of positions.

Numerous other objects and advantages of the invention will be apparent as it is better understood from the following description, which, taken in connection with the accompanying drawings, discloses a preferred embodiment thereof.

Referring to the drawings:

Figure 1 is a vertical sectional elevation taken in a front-to-rear plane of one form of rack unit embodying the invention;

Fig. 2 is a horizontal section of the unit;

Fig. 3 is a vertical sectional elevation taken from side-to-side or lengthwise of the rack, as indicated by the line 3—3 of Figs. 1 and 2;

Fig. 4 is an enlarged fragmentary vertical section of the upper part of the racks; and

Fig. 5 is an enlarged fragmentary vertical section of the bottom part of the rack.

In its general construction, the illustrative rack or shelf comprises the dividers 11 constituting the sides or ends, the top 12 and bottom 13, the back 14, and the selves 15, all made of sheet metal to provide the structures hereinafter set forth.

The sides of the rack, or dividers 11, are each made from flat vertical plates and extend in vertical planes from front-to-rear of the rack unit. Each divider is provided along its front vertical edge with flanging 16 bent to form a bulb fold and then rebent to lie substantially flat against the outside face surface 17 of the divider. Along its rear vertical edge, each divider 11 is formed with vertical flanging 18 bent from the main plane of the divider and projecting inwardly therefrom in the side-to-side or lengthwise dimension of the rack. The rear flanging 18 provides shoulders which cooperate mutually to support the back 14 of the rack as hereinafter described.

At their tops and bottoms, the divider plates 11 are also provided preferably with

sidewise extending flanging 19 and 20 (Figs. 3, 4 and 5) which project horizontally inwardly from the inside faces 21 of the dividers.

For the purpose of supporting the shelving at different levels and angles, the dividers 11 are provided each with superposed horizontal rows of ears or frets 22 punched and bent from the main planes of the dividers and respectively projecting inwardly and upwardly, from their bottom lines 23 of attachment to the opposite inside faces or surfaces 21 of the divider plates. As shown the frets are spaced from each other, both horizontally and vertically, distances greater than the horizontal and vertical dimensions of any fret. This arrangement permits ready adjustment of the shelving 15 not only at different horizontal levels, but at various angles with respect to the top or bottom of the rack unit. In the illustrative embodiment, the several rows of ears or frets 22 are arranged in vertical as well as in horizontal alinement, thereby promoting the symmetrical appearance of the divider plates and also permitting considerable variation in the angle of adjustment of the shelving, as shown particularly in Fig. 1. The rows of frets 22 are spaced vertically the minimum distance permitted between any two adjacent horizontally-positioned shelves and sufficient frets are provided preferably to permit of wide variation in the levels of adjustment of the shelving.

The extreme bottom row 24 of frets are punched and bent inwardly from the main planes of the dividers 11 similarly to the other rows 22, but project downwardly from their top lines of attachment to the divider plates, in order to provide for holding down the bottom 13 of the rack.

The illustrative rack provides a structure whereby the top 12, bottom 13, back 14, and shelves 15 may be made all substantially uniform in structure and dimensions. Each of these parts may be made from a sheet metal plate 26 cut to the required dimensions and so formed as to function in the rack either as a top, bottom, back or shelf. The plates 26 are provided with flanges 27 extending along

their opposite sides and bent so as to project in the same direction substantially perpendicularly to the main planes of the plates. At one end, each plate 26 is formed with flanging 28 bent into a bulb fold and then re-
 5 bent to be substantially flat against the same surface of the plate from which the side flanging 27 projects. At its other, each plate 26 is formed with end flanging 29 bent sub-
 10 stantially perpendicularly to the plane of the plate and projecting therefrom in the same direction as the side flanging 27. The opposite ends of the side flanging 27 are bevelled, as shown at 30, from the line of bend converg-
 15 ently towards the free edge of the flanging; and the opposite ends of the end flanging 29 of the plate are bevelled similarly, as shown at 31.

In order to provide clearance for the vari-
 20 ous parts in assembling into rack units, the corners of the plates 26 between the side and end flanging thereof may be bevelled off, as shown at 32.

In constructing a rack unit with the di-
 25 viders 11 and plates 26 above described, it is only necessary to provide a pair of divider plates 11 for the sides, a pair of plates 26 for the top 12 and bottom 13, a third plate 26 if it be desired to provide a back 14, and such other
 30 plates 26 as may be required for the shelves 15. The top 12, bottom 13 and dividers 11 constituting the side walls of a unit may be connected in any convenient sequence by slid-
 35 ing the top and bottom in interengagement with the spaced dividers so that the side flanging 27 of the top plate 12 projects downwardly into the spaces between upper rows of frets 22 at the same level, and the inside faces 21 of the dividers and the side flanging 27 of the
 40 inverted bottom plate 13 project upwardly inside the bottom rows 24 of reversely projecting frets. If the top 12 and bottom 13 be applied to the extreme top and bottom rows of frets of the side dividers, the upper face or
 45 surface of the top 12 underlies and is embraced by the top side flanging 19 of the dividers and the lower face or surface of the bottom 13 rests upon the bottom side flanging 20.

Whenever a back 14 is employed for the
 50 rack unit, one of the plates 26 is positioned with the bulb flanging end 28 lowermost and is turned so that the side flanging 27 will project forwardly of the unit and inside the inner faces 21 of the divider plates. The back
 55 14 may be slid into place by lowering it until the bulb flanging 28 is positioned forwardly of and within the upstanding end flanging 29 of the bottom 13, and the end flanging 29 of the back rests upon the upper surface of the top 12 and the forward inside face of the back engages the end flanging 29 of the top.

Any desired number of shelves 15, within
 65 the capacity of the rack unit, may be applied

at the levels, or at the various angles permitted by the rows of frets 27 between the top and bottom of the rack unit. The shelves may be rapidly applied or removed by sliding the interengaged side flanging 27 within and relatively to any two companion rows of frets 22.
 70 When in position, the shelves 15 are pushed back preferably far enough so that their end flanges 29 engage and help support the back 14.

The illustrative rack unit construction here-
 75 inbefore described provides a true knock-down structure in which the parts may be assembled or adjusted rapidly to various shelving requirements, without the employment
 80 of any extraneous fastening devices whatever. Moreover only three structurally different types of parts are required to provide a unit of any predetermined dimensions having a wide capacity for various adjustments
 85 of shelving not only at different levels, but also in many different angular positions. These parts are the two dividers which differ from each other only in that the frets 22 and 24 are pressed reversely from the plane
 90 of the dividers to provide the right and left sides of the rack unit, and the flanged plates 26 all of which are alike and may be employed for either top, bottom, back, or shelving. Although extremely cheap to manufacture
 95 because of the small number of parts, all of which are made of sheet metal by relatively simple factory methods, the units are strong and durable and when assembled the parts remain permanently in adjusted position.
 100 The bulb flanging 16 and 28 at the front edges of the dividers, top, bottom and intermediate shelves, provide smooth, rounded surfaces, which eliminate sharp corners and avoid
 105 tearing of clothing, or possible injury to the articles, in depositing them on or removing them from the shelves.

Such rack units have one important use as
 shelving under ordinary wooden store coun-
 110 ters, for carrying reserve stocks of the article displayed upon the counters. They may be assembled readily in units with the desired length of shelving and the shelving may be adjusted rapidly at back or angles
 115 to suit the requirements of the articles stored in the racks.

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
 120 made in the form, construction and arrangement of the parts without departing from the spirit and scope of the invention or sacrificing all of its material advantages, the form hereinbefore described being merely a
 125 preferred embodiment thereof. Moreover, it is not indispensable that all features of the invention be used conjointly, as they may be advantageously employed in various
 130 sub-combination and other combinations.

I claim:

1. In a sheet metal shelf or rack construction, the combination with side divider plates having top and bottom front-to-rear extending, inwardly-projecting horizontal flanging, front bulb-fold vertical flanging and rear inwardly-projecting vertical flanging and provided with vertically-superposed horizontal rows of horizontally elongated shelf-supporting frets projecting upwardly from the inside faces of said divider plates and with a bottom horizontal row of reversely-projecting frets, the vertical and horizontal distance between any two adjacent frets being greater than the corresponding dimensions thereof, of a top, bottom, back and shelving supported by said divider plates and having interlocking engagement therewith to form a unitary structure, each comprising a plate having projecting side flanging, similarly projecting flanging at one end and bulb-fold flanging at the other end, the top plate and shelving being arranged with the bulb-fold flanging at the front and supportable by sliding interengagement of the downwardly-projecting side flanging thereof with said upwardly-projecting frets, the bottom plate being turned reversely with respect to the other plates but also with the bulb-fold flanging at the front and supportable upon the bottom horizontal flanging of the divider plates with sliding interengagement of the side flanging of the bottom plate with the reversely-projecting frets of the divider plates, and the back plate being vertically positioned at the rear of the rack with the side flanging thereof embraced by the rear vertical flanging of the divider plates, with its bulb flanging at the bottom embraced by the upwardly-projecting end flanging of the bottom plate and with its other end flanging embracing the downwardly-projecting end flanging of the top plate.

2. In a sheet metal shelf or rack construction, the combination with the side divider plates having top and bottom horizontal and rear vertical flanging and front bulb-fold vertical flanging and provided with horizontal rows of horizontally-elongated shelf-supporting frets projecting inwardly from the inside faces of said divider plates and with a bottom horizontal row of reversely-projecting frets, the distance between any two adjacent frets being greater than the corresponding dimensions thereof, of a top, bottom, and back interlocking with said divider plates, shelves slidably and adjustably supported by said divider plates to form a unitary structure, said top, bottom, back, and shelving each comprising a plate having side end flanging and bulb-fold flanging at the other end, the top plate and shelving being arranged with the bulb-fold flanging at the front and supportable by sliding interengagement of the side flanging thereof with said upwardly-projecting frets, the bottom plate being

turned reversely with respect to the other plates but also with the bulb-fold flanging at the front and supportable upon the bottom horizontal flanging of the divider plates with sliding interengagement of the side flanging of the bottom plate with the reversely-projecting frets of the divider plates, and the back plate being vertically positioned at the rear of the rack with the side flanging thereof embraced by the rear vertical flanging of the divider plates, with its bulb-fold flanging at the bottom embraced by the upwardly-projecting and flanging of the bottom plate and with its other end flanging embracing the downwardly-projecting end flanging of the top plate.

3. In a sheet metal shelf or rack construction, the combination with the side divider plates having top and bottom horizontal and rear vertical flanging and front bulb-fold vertical flanging and provided with horizontal rows of horizontally-elongated shelf-supporting frets, the distance between any two adjacent frets being greater than the corresponding dimensions thereof, of a top, bottom, back and shelving interlocking with said divider plates to form a unitary structure, each comprising a plate having side and end flanging and bulb-fold flanging at the other end, the top, bottom and shelving plates being arranged with the bulb-fold flanging at the front and slidably engageable with said frets and interlocked therewith, and the back plate being vertically positioned at the rear of the rack with the side flanging thereof embraced by the rear vertical flanging of the divider plates, with its bulb-fold flanging at the bottom embraced by the end flanging of the bottom plate and with its other end flanging embracing the end flanging of the top plate.

4. In a sheet metal shelf or rack construction, the combination with the side divider plates having horizontal and vertical flanging and provided with shelf-supporting frets spaced both horizontally and vertically distances greater than the corresponding dimensions thereof, of a top, bottom, and intermediate shelving and a back supported by said divider plates, each comprising a plate having side and end flanging, said shelving plates being slidably engageable with said frets, means for selectively supporting said shelving at various levels or angles with respect to the tops of the divider plates, and the back plate being vertically positioned at the rear of the rack with the side flanging thereof engaging the rear vertical flanging of the divider plates, and with its top and bottom flanging engaging the end flanging of the top and bottom plates.

5. In a sheet metal shelf or rack construction, the combination with the side divider plates having shelf-supporting frets spaced both horizontally and vertically distances greater than the corresponding dimensions

thereof, of a top, bottom and intermediate shelving interlockingly supported by said divider plates to provide a unitary structure, said top, bottom, and intermediate shelving, each comprising a plate having fret-engaging flanging which is slidably engageable with said frets, said shelving having means for selectively supporting said shelves on said frets at different levels or at different angles with respect to the tops of the divider plates.

6. In a sheet metal shelf or rack construction, the combination with the side divider plates having shelf-supporting frets spaced distances greater than the dimensions of the frets themselves, of shelving supported by said divider plates, and means on said shelving and engageable with said frets, whereby said shelving may be selectively arranged at different levels or at different angles with respect to the tops of the divider plates.

7. In a sheet metal shelf rack, a pair of spaced uprights providing end walls and having superposed horizontal rows of inwardly and upwardly extending shelf supporting frets, said frets comprising struck out portions of the uprights, and each row consisting of more than two frets, the frets of each row being formed in vertical alignment with the corresponding frets of every other row and formed so that shelf members may be selectively arranged and supported by the frets of any one row or a fret from each of several adjacent rows, whereby to support the shelf at any desired angle between the uprights.

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