

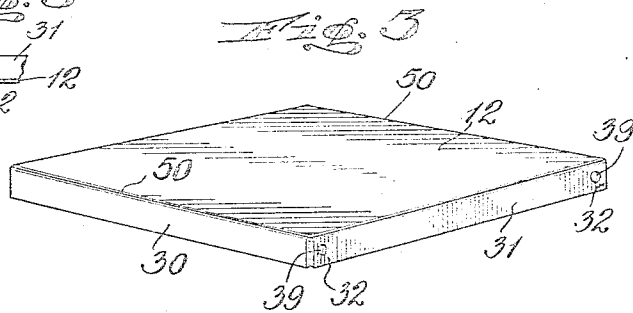
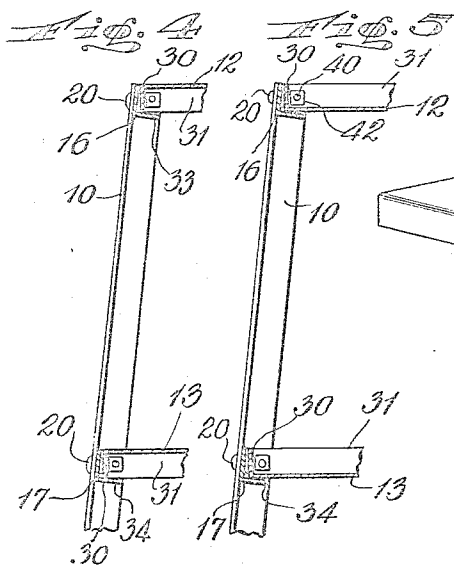
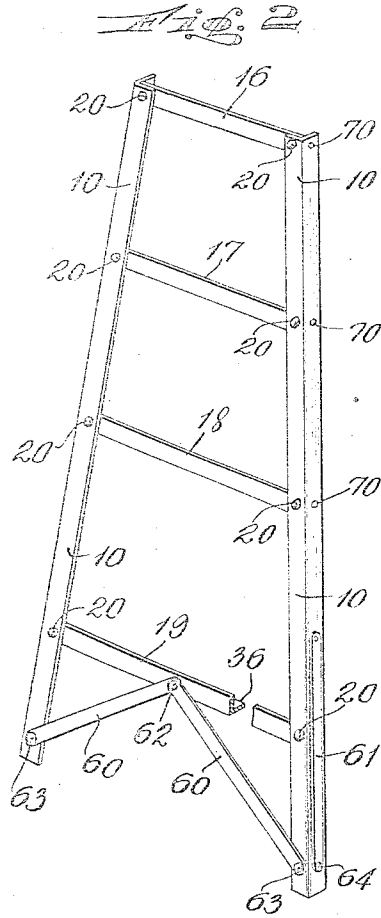
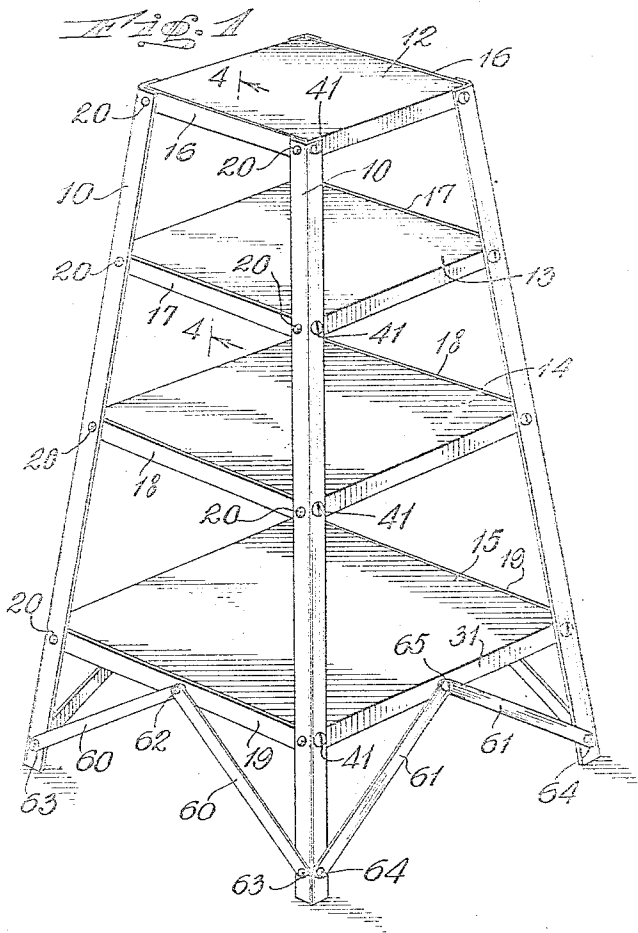
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DISPLAY RACK

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## UNITED STATES PATENT OFFICE

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## DISPLAY RACK

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The present invention relates to display and storage arrangements, and has particular reference to racks and stands for merchandising purposes, especially adapted to be utilized with cylindrical, prismatic, conical or pyramidal objects or containers.

Among the objects of the present invention are to provide an inexpensive storage and display rack or stand, which may be readily manufactured or assembled from relatively few, readily available sheets or thin metal stampings or members with a minimum of operations; which may be conveniently shipped and stored in dismantled condition, in which condition it will occupy little space, and may be most readily handled, packaged and merchandised; which may be readily assembled and dismantled by a storekeeper or householder, as with the sole use of a screwdriver; which will readily serve as a display or storage stand or rack for merchandising and other purposes; and which is readily adapted to receive vertical containers or vertical merchandise, as for example of cylindrical, conical, prismatic and pyramidal shape of a wide variety of sizes.

In one embodiment of the invention, the rack, stand or shelf structure is formed of a series of substantially vertical or upwardly converging leg members, preferably formed of L-shaped metal strips, stampings or bars. To these legs are attached by screw and nut arrangements, a series of invertible or reversible shelves or transverse supports. Although these shelves may be round, or of any polygonal shape, they are preferably square or rectangular, and the edges thereof are flanged or bent inwardly and vertically at right angles to the shelves to form a dished arrangement.

In a preferred form, where the shelves are rectangular or square in shape, and where the rack has a general frustrated pyramidal contour with shelves of increasing dimension from top to bottom, the side legs are joined together in pairs by transverse members, which may be riveted or otherwise permanently attached to said legs. These transverse members may consist of L-shaped angle

members with their vertical legs directed upwardly.

The opposite pairs of legs may then be connected together by said horizontal shelf members, said shelf members resting upon said angle members in such position that the cooperating holes in the legs and flanges to receive said nut and screw attachments will be automatically aligned. The holes in the flanges of the shelves are usually so positioned equidistant from the upper and lower edges of the flanges that said alignment will take place regardless of whether the shelves are positioned with their flanges directed upwardly or downwardly. The heights of the vertical sides of the transverse angle members are preferably such that their upper edges will be flush with the plane surfaces when the shelf flanges are directed downwardly, or with the upper edges of said shelf flanges when they are directed upwardly.

To increase the rigidity of the stand or rack, sloping braces or angle-members may be provided preferably in the space below the lowermost shelf, said braces or angle strips in the form shown, extending from the middle of the sides of the lowermost shelf or transverse angle members to the lower ends of the leg portions.

The flanges 31 serve to enable attachment of the shelves to the supporting legs, and may also serve, when they are turned upwardly, to retain articles upon the shelves. The lower edges of ends 32 of the flanges 31, and also the lower edges of the flanges 30, rest upon the horizontal portions 33 and 34 of the L-shaped members 16 and 17, respectively, as shown in Figure 4. The ends 32 of the flanges 31 are provided with holes or openings 39. These openings are preferably positioned equidistant from the top or plane surface of the shelf and the lower edge of the flanges 31. The openings or holes 39 receive the shanks 40 of the screws 41, said shanks passing also through the holes 70 in the legs 10 and projecting inside of the flanges 31 to receive nuts 42. These nuts 42 may be tightened to clamp said flanges 31 against the sides of the legs 10.

In inverted or reversed position, as shown

in Figure 5, the corners or edges 50 of the shelves between the holed flanges 31, rest upon the horizontal portions 33 and 34 of transverse L-shaped members 16 and 17.

5 Since the holes 39 are positioned equidistant from the plane surface of the shelf and the lower edge thereof, they will be automatically aligned with the cooperating holes 70 in the legs 10 in both shelf positions.

10 In the drawing, which illustrate one embodiment of the invention,

Figure 1 is a top perspective view of the stand,

15 Figures 2 and 3 are top perspective views of the side and shelf members in dismantled condition,

20 Figure 4 is a fragmentary sectional view upon the line 4—4 of Figure 1, illustrating the method of connection of the shelf to the side members, and

Figure 5 is a view similar to Figure 4, with the shelf member inverted.

In Figures 1 to 5 the rack or stand consists of the leg members 10, preferably formed of 25 L-shaped metal strips or bars. The legs 10 are preferably joined together in pairs, as shown in Figure 2, by the L-shaped transverse members 16, 17, 18 and 19, which are riveted, or otherwise permanently attached, 30 at 20 to one of the inside faces of the legs 10. The L-shaped cross members 16, 17, 18 and 19, are preferably so positioned that their leg portions will be directed upwardly. The shelf members 12, 13, 14, and 15, are removably attached to and supported from said 35 legs 10, and rest upon the horizontal portions of the transverse members 16 to 19. The shelves 12 to 15, a typical shelf being shown in Figure 3, consist of flat pieces or sheets of 40 relatively thin metal, the edges 30 and 31 of which have been bent inwardly and vertically at right angles to the plane of the surface of the shelf.

To strengthen the stand or rack and to increase its rigidity, the angle braces 60 and 61 45 may be employed, eight of said braces being employed in the form shown. The braces 60 may be riveted or otherwise permanently attached at 62 to the transverse members 19, and 50 at 63 to the legs 10 adjacent their lower ends. The members 61 at their outer ends may be similarly riveted, or otherwise permanently attached, to the lower ends of the legs 10 at 55 64, but they are provided with screw-nut connections 65 to the mediate portions of the side flanges 31. These nut and screw attachments may be generally the same as the attachments 40-41-42 already described in connection 60 with the shelves. Although the riveting at 62 and 63 may be of such a character as to rigidly attach the cross-braces 60 to the legs and transverse members respectively, it should be of such a character at 64 as to permit pivotal 65 movement of the brace 61 into the extended

position as shown in Fig. 1, or into the collapsed position as shown in Fig. 2.

The arrangement shown in Fig. 4, with the flanges directed downwardly, is somewhat more desirable in instances particularly where 70 relatively large containers are employed, which would be largely stopped from sliding off the shelves by the legs 10 and which might also project over the edges of the shelves. 75

The arrangement shown in Figure 5 is usually preferable when a large number of relatively small containers of the same or different sizes and shapes, are displayed or stored, the upstanding flanges 31 in this instance assisting the legs 10 in keeping the displayed or stored containers from sliding from the shelves. 80

In either arrangement, and particularly in the latter arrangement, the flange 30 may be readily omitted, inasmuch as the vertical portions of the transverse members 16 to 19, will serve as stops along the sides of the shelves 12 to 15 to prevent the objects or containers being stored from sliding off said 85 shelves. The omission of the flanges 30 will result in a decrease in the weight of the stand, and also in the amount of metal needed in its manufacture. Upon omission of the flanges 30, the ends 32 of the flanges 31 in the arrangement shown in Figure 4, and the edge 50 in the arrangement shown in Figure 5, will sufficiently support the shelves 12 to 15 upon the horizontal portions 33 and 34 of the transverse members 16 to 19. 90 95 100

It will be noted that the sides of the L-shaped members 16 to 19 are of sufficient height that their upper edges will be flush with the plane faces of the shelves 12 to 15 in Figure 4 or with the upper edges of the 105 flanges 30 and 31 in Fig. 5.

Usually the constituent forms shown in Figs. 2 and 3 are manufactured and stored and/or shipped as such. The dismantled equipment will, therefore, consist of two side 110 members, as shown in Fig. 2, and four shelves of varying dimension of the shape as shown in Figure 3, with or without the side flanges 30. Usually the unit, as shown in Fig. 2, is provided with the nuts and screws in position, 115 the shanks of the screws passing through the openings 70 in said legs 10.

Upon assembly, the nuts 42 are removed, and the screws are inserted through the aligned openings 70 in the legs 10, and 39 in 120 the side flanges 31 of the shelves 12 to 15. A similar operation may also take place in respect to the screw attachments 65 for connecting the inner ends of the braces 61 to the flanges 31 of the lowermost shelf 15. A 125 screw-driver may then be readily employed for tightening up the nuts 42, after they have been placed upon the ends of the shanks 41 by hand, whereupon the whole rack or stand will be clamped rigidly together. The nuts 130

42 are stopped from rotation during the operation by contact with the bases of the shelves 12 to 15.

The arrangement may be again suitably dismantled by the store-keeper with a screw-driver, for storage until again required, or for shipment from place to place, the dismantled unit assisting a series of relatively flat parts, including the side members shown in Figure 2 and the shelf-members shown in Figure 3, which may be tied together to form a compact package.

The rack or stand of the present invention is clean, sanitary, convenient and is economical in regard to space consumption. It serves to position the articles stored off the floors in a position where they may be most readily subject to inspection, and where access may be had more readily to them. Moreover, the skeleton construction gives perfect ventilation, and enables articles to be readily removed from the shelves or placed thereupon, with the maximum of convenience. The shelves may be constructed of unbreakable bar steel, and finished in attractive colors, such as silver, gold, lavender, blue and rose.

Although only square and rectangular shelves are specifically shown, it is to be understood that circular, triangular, octagonal and various other polygonal shelves may be employed. Of course, with a triangular shelf only three legs will be employed, while with other shapes of shelves, the number of legs and the contour of the cross-section of such legs will be correspondingly modified.

While I have illustrated and described a preferred embodiment of my invention, I do not wish to be understood as limiting myself to the specific construction shown except as we may be limited by the process of the appended claims.

What is claimed is:—

1. A knock-down all-metal rack construction including a pair of converging standards and a plurality of removable rectangular horizontal shelves of decreasing dimension upwardly; each of said standards including inwardly-sloping substantially vertical side angle members fitting about the corners of the shelves and a plurality of transverse angle members right angular in cross-section, the vertical portions of which transverse members extend upward and are permanently riveted to the side members at their ends and the horizontal portions of which extend inward toward the other standard, the transverse members being vertically spaced the distance it is desired to space the shelves and the size and shape of said angle side and transverse members being substantially the same; each of said shelves consisting of flat pieces of rectangular shape, squared pieces having been removed from the corners and the resulting projecting portions having been bent at right

angles to form flanges of substantially the same depth as the vertical and transverse angle members previously described, which flanges will be separated by narrow slots at said corners; holes being provided in each of the side members midway between the base and outer edge of the flange opposite the riveted connections described and also in pairs in one set of opposite flanges of said shelves adjacent the corners thereof; and bolt and nut connections passing through each of said holes the nuts being on the inside of the corner and the heads of the bolts outside.

2. A knock-down display all-metal rack construction including a pair of converging standards and a plurality of removable rectangular substantially horizontal shelves of decreasing dimension upwardly; each of said standards including inwardly-sloping substantially vertical side angle members right angular in cross-section and adapted to fit about the corners of the shelves and a plurality of transverse angle members also right angular in cross-section, the vertical portions of which transverse members extend upwardly and are permanently riveted to the side members at their end and the horizontal portions of which extend horizontally inward toward the other standard, the transverse members being vertically spaced the distance it is desired to space the shelves and the size and shape of said side and transverse angle members being substantially the same; each of said shelves consisting of flat plates of rectangular shape with flanged edges of substantially the same depth as the angle vertical and transverse members previously described, holes being provided in each of the side members midway between the base and outer edge of the flange opposite the riveted connections described and also in pairs in one set of opposite flanges of said shelves adjacent the corners thereof and bolt and nut connections passing through each of said holes the nuts being on the inside of the corner and the heads of the bolts outside, said shelves being invertible so that the flanges may be directed upwardly with the edge of the base of the shelf resting upon the horizontal portion of the transverse angle member or be directed downwardly with the lower edge of the flange resting upon said horizontal portion.

3. A knock-down display all-metal rack construction including a pair of converging standards and a plurality of removable rectangular horizontal shelves of decreasing dimension upwardly; each of said standards including inwardly sloping substantially vertical side members right angular in cross-section and adapted to fit about the corners of the shelves and a plurality of transverse members also right angular in cross-section, the vertical portions of which transverse members extend upwardly and are attached to the side members at their ends and the

horizontal portions of which extend horizontally inwardly toward the other standard, the transverse members being vertically spaced the distance it is desired to space the shelves; each of said shelves consisting of flat plates of rectangular shape, with flanges at the edges of the same depth as the angle members previously described; holes being provided in each of the side members midway between the base and the outer edge of the flange opposite said transverse members and also in pairs in one set of opposite flanges adjacent the corners thereof and bolt and nut connections passing through each of said holes the nuts being on the inside of the corner and the heads of the bolts outside, each of said stand-

ards being provided with four braces, two permanently connected thereto between the bottoms of the vertical side members and the middle of the lowest transverse members and the other two being pivotally connected to the lower ends of said legs and being provided at their outer ends with bolt attaching holes and the holed flanges of said shelves being provided with co-operating holes in the median portions thereof, whereby with bolt and nut connections a rigidly braced rack may be assembled.

Signed at Dayton in the county of Montgomery and State of Ohio this 12th day of December A. D. 1931.

EDWARD B. WESTON.

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