Feb. 20, 1962 J. PIPE 3,021,960

RACK STRUCTURE

Filed July 5, 1960 2 Sheets-Sheet 1

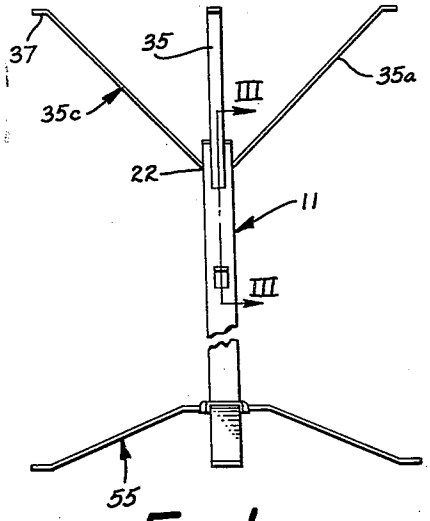


FIG. 1

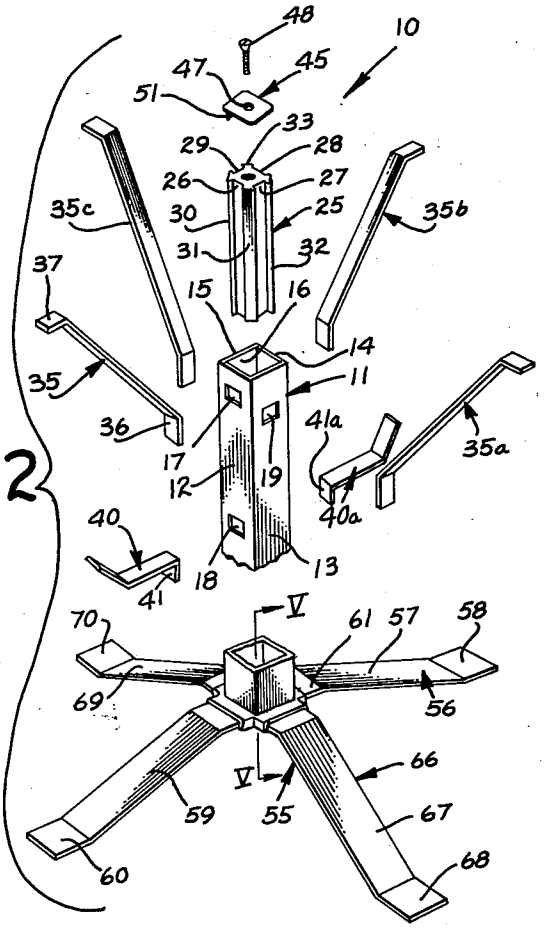


FIG. 2

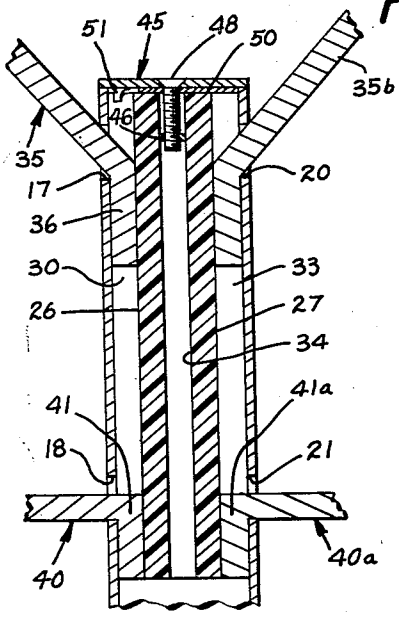


FIG. 3

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Feb. 20, 1962 J. PIPE 3,021,960

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Filed July 5, 1960 2 Sheets-Sheet 2

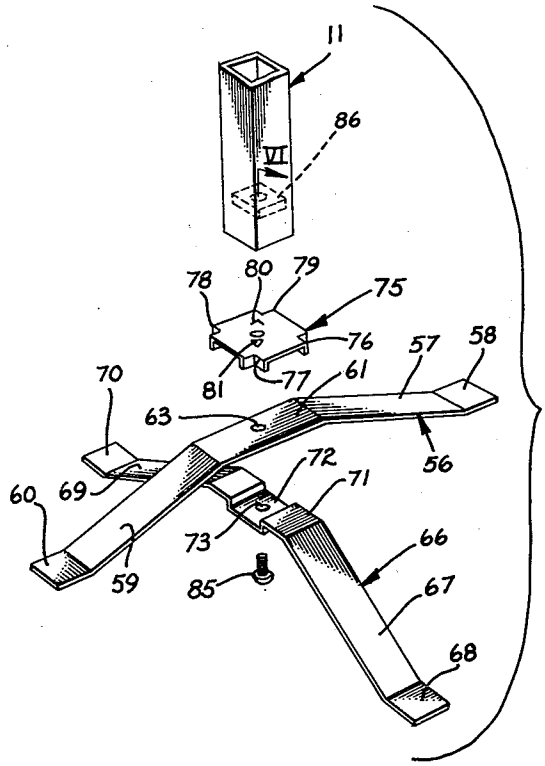


FIG. 4

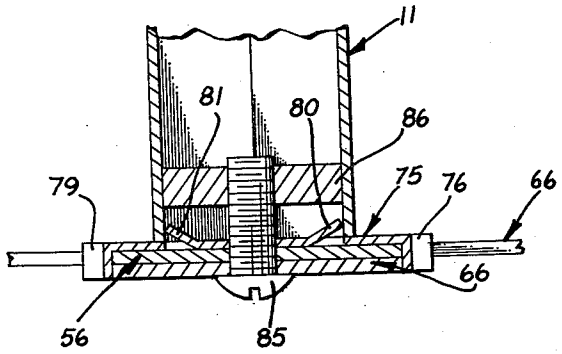


FIG. 5

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RACK STRUCTURE

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This invention relates to a rack structure and more particularly to a rack structure of the knocked down type.

With the growing cost of transportation, the manufacturers of furniture and various other equipment have found it necessary to transport their merchandise in a knocked down or disassembled manner. It has been found that many articles, such as the subject of this invention, can be packaged very compactly and sent to the wholesaler or retailer at a fraction of the cost required to ship a fully assembled article. Furthermore, the components of the rack structure can be individually protected in the packaging process and the product reaches the ultimate consumer without such damage as scratching and marring which is always present when the article is shipped in the assembled manner.

The fact that the manufacturer does not have to assemble the article results in a further saving. However, if the consumer is to assemble the article, it must consist of a minimum number of parts which fit together accurately and simply so that the average householder may assemble the article.

Also, the article, when completed by the householder, must produce a finished product which is as acceptable as if the factory itself had assembled it.

It is, therefore, an object of this invention to provide a rack structure which is extremely simple to assemble and disassemble.

It is another object of this invention to provide a rack structure which can be shipped and sold to the ultimate consumer in a disassembled or knocked down state.

Still another object of this invention is to provide a rack structure which is constructed from the minimum number of component parts.

A further object of this invention is to provide a clothes rack which has a novel manner of clamping the hanger members to the post of the rack.

Still another object of this invention is to provide a knocked down type rack structure which, when assembled by the householder, is as strong and acceptable as if factory assembled.

Yet another object of this invention is to provide a rack structure of the knocked down type which utilizes a minimum amount of material and parts, and is therefore economical to manufacture.

These and other objects and advantages of this invention will become more apparent upon reading the following specification in conjunction with the appended drawings, wherein:

FIG. 1 is a side elevational view of the clothes rack structure;

FIG. 2 is an enlarged perspective view of the rack structure showing the various components thereof in the exploded position;

FIG. 3 is an enlarged cross sectional view taken along the section lines III—III of FIG. 1;

FIG. 4 is an exploded perspective view of the base structure; and

FIG. 5 is a cross sectional view taken along the section lines V—V of FIG. 2.

Basically this invention relates to a rack structure which can be readily assembled or disassembled. The rack structure has a base to which is secured a post being maintained in the upright position thereby. The post is of tubular construction and is provided with hanger receiving apertures at the end thereof opposite its connection with the base. The apertures are spaced about the periphery of the post and communicate with the interior of the post. Hanger members are provided with flanges which are insertable in the post apertures and adapted to lie adjacent the interior of the post. An insert member is positionable within the post and engages the flanges of the hanger members, clamping them between itself and the interior of the post, thereby maintaining the hangers in a predetermined position. The exposed end of the post is covered by a cap member which fastens to the insert.

The rack structure 10 is best shown in FIG. 2. The assembly 10 includes the base 55, the post 11, which is secured to the base 55, upper hanger members 35 through 35c, lower hanger members 40 and 40a, an insert clamp 25 and a cap 45 for covering the end of the post.

Referring specifically to the details of the invention, FIG. 2 shows the base which is designated generally as 55. The base 55 includes legs 56 and 66, locator cap 80, and fastener 85.

The leg 56 is of an expanded U-shape. It has a flat portion 61 from which foot portions 57 and 59 project. Toes 58 and 60 are formed integral with the foot portions 57 and 59, respectively, and are adapted to rest upon the floor or other support structure. A fastener aperture 63 is centrally located in the flat portion 61 and provides passage for a fastener to be explained more fully hereinafter.

The leg 66 is basically similar in design to the leg 56. It has foot portions 67 and 69 which are secured to a flat portion 71. Toes 68 and 70 are formed integral respectively with the foot portions 67 and 69. The flat portion 71 of leg 66 is provided with a countersink 72. The countersink 72 is of sufficient depth to accommodate the thickness of leg 56 and have the flat portions 61 and 71 of the legs appear flush. The countersink portion of flat 71 is provided with a centrally disposed aperture 73 to allow passage of a fastener.

A locator plate 75 is associated with the base legs 56 and 66 and provides a means for properly orienting the legs, one with respect to the other. The locator plate 75 takes the form of the cross and has a plurality of flanges formed therefrom. The flanges 76, 77, 78 and 79 project downwardly from the locator plate 75. Each of these flanges is positioned transversely with respect to the other and form generally U-shaped channels. When the leg 56 is positioned in the countersink 72 of leg 66, the locator plate 75 fits over the legs and the U-shaped channels formed by the flanges maintain them in a transverse position with respect to each other.

The top of locator plate 75 is provided with a pair of upturned ears 80 and 81. These ears are formed from the plate 75. They are positioned on the locator plate 75 so as to engage the interior of post 11 and position the same on the base structure 55. This arrangement is best

shown in FIG. 5 wherein the ears are shown projecting into the interior of post 11.

The locator plate 75 is also provided with the centrally disposed fastener aperture 83 which allows passage of the base fastener.

A nut 86 is secured to the interior of the post adjacent the end thereof which connects with the base 55. The fastener 85 passes through the apertures 73, 63 and 83 of the various base components and is screwed into nut 86 to secure the base 55 together as a unit, and to the post 11 now to be described.

The base 55 supports a post 11 in an upright position. The post 11 is secured to the base 55 by fastener 85 which allows for ready attachment and detachment.

The post 11 is of sufficient longitudinal extent so as to position its end opposite the base or hanger end at a convenient height for hanging articles, such as clothing, therefrom.

The post 11 is a tubular member and, as shown in FIG. 2, is square in cross sectional configuration. However, it is to be understood that the post 11 may take other shapes, such as a round tubular member. The hanger end of post 11 is provided with a series of apertures spaced at intervals about the periphery thereof. Certain of the sides of the post have multiple apertures which are aligned, but vertically spaced from each other.

Since the post 11 is square, it has four sides 12, 13, 14 and 15 numbered in a counterclockwise direction as viewed in FIG. 2. The side 12 has an upper hanger aperture 17 and a lower hanger aperture 18, which is spaced vertically therebelow. The apertures 17 and 18 communicate with the interior of the post or post passage 16. The particular positioning of the hanger apertures 17 and 18 is not critical. The side 13 is provided with a single hanger aperture 19. However, the side 13 may be provided with an additional aperture or no apertures if such an arrangement is desired. The side 14 has an upper hanger aperture 20 and a lower hanger aperture 21 (FIG. 3) which are opposite the hanger apertures 17 and 18 respectively. Post side 15 has a hanger aperture 22 which is opposite the hanger aperture 19. All of the hanger apertures communicate with the interior or passage 16 of the post 11.

Upper hanger members 35, 35*a*, 35*b* and 35*c* are best shown in FIG. 2. Since each of these members is similar in construction, only the upper hanger member 35 will be explained in detail.

The upper hanger member 35 is a generally U-shaped member having a flange 36 at one end thereof and a support 37 at the other end thereof. The flange 36 is formed integral with the upper hanger member 35 and is bent inwardly thereupon but lies at an obtuse angle thereto. The support member 37 is likewise formed integral with the upper hanger member 35 and lies at an obtuse angle thereto. The flange 36 is adapted to be inserted in the hanger aperture 17 (FIG. 2) in a manner and for a purpose which will be explained more fully hereinafter. The support element 37 is designated to support clothing which may be hung therefrom.

The lower hanger brackets 40 and 40*a* (FIG. 2) are somewhat similar in design to the upper hanger brackets 35 through 35*c*. However, the flange portions 41 and 41*a* of the lower hanger brackets are disposed transversely with respect to the lower hangers 40 and 40*a* instead of at an obtuse angle as is the flange member 36 of upper hanger 35. The purpose for this will be explained more fully hereinafter.

The insert member 25 is best shown in FIGS. 2 and 3. The insert member 25 is of sufficient length so as to extend both above the upper hanger apertures and below the lower hanger apertures. The insert clamp is star-shaped in cross sectional configuration, having a series of channels and points or guide surfaces positioned above the periphery thereof.

The channels are numbered 26, 27, 28 and 29 in a counterclockwise direction. The guide surfaces are numbered 30, 31, 32 and 33, also in a counterclockwise direction. As is readily apparent from FIG. 2, the channels lie between the various projecting guide surfaces. As shown in the particular arrangement of FIG. 2, the channel 26 cooperates with post side 12 and hanger apertures 17 and 18. However, since the clamp insert 25 is of symmetrical design, the channel 26 may cooperate with any of the sides and apertures of the post. The channels 26 through 29 are dimensioned so as to encompass the flanges of the upper and lower hanger members for purposes which will be explained more fully hereinafter. The insert 25 has a bore 34 (FIG. 3) extending throughout the longitudinal extent thereof. An expansion nut 46 is secured in the bore 34 to receive a fastener of the cap 45.

The insert member 25 is made of plastic, but it is to be understood that within the broadest aspect of the invention it may be constructed of other material. The plastic is somewhat resilient and facilitates assembly as will be shown subsequently.

The cap 45 is square in shape and of sufficient peripheral dimension to cover the end of post 11. A locator plate 50 is secured to the bottom of the cap 45, by means such as welding, and has downwardly positioned spaced projections 51 which cooperate with the guide surfaces 30 through 35 to properly position the cap on the post. The cap 45 and locator plate 50 are provided with a centrally disposed aperture which allows the passage of fastener 48 which screws into the nut 46 placed in the insert clamp. The aperture 47 in the cap 45 is preferably of sufficient dimension so as to allow the head of fastener 48 to assume a countersunk position, thus enhancing the appearance of the rack structure.

Assembly

Either the base 55 or the upper hanger members 35 through 35*c* may be secured to the post 11 initially; however, for purposes of illustration, the assembly of the base will be described first.

The base 55 is assembled by positioning the flat 61 of leg 66 in countersink 72 formed in the flat 71 of leg 66. The locator plate 75 is then positioned on the leg so that the U-shaped channel portions formed by the flanges 76, 77, 78 and 79 engage the flat portions 61 and 71.

The fastener 85 is then passed through the apertures 73 and 63 formed in the legs 66 and 56, and locator plate 75 respectively.

The post 11 is then placed on the locator plate 75 and is properly positioned by the ears 80 and 81 which project into the interior of the post 11. The fastener 85 is then threaded into nut 86 and drawn tight. The base 55 is thus assembled and the post secured thereto. The base 55 supports the post 11 in an upright position.

The next step in the assembly is to clamp the upper hanger members 35 through 35*c* to the post 11. Since the hanger apertures 17 and 20 are closest to the open end of the post 11, the upper hanger members associated therewith are first secured to the post 11. This is accomplished by inserting the flange portions of the upper hanger members 35 and 35*b* in the hanger apertures 17 and 20, respectively. The insert 25 is then positioned in the post passage 16 and pushed downwardly toward the base 55. The bottoms of channels 26 and 28 will engage the flange portions of upper hanger members 35 and 35*b* and force them against the interior of the post 11, as best shown in FIG. 3.

The upper hanger members 35*a* and 35*c* are next inserted in the apertures 19 and 22, respectively. The apertures 19 and 22 are located somewhat lower on the post 11 to enhance assembly. Thus, if the upper hanger brackets were all at the same level, it would be necessary to control all four of them simultaneously while positioning the insert member 25. However, with this arrangement, the upper hanger bracket members 35 and 35*b* can first be positioned and then the upper hanger bracket

members 35*a* and 35*c* positioned. Thus, with the flange portions of upper hanger members 35*a* and 35*c* inserted in the hanger apertures 19 and 22, respectively, the clamp insert 25 can be pushed a further distance toward the base 55. As the insert clamp 25 travels downwardly, the bottoms of channels 27 and 29 engage the flanges of upper hanger members 35*a* and 35*c*, respectively, and clamp them between itself and the interior of the post 11. The upper hanger brackets are now assembled.

The lower hanger brackets 40 and 40*a* are next inserted in the hanger apertures 18 and 21, respectively. The lower hangers 40 and 40*a* are positioned in the lower hanger apertures 18 and 21 so that the flanges 41 and 41*a* thereof are turned downwardly (FIG. 3). With the lower hanger brackets 40 and 40*a* positioned in the apertures 18 and 21, the clamp insert 25 is further pushed toward the base 55. The bottoms of channels 26 and 28 engage the flanges 41 and 41*a*, respectively, and clamp them between the interior of the post sides 12 and 14 and in insert member 25.

The cap 45 is next secured to the insert member 25 by the fastener 48. The cap 45 may be secured to the insert 25 before it is even started in the bore 16. This procedure is particularly desirable if the parts have a tendency to fit loosely since the cap would prevent the insert from following into the bore past the hanger members. The rack structure is now fully assembled, as shown in FIGS. 1 and 3.

It should be noted that the edges of the guide surfaces 30 through 33 engage the respective edges of the upper and lower hanger members and prevent transverse movement of these members with respect to the post 11. The flanges of the hanger members are otherwise tightly clamped between the surfaces of the post passage 16 and the bottoms of the channels 26 through 29 as previously described. Therefore, the upper and lower hanger members are rigidly fixed in position by the insert member 25 coacting with the surfaces of the post passage 16. If the hanger members have a tendency to fit too tightly the resiliency of the plastic insert 25 will facilitate assembly. The resiliency of the insert is also otherwise utilized to rigidly secure the hangers in place.

The rack structure may be disassembled in the reverse manner. As previously stated, the base 55 may be first disassembled if so desired.

The rack structure disclosed herein readily lends itself to shipment in the knocked down condition. The various component parts of the rack structure can be packaged in a small compact carton and shipped to the wholesaler and retailer at a fraction of the cost necessary for transporting equivalent assembled racks. The rack structure is composed of a minimum number of parts which can be manufactured economically resulting in a highly competitive article of merchandise. Since the rack structure can be shipped in a disassembled manner, the component parts can be separately protected by the packaging, providing a product which reaches the ultimate consumer in a condition free from scratches and mars present when such articles are shipped in the assembled condition. Since the rack structure contains a minimum number of parts, it is extremely simple to assemble and can be put together by the most inept householder. After the householder assembles the rack structure, the resultant product is of equal quality and strength to that of a similar factory assembled rack structure.

While a preferred embodiment of this invention has been described, it will be understood that other modifications and improvements may be made thereto. Such of these modifications and improvements as incorporate the principles of this invention are to be considered as included in the hereinafter appended claims, unless these claims by their language expressly state otherwise.

I claim:

1. A knocked down clothes rack structure comprising: a base; a rectilinear hollow post secured to said base, said post having a plurality of apertures spaced about the periphery and located in the sides thereof, a plurality of hangers having flanges formed on the ends thereof, said hangers projecting through said apertures and the flanges thereof abutting against the sides of said post; insert means positionable in said post, said insert means having means for receiving said flanges, and guide means formed on said insert means, said guide means engaging the sides of said post for automatically aligning said means for receiving said flanges with said hanger flanges, said insert means engaging said flanges for clamping them between said insert and said post whereby clothes may be supported from said hangers.

2. A knocked down clothes rack structure as in claim 1 wherein said insert is constructed from resilient material and press fitted on said hanger members.

3. A knocked down clothes rack structure comprising: a rectilinear tubular post, a base secured to said post for maintaining it in an upright position, at least one aperture formed in said post adjacent the end opposite said base, at least one hanger insertable in said aperture and having a flange engaging the interior of said post, an insert positionable in said post and having at least one channeled surface engaging said flange and clamping said flange between said post and said channeled surface and guide surfaces formed on said insert means engaging the sides of said post for automatically aligning said channeled surface with said flange.

4. A knocked down clothes rack structure comprising: a tubular post, a base for supporting said post in an upright position, a plurality of apertures spaced about the periphery of said post adjacent the ends of the post opposite the base supporting end, certain of said apertures being aligned and vertically spaced from each other; an insert positionable within said post, said insert having a series of channels formed therein and being alignable with said apertures in said post, guide surfaces formed on said insert for positioning the same in said post and for aligning said channels with said apertures, and hanger members having flanges, said flanges passing through said apertures and abutting the interior of said post, said insert channels being dimensioned so as to encompass said hanger flanges and clamp them against said post, and a post cap including means for securing it to said insert for covering the end of said post.

5. A knocked down clothes rack structure comprising: a tubular post, a base means for maintaining said post in an upright position, said base means including legs one of which is crossed over the other, a locator plate having flanges engaging said legs and orienting one with respect to the other, said locator plate having ears for engaging the interior of said tubular post and locating said post on said locator plate, fastener means for securing said base means to said post; apertures formed in said post, hanger means being insertable into said apertures, and insert means positionable in said post for clamping said hanger means thereagainst whereby said hanger means may support clothes.

6. A knocked down base for use with a clothes rack structure and the like comprising: a leg having a flat portion from which foot and toe portions extend forming a generally expanded U-shaped member, another leg having a flat portion from which foot and toe portions extend and being similar in design to said first mentioned leg, said other leg flat portion having a countersink receiving and positioning said first mentioned leg transversely thereto, a locator plate having flanges engaging said legs and maintaining them in transverse relationship, projecting ears formed from said locator plate and adapted to fit within a structure to be supported and located on the base, and aperture means formed in said legs and locator plate adapted to allow passage of a fastener for securing said members to a structure to be supported thereby.

7. A knocked down base for use with a clothes rack

structure and the like comprising: a leg having a flat portion, another leg having a flat portion having a countersink receiving and positioning said first mentioned leg transversely thereto, a locator plate having flanges engaging said legs and maintaining them in transverse relationship, projecting ears formed from said locator plate and adapted to fit within a structure to be supported and located on said base, and means formed in said legs and locator plate adapted to receive connection means for securing said members to a structure to be supported thereby.

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