Dec. 15, 1942. W. S. HOLABIRD ET AL 2,305,571

RACK

Filed April 28, 1942 2 Sheets-Sheet 1

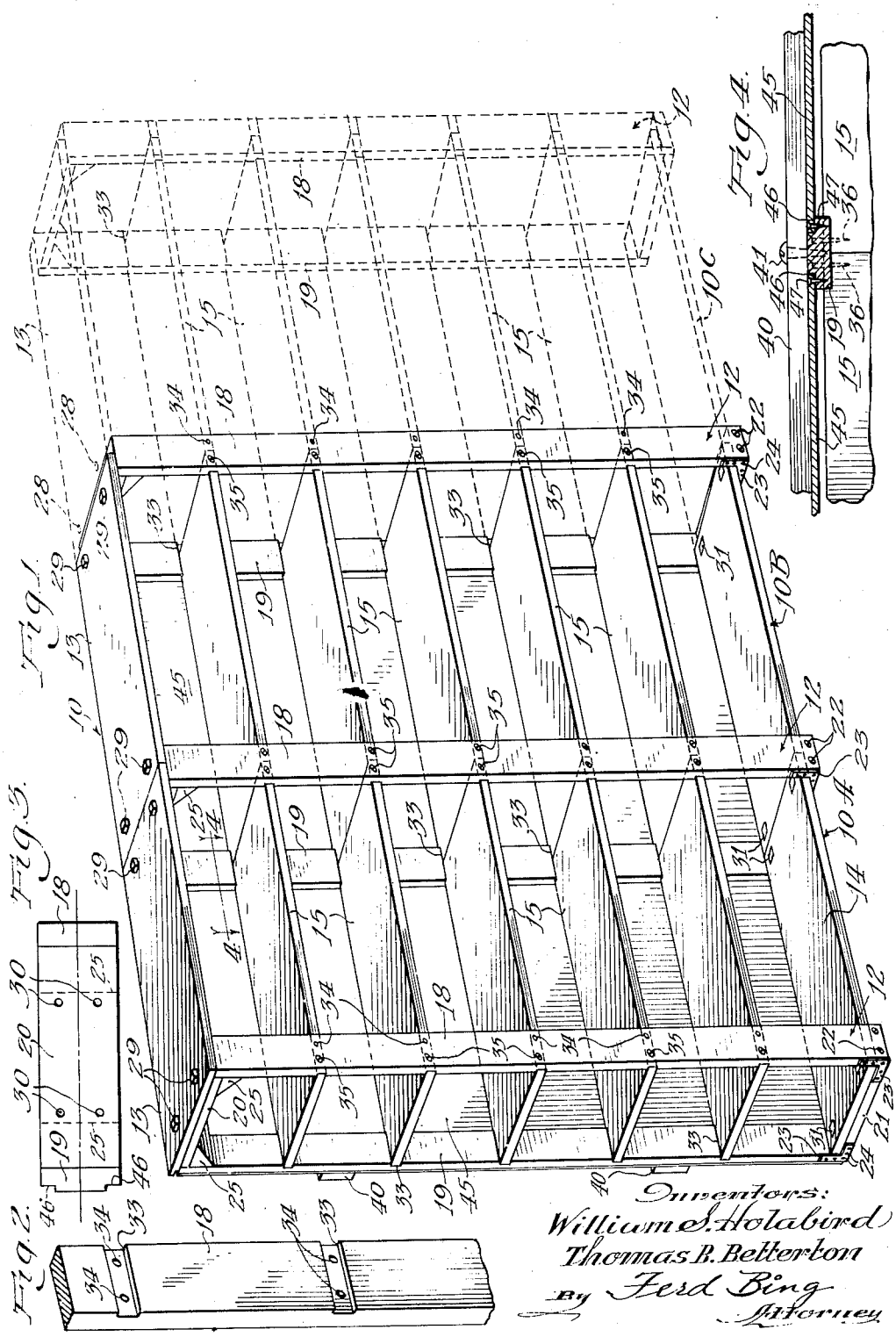


Fig. 1.

Fig. 2.

Fig. 4.

Inventors:
William S. Holabird
Thomas R. Betterton
By Ferd Bing
Attorney

Dec. 15, 1942. W. S. HOLABIRD ET AL 2,305,571

RACK

Filed April 28, 1942 2 Sheets-Sheet 2

Fig. 6.

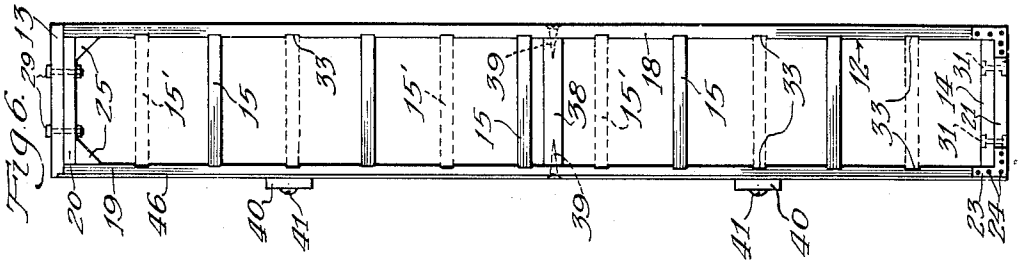


Fig. 5.

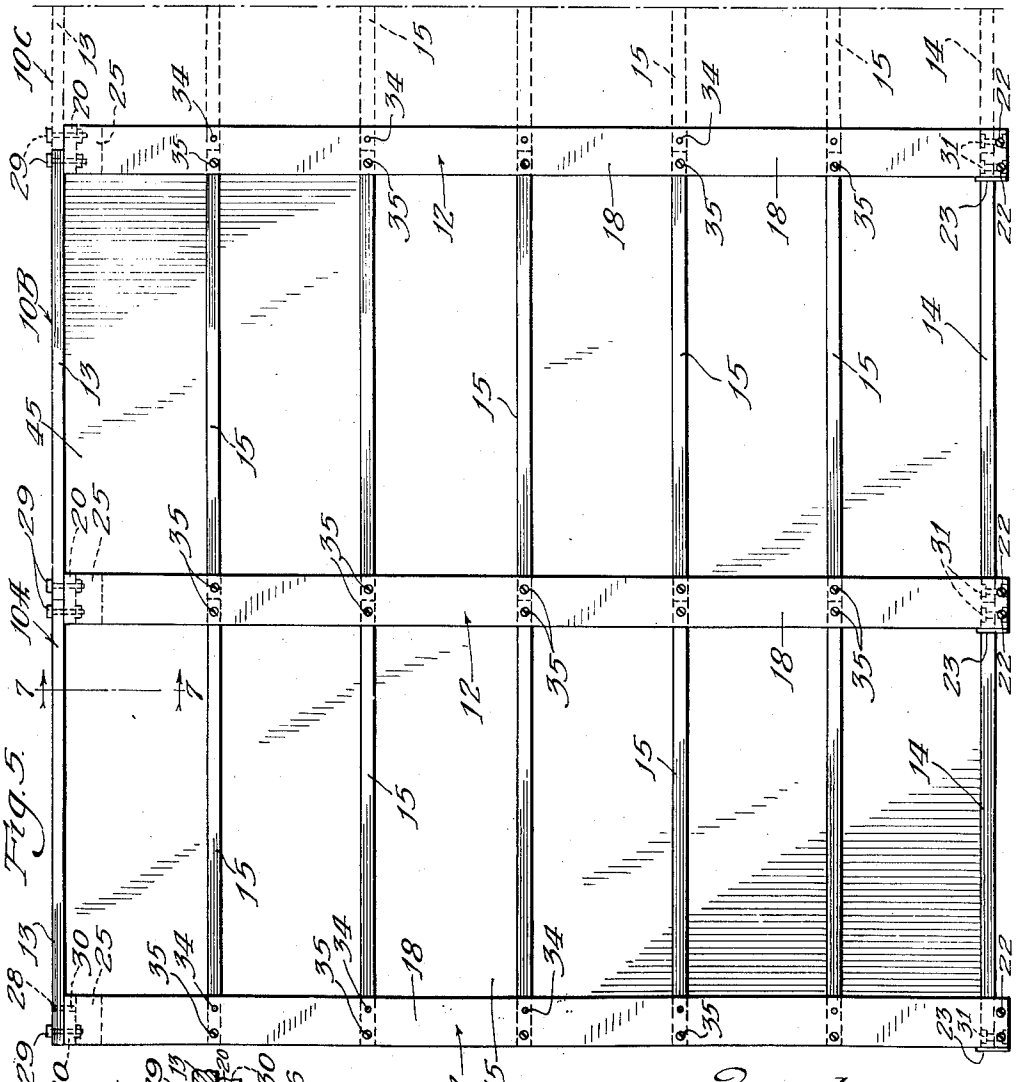
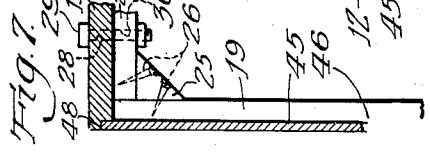


Fig. 7.



Inventors:
William S. Holabird
Thomas B. Betterton
By Ferd Burg
Attorney

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UNITED STATES PATENT OFFICE

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RACK

William S. Holabird, Hamilton, Ind., and Thomas B. Betterton, Chattanooga, Tenn., assignors to Holabird Furniture Company, Chicago, Ill., a corporation of Illinois

Application April 28, 1942, Serial No. 440,838

13 Claims. (Cl. 211—148)

This invention relates to wall racks of the type embodying the plurality of vertically spaced horizontal shelves, and more particularly the invention relates to such racks adapted to be shipped in knocked down form to be erected at the place where they are to be used.

Extensible wall racks of the aforesaid character are widely used for storage purposes in industrial tool rooms and store rooms, and have in the past been constructed from steel so that the elements thereof might be readily bolted together on the job, and such prior wall racks were readily extensible through erection of additional rack sections connected together and to the ends of the previously erected sections. Such prior racks were also adapted for convenient disassembly so as to facilitate rearrangement of storage facilities. Since the steel employed in such prior racks is now commercially unavailable for such uses, it is an important object of the present invention to enable racks of the aforesaid character to be constructed from a material such as natural wood or plywood, and to attain, in such racks made from wood, all the features of ready erection, disassembly, and convenient extensibility which have heretofore been obtained in racks made from steel.

In extensible wall racks as heretofore constructed from steel it has generally been necessary to utilize what were termed "finishing strips" at the exposed ends of the end sections in order to impart a finished appearance thereto, and this of course has required that the exact layout of the proposed racks be known when the material for such racks is being prepared for shipment. This represents a marked objection to the structure of such prior wall racks, and a further object of this invention is to enable the elements of such a rack to be made from wood in such a manner that the parts may be assembled to impart a finished appearance to an end of the rack through the use of the same parts as would be used if this particular end of the rack were to be joined to another rack section.

A further object of this invention is to enable the same structural parts to be employed in producing racks either with or without a rear wall or closure member.

Another object of this invention is to enable extensible wall racks to be made from wood in such a manner as to attain unusual strength and rigidity in the rack, and a further object is to so assemble and relate parts of the racks that additional rack sections may be readily and easily built onto either or both of the ends of a previously erected rack. Further objects related to the foregoing are to enable an erected rack made from wood to be disassembled readily and easily and in such a manner that the rack may be again erected in another location; to enable supporting sections for wooden racks to be assembled at the factory in such a manner as to facilitate erection of the racks in the field, and to assemble the racks with the minimum of manually performed connecting operations.

Other and further objects of the present invention will be apparent from the following description and claims and are illustrated in the accompanying drawings which, by way of illustration, shows a preferred embodiment and the principle thereof and what we now consider to be the best mode in which we have contemplated applying that principle. Other embodiments of the invention embodying the same or equivalent principles may be used and structural changes may be made as desired by those skilled in the art without departing from the present invention and the purview of the appended claims.

In the drawings:

Fig. 1 is a perspective view of an extensible wall rack embodying the features of the invention;

Fig. 2 is a fragmental perspective view showing a portion of the rear face of one of the front supporting posts;

Fig. 3 is a plan view illustrating the formation of one of the top rails of the rack;

Fig. 4 is a fragmental plan sectional view taken substantially along the line 4—4 of Fig. 1;

Fig. 5 is a front elevational view of the rack;

Fig. 6 is an end elevational view of the rack; and

Fig. 7 is a fragmental vertical sectional view taken along the line 7—7 of Fig. 5.

In the form chosen for disclosure herein the invention is illustrated as embodied in a multiple section rack 10 having rack sections 10A and 10B fully erected and ready for use, and a third rack section 10C is illustrated in dotted outline in the position and relation in which it would be erected when it became necessary to expand the storage facilities afforded by the previously erected rack sections 10A and 10B. The sectional rack of the present invention is of such a construction as to enable the structural elements thereof to be made from wood, in the form of natural wood, plywood or the like, and the rack is such that it may be shipped in what may be termed "knocked down" relation for erection by relatively unskilled help at the location in which

it is to be used. Furthermore, the rack sections of the present invention may be joined together in the desired number, and sections may be added as required to form continuations of previously erected sections. The arrangement of the sectional rack of the present invention is such that the exposed end of an end section may be assembled so as to afford a finished appearance, and this result is attained merely through variation in the relationship of the same parts which are normally furnished for other or intermediate sections of the rack. Moreover, the present sectional rack may be disassembled and again erected where the user desires to rearrange the storage space afforded by such racks.

In attaining the foregoing advantageous results the sectional rack 10 of the present invention is formed from a plurality of similar upstanding frame assemblies 12 disposed at and between the ends of the several sections and between which a plurality of horizontal shelves 13, 14 and 15 are extended and supported as shown in Fig. 1. The frame assemblies 12 are preferably exact duplicates, and each comprises front and rear columns or posts 18 and 19 and top and bottom rails 20 and 21 which connect the front and rear posts 18 and 19 to form a rigid structure or assembly. In the present instance the lower rail 21 is disposed between the lower ends of the front and rear posts 18 and 19 and the front and rear posts are secured to the ends of the lower rail 21 by means such as nails or screws 22 and if desired a suitable adhesive or glue may also be employed to augment the action of such nails or screws. In addition, where metal is available, angle brackets may be connected between the posts 18 and 19 and the lower rail 21. Thus an angle bracket 23 is secured by screws 24 to the rail 21 and the front post 18, and a similar angle bracket 23 is similarly connected between the rail 21 and the rear post 19 along the edges thereof. Such brackets may be used on both side edges of the lower rail 21 if desired. The upper rail 20 is also located between the front and rear posts 18 and 19 and the arrangement is such that the upper face of the upper rail 20 is flush with the upper ends of the front and rear posts. The front and rear posts may be secured directly to the upper rail 20 by means such as nails or screws the fastening action of which would in any event be augmented by the use of suitable adhesive or glue joint. In addition to such fastening of the members, however, we prefer to employ corner blocks 25, one such corner block being disposed in each of the rail corners formed beneath the upper rail 20. Thus as shown in Fig. 7 the corner block is secured by suitable adhesive to the lower face of the upper rail 20 and to the adjacent face of the adjacent post, and this fastening action is supplemented by spaced screws 26 one of which extends through the corner block 25 and into the adjacent post, and the other of which extends through the corner block and into the top rail 20.

Thus it will be clear that the frame assemblies 12 are in the form of relatively rigid rectangular structures which may be disposed in upstanding and horizontally spaced relationship so that the shelves 13, 14 and 15 may extend therebetween. To facilitate the erection of the sectional racks of this invention the upper shelf 13 and the lower shelf 14 are so formed that they may be readily secured to the upper and lower rails respectively of a pair of adjacent frame assemblies 12 to form a relatively rigid upstanding structure upon which the intermediate shelves 15 may then be mounted and secured. To this end each of the top shelves 13 has a pair of openings 28 formed therein adjacent to each end of the shelf so that fastening means such as bolts 29 may be passed through these openings and through an upper rail 20 which also has complemental openings 30 formed therein to receive the bolts 29. Similarly located openings are also formed in the lower rail 21 and in the lower shelf 14 so that bolts 31 may be extended therethrough to clamp the ends of the lower shelf 14 to the rails 21. In the case of the lower rails 21, the nuts for the bolts 31 may be countersunk into the lower surfaces of the rails 21 so that the rails 21 may rest flat upon the floor. After the upper and lower shelves 13 and 14 have thus been secured so as to extend between a pair of frame assemblies 12, the intermediate shelves 15 may be put into position. To this end a plurality of supporting means are provided on the adjacent faces of the front and rear posts 18 and 19 so that the ends of the intermediate shelves 15 may be rested thereon. In the present instance these supporting means are provided by horizontal grooves 33 formed in the adjacent faces of the front and rear posts 18 and 19 at corresponding vertically spaced intervals. The grooves 33 are relatively shallow and extend entirely across the faces of the posts thereby to enable the intermediate shelves 15 to be shifted longitudinally into and along the grooves 33 in the mounting operation. After the intermediate shelves 15 have been located in the desired longitudinal positions a suitable fastening means may be put in place to hold the shelves 15 against shifting movement.

The fastening means which is illustrated in Figs. 1 to 5 of the drawings for holding the shelves 15 against displacement takes into account the fact that where two rack sections are assembled in an end to end relation, as illustrated by rack sections 10A and 10B, the two adjacent ends of the shelves of the two sections are supported by but a single frame assembly 12. Thus in such instances, as will be clear in Figs. 1 and 2, the intermediate shelves 15 of each section extend but half way through the grooves 33 so that the ends of these shelves meet in substantially the central front to rear plane of the assembly 12, or in other words, substantially in the vertical plane which includes the vertical central axes of the front and rear posts. Preferably an individual fastening element is employed to secure each corner of each intermediate shelf 15 to the post which supports such corner. To this end a pair of screw holes or bores 34 are provided in the post 18 opposite each groove 33 so as to extend through the post 18 and open into such groove 33. These openings 34 are located, for each groove 33, in a horizontal plane and on opposite sides of the vertical central plane of the frame assembly 12. The bores 34 are located symmetrically with relation to the central plane of the assembly 12, and are spaced on opposite sides of the central plane so as to be located half way between this plane and the related side edge of the post 18. Thus when the two shelves of adjacent rack sections are extended into a groove 33 so as to meet in said central plane of the assembly, the two ends of the shelves 15 may be secured in place by screws 35 extended through the bores 34 and screwed into the edges of the shelves 15. To facilitate the insertion of the screws 35 as well as to simplify the location of the shelves in the proper relation to the frame

assemblies 12, suitable starting holes are formed in the edges of the shelves 15 to receive the ends of the screws 35. These starting holes are spaced from the ends of the shelves 15 in a distance equal to one fourth of the width of the posts 18.

The rear edges of the shelves 15 are also connected to the rear posts 19, and this end may be obtained through the use of bores 34, screws 35, and starting holes in the edges of the shelves related and located substantially as described with respect to the front posts 18. In Fig. 4 of the drawings, however, we have illustrated a slightly different arrangement or spacing of the fastening means and in this arrangement screws 36 are extended through pre-formed bores in the post 19 so as to be screwed into suitable starting holes in the rear edges of the shelves 15. This arrangement, wherein the screws 36 are not located midway between the edges of the posts and the central plane of the assembly 12 is satisfactory in most instances, but where finished appearance is to be imparted to an end of an end section of the rack, as will hereinafter be described, this arrangement will require new starting holes to be formed in one end of the rear edges of the shelves 15.

It has been observed that the bores 34 are spaced from the edges of the post 18 in a distance equal to one-fourth of the width of the posts 18, and a similar relationship is employed in connecting the upper and lower shelves 13 and 14 to the frame assemblies. Thus the openings 28 in the upper shelf 13 are spaced from the ends of the shelf 13 in a distance equal to one-fourth of the width of the upper rails 30, it being noted that the upper rail 20, the lower rail 21, and the front and rear posts 18 and 19 are of the same width. To receive the bolts 29 or other fastening means the upper rail 20 is formed so that fastening means from two upper shelves 13 may pass through the upper rail. Thus as shown in Fig. 3 the fastening openings 30 are disposed on opposite sides of the vertical central plane of the assembly 22 so that the openings are located half way between this central plane and the adjacent edge of the upper rail 20. A similar spacing and arrangement is employed in locating the openings which receive the bolts 31.

With the foregoing arrangement of the openings such as the openings 28 and 30, the openings for the bolts 31, and the openings 34, the same parts which are used in forming an intermediate rack section 10B may also be used in providing a rack section such as the rack section 10A wherein the exposed end of the rack section has a finished appearance. Thus, as best illustrated in Fig. 1 of the drawings, the upper and lower shelves 13 and 14 are placed in such a relation to the end frame assembly 12 that the ends of the shelves 13 and 14 are flush with the outer or remote edges of the upper and lower rails 20 and 21. Hence the shelves 13 and 14 extend entirely across the upper and lower rails 20 and 21, and the openings 28 are aligned with the pair of openings 30 closest to the outer edges of the end frame assembly 12. Similarly when the intermediate shelves 15 are put in place in the end section 10A, the ends of these shelves 15 are located flush with the side edges of the end frame assembly 12. In other words, the shelves 15 extend entirely through the grooves 33, and the starting holes in the edges of the shelves 15 are thus aligned with the right hand openings 34 as viewed in Fig. 1. Fastening screws 35 are extended through the openings 34 which are thus aligned with the starting holes of the shelves.

At the other end of the two rack sections which are shown erected in Fig. 1, the ends of the shelves 13, 14 and 15 are so connected to the frame assembly 12 that the ends of the shelves are located substantially in the vertical central plane of the frame assembly. Thus the user may readily add another section, such as the section 10C, in which event the ends of the shelves 15 of the new section 10C would be extended into the adjacent ends of the grooves 33, and in the case of the upper and lower shelves 13 and 14, would be rested upon and bolted or otherwise secured to the exposed half of the upper surfaces of the upper and lower rails 20 and 21.

Through the use of the fastened screws 35 and 36, the intermediate portions of the posts 18 and 19 are held against separation, or in other words, against outward bowing when the rack is placed under load. In certain instances it may be desirable to avoid the necessity for shifting or moving the racks to insert additional fastening screws 36 when an added section such as the section 10C is to be connected to a previously erected rack section such as the rack section 10B. In such instances the posts 18 and 19 may be made of a greater depth from front to rear so as to impart greater strength thereto, or means in the nature of a tie rod may be extended between the front and rear posts intermediate the upper and lower ends thereof. This means may be in the form of a metal tie rod, where such metal is available, or it may be formed by a wooden tie rod member 38 extended between the front and rear posts and securely fastened thereto by means such as screws 39. Such a tie rod 38 is illustrated only in Fig. 6 of the drawings, but it will be understood that where fastening means such as the screws 36 are to be eliminated, such a tie rod 38 would be provided in each of the frame assemblies 12. It will be understood, of course, that two or more tie rods might be employed in each frame section 12, in which case the tie rods would be appropriately spaced vertically of the frame assemblies.

In many instances it may be desirable to impart further bracing action to the adjacent rack sections 10A and 10B, and in such instances a plurality of connecting bars 40 may be extended along the rear faces of the sections such as the sections 10A and 10B and may be secured to the rear posts 19 by bolts or by screws 41. In some instances the upper one of the bars 40 may be located relatively close to the upper ends of the rear posts 19, thereby to prevent formation of a downwardly opening space behind the rack.

In many uses of racks of the character to which the present invention pertains it will be recognized that the racks may be open at the rear as well as at the front thereof, but in other uses it is necessary to provide closed backs upon the racks 10. The present invention makes provision for convenient incorporation of such a back or closure member, and this end is attained through the provision of individual back panels 45 which extend between the rear posts of each section just rearwardly of the rear edges of the shelves 13, 14 and 15. In order that such back panels 45 may be readily put in position, the rear corner of the rear posts 19 are rabbetted as indicated at 46 to receive the edges of the panels 45. The panels 45 are preferably formed from ply-

wood or from the other suitable woodlike material, and these panels are secured in place by screws 47 which extend through the end portions of the panel and are screwed into the posts 19. Preferably the lower rear corner or edge of the top shelf 13 is rabbetted as indicated at 48 in Fig. 7 of the drawings so that the upper edge of the rear panel 45 may enter into the rabbet 48 to effectively close and seal the upper edge of the rack against the interior or circulation of air and dust.

It will be recognized that the width and thickness of the posts 18 and 19 as well as the upper and lower rails 20 and 21 may readily be varied in accordance with the loads which are to be carried in the racks, and also that the length and the width of the shelves may be varied as required. In this connection it will be evident that where the width of the shelves 15 is unduly increased, the transverse strength thereof may be so reduced as to require the provision of cleats on the bottoms thereof, and in such instances the cleats are terminated at a sufficient distance from the front and rear edges of the shelves 15 to enable the shelves to be slid endwise into the supporting grooves 33. In Fig. 1 of the drawings the rack 10 is illustrated as having shelves 15 located at relatively great vertical intervals, but it will be recognized that additional grooves 33 may be provided in the posts 18 and 19, as illustrated in Fig. 6 of the drawings, so that shelves such as those indicated in dotted outline at 15' may be mounted therein.

The fastening of the shelves 13 and 14 to the upper and lower rails is preferably accomplished by bolts such as the bolts 29 and 31, but it will be recognized that in some instances screws or the like might be used, and in such instances the holes 30 in the upper rail 20, and the corresponding openings in the lower rail 21 will be formed as starting holes which merely facilitate the location of the elements and the insertion of the screws.

From the foregoing description it will be apparent that the present invention enables extensible wall racks to be made from wood, thereby to avoid the use of appreciable amounts of metal, and under the present invention these racks made from wood, either natural wood or plywood, are capable of ready erection by relatively unskilled help and may be conveniently extended to meet operating conditions in the establishment in which they are used.

Hence, while we have illustrated and described a preferred embodiment of our invention, it is to be understood that this is capable of variation and modification and we therefore do not wish to be limited to the precise details set forth, but desire to avail ourselves of such changes and alterations as fall within the purview of the following claims.

We claim:

1. In a sectional wall rack, a pair of frame assemblies each comprising spaced front and rear posts formed from wood and top and bottom connecting rails formed from wood and joining said front and rear posts in spaced and rigid relationship at the upper and lower ends respectively of said posts, said posts of each assembly having shelf supporting means at correspondingly spaced intervals on the adjacent faces thereof, top and bottom shelf members made from wood and having fastening openings therein spaced from the adjacent ends of said shelves a distance equal to substantially one-fourth the width of said rails, the bordering end portions of said top and bottom shelves being rested on the upper faces of the top and bottom rails respectively of the adjacent supporting assemblies, fastening means extended through the fastening openings of said shelves and secured to the rails to secure said shelves and said assemblies in a rigid relation, at least one of said assemblies being so related to said shelves that the ends of the shelves are located substantially at the central front to rear plane of the assembly whereby to enable the top and bottom shelves of another rack section to overlie and be secured to the exposed portions of the upper faces of such top and bottom rails, and wooden intermediate shelves extending between and supported by at least certain of the supporting means of the adjacent frame assemblies.

2. In a sectional wall rack, a plurality of frame assemblies each comprising spaced front and rear posts and top and bottom connecting rails joining said front and rear posts in spaced and rigid relationship at the upper and lower ends respectively of said posts, the top and bottom rails of each of said assemblies each having securing openings formed therein symmetrically with respect to a center plane which includes the central axes of the two posts of the assembly and said securing openings being located substantially midway between said plane and the opposite edges of the rails, said posts of each assembly having shelf supporting means at correspondingly spaced intervals on the adjacent faces thereof, top and bottom shelf members having fastening openings therein at points corresponding to the locations of said fastening openings in said rails so that said fastening openings in each such shelf are spaced from the adjacent ends of said shelf a distance equal to substantially one-fourth the width of said rails, the bordering end portions of said top and bottom shelves being rested on the upper faces of the top and bottom rails respectively of adjacent supporting assemblies, fastening means extended through the openings of said shelves and engaging the fastening openings of the rails to secure said shelves and said assemblies being so related to said shelves that the ends of the shelves are located substantially at said central plane of the assembly, and intermediate shelves extending between and supported by at least certain of the shelf supporting means of adjacent assemblies.

3. In a sectional wall rack, a plurality of frame assemblies each comprising spaced front and rear posts formed from wood and top and bottom connecting rails formed from wood and joining said front and rear posts in spaced and rigid relationship at the upper and lower ends respectively of said posts, said posts of each assembly having shelf supporting means at correspondingly spaced intervals on the adjacent faces thereof, top and bottom shelf members made from wood and having fastening openings therein at points spaced from the adjacent ends of said shelves a distance equal to substantially one-fourth the width of said rails, the bordering end portions of said top and bottom shelves being rested on the upper faces of the top and bottom rails respectively of adjacent supporting assemblies, fastening means extended through the openings of said shelves and secured to the rails upon which the shelves are respectively rested to rigidly secure said shelves and said assemblies in a rigid relation, at least one of said assemblies being so related to said shelves that the ends of the shelves are lo-

cated substantially at the central front to rear plane of the assembly, intermediate shelves extending between and supported by at least certain of the supporting means of adjacent frame assemblies, said front post having fastening means extended therethrough and engaging each end portion of each such intermediate shelf.

4. In a sectional wall rack, a plurality of frame assemblies each comprising spaced front and rear posts made from wood and top and bottom connecting rails made from wood and joining said front and rear posts in spaced and rigid relationship at the upper and lower ends respectively of said posts, the top and bottom rails of each of said assemblies each having securing openings formed therein symmetrically with respect to a center plane which includes the central axes of the two posts of the assembly and said securing openings being located substantially midway between said plane and the opposite edges of the rails, said posts of each assembly having shelf supporting means at correspondingly spaced intervals on the adjacent faces thereof, top and bottom shelf members made from wood and having fastening openings therein at points corresponding to the locations of said fastening openings in said rails so that said fastening openings in said shelf are spaced from the adjacent ends of said shelves a distance equal to substantially one-fourth the width of said rails, the bordering end portions of said top and bottom shelves being rested on the upper faces of the top and bottom rails respectively of adjacent supporting assemblies, fastening means extended through the openings of said shelves and engaging the fastening openings of the rails to rigidly secure said shelves and said assemblies in a rigid relation, at least one of said assemblies being so related to said shelves that the ends of the shelves are located substantially at said central plane of the assembly, intermediate wooden shelves extending between and supported by at least certain of the supporting means of adjacent assemblies, fastening means extended through the front posts of each assembly and engaging each of the ends of each intermediate shelf; and at least one rear rail extended between the rear posts and across the rear faces thereof and connected to said rear posts.

5. In a sectional wall rack, a pair of frame assemblies each comprising spaced front and rear posts formed from wood and top and bottom connecting rails formed from wood and joining said front and rear posts in spaced and rigid relationship at the upper and lower ends respectively of said posts, said posts of each assembly having relatively shallow shelf supporting grooves extending horizontally and entirely across the adjacent faces thereof and at correspondingly spaced intervals vertically of said posts, top and bottom shelf members made from wood and having fastening openings therein spaced from the adjacent ends of said shelves a distance equal to substantially one-fourth the width of said rails, the bordering end portions of said top and bottom shelves being rested on the upper faces of the top and bottom rails respectively of the adjacent supporting assemblies, fastening means extended through the fastening openings of said top and bottom shelves and secured to the rails to secure said shelves and said assemblies in a rigid relation, at least one of said assemblies being so related to said shelves that the ends of the shelves are located substantially at the central front to rear plane of the assembly whereby to enable the top and bottom shelves of another rack section to overlie and be secured to the exposed portions of the upper faces of such top and bottom rails, and wooden intermediate shelves extending between said adjacent frame assemblies and engaged with said shelf supporting grooves in positions corresponding to the positions of said top and bottom shelves.

6. In a sectional wall rack, a plurality of frame assemblies each comprising spaced front and rear posts formed from wood and top and bottom connecting rails formed from wood and joining said front and rear posts in spaced and rigid relationship at the upper and lower ends respectively of said posts, said posts of each assembly having shelf supporting means at correspondingly spaced intervals on the adjacent faces thereof, top and bottom shelf members made from wood and disposed so that the bordering end portions of said top and bottom shelves are rested on the upper faces of the top and bottom rails respectively of adjacent supporting assemblies, fastening means securing said shelves to the rails upon which the shelves are respectively rested to rigidly secure said shelves and said assemblies in a rigid relation, at least one of said assemblies being so related to said shelves that the ends of the shelves are located substantially at the central front to rear plane of the assembly so as to thereby enable top and bottom shelves of another rack section to be rested on and secured to the thus exposed upper faces of such top and bottom rails, intermediate wooden shelves extending between and supported by at least certain of the supporting means of adjacent frame assemblies, and fastening means extended through said front posts and securing the posts to each end portion of each such intermediate shelf.

7. In a sectional wall rack, a pair of frame assemblies each comprising spaced front and rear posts formed from wood and top and bottom connecting rails formed from wood and joining said front and rear posts in spaced and rigid relationship at the upper and lower ends respectively of said posts, said posts of each assembly having shelf supporting means at correspondingly spaced intervals on the adjacent faces thereof, top and bottom shelf members made from wood and disposed so that the bordering end portions of said top and bottom shelves are rested on the upper faces of the top and bottom rails respectively of adjacent supporting assemblies, fastening means securing said shelves to the rails upon which the shelves are respectively rested to rigidly secure said shelves and said assemblies in a rigid relation, one of said assemblies being so related to said top and bottom shelves that the ends of the shelves are located substantially at the central front to rear plane of the assembly so as to thereby enable top and bottom shelves of another rack section to be rested on and secured to the thus exposed upper faces of such top and bottom rails, and the other one of said assemblies being so related to said top and bottom shelves that said shelves extend entirely across the upper faces of said top and bottom rails to thereby locate the end faces of such shelves in the plane of the exposed side edges of said top and bottom rails, intermediate wooden shelves extending between and supported by at least certain of the supporting means of adjacent frame assemblies, and fastening means extended through at least certain of said posts and securing the posts to the end portions of at least certain of such intermediate shelves.

8. In a sectional wall rack, a pair of frame assemblies each comprising spaced front and rear posts formed from wood and top and bottom connecting rails formed from wood and joining said front and rear posts in spaced and rigid relationship at the upper and lower ends respectively of said posts, said posts of each assembly having relatively shallow shelf supporting grooves extending horizontally and entirely across the adjacent faces thereof and at correspondingly spaced intervals vertically of said posts, top and bottom shelf members made from wood and having fastening openings therein spaced from the adjacent ends of said shelves a distance equal to substantially one-fourth the width of said rails, the bordering end portions of said top and bottom shelves being rested in flat surface contact with and upon the upper faces of the top and bottom rails respectively of the adjacent supporting assemblies, fastening means extended through the fastening openings of said top and bottom shelves and secured to the rails to secure said shelves and said assemblies in a rigid relation, at least one of said assemblies being so related to said shelves that the ends of the shelves are located substantially at the central front to rear plane of the assembly whereby to enable the top and bottom shelves of another rack section to overlie and be secured to the exposed portions of the upper faces of such top and bottom rails, wooden intermediate shelves extending between said adjacent frame assemblies and engaged with said shelf supporting grooves in positions corresponding to the positions of said top and bottom shelves, and means connecting said front and rear posts intermediate the upper and lower rails to prevent outward bowing of said posts under load.

9. In a sectional wall rack, a plurality of frame assemblies each comprising spaced front and rear posts made from wood and top and bottom connecting rails made from wood and joining said front and rear posts in spaced and rigid relationship at the upper and lower ends respectively of said posts, the top and bottom rails of each of said assemblies each having securing openings formed therein symmetrically with respect to a center plane which includes the central axes of the two posts of the assembly and said securing openings being located substantially midway between said plane and the opposite edges of the rails, said posts of each assembly having shelf supporting means at correspondingly spaced intervals on the adjacent faces thereof, top and bottom shelf members made from wood and having fastening openings therein at points corresponding to the locations of said fastening openings in said rails so that said fastening openings in said shelf are spaced from the adjacent ends of said shelves a distance equal to substantially one-fourth the width of said rails, the bordering end portions of said top and bottom shelves being rested in flat surface contact with and upon the upper faces of the top and bottom rails respectively of adjacent supporting assemblies, fastening means extended through the openings of said shelves and engaging the fastening openings of the rails to rigidly secure said shelves and said assemblies in a rigid relation, at least one of said assemblies being so related to said shelves that the ends of the shelves are located substantially at said central plane of the assembly, intermediate wooden shelves extending between and supported by at least certain of the supporting means of adjacent assemblies, said front posts having securing bores formed therein opposite the levels at which the shelves may be supported, there being two such bores at each possible shelf level and such bores being spaced from the opposite sides of the posts a distance equal to one-fourth the width of the posts, and fastening means extended through said bores in the front posts of each assembly and engaging each of the ends of each intermediate shelf.

10. In a frame assembly for sectional wall racks, said frame assembly comprising front and rear posts made from wood and top and bottom rails also made from wood and rigidly connecting said front and rear posts at the upper and lower ends thereof, said front and rear posts having relatively shallow horizontal grooves formed in the adjacent faces thereof at corresponding vertically spaced intervals to receive edge portions of shelves when the frame assembly is erected as a part of a rack section, and having fastening openings therethrough opening into said grooves, there being two such openings for each groove and such openings being symmetrically located on opposite sides of the central front to rear plane of said frame assembly and one-half the distance between said plane and the side edges of the posts.

11. In a sectional wall rack, a pair of frame assemblies each comprising spaced front and rear posts formed from wood and top and bottom connecting rails formed from wood and joining said front and rear posts in spaced and rigid relationship at the upper and lower ends respectively of said posts, said posts of each assembly having shelf supporting means at correspondingly spaced intervals on the adjacent faces thereof, top and bottom shelf members made from wood and having fastening openings therein spaced from the adjacent ends of said shelves a distance equal to substantially one-fourth the width of said rails, the bordering end portions of said top and bottom shelves being rested on the upper faces of the top and bottom rails respectively of the adjacent supporting assemblies and in flat surface contact with said rails, fastening means extended through the fastening openings of said shelves and secured to the rails to secure said shelves and said assemblies in a rigid relation, at least one of said assemblies being so related to said shelves that the ends of the shelves are located substantially at the central front to rear plane of the assembly whereby to enable the top and bottom shelves of another rack section to overlie and be secured to the exposed portions of the upper faces of such top and bottom rails, at least one wooden intermediate shelf extending between and supported by selected of the supporting means of the adjacent frame assemblies, and tie rod means extended between corresponding front and rear posts intermediate the associated upper and lower rails to prevent outward bowing of the posts under load.

12. In a frame assembly for sectional wall racks, said frame assembly comprising front and rear posts made from wood and top and bottom rails also made from wood and rigidly connecting said front and rear posts at the upper and lower ends thereof, said front and rear posts having relatively shallow horizontal grooves formed in the adjacent faces thereof at corresponding vertically spaced intervals to receive edge portions of shelves when the frame assembly is erected as a part of a rack section, said bottom and top rails having fastening openings therein accessible from the tops of said rails, there being at

least two such openings in each rail and said openings in each rail being symmetrically located on opposite sides of the central front to rear plane of said frame assembly and one-half the distance between said plane and the side edges of the rails.

13. In a frame assembly for sectional wall racks, said frame assembly comprising front and rear posts made from wood and top and bottom rails also made from wood and rigidly connecting said front and rear posts at the upper and lower ends thereof, said front and rear posts having relatively shallow horizontal grooves formed in the adjacent faces thereof at corresponding vertically spaced intervals to receive edge portions of shelves when the frame assembly is erected as a part of a rack section, said bottom and top rails having fastening openings therein and there being at least two such openings in each rail and such openings being located on opposite sides of the central front to rear plane of said frame assembly with each opening located midway between said plane and the adjacent side edges of the rail, and tie rod means extended between said front and rear posts intermediate the upper and lower rails to prevent outward bowing of the posts under load.

WILLIAM S. HOLABIRD.
THOMAS B. BETTERTON.