

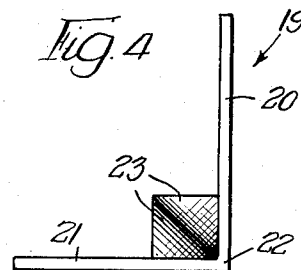
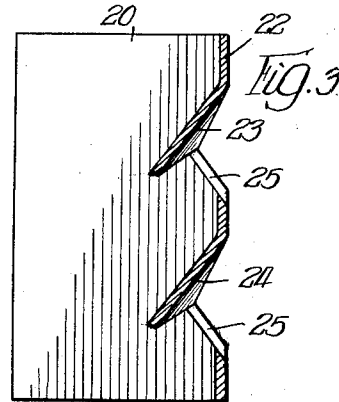
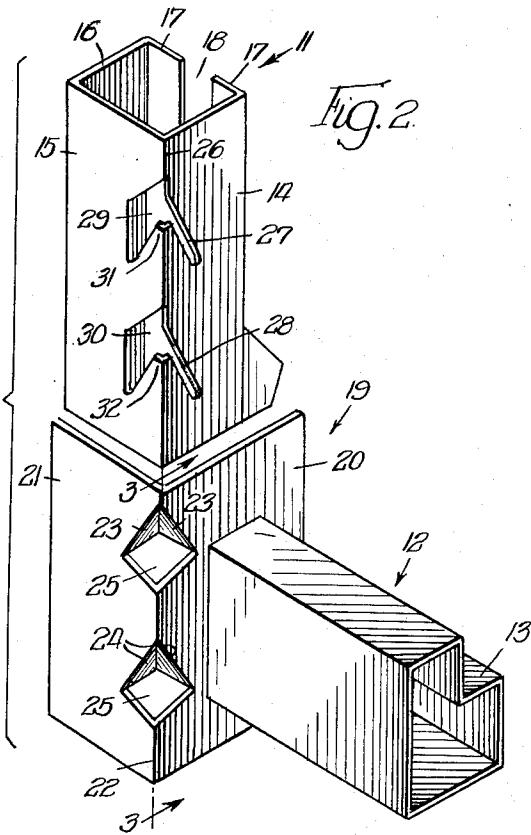
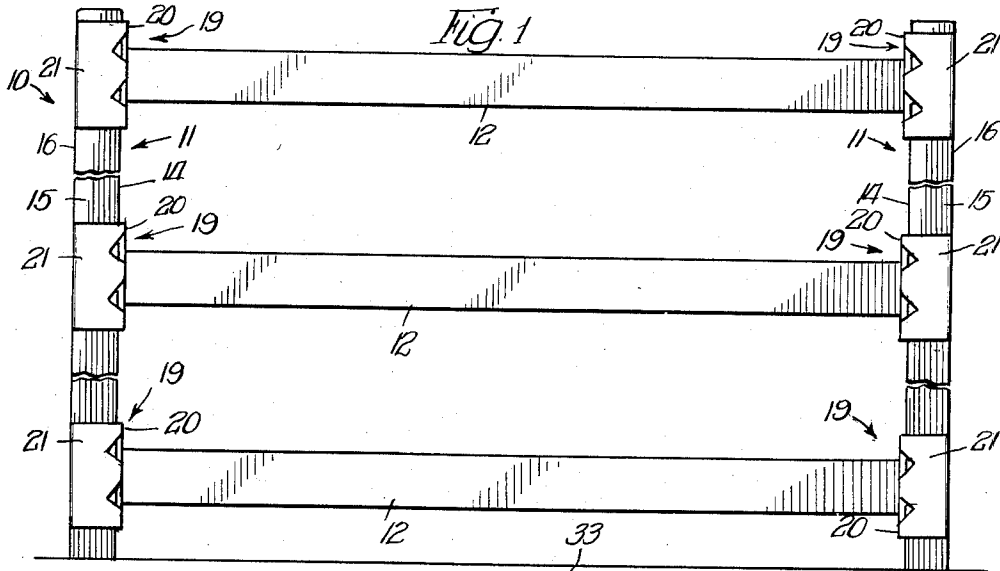
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This invention relates, generally, to racks and it has particular relation to demountable racks.

In industrial warehousing and other applications there is a need for sturdy, well built storage racks that can be quickly and easily assembled and disassembled and yet are capable of supporting heavy loads. The present invention provides such a rack construction and particularly relates to the demountable fastening means between the uprights of such a rack and the interconnecting transverse or shelf members.

Among the objects of this invention are: To provide for simply and efficiently assembling and disassembling racks in a new and improved manner; to provide for supporting one or more transverse rack members on spaced apart upright members in such a way that they can be readily assembled and are capable of sustaining relatively heavy loads; and to employ for the upright members angle shaped members having slots in facing flanges extending downwardly from the corners of the angles and clearance slots in the adjacent flanges forming with the respective inclined slots upstanding nose portions at these corners having downwardly inclined sides for detachably and wedgingly receiving downwardly opening detents in the corners of angle shaped transverse plate members at the ends of transverse members extending between the upright members.

In the drawing:

FIG. 1. is a view, in front elevation, of a typical rack in which the present invention is embodied.

FIG. 2 is a perspective view of a section of one of the angle shaped upright support members and one of the angle shaped transverse plates arranged for detachable mounting thereon.

FIG. 3 is a vertical sectional view taken generally along the line 3-3 of FIG. 2.

FIG. 4 is a top plan view of one of the angle shaped transverse plates.

Referring now particularly to the drawing, it will be observed that the reference character 10 designates, generally, a rack which includes angle shaped upright support members 11-11 that may be generally box shaped that are arranged to be interconnected by transverse members 12 which act as shelves or supports to receive the material to be piled thereon. As shown in FIG. 2 a transverse member 12 may have a step 13 on its rear side but it will be understood that other configurations can be employed as may be desired.

As pointed out, each angle shaped upright support member 11 is generally box shaped and, as shown in FIGS. 1 and 2, the upright support members 11-11 have flanges 14-14 facing each other and flanges 15-15 that are coplanar and extend at right angles from the facing flanges 14-14. The box like structure is completed by flanges 16-16 that extend parallel to the facing flanges 14-14. One of the rear sides is shown in FIG. 2 and it comprises flanges 17-17 with a slot 18 therebetween. It will be understood that, if desired, only upright support members provided with flanges 14 and 15 can be employed. However, the box like construction is preferred in order to provide the required strength and rigidity.

Provision is made for mounting the transverse members 12 on the angle shaped upright support members 11-11 by angle members, indicated at 19-19, which

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are welded or otherwise secured to the ends of the respective transverse member 12. As shown in FIG. 2 each angle member 19 includes a flange 20 that is arranged to overlie the facing flange 14 of the respective support member 11 and also includes a flange 21 that is arranged to overlie the respective coplanar flange 15. The junction between the flanges 20 and 21 is indicated at 22 in FIGS. 2, 3 and 4. Here it will be observed that upper support sections 23-23 and lower support sections 24-24 are pressed out by a suitable forming operation from the flanges 20 and 21 so as to provide what may be termed a "half tent" shape leaving openings 25-25 therebelow. It will be understood that the support sections 23-23 and 24-24 can be formed by suitable metal working apparatus.

Referring now particularly to the construction of the portion of the upright support member 11 as shown in FIG. 2, it will be noted that the flanges 14 and 15 extend at right angles to each other from a junction 26 therebetween and that the facing flange 14 is provided with downwardly inclined slots 27 and 28 that extend from the junction 26. The coplanar flange 15 is provided with clearance slots 29 and 30 that extend from the junction 26 and open into the upper ends of the inclined slots 27 and 28. The result of the provision of the downwardly inclined slots 27 and 28 in conjunction with the clearance slots 29 and 30 is to leave upstanding nose portions 31 and 32 one above the other along the junction 26 between the flanges 14 and 15 for receiving the detents formed by the upper support sections 23-23 and lower support sections 24-24.

In assembling the rack 10, the angle shaped upright support members 11-11 are suitably rigidly mounted on a support surface 33 which may be a floor or the like. They are mounted in parallel spaced relation with the flanges 14-14 facing each other and the flanges 15-15 extending therefrom in coplanar relation. Next the transverse members 12 having the angle members 19-19 at their ends are assembled on the upright support members 11-11 one by one. For this purpose each transverse member 12 is moved horizontally toward the upright support members 11-11 and in the vicinity of one pair of the several pairs of upstanding nose portions 31 and 32. The movement continues with the flanges 20 being positioned in overlying relation with respect to the facing flanges 14-14 and the support sections 23-23 and 24-24 are moved into the clearance slots 29 and 30 respectively. This movement continues until the flange 21 overlies the respective flange 15. This movement is performed in such manner that the lower edges of the support sections 23-23 and 24-24 are above the upper ends of the nose portions 31 and 32. After each transverse member 12 has been moved to the position described, it is then moved downwardly so that the nose portions 31 and 32 are positioned inside of the support sections 23-23 and 24-24 with the arrangement being such that a wedging engagement is effected resulting from the relative inclinations of the sides of the nose portions 31 and 32 with respect to the inner surfaces of the support sections 23-23 and 24-24. As a result of this wedging action the flanges 20 and 21 are moved solidly flush against the surfaces of the flanges 14 and 15 on the respective support members 11-11.

When the rack 10 is assembled in the manner described, it will be apparent that subsequent application of load to the transverse members 12 increases the wedging action between the support sections 23-23 and 24-24 with the upstanding nose portions 31 and 32. This tightly locks the transverse members 12 to the angle shaped upright support members 11-11 and secures them rigidly together. Moreover, the use of the

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inclined slots 27—28 and the clearance slots 29—30 in conjunction with the support sections 23—23 and 24—24 in the angle members 19—19 provides a rigid torsional resisting structure in both planes of the angle members 19—19.

The rack 10 can be disassembled readily merely by striking a sharp blow on the bottom side of the transverse member 12 adjacent the respective upright support member 11. This breaks the friction wedging action described above with the result that the transverse member 12 can be readily lifted up and away from the upright support members 11—11.

By using multiple arrangements of the inclined slots 27—28 and the associated clearance slots 29—30 at different spacings along the upright support members 11—11, it is possible to adjust the transverse members 12 to different vertical spacings as may be desired.

Since certain further changes can be made in the foregoing construction and different embodiment of the invention can be made without departing from the spirit and scope thereof, it is intended that all matter shown in the accompanying drawing and described hereinbefore shall be interpreted as illustrative and not in a limiting sense.

What is claimed as new is:

1. A demountable rack comprising, in combination, a pair of angle shaped upright support members having flanges facing each other in parallel spaced relation and coplanar flanges extending from said parallel flanges, each parallel flange having a downwardly inclined slot extending from its junction with its coplanar flange, each coplanar flange having a clearance slot extending from the respective junction and defining with the respective inclined slot an upstanding nose portion having downwardly inclined sides, a transverse member extending between said support members and having at each end an angle shaped member whose flanges overlie respectively the facing and coplanar flanges of the respective support member, each angle shaped member having a support section extending laterally and downwardly from each flange at the junction thereof in overlying relation to the respective inclined side of the respective nose portion whereby said transverse member is detachably mounted at its ends on said support members.

2. A demountable rack comprising, in combination, a pair of angle shaped upright support members having flanges facing each other in parallel spaced relation and coplanar flanges extending from said parallel flanges, each parallel flange having a pair of downwardly inclined parallel slots extending from its junction with its coplanar flange, each coplanar flange having a pair of clearance slots extending from the respective junction and defining with the respective inclined slots upstanding nose portions having downwardly inclined sides, a transverse member extending between said support members and having at each end an angle shaped member whose flanges overlie respectively the facing and coplanar flanges of the respective support member, each angle shaped member having a pair of parallel support sections extending laterally and downwardly from each flange at the junction thereof in overlying relation to the respective inclined side of the respective nose portion whereby said transverse member is detachably mounted at its ends on said support members.

3. A demountable rack comprising, in combination, a pair of horizontally spaced support members having facing flanges and coplanar flanges extending therefrom, a transverse member extending between said support members and having at its ends angle shaped members the flanges of which overlie the flanges of said support members, each angle member having a support section extending laterally and downwardly from each flange there-

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of, each facing flange of each support member having a downwardly inclined slot extending from its junction with its coplanar flange, each coplanar flange having a clearance slot extending from the respective junction and defining with the respective slot an upstanding nose portion having downwardly inclined sides for receiving said support sections on said angle members whereby said transverse member is detachably mounted at its ends on said support members.

4. A demountable rack comprising, in combination, a pair of horizontally spaced support members having facing flanges and coplanar flanges extending therefrom, a transverse member extending between said support members and having at its ends angle shaped members the flanges of which overlie the flanges of said support members, each angle member having upper and lower support sections extending laterally and downwardly from each flange thereof, each facing flange of each support member having upper and lower downwardly inclined slots extending from its junction with its coplanar flange, each coplanar flange having upper and lower clearance slots extending from the respective junction and defining with the respective slot an upstanding nose portion having downwardly inclined sides for receiving said support sections on said angle members whereby said transverse member is detachably mounted at its ends on said support members.

5. A demountable rack comprising, in combination, a pair of horizontally spaced support members of angle shape having facing flanges and other flanges angularly related thereto, a transverse member extending between said support members and having at its ends angle shaped members the flanges of which overlie the flanges of said support members, each angle member of the transverse member having a support section extending laterally and downwardly from each flange thereof, each facing flange of each support member having a downwardly inclined slot extending from its junction with the respective other flange, each other flange having a clearance slot extending from the respective junction and defining with the respective slot an upstanding nose portion having downwardly inclined sides for receiving said support sections on said transverse angle members whereby said transverse member is detachably mounted at its ends on said support members.

6. A demountable rack comprising, in combination, a pair of upstanding support members of angle shape each having a first flange facing the other first flange and a second flange in coplanar relation and extending away from the respective first flange in right angular relation, a transverse member extending between said support members and having at each end an angle member whose flanges overlie respectively the facing and coplanar flanges of the respective support member, each first flange having a downwardly inclined slot extending from the corner of the respective support member and each second flange having a clearance slot extending from the respective corner and defining with the respective inclined slot an upstanding nose portion at the respective corner having downwardly inclined sides, and downwardly extending detent means on the corner portion of each angle member wedgingly overlying and engaging the respective nose portion whereby said transverse member is detachably mounted on said support members.

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