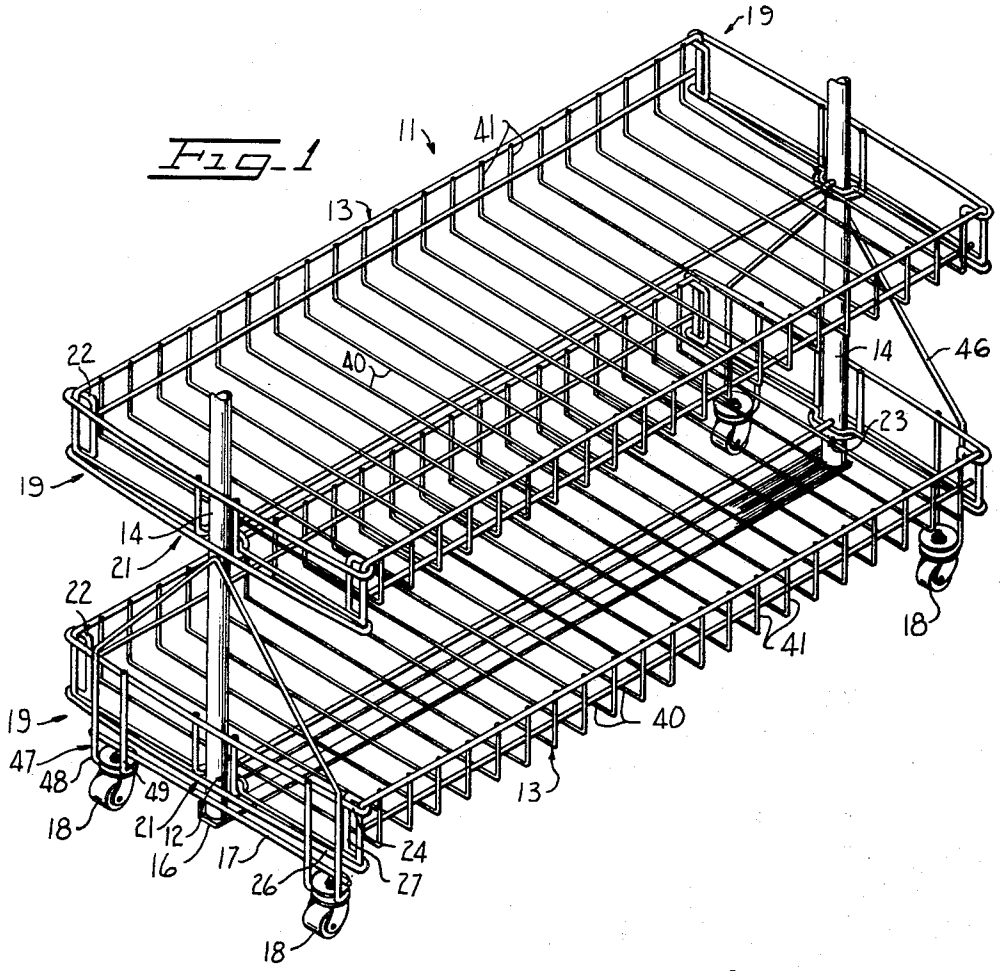
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RACK FOR MERCHANDISING AND THE LIKE

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Fig. 1



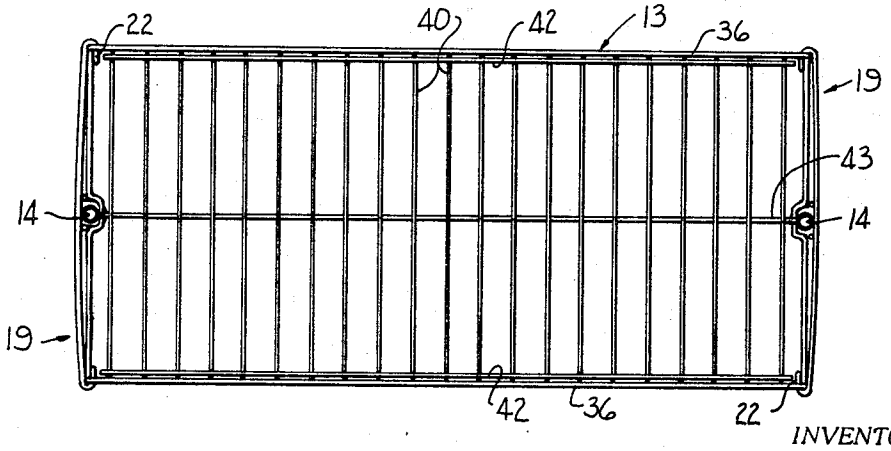


Fig. 2

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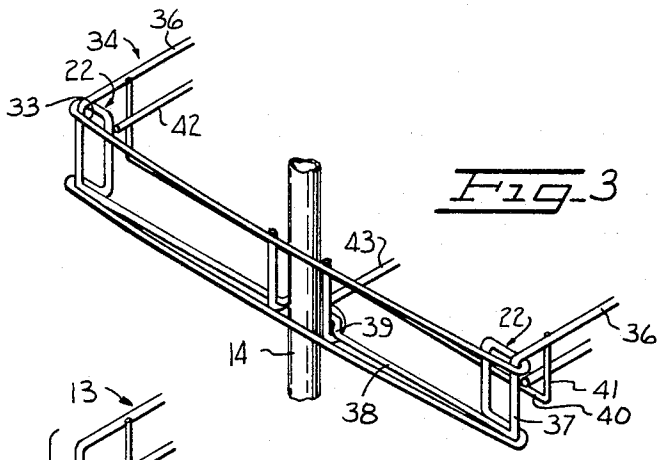


Fig. 3

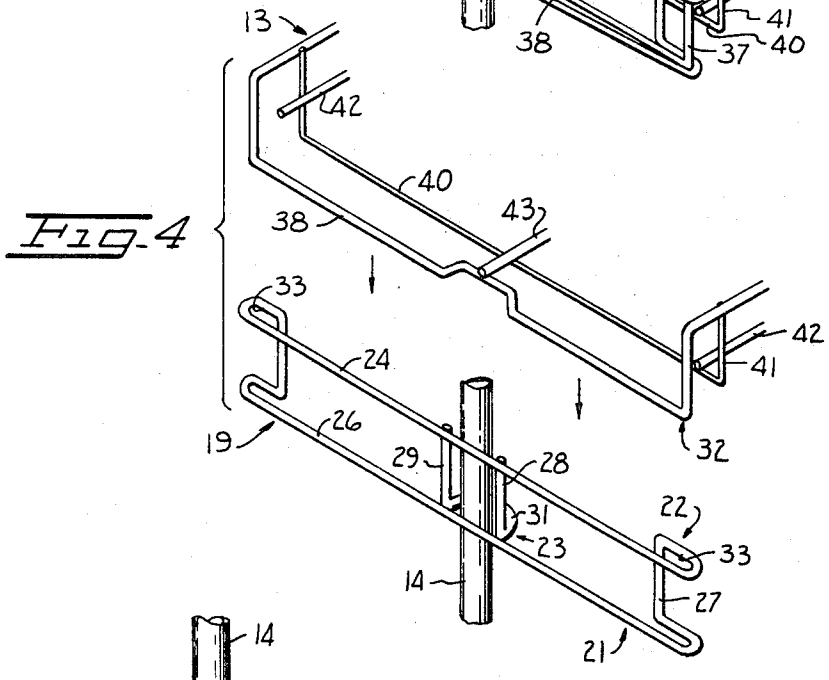


Fig. 4

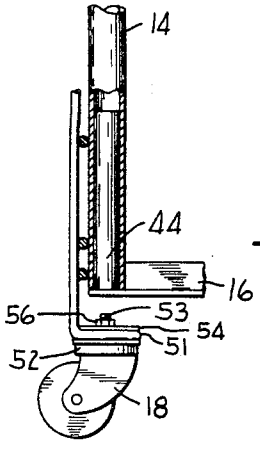


Fig. 5

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RACK FOR MERCHANDISING AND THE LIKE

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7 Claims. (Cl. 280—79.3)

ABSTRACT OF THE DISCLOSURE

A merchandising rack is described which has a plurality of trays removably secured with a positive locking action in tiered relationship to a frame. The rack comprises a support frame having two vertical posts between which are secured the trays in spaced vertical relationship by tray securing means. The tray securing means includes in opposed positions on each of the posts resilient arms which project transversely outward from opposite sides of the posts. Each of the arms includes at its free end inwardly turned reentrant flanges. The ends of each tray have downwardly turned tab portions adapted to engage within the slot defined between the reentrant flanges and the arms of each securing means. These tabs are spaced in the direction longitudinally of the trays by a distance which is slightly less than the longitudinal distance between the flanges of the corresponding pairs of the opposed tray securing means, so that the resilient arms are flexed inwardly when the tabs engage said flanges to provide a tight, frictional lock between the trays and the frame.

This invention relates to a rack in which a number of articles may be placed for purposes of merchandising, storage, and the like, and is more particularly directed to such a rack which has a plurality of trays removably secured in tiered relationship to a frame with a positive locking action.

It is frequently desirable to arrange a number of articles in a neat manner for display purposes in merchandising, compactness in storage, etc. To these ends various racks have been provided wherein a number of trays are mounted in a supporting framework, the trays serving to hold the articles. However, the trays have generally not been readily removable from the frame, or where readily removable, the securance between the trays and frame has not been particularly stable with the result that the trays tend to tip or even become disconnected from the frame. In a rack having the trays mounted in tiered relationship, it is particularly desirable that the trays be removable so as to increase the versatility of the rack in use. For example, various of the trays may be removed to increase the space between adjacent trays left in the rack in order to accommodate relatively tall articles. However, it is undesirable that the removability of the trays be accomplished with a sacrifice of stability and sturdiness in the connections between the trays and frame.

It is therefore an object of the present invention to provide a rack having a plurality of tiered trays removably secured in a support frame with a positive locking action that insures extreme sturdiness and stability of securance.

Another object of the invention is the provision of a rack of the class described wherein the trays are separable from a pair of support posts of the frame having tray securing means at spaced positions therealong, such that the trays may be interchangeably employed with other frames having support posts of different lengths and/or different spacings between the tray securing means thereof.

It is a further object of the invention to provide a rack of the class described which is of very simple, yet extremely sturdy and rigid construction.

To accomplish the foregoing objects, the rack of the

invention includes a tray support frame having a pair of spaced apart support posts between which the trays are to be removably secured. The means by which each tray is secured to the post includes on each of the posts a pair of resilient arms which project transversely outward from opposite sides of the post. The free end of each of the arms has an inwardly turned reentrant flange adapted to be engaged by a corresponding downwardly turned tab portion on the end of each tray. There is a greater distance longitudinally of the rack between opposed flanges on the posts than there is between the tabs on the trays so that the arms are flexed inwardly when the tabs engage the flanges. It has been found that with this construction, a rack having removable trays is provided which when assembled is extremely sturdy and stable.

The invention possesses other objects and features of advantage, some of which, with the foregoing, will be set forth in the following description of the preferred form of the invention which is illustrated in the drawings accompanying and forming part of the specification. It is to be understood, however, that variations in the showing made by the said drawings and description may be adopted within the scope of the invention as set forth in the claims.

FIGURE 1 is a perspective view of a rack in accordance with the present invention.

FIGURE 2 is a plan view of the rack.

FIGURE 3 is a fragmentary perspective view on an enlarged scale of cooperating portions of a tray and securing means of the support frame interengaged to provide a positive locking action.

FIGURE 4 is a fragmentary exploded perspective view of the tray and securing means of FIGURE 3, illustrating the manner in which they are interengaged.

FIGURE 5 is a fragmentary side elevation of the support frame of the rack with portions broken away.

Referring now to the drawings, FIGURES 1 and 2 in particular, there will be seen to be provided a rack **11** which includes a support frame **12** having a plurality of trays **13** mounted in tiered relationship thereon. The frame **12** is preferably formed by a pair of upright support posts **14** mounted at the opposite ends of a longitudinal base member **16** which in the present case is provided as a length of angle iron. A rod **17** is centrally secured transversely to the base of each post to project laterally outward from the opposite sides thereof. In order that the frame be wheelable, casters **18** are secured, in a manner subsequently described, at the opposite ends of the rods **17**.

A plurality of tray securing means **19** are secured to each post **14** at vertically spaced positions thereof, with one securing means being adjacent the base of the post. Each securing means is arranged to engage a cooperating portion of one of the trays **13** to facilitate removable securance of the tray with a positive locking action in a manner which will soon become evident. More particularly each securing means basically comprises an elongated rectangular element **21** secured at its center transversely to the outer end surface of the post, and having inwardly turned reentrant flanges **22** at its opposite ends. The element **21** is resilient such that the transverse arm portions thereof on opposite sides of the post may be flexed. The securing means further includes a stop **23** projecting inward from the post at the lower edge of the element **21**.

Although the element **21** and stop **23** generally outlined above may be variously provided, an articulate peripherally framed construction thereof is preferred. In this regard, the element **21** is best formed of rod to have parallel spaced upper and lower rod portions **24**, **26** inwardly arcuately turned at their opposite ends and interconnected by vertical rod portions **27** extending rightangularly therebetween to define the flanges **22** (see FIGURE 4). The stop **23** is defined by parallel spaced vertical

rod portions 28, 29 secured in right-angular bridging relation to the rod portions 24, 26 on opposite sides of the post and having a semi-circular interconnecting rod portion 31 projecting right-angularly from their lower ends. Such semi-circular portion extends inwardly about the post 14 in spaced relation thereto.

Considering now the trays 13 in greater detail, it will be appreciated that they may be of substantially any open topped rectangular configuration having a length adapted to fit between the posts 14. In addition, each tray is provided with downwardly turned substantially rigid tab portions 32 at its opposite ends adapted to be received in the slots 33 defined between the flanges 22 and element 21 and to engage the internal surfaces of the flanges. Upon urging the tab portions downwardly into the slots, the tab portions engage the stops 23. It is particularly important to note that the longitudinal distance between the tab portions at the opposite ends of a tray is slightly less than the longitudinal distance between the flanges 22 of the elements 21 at the opposite ends of the frame. Consequently, when the tab portions are engaged with the flanges, the oppositely extending arm portions of the elements are flexed inwardly, as best shown in FIGURE 2. By virtue of the resiliency of the flexed arm portions, longitudinally outwardly directed forces are exerted on the tabs which establish a positive locking action for stably and sturdily holding the tray in position. To remove the trays it is only necessary to move same upward to thereby withdraw the tab portions from the slots 33.

Although the trays 13 may be variously provided, it is prefered that they be of an articulate rod construction. More particularly, each tray preferably includes a peripheral rod element 34 having parallel spaced longitudinal side portions 36 respectively terminating at their opposite ends in downwardly turned vertical portions 37, in turn interconnected by transverse portions 38. The transverse portions 38 are provided with central depressions 39 to accommodate the posts 14. In addition a plurality of rods 40 having upwardly turned ends 41 are transversely disposed in longitudinally spaced relation between the side portions 36 with their ends secured thereto. Longitudinal rods 42 are secured to the upwardly turned ends 41 of the rods 40 at a position downwardly spaced from side portions 36. The rods 42 terminate short of the vertical portions 37. A central longitudinal rod 43 extends between the depressions 39 and is secured to the transverse rods 40. The vertical portions 37 and transverse portions 38 of the peripheral rod element 34 thus define the downwardly turned tabs 32 at the opposite ends of the tray for engaging the flanges 22.

Considering now in greater detail the mounting of the posts 14 and attachment of the casters 18, it should be noted that the posts 14 are preferably tubular. Upwardly projecting elongated cylindrical stubs 44 are then provided at the opposite ends of base member 16 to coaxially receive the tubular posts in a tight fit, as shown in FIGURE 5. A substantially V-shaped support member 46 is secured at its apex to each post. The member 46 has depending parallel spaced legs 47 at its opposite ends which bridge the rod portions 24, 26 of the lowermost tray securing element 21 and the transverse rod 17 and are secured thereto. Each leg includes parallel spaced rod portions 48, 49 with a right-angularly inwardly projecting semi-circular interconnecting portion 51 therebetween subjacent an end of one of the rods 17. The semi-circular portions 51 serve to mount the casters 18. In this regard, each caster has a circular upper face 52 which engages the lower surface of one of the portions 51, and a threaded stub 53 projects upwardly from the face 52 through the portion 51. A washer 54 is traversed by the stub and engages the upper surface of the portion 51, while a nut 55 is threaded on the stub tightly against the washer to thereby secure the caster to the frame.

What is claimed is:

1. A rack comprising a support frame having a pair of spaced apart support posts, a plurality of trays adapted to extend between said posts, and tray securing means carried at spaced positions on each post for removably securing said trays between said posts at said positions, each of said securing means including resilient arms oppositely transversely projecting from said post to locations outwardly thereof adjacent the locations for the corners at one end of a corresponding one of said racks, each of said arms having inwardly turned reentrant flanges at their free ends, downwardly turned extensions at the opposite ends of each of said trays adapted to engage between said flanges and said arms of opposed securing means respectively carried by said posts, said extension of each of said trays spaced longitudinally thereof by distances slightly less than those of said flanges of the opposed securing means whereby said resilient arms are flexed when said extensions engage said flanges to provide a tight frictional fit therebetween.

2. A rack according to claim 1, further defined by said securing means each including a stop engaging one of said tabs of one of said trays.

3. A rack comprising a support frame including a pair of spaced-apart support posts, tray securing means carried at spaced positions on each post, each of said securing means including resilient arms oppositely transversely projecting from said post with said arms having inwardly turned reentrant flanges at their ends, and a plurality of trays each having downwardly turned tab portions at their opposite ends engaging internal surfaces of said flanges of said arms of corresponding pairs of said securing means respectively carried by said posts, said tabs of said trays longitudinally spaced by distances slightly less than those of said flanges of said corresponding pairs of said securing means whereby said arms are flexed when said tabs engage said flanges to provide a positive locking action, said securing means each including parallel spaced upper and lower rod portions centrally transversely secured to one of said posts and defining said transversely projecting arms, said upper and lower rod portions being respectively inwardly arcuately turned at their opposite ends and interconnected by vertical rod portions extending right angularly therebetween to define said flanges.

4. A rack according to claim 3, further defined by parallel spaced second vertical rod portions secured in right angular bridging relation to each of said uppper and lower rod portions on opposite transverse sides of said post and interconnected by a semi-circular rod portion projecting right angularly from their lower ends about said post in spaced relation thereto to define a stop.

5. A rack according to claim 3, further defined by each of said trays comprising a peripheral rod element having parallel spaced longitudinal side portions respectively terminating at their opposite ends in downwardly turned vertical portions interconnected by transverse portions having central depressions, said vertical portions and transverse portions of said peripheral rod element defining said tabs, a plurality of transverse rods having upwardly turned ends disposed in longitudinally spaced relation between said longitudinal side portions with their ends secured thereto, first and second longitudinal rods secured to the upwardly turned ends of said transverse rods in downwardly spaced relation to said longitudinal side portions, said first and second longitudinal rods terminating short of said vertical portions of said peripheral rod element, and a third longitudinal rod extending between said depressions and secured to said transverse rods.

6. A rack according to claim 5, further defined by parallel spaced second rod portions secured in right angular bridging relation to each of said upper and lower rod portions on opposite transverse sides of said post and interconnected by a semi-circular rod portion projecting

right-angularly from their lower ends about said post in spaced relation thereto, said semi-circular rod portions engaging said transverse portions of said rod elements of said trays.

7. A rack comprising a support frame including a pair of spaced-apart support posts, tray securing means carried at vertically spaced positions on each post, each of said securing means including resilient arms oppositely transversely projecting from said post with said arms having inwardly turned reentrant flanges at their ends, a plurality of trays each having downwardly turned tab portions at their opposite ends engaging internal surfaces of said flanges of said arms of corresponding pairs of said securing means respectively carried by said posts, said tabs of said trays longitudinally spaced by distances slightly less than those of said flanges of said corresponding pairs of said securing means whereby said arms are flexed when said tabs engage said flanges to provide a positive locking action, said posts being tubular, a longitudinal base member, upwardly projecting cylindrical stubs projecting upwardly from the opposite ends of said base member and engaging said tubular posts, a substantially V-shaped support member secured at its apex to each of said posts, said support member having parallel spaced legs depending from its opposite ends, a caster secured to each of said legs, each leg of each support member

including parallel spaced rod portions secured in bridging relation to the lowermost one of said securing means, each leg including a semi-circular inter-connecting portion projecting right-angularly from the lower ends of said rod portions thereof, each of said casters having a circular mounting face engaging the semi-circular portion of one of said legs and a threaded stub projecting from the mounting face through the semi-circular portion, a washer traversed by said stub and engaging said semi-circular portion, and a nut threadably secured to said stub.

References Cited

UNITED STATES PATENTS

2,254,770	9/1941	Bitney	211—181 X
2,533,324	12/1950	Mendle	211—177
2,724,511	11/1955	Morgan	211—181
2,764,419	9/1956	Enders	280—79.1 X
2,850,172	9/1958	Beckner	211—181 X

FOREIGN PATENTS

963,516	7/1964	Great Britain.

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