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F. J. BELL ET AL

2,918,176

STORAGE RACK

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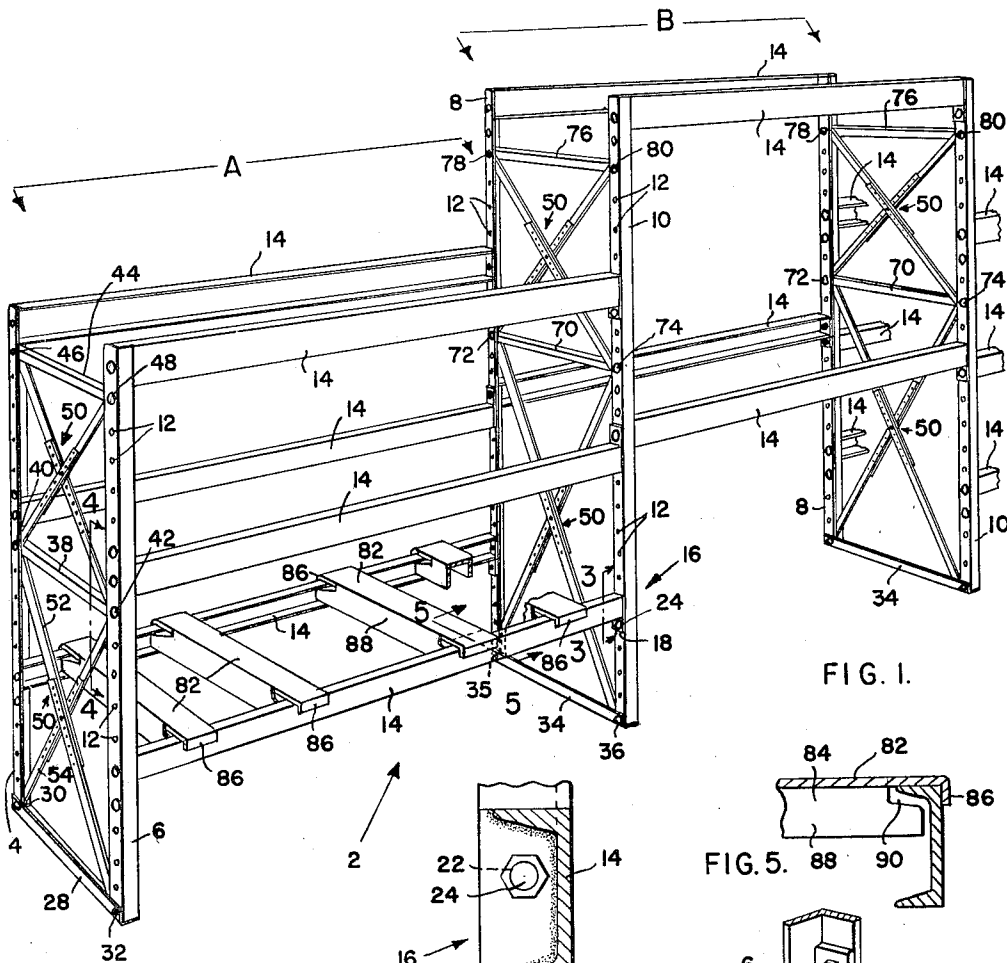


FIG. 1.

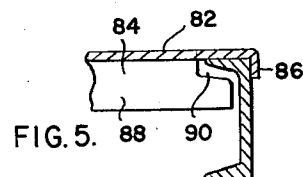


FIG. 5.

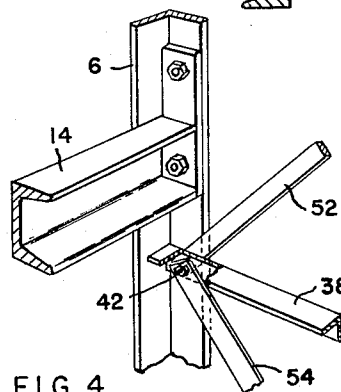


FIG. 4.

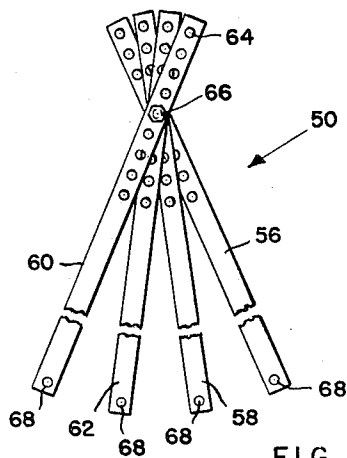


FIG. 2.

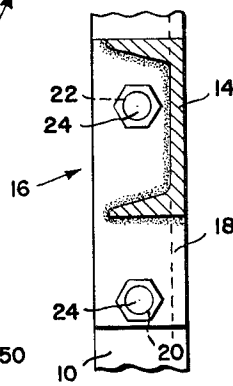


FIG. 3.

INVENTORS
FRANCIS J. BELL &
JOHN O. STODDART
BY *Buss Smith & Hardy*
ATTORNEYS

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STORAGE RACK

Francis J. Bell, Roxborough, and John O. Stoddart, Lafayette Hill, Pa., assignors to The Allen Iron & Steel Company, Norristown, Pa., a corporation of Pennsylvania

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4 Claims. (Cl. 211-143)

This invention relates to a metal storage rack which has utility, for example, for the accommodation of pallets carrying articles to be stored.

The pallet rack in accordance with this invention is highly advantageous in that it combines great strength with a wide degree of flexibility in the manner of its use. In particular, the strength members are susceptible to being placed in a variety of positions depending upon the positions in which it is desired to support the pallets.

Further, the securing means associated with the members adapted to support the pallets permit an adjustment with respect to height by the simple expedient of reversing the pallet support members.

Briefly, the storage rack of this invention, to a unique degree, embodies the desirable features of flexibility of arrangement, strength, ease of assembly and disassembly, and occupancy of a minimum of shipping space.

These and other objects of this invention will become apparent on reading the following description in conjunction with the drawings in which:

Figure 1 is a front perspective view of a storage rack in accordance with this invention;

Figure 2 is an elevation of an X brace employed in the rack of Figure 1;

Figure 3 is a vertical section taken on the plane indicated by the lines 3-3 in Figure 1;

Figure 4 is a perspective view, partially broken away, of the junction area of braces and an upright member indicated by the line 4-4 in Figure 1;

Figure 5 is a vertical section taken on the plane indicated by the lines 5-5 in Figure 1.

Referring now to Figure 1, a storage rack 2 in accordance with this invention has a storage section indicated at A and a storage section indicated at B. Storage section A is formed by a plurality of spaced upright angle members 4, 6, 8 and 10, which are provided with a series of spaced openings 12.

Opposed longitudinal U-shaped rails 14 act as strength members and also form a bed for the support of the items to be stored, for example, loaded pallets. An end plate 16 is welded to each end of each rail 14 to permit the bolting of the rail to the upright members. Each end plate has a portion 18 extending beyond the rail, the end plates on each rail extending in the same direction. Each end plate 16 has an opening 20 in the portion 18 and an opening 22 which lies within the boundary of the rail. The spacing between the centers of openings 20 and 22 is the same as the spacing between the centers of openings 12 and, as shown in Figures 1 and 3, plate 16 is bolted to an adjacent upright 10 by bolts 24 passing through openings 20 and 22 and the selected openings 12.

It will readily be seen that the height of the rails 14 can readily be adjusted by increments equal to the distance between the centers of openings 12. In addition, a smaller adjustment can readily be accomplished by reversing the direction in which the end plates 16 extend. Thus, for example, by reversing the end plates of the lowest level of the rails 14 in section A so that

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they extend upwardly and bolting again through the same openings 12, the supporting upper level of these rails would be lowered, an amount less than if the bolts were secured each one opening lower. The middle pair of rails 14 in section A are shown in this reversed position. This result is possible due to the fact that opening 20 is spaced at different distances from the two possible supporting surfaces of rail 14.

Section A is also provided with transverse bracing between adjacent upright members, i.e., between upright members 4 and 6 and between upright members 8 and 10. Upright members 4 and 6 are mounted on a transverse angle brace 28 which is bolted to members 4 and 6 by bolts 30 and 32. Similarly, upright members 8 and 10 are mounted on a transverse brace 34 bolted to the upright members by bolts 35 and 36. Similarly, a transverse angle member brace 38 is bolted to upright members 4 and 6 by bolts 40 and 42, respectively, and a transverse angle member brace 44 is bolted to upright members 4 and 6 at 46 and 48, respectively.

In order to provide satisfactory strength, additional bracing is accomplished by X braces 50. Each X brace has two legs 52 and 54. Leg 52 is formed from a pair of overlapping members 56 and 58 while leg 54 is formed by a pair of overlapping members 60 and 62. Each of the members 56, 58, 60 and 62 are provided with a plurality of openings 64 whereby the members can be bolted together by a bolt 66 to form an X brace having legs of the desired length so that their end opening 68 will register with the desired openings 12 in the upright members. As shown in Figure 1, the left-hand X braces of section A are secured in position by bolts 30, 32, 40, 42, 46 and 48, the same bolts which are employed to secure braces 28, 38 and 44. It will be readily apparent that the length of the legs of the X braces can readily be modified so that these braces can be secured in openings which will not interfere with the securing of the longitudinal rails 14. Thus there is complete freedom with respect to the adjustment of the height of the rails 14.

Referring now to the right-hand end of section A as viewed in Figure 1, due to the greater height of upright members 8 and 10, transverse angle brace 70 is bolted to members 8 and 10 by bolts 72 and 74 at a level above the level of the brace 38. A further transverse angle brace member 76 is bolted to members 8 and 10 at 78 and 80, respectively. It will be noted that the lower X brace member 50 in this section is also secured in position by bolts 35, 36, 72 and 74. In this case, the legs of X brace 50 must be longer than they are in the left-hand section as viewed in Figure 1. The lengthening of the legs is obviously readily accomplished simply by decreasing the overlap between the members forming the legs and selecting the appropriate registering openings to bolt them together. Similarly, the upper X brace 50 in the right hand end of section A are secured by bolts 72, 74, 78 and 80.

The right-hand end of Section B, as viewed in Figure 1, is a duplication of the right-hand end of Section A having upright members 8 and 10, transverse braces 34, 70, 76, and two X braces 50 extending between said transverse braces. The rails 14 in section B are identical with the rails in section A. In order to illustrate the difference in height achieved by reversing the position of end plate 16, the lower rails 14 in section B have their end plates reversed with respect to the end plates of the middle section of rails in section A.

As illustrated in Figure 1, the storage rack can be continued for an indefinite length by the employment of further rail members 14 and associated upright members and braces (not shown).

As illustrated in connection with the lower rails in sec-

tion A, deck members 82 can be employed to provide a supporting surface for articles which have a width less than the distance between the companion rails 14. As shown, each deck member 82 has a cavity 84 and a pair of flanges 86, 86 which are adapted to engage the top and outside surfaces of the rails, respectively. Each deck member 82 is provided with sides 88, 88 which, in turn, have openings 90 for the reception of a flange of a rail 14. The deck members 82 are inserted between a pair of rails 14 before end plates 16 are bolted in place.

It is not desired to be limited except as set forth in the following claims.

What is claimed is:

1. A storage rack comprising spaced upright members having spaced openings, a plurality of adjacent pairs of longitudinal rails secured to the upright members by means passing through said openings, each pair of rails forming a bed for an article to be stored and each rail being U-shaped in cross section and having inwardly directed flanges, braces lying transverse to said rails and secured between adjacent upright members by bolts passing through said openings in the upright members, X braces secured to adjacent upright members, each of said X braces having two legs, each leg comprising a pair of overlapping members each provided with a plurality of openings in its inner end through which the legs can be secured together to form legs of various lengths, securing means passing through said openings in said leg members to secure the legs of each X brace together at the point where the legs intersect, the outer ends of said legs being bolted to said openings in adjacent upright members and a plurality of deck members removably secured to an adjacent pair of rails, each deck member having outer flanges respectively engaging the outwardly facing surfaces of adjacent rails and having downwardly extending sides provided with openings to accommodate the upper flanges of the adjacent rails respectively, the sides of the deck member extending under the upper flanges of the adjacent rails respectively to prevent the removal of the deck member when the adjacent rails are secured in position.

2. A storage rack comprising spaced upright members having spaced openings, a plurality of adjacent pairs of longitudinal rails, each said rail having upper and lower supporting surfaces, an end plate secured to each end of each rail in transverse relationship to the longitudinal axis thereof, said end plate having a portion extending beyond one of said surfaces and having a pair of openings therein, one of said pair of openings being in said portion and the other of said pair of openings being between said surfaces, said other opening being located to one side of a point half-way between said surfaces, means passing through each said pair of openings in the end plates and the aforementioned spaced openings in said upright members to secure the rails to the upright members, each adjacent pair of rails thereby forming a bed for an article to be stored, braces lying transverse to said rails and secured between adjacent upright members by bolts passing through said spaced openings in the upright members, X braces secured to adjacent upright members, each of said X braces having two legs, each leg comprising a pair of overlapping members each provided with a plurality of openings in its inner end through which the legs can be secured together to form legs of various

lengths, and securing means passing through said openings in said leg members to secure the legs of each X brace together at the point where the legs intersect, the outer ends of said legs being bolted to said spaced openings in the adjacent upright members.

3. A storage rack comprising spaced upright members having spaced openings, a plurality of adjacent pairs of longitudinal rails, each rail being substantially U-shaped in cross-section and having inwardly directed flanges forming supporting surfaces, an end plate secured to each end of each rail in transverse relationship to the longitudinal axis thereof, said end plate having a portion extending beyond one of said flanges and having a pair of openings therein, one of said pair of openings being in said portion and the other of said pair of openings being between said flanges, said other opening being located to one side of a point half-way between said flanges, means passing through each said pair of openings in the end plates and the aforementioned spaced openings in said upright members to secure the rails to the upright members, each adjacent pair of rails thereby forming a bed for an article to be stored, braces lying transverse to said rails and secured between adjacent upright members by bolts passing through said openings in the upright members, X braces secured to adjacent upright members, each of said X braces having two legs, each leg comprising a pair of overlapping members each provided with a plurality of openings in its inner end through which the legs can be secured together to form legs of various lengths and securing means passing through said openings in said leg members to secure the legs of each X brace together at the point where the legs intersect, the outer ends of said legs being bolted to said spaced openings in adjacent upright members.

4. A storage rack comprising spaced upright members having spaced openings, a plurality of adjacent pairs of longitudinal rails, each said rail having upper and lower supporting surfaces, an end plate secured to each end of each rail in transverse relationship to the longitudinal axis thereof, said end plate having a portion extending beyond one of said surfaces and having a pair of openings therein, one of said pair of openings being in said portion and the other of said pair of openings being between said surfaces, said other opening being located to one side of a point half-way between said surfaces, means passing through each said pair of openings in the end plates and the aforementioned spaced openings in said upright members to secure the rails to the upright members, each adjacent pair of rails thereby forming a bed for an article to be stored, and braces lying transverse to said rails and secured between adjacent upright members.

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