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G. A. NIELSEN

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STEEL RACK

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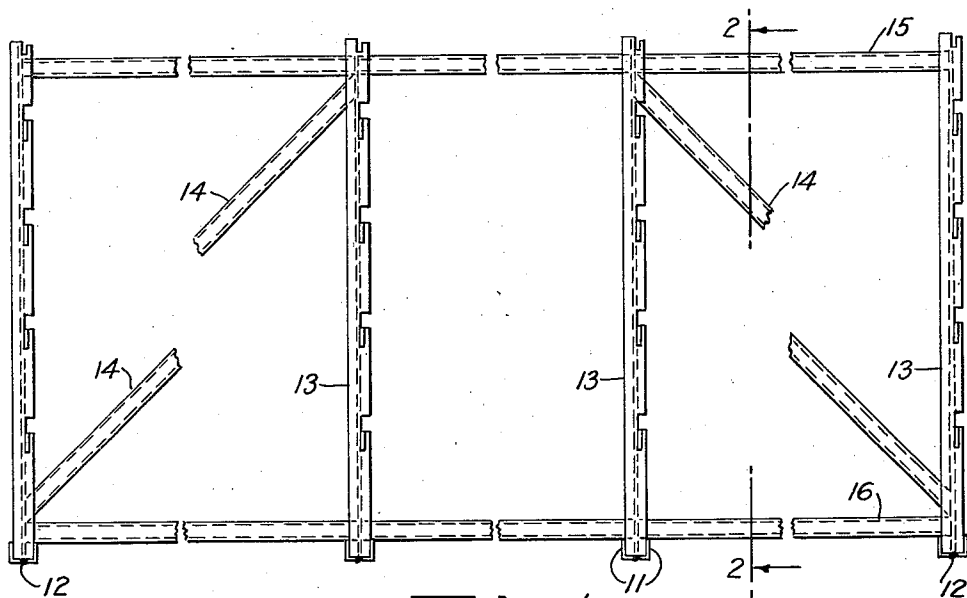


Fig. 1

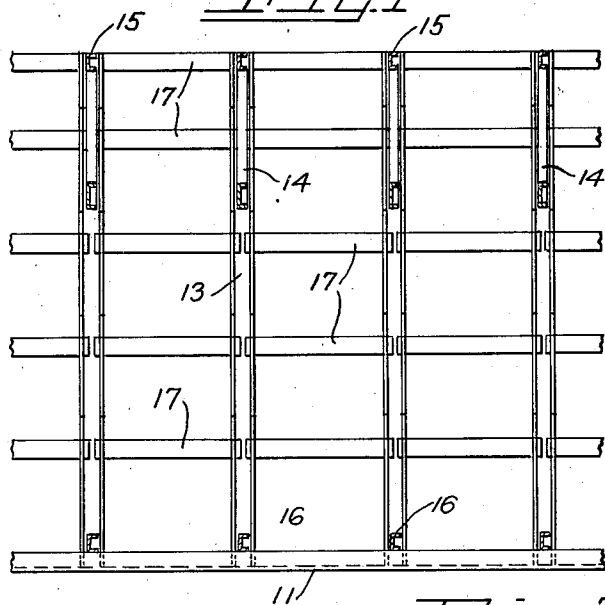


Fig. 2

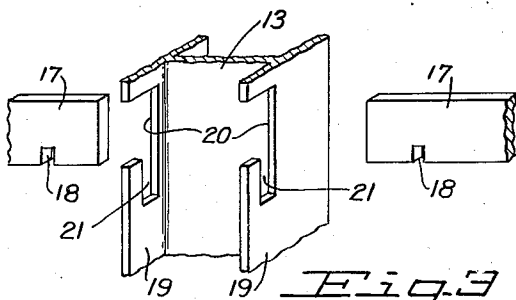


Fig. 3

INVENTOR.
Gordon A. Nielsen

BY *Wapler and Associates*

ATTORNEYS

UNITED STATES PATENT OFFICE

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STEEL RACK

Gordon A. Nielsen, Piedmont, Calif.

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2 Claims. (Cl. 211—182)

The present invention relates to racks of the kind generally employed for storing classified steel shapes, such as rods, strips and the like.

A well known form of such rack consists essentially of a plurality of reticulate frameworks arranged in tandem so that each of the sizes and shapes of rods, strips or the like may be supported by at least two such frameworks and separated from all other sizes and shapes by vertical and transverse members constituting the several frameworks. This arrangement is such that a few pieces of any desired size or shape may be easily withdrawn by endwise movement thereof, as required.

In order to facilitate reloading of such racks it has been proposed heretofore to provide for displacement or complete removal of each of the horizontal members spanning adjacent vertical members of the frameworks of such racks, thus permitting an overhead crane to lower a large number of pieces of any desired size or shape into position upon any selected one of the horizontal members after all such members above it have been displaced or completely removed. It is much more economical to replenish an exhausted stock in this way than by inserting pieces by endwise movement, even though overlying stocks must be removed by the crane or otherwise in doing so. Heretofore it has never been feasible, however, to make all of the horizontal members displaceable or removable, without impairing the strength of the reticulate frameworks to such a degree as to render the rack liable to transverse collapse, because the connections between the displaceable or removable horizontal members and the vertical members have been such as to provide no reinforcement against such transverse collapse. Therefore it has been necessary to weld or otherwise permanently secure at least the lowermost two or three horizontal members to the vertical members to provide reinforcement of the character referred to, and this has made it impossible to use an overhead crane to place loads below the level of such fixed horizontal members.

The primary object of the present invention is to make possible overhead placement of all loads in a rack of the character described, without impairing the strength of the rack so as to render it liable to transverse collapse.

A further and more specific object of the invention is to provide, in a rack of the character described, easily removable horizontal members so connected to the vertical members as to pro-

vide reinforcement against transverse collapse of the rack.

Other objects and advantages of the invention will be apparent from the following description of an embodiment thereof.

Referring to the drawing which illustrates an embodiment of the invention and forms a part hereof:

Figure 1 is a broken side elevation of a rack built in accordance with this invention;

Figure 2 is a vertical section taken on line 2—2 of Figure 1; and

Figure 3 is an isometric exploded view showing the interlocking of the cross members.

The members of the rack which rest upon a suitable support, which may be a floor or the ground, preferably comprise each a channel iron 11 which may be formed of two angle irons welded or otherwise connected together as at 12, running from side to side of the rack. Uprights 13 are set in the channels and are attached thereto as by welding or other suitable means. These uprights are spaced longitudinally and transversely of the rack and are preferably H beams. Adjacent longitudinally spaced uprights are interconnected by oblique braces 14, and also by upper and lower horizontal braces 15, 16. The braces are connected to the uprights in any suitable manner; for example, by welding.

The structure so far described forms a series of side by side spaces separated from each other by the upright, horizontal and oblique members referred to above, which constitute wall-like assemblies.

For the purpose of subdividing the spaces between vertical members 13, removable means, each adapted to form a support for one class of the different shapes to be stored, are employed; such means, according to the present invention, functioning also as lateral reinforcements for the unitary wall-like assemblies described above. As shown in Figure 3, these means preferably consist of cross members 17 which are easily and quickly connectable and removable, and which connect each upright 13 with the corresponding one in the next adjacent longitudinal row of uprights. Each flange 19 of each upright H-shaped member is cut away to provide slots of "bayonet" form, horizontally aligned as at 20 and sufficiently large for the cross members 17 to enter the flange, and wide enough at 21 to permit such cross members to move downwardly in the slots.

For the purpose of providing lateral reinforcement for the vertical members 13 and the wall-like assemblies of which they form a part, each

cross member 17 is provided with housings or slots 18 adjacent its opposite ends and so dimensioned and positioned as to embrace portions of the flanges 19 adjacent an edge of each of the portions 21 of the bayonet slots in said flanges, forming what is known in carpentry as a dado joint therewith. As shown, the slot 18 is in the lowermost surface of the cross member 17, but it can be disposed alternatively in the surface adjacent the web of the vertical member 13. The cross members 17 are also prevented from sliding laterally by such positioning of the notches 18. Connection or interlocking is easily and quickly effected by moving the cross member first horizontally and then downwardly and the cross member can be easily and quickly disconnected or removed by reversing such movements.

The number of cross members 17 required at any level in a tier will depend on the length and weight of the shapes to be stored. The number of side-by-side tiers can be chosen at will, as can the number of upright members arranged longitudinally.

The rack is filled by lowering a plurality of items of a particular shape into the bottom of a space between uprights by means of a crane, while all cross members 17 are removed. When the load has been deposited and cross pieces locked into the lowermost positions over the deposited load, a load of perhaps different shapes are deposited on such cross pieces, whereupon cross pieces are locked into the lowermost position over that deposited load. This procedure can be repeated until the compartment-like spaces defined by the uprights and cross pieces contain all the pieces it is desired to store in the tier. A great advantage of this invention is that cross bracing by the members 17 increases as the load increases, even though no provision is made for cross bracing other than the load-supporting cross members.

Loading in the manner described is much more

economical than loading the shapes lengthwise into compartments, which must be done manually, and it is even more economical to use an overhead crane to remove and replace five superposed loads in recharging the lowermost compartment of any tier than to recharge any compartment by pushing the pieces in endwise by hand labor.

Certain details have been referred to and shown merely for the purpose of exemplifying the invention, and may be changed without departing from the spirit thereof.

The invention claimed is:

1. In a rack comprising a plurality of reticulate frameworks disposed in tandem and each including aligned vertical and horizontal members; releasable connections between said vertical and horizontal members each comprising a bayonet slot in the vertical member, and a slot in the lower edge of the horizontal member adapted to engage over one margin of said bayonet slot to a sufficient extent to reinforce the framework against collapse in its own plane; another margin of said bayonet slot being disposed so as to prevent horizontal disengagement of the slot in said horizontal member from engagement with said first mentioned margin.

2. In a rack comprising a plurality of reticulate frameworks disposed in tandem and each including aligned vertical and horizontal members; releasable connections between said vertical and horizontal members each comprising a bayonet slot in the vertical member, and a vertical slot in the lower edge of the horizontal member adapted to engage over the lowermost margin of said bayonet slot to a sufficient extent to reinforce the framework against collapse in its own plane; another margin of said bayonet slot being disposed so as to prevent horizontal disengagement of the slot in said horizontal member for engagement with said first mentioned margin.

GORDON A. NIELSEN.