Feb. 3, 1931. N. WARSHAW 1,791,336

STORAGE RACK

Filed June 21, 1926

Fig. 1.

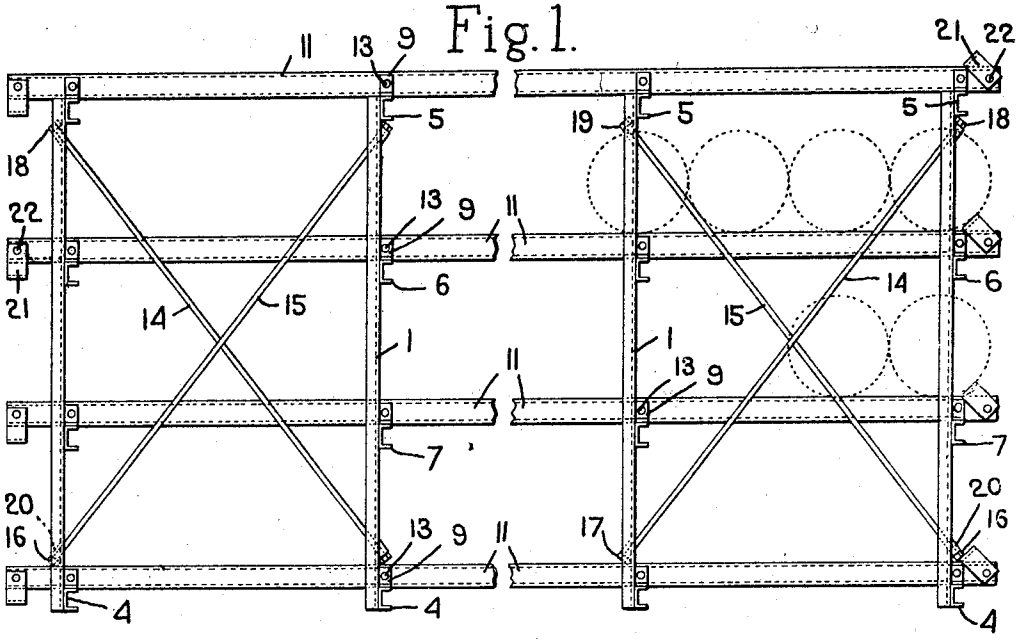


Fig. 2.

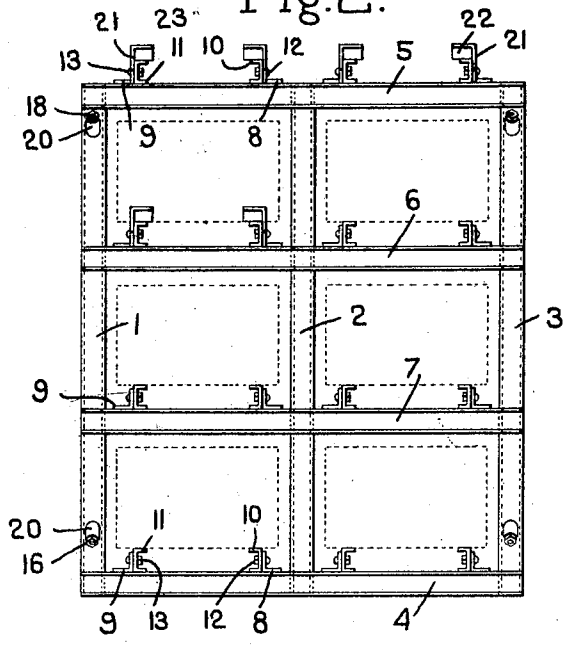
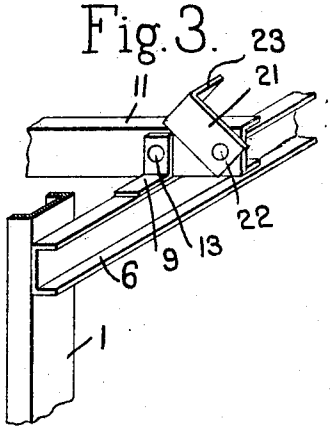


Fig. 3.



Inventor.
Nathaniel Warshaw
by Heard Smith & Tennant.
Attys.

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UNITED STATES PATENT OFFICE

NATHANIEL WARSHAW, OF MATTAPAN, MASSACHUSETTS, ASSIGNOR TO LEWIS-SHEPARD COMPANY, OF WATERTOWN, MASSACHUSETTS, A CORPORATION OF MASSACHUSETTS

STORAGE RACK

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This invention relates to improvements in storage racks, and the general object thereof is to provide a storage rack which can be economically constructed of standard structural bars which will be of lighter construction but of greater strength than racks heretofore constructed.

A further object of the invention is to provide a storage rack of the character described comprising fabricated supporting units adapted to be connected by articles supporting rails so that the necessary number of supporting units may be employed to construct a rack of any desired length.

A further object of the invention is to provide a fabricated supporting unit which may be constructed in any permanent form of any desired height or width so that any required number of such units may be employed with connecting and supporting rails to provide a storage rack with any desired capacity.

More particularly the invention relates to improvements in barrel storage racks comprising fabricated supporting units of any desired width and height comprising channel bar uprights connected by channel bar girders at spaced intervals in which the webs of the girders are welded to the webs of the channel bars with barrel supporting rails detachably secured to the girders intermediate of the uprights so that the barrels can be rolled through the spaces between the uprights and the girders from one end of the rails to the other.

A further feature of the invention consists in providing means at the ends of the barrel supporting rails for arresting barrels and which is so constructed as to be swung out of its position to permit the barrels to be rolled off of the end of the rails.

A further feature of the invention relates to the means for connecting the upper end of one supporting unit to the lower end of another supporting unit for the purpose of reinforcing the structure.

A further object of the invention is to provide a storage rack of the character above described in which the supporting units can be fabricated from channel bar material by merely cutting the same into suitable lengths for uprights and girders and permanently assembling them by welding and in which suitable barrel supporting rails may be cut in any desired length and assembled upon the girders to provide a rack of the desired capacity.

A preferred embodiment of the invention as illustrated in the accompanying drawing is:

Fig. 1 is a side elevation of the barrel rack showing in dotted lines the barrels supported thereby.

Fig. 2 is an end view of the same, and

Fig. 3 is a detailed perspective view showing one of the uprights with the girders secured thereto supporting upon which is mounted one of the barrel supporting rails and illustrating a stop pivotally connected to the end of the rail and adapted to be swung out of barrel arresting position.

A preferred form of the invention is illustrated herein as a barrel storage rack construction comprising a series of similar permanently fabricated supporting units, each comprising a series of channel bar uprights of any desired number and permanently connected by horizontal channel bar girders, the webs of which are welded to the channel bar uprights. These units serve to support rails for the barrels or other articles, and such rails also serve to connect the uprights together so that the assembled structure is of unusual rigidity.

In the particular barrel rack construction illustrated in the drawings, the fabricated supporting units compose vertical channel bar uprights 1, 2 and 3 which are connected at their bases by a horizontal girder 4 and at their tops by a horizontal girder 5, and are also connected by intermediate girders 6 and 7, all of which are welded to the respective uprights. The uprights 1, 2 and 3 are spaced apart a distance slightly greater than the standard length of the barrels which are to be placed in the rack, and the horizontal girders are spaced apart a sufficient distance to accommodate the connecting rails and to permit the barrels resting upon such rails to pass through the spaces between the girders. Each of the girders desirably has permanent-

ly secured to it preferably by welding, rail supporting members such as angle plates 8 and 9 to which the rails 10 and 11 are detachably connected preferably by bolts 12 and 13 which pass through the vertical webs of the angle iron plates 8 and 9 and through the webs of the channel bars 12 and 13 respectively.

Thus the permanently fabricated units are detachably secured together by rails 10 and 11 and can be readily erected at any desired location. By thus detachably connecting the rails to the supporting units, a construction can be made in which the supporting units may be spaced at any desired distance and the rack made of any desired length either by providing rails of suitable length or by cutting the excess length of the rails away after the rack has been assembled.

Reinforcing means for the rack are provided, preferably in the form of pairs of crossed rods 14 and 15 which extend from the upper end portion of one supporting unit to the lower portion of an adjacent supporting unit. Such rods are desirably in the form of bolts having heads 16 and 17 respectively, and provided with nuts 18 and 19 respectively.

These reinforcing bolts desirably are passed through the webs of the channel bars forming the uprights at an oblique angle to the vertical plane of such webs. Desirably, fillers such as washers 20 presenting faces to engage respectively the webs of the channel bar, and the heads and nuts of the bolt are provided to give a proper engagement for the heads and nuts of the bolt. It will be observed that these reinforcing bars lie wholly within the planes of the flanges of the channels and can be employed to reinforce the inner as well as the outer uprights of the rack construction, although reinforcement of the outer members at the ends of the rack, is usually sufficient.

Desirably, stops are provided for preventing the barrels from rolling off the ends of the supporting rails. In the present construction, a preferred form of stop is shown which comprises angle plates 21 which are pivotally mounted upon studs 22 projecting from the central portions of the webs of the rails 10 and 11; when positioned as illustrated in Figs. 2 and 3, the flange 23 of the angle plate extends across the web and forms an abutment which will prevent the barrel from rolling off the end of the rail. By reason of the pivotally mounted angle plate 21, however, it may be swung into and downwardly depending position thereby removing the flange 23 from the barrel arresting position so that the barrel may be rolled from the end of the rail when it is desired to remove the barrel from the rack.

By reason of the fact that substantially all the members of the storage rack are formed of channel bars, the necessity of using a variety of material is avoided. Any number of uprights may be employed to form a rack of such width as may be required, and said uprights may be cut to such height as may be needed to provide the desired number of tiers of barrels. The horizontal girders may likewise be cut to such lengths as is required by the number of uprights used and welded to the uprights at the factory to provide the fabricated supporting units. Such units may be readily transported to the place at which the barrel rack is erected. The barrel supporting rails which connect units may be cut to the desired length before shipment to their destination, or may be shipped in standard length when the length required is uncertain and cut off after the rack has been assembled.

The angle plates 8 and 9 desirably are drilled to provide bolt holes for the bolts 12 and 13, and are welded to the horizontal girders at the time the suporting units are fabricated. Bolt holes may also be drilled in the webs of the rails 12 and 13 at the factory before shipment if the desired distance between the supporting units is known at that time, or such holes may be drilled after the material has reached its destination or during process of erection.

The bolt holes for the reinforcing bolts 14 and 15 may also be drilled at the factory in such uprights as may be desirable, so that the matter of assembling rack at destination is very simple.

By reason of the fact that the structure is substantially entirely formed of channel bars, a maximum rigidity is required with the minimum amount of material so that a very great saving is made of metal over other constructions heretofore produced. A great amount of labor is also saved in the fabrication of the supporting units as no special cutting and fitting of metal is required, furthermore, such pieces of angle bar as may be cut from standard lengths for the purpose of constructing a storage rack of a desired height, width and length may be employed in the construction of other racks for which the cut off lengths are assumed. Thus a great economy in the use of material and saving of labor is accomplished.

It will be obvious that while the storage rack illustrated herein is particularly adapted to receive barrels, other articles such as boxes may be supported upon the raids, or the rails may be decked over to provide support for other kinds of articles.

It will, therefore, be obvious that the present embodiment invention is of an illustrative character and is not restrictive and that various changes and forms of construction may be made in the scope of following claims.

Having thus described the invention, what is claimed as new, and desired to be secured by Letters Patent, is:

1. A storage rack comprising a series of

fabricated supporting units, each having spaced channel bar uprights, a series of spaced horizontal channel bar girders welded thereto, angle irons forming rail supporting members having a flange resting upon and welded to said girders, intermediate of said uprights, and channel bar rails having their lower flanges resting on girders, and means detachably connecting their webs to said rail supporting members.

2. A barrel storage rack comprising a plurality of fabricated supporting units, each having vertical channel bar uprights spaced apart sufficiently to provide clearance for the ends of the barrels and permanently connected by a series of channel bar girders spaced apart a distance greater than the diameter of the barrel, barrel supporting rails resting upon and detachably secured to said girders intermediate of said uprights and angle iron stop plates pivotally mounted at the ends of said barrel supporting rails so that the laterally extending flanges of said stop plates may be swung into engagement with the upper faces of the barrel supporting rails, into barrel arresting position, or swung beyond the ends of the barrel supporting rails, out of barrel arresting position.

3. A barrel storage rack comprising a plurality of fabricated supporting units, each having vertical channel bars spaced to provide clearance for the ends of the barrels, a series of channel bar girders welded thereto and spaced apart a distance greater than the diameter of the barrel, rail supporting angle irons welded to said girders intermediate of said uprights, channel bar rails resting upon said girders having their webs bolted to said angle plates, and angle iron stop plates pivotally connected to the webs of said channel bar rails at the ends thereof so that the laterally extending flanges of said stop plates may be swung into engagement with the upper faces of the barrel supporting rails, into barrel arresting position, or swung beyond the ends of said barrel supporting rails, out of barrel arresting position.

In testimony whereof, I have signed my name to this specification.

NATHANIEL WARSHAW.