March 3, 1931. W. N. VANCE 1,795,060

LATTICE BRACE

Filed July 29, 1929

Fig. 1

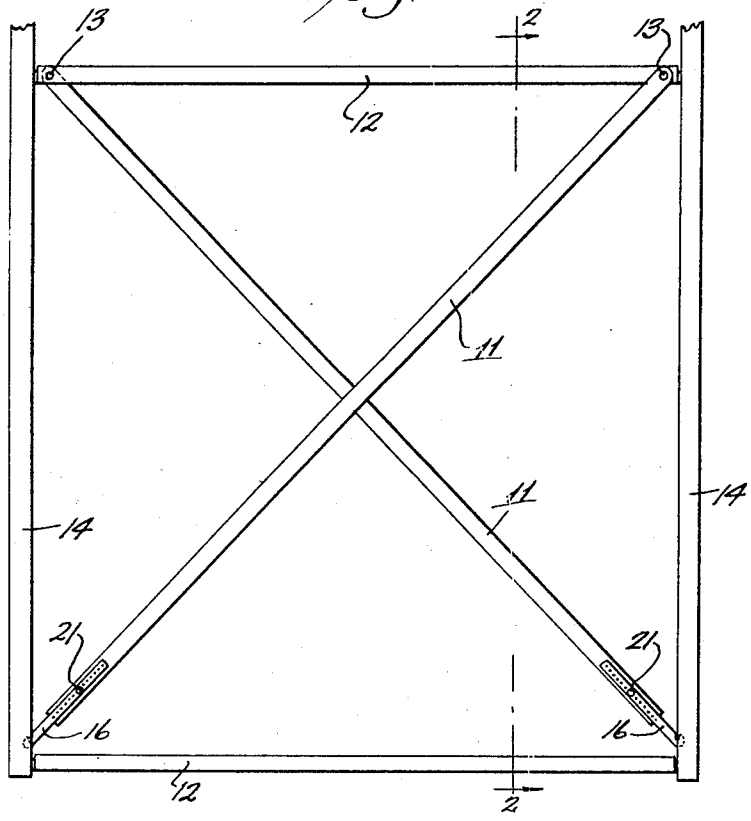


Fig. 2

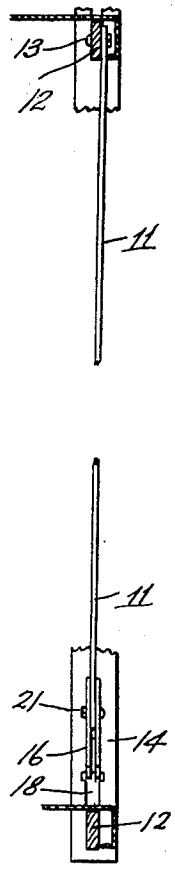


Fig. 3

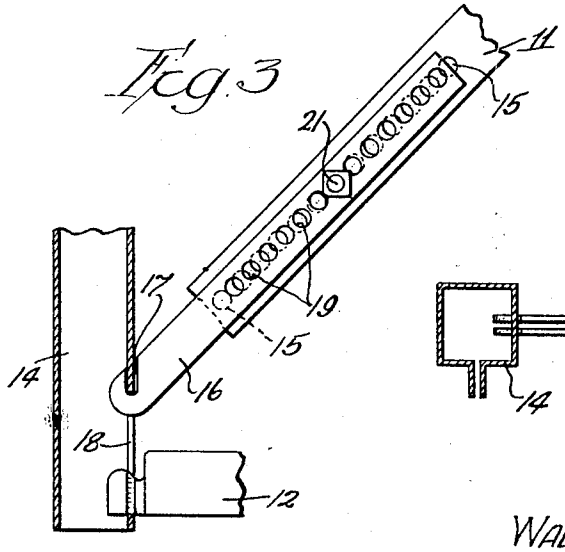
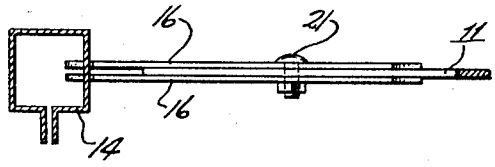


Fig. 4



Inventor:
WALTER N. VANCE.
By Cheever, Cox & Moore
Attys.

Patented Mar. 3, 1931 1,795,060

UNITED STATES PATENT OFFICE

WALTER N. VANCE, OF NORTH AURORA, ILLINOIS, ASSIGNOR TO LYON METAL PRODUCTS, INCORPORATED, OF AURORA, ILLINOIS, A CORPORATION OF ILLINOIS

LATTICE BRACE

Application filed July 29, 1929. Serial No. 381,756.

This invention relates to lattice braces for connecting a plurality of members to prevent them from swaying or racking.

In rack shelving, framework, and the like the upright members which support the shelves have a tendency to sway unless they are supported in some way, such as by cross-braces. In built-up structures which may be of several tiers, it is preferable that certain parts of the structure can be readily knocked down. In this case it is not desirable that the braces be rigidly connected to their cooperating supporting members as the tiers would be bulky, difficult to assemble, and could not be readily knocked down.

The present invention provides a new and novel lattice brace which can be readily fastened to the work and is provided with an adjustment so that the brace will be of proper length.

Another object is to provide an improved lattice brace, which is strong and durable, and which can be readily and economically manufactured.

Another object is to provide a lattice brace of simple construction, which is removable, and which is provided with new and novel adjusting means.

Numerous other objects and advantages will appear throughout the progress of the specification.

The invention comprises in general a plurality of uprights having cross-bearers or supports, which are adapted to receive shelves or the like. These bearers are adapted to drive down in slots provided in the sides of the tubular uprights. Tension straps have their upper ends connected to the upper bearers by means of a bolt or the like, and their lower ends are provided with a plurality of spaced holes. A pair of brace supports provided with a plurality of holes are arranged on either side of the tension strap, and a bolt passes through the holes in the tension strap and the brace supports to hold them in position. The holes in the tension strap are on different centers than the holes in the brace supports, so that they will overlap. The brace supports are preferably formed with hooks, each hook being provided with a slot adapted to receive an edge of the upright where the slot is provided to receive the bearers or supports. As the holes in the brace supports are on different centers than the holes in the straps, the uprights may be plumbed to position and a bolt inserted in the holes which have come into alignment.

The accompanying drawing illustrates a selected embodiment of the invention, and the views therein are as follows:

Fig. 1 is a detail elevation of a rack or structure showing the improved lattice braces applied thereto.

Fig. 2 is a detail vertical sectional view on the line 2—2 of Fig. 1.

Fig. 3 is a detail sectional view showing an improved brace arranged in position.

Fig. 4 is a detail plan sectional view.

Referring to the drawing, 11 designates a tension strap which is pivotally fastened to a cross-bearer or support 12 by any convenient means, such as a bolt 13. These bearers are connected to tubular uprights 14, preferably by grooves in the sides of the bearers driven into wedging engagement in slots provided in the uprights. One end, preferably the lower end of the tension straps is provided with a plurality of holes 15, which may be of the same size but which may be spaced on constant centers. A pair of brace supports 16 are provided for preferably detachable connection with the uprights 14. In the illustrated form, these supports 16 are furnished with hooks and with notches 17, which engage the inner edge of the upright above the hole 18 provided therein to receive the ends of the bearers 12. These brace supports 16 are provided with a plurality of holes 19 which are substantially the same size as the holes 15 in the strap but which are spaced on different centers than those in the straps. The brace supports 16 are fastened to the tension strap 11 by means of a bolt or other fastening member 21, which passes through the holes 15 and 19 which have come into alignment.

A single base support 16 may be substituted instead of the two supports shown, but the two supports provide double shear and more rigidly support the structure.

By providing a relatively large number of holes on close centers in the straps and hooked supports a relatively fine adjustment may be made without the use of turnbuckles. The holes in the straps and the holes in the brace hooks are on different centers so that they overlap each other and permit various degrees of adjustment. When the structure needs adjustment the bolt is taken out and the structure plumbed to position. The bolt is then put in the holes which are in alignment. An adjustment of practically any degree may be made in a very short space of time.

In practice two straps are riveted to a bearer which is placed at any shelf position. These straps are crossed, a pair of hooks is hooked upon the top of a slot in the mating upright and engaged upon the strap by inserting a drift pin in any hole that matches; then by inserting a second drift pin at the next hole and removing the first drift pin the brace may be shortened by the differential between the hole spacings. By repeating this operation selectively on the two diagonals, the braces are tightened and the upright plumbed, whereupon bolts are inserted in the holes next to the final positions of the drift pins.

The invention is hereby claimed as follows:

1. A structure comprising uprights having slots adapted detachably to receive the ends of bearers, straps interconnected with the uprights and bearers, said straps having hooked portions adapted to engage a part of the uprights surrounding certain of said slots, said straps including means for adjusting the length of said straps to tighten the same.

2. A structure comprising tubular uprights having openings therein, bearers having hooked ends engaging the openings in said uprights, a strap pivoted to one of said bearers near one of said uprights, a hook engaging the material surrounding the opening of another of said uprights, the free ends of said strap and hook being provided with holes adapted to be brought into alinement, and a bolt passing through said holes which are brought into alinement.

3. A lattice support comprising a strap, a brace hook arranged on each side of the strap and pivotally connected thereto, and means for adjusting the brace hooks relative to said strap.

4. A structure comprising tubular metal uprights having openings therein, bearers extending in said openings and supported by said uprights, a strap pivotally connected with a bearer, a hook engaging the metal surrounding the opening in an upright, said strap and brace hook being provided with holes on different centers, and means passing through corresponding or alining holes in the brace hook and strap.

In witness whereof, I have hereunto subscribed my name.

WALTER N. VANCE.