June 8, 1954 L. SULTAN 2,680,326

SUPPORTING AND LEVELING DEVICE

Filed Dec. 16, 1950

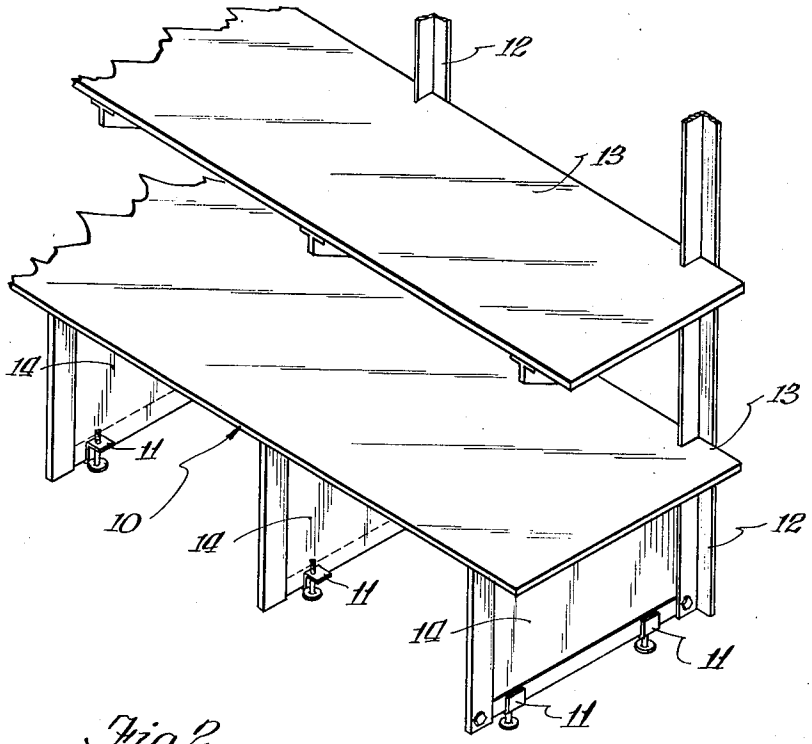


Fig. 1

Fig. 2

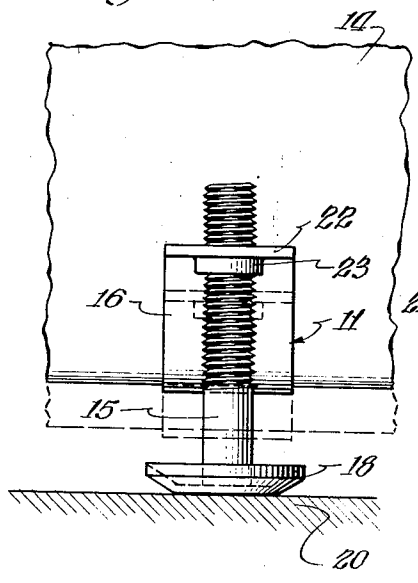


Fig. 3

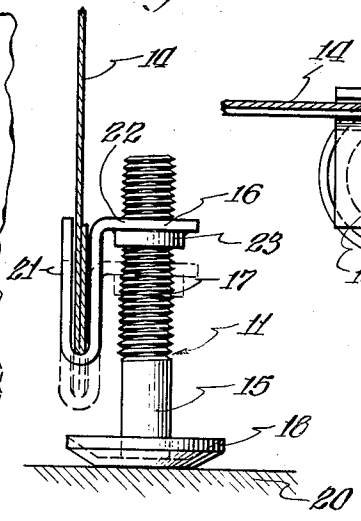
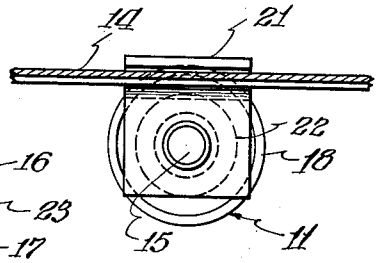


Fig. 4



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Patented June 8, 1954

2,680,326

UNITED STATES PATENT OFFICE

2,680,326

SUPPORTING AND LEVELING DEVICE

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Application December 16, 1950, Serial No. 201,199

2 Claims. (Cl. 45—139)

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This invention relates generally to supporting devices used to support large articles on horizontal surfaces which may have uneven contours, and more particularly to an improved device whose height is readily adjustable so that the articles may be leveled regardless of the slope and condition of the supporting surface. The device of this invention is particularly well adapted for supporting shelving sections and the like where more than four point supports are desirable.

One important object of this invention is to provide a leveling device which is readily detachable from the supported article so that the device may be removed, its height adjusted, and reattached with a minimum of effort.

Another object is to provide a leveling device which occupies a very small space and does not appreciably increase the height of the article being supported above the surface when adjusted to a low setting, yet which may be extended to a substantial height to accommodate for large variations in the level of the supporting surface.

Another object is to provide a device which may be attached to any downwardly extending flange or narrow vertical element and which is constructed in such fashion as to be largely hidden by the flange or element when installed thereon.

A further object is to provide a leveling device which may be adjusted either before or after it has been installed on the article to be supported but which automatically locks itself when weight is borne thereby so that its height is not varied by vibration or other causes once it has been installed and properly adjusted.

A further object is to provide a device having but two easily fabricated parts which are simple to manufacture and assemble.

Other objects and advantages of the device of this invention will be apparent upon reading the following specification in conjunction with the drawing and the appended claims:

In the drawing:

Fig. 1 is a perspective view of a portion of a shelving unit equipped with the supporting and leveling devices of this invention;

Fig. 2 is an enlarged view of one of the supporting and leveling devices;

Fig. 3 is a side view thereof; and

Fig. 4 is a top view thereof.

A fundamental concept of the supporting device of this invention is to provide an externally threaded member having an enlarged lower end to engage the supporting surface, and an internally threaded member adapted to engage a vertical flange or narrow element in supported relationship. The two members are threadably connected, and the rotation of one with respect to the other varies the effective height of the device.

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A shelving unit 10 provided with a plurality of supporting devices 11 is shown in Fig. 1. Actually the supporting devices 11 can be used to support many other articles but they are particularly well adapted to support shelving units which must be maintained at the same level over their entire length and which are supported at a large number of points.

The shelving unit 10 comprises a plurality of spaced uprights 12 and a plurality of shelves 13. The lowermost shelf is supported by vertical plates 14 which form the bottom of the unit. In the embodiment shown, each plate 14 is provided with two supporting devices 11, one at the front of the unit and the other at the rear.

The construction and the manner of attachment of the leveling devices 11 is best shown in Figs. 2 to 4. Each of the devices 11 comprises a bolt-like member 15 and a bracket member 16. The bolt-like member 15 is preferably formed by welding a threaded stud 17 to a concave circular disc 18 which is preferably formed by stamping from sheet metal. The bottom of the disc 18 is flat so as to engage a substantial portion of the supporting surface 20, while the sides slope upwardly to provide a rounded corner so as not to mar the floor and to permit the device to be slid along the floor.

The bracket 16 is also formed from a piece of sheet metal which is bent to the shape shown to provide a U-shaped portion 21 and a horizontal portion 22. The horizontal portion is punched downwardly to provide a hole therein which is threaded to receive the threads on the bolt 17. The hole in the horizontal portion is preferably punched with a pointed die so as to leave a downwardly extending flange 23 having a relatively large internal surface in which the thread is cut.

The supporting devices 11 are attached to the vertical elements 14 by merely slipping the U-shaped portions 21 over the bottom of the elements. The internal width of the U-shaped portions is preferably such as to just fit the bottom of the elements 14 so that the devices may be slipped on or off the elements 14 with ease or may be shifted to various positions along the elements as desired. This makes the erection and

leveling of the shelving unit shown in Fig. 1 very simple, for the devices 11 may be either adjusted prior to installation on the unit or after they are in place, and they may be shifted towards the front or the rear in order to take advantage of irregularities in the supporting floor. The preferred procedure in erecting the unit 10 shown in Fig. 1 is to first assemble the complete unit which may have a large number of uprights 12 and vertical elements 14. When the assembly is complete, the leveling devices are installed on the plate 14 at the ends of the unit and the unit is leveled in the conventional manner by adjusting the four devices. Each of the leveling devices for the intervening vertical plates 14 can then be held alongside the plate in the position in which it is to be mounted and adjusted to the proper effective height by twisting the member 15 with respect to the bracket 16. When they all have been adjusted to the proper height, the unit 10 may be lifted and all the devices 11 installed thereon. The unit is then set down and each of the devices may be checked to see that it is properly set, any which are too long or too short being given a fine adjustment by rotating the bolt-like member 15 without detaching the device from the unit 10.

Other procedures may, of course, be used but that described above has proved to be particularly well adapted for the unit shown.

The particular advantage of the device of this invention is that once it is installed so as to bear weight the eccentric force applied to the bracket 16 causes the bracket to cock sideways slightly with respect to the member 15 to lock the threads in engagement. This makes the bracket very resistant to vibration by insuring that the member 15 will not rotate in the bracket to vary the height adjustment.

From the foregoing it will be apparent that a superior leveling device has been provided which is very easy to fabricate and use and which otherwise fulfills the objects set forth therein. Various changes and modifications such as will present themselves to those familiar with the art may be made without departing from the spirit of this invention whose scope is commensurate with the following claims.

What is claimed is:

1. A supporting device adapted to be attached to a vertical element comprising a strip of sheet metal reversely bent upon itself at one end to form a U-shaped single rectilineal groove to receive said vertical element in weight-bearing relationship and bent at its other end to form a laterally disposed horizontal portion punched out to form a flange defining an opening which is internally threaded, and a vertically disposed member having a threaded shank portion received in said threaded opening and an enlarged integral head portion at the lower end of the shank portion, the weight bearing portion of said head being spaced horizontally from said groove to carry the supported weight eccentrically with respect thereto when the shank portion is in weight bearing adjustment and said threaded opening being of a short length whereby a cocking and binding occurs between the threaded opening and the shank when said shank is in weight bearing adjustment to prevent inadvertent turning of the vertical member, said head portion overlapping said U-shaped portion to rest against the lowermost portion thereof in direct weight bearing relationship at the uppermost limit of threaded movement between said threaded shank and said horizontal portion.

2. In combination an article having a plurality of substantially vertical fin elements at the bottom thereof with rectilineal edges and a plurality of supporting devices attached to said elements at spaced points along said rectilineal edges, each of said devices comprising a sheet metal bracket having a horizontal portion punched out to form a flange defining an opening which is internally threaded and a depending offset U-shaped portion engaging a vertical element aforesaid to encompass the rectilineal edge thereof below the level of said threaded opening, and a floor engaging member having a threaded shank received in said threaded opening extending downwardly on an axis spaced horizontally from said U-shaped portion and an integral head portion overlapping said U-shaped portion to rest against same at one limit of its movement, said threaded opening being of a short length whereby a cocking and binding occurs between the threaded opening and threaded shank throughout the remaining relative positions of the head portion and U-shaped portion when a load is applied to the U-shaped portion to prevent inadvertent turning of said floor engaging member.

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