

A. H. LEVENE.
ADJUSTABLE SHELVING.
APPLICATION FILED SEPT. 13, 1919.

1,336,971.

Patented Apr. 13, 1920.
2 SHEETS—SHEET 1.

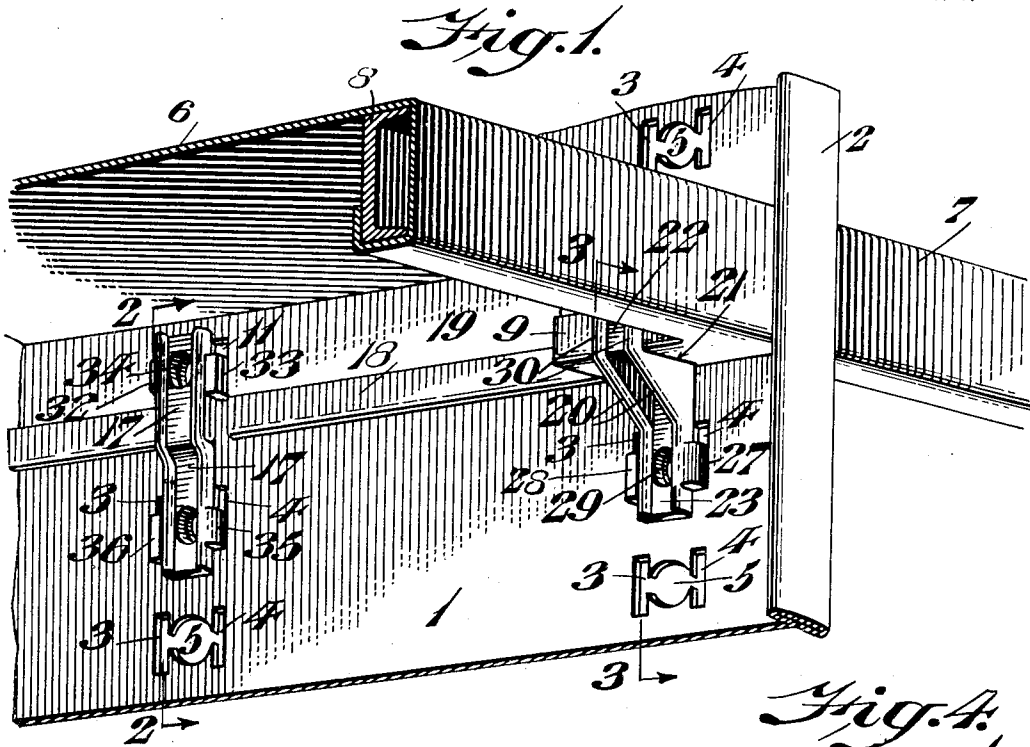


Fig. 2.
ON LINE 2-2, FIG. 1.

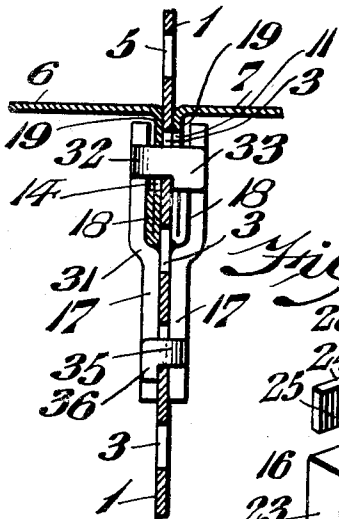
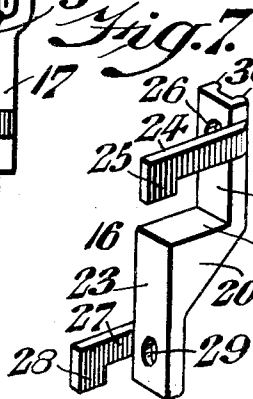
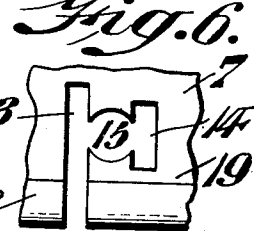
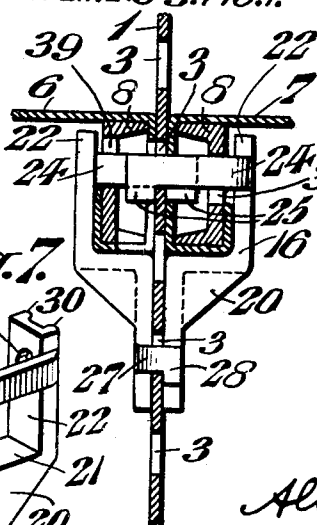


Fig. 3.
ON LINE 3-3, FIG. 1.



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2 SHEETS—SHEET 2.

Fig. 8.

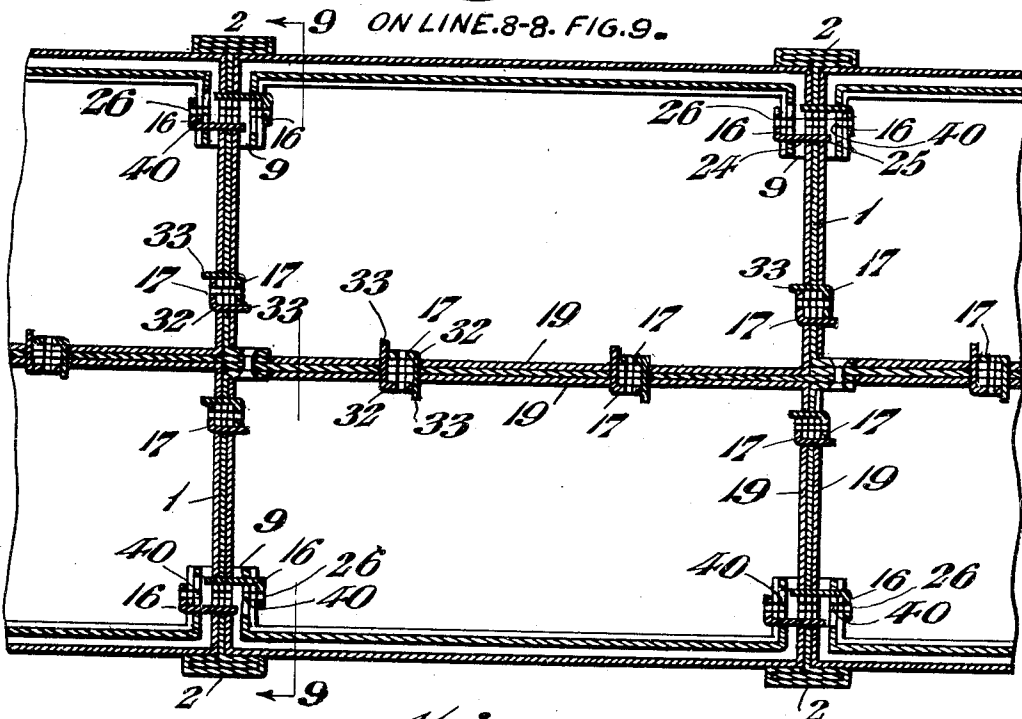
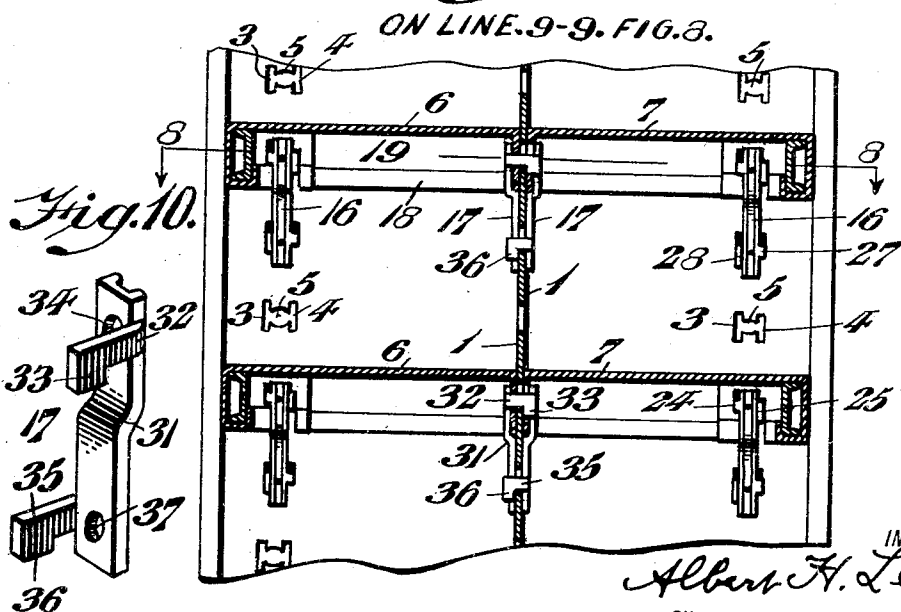


Fig. 9.



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ADJUSTABLE SHELVING.

1,336,971.

Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, ALBERT H. LEVENE, a citizen of the United States, residing at Philadelphia, county of Philadelphia, State of Pennsylvania, have invented a new and useful Adjustable Shelving, of which the following is a specification.

One of the main objects of my present invention is to devise a novel construction of shelving wherein when shelves on the opposite side of an upright are in horizontal alinement the locking members or clips employed on opposite sides of the upright will pass through each shelf into the upright, the construction being such that the shelf on one side of the upright is capable of independent adjustment or removal without affecting the alined shelf on the opposite side of the upright.

With the above and other objects in view as will be hereinafter more clearly set forth my invention comprehends a novel construction of adjustable shelving in which the shelves are capable of adjustment in order to effect their rearrangement in accordance with the character of the material to be stored.

It further comprehends a novel construction of shelving in which the uprights are provided with a plurality of rows of slots arranged in spaced relationship. The shelves are provided with a novel construction and arrangement of slots to register with predetermined slots of the rows of slots in the upright and locking devices are employed having means to pass through a shelf and into the upright, the construction of such locking devices being preferably such that each device will have a locking member to pass through a slot of each row so that any rocking or wobbling movement of the shelves is positively prevented and the shelves are securely locked with respect to the uprights.

It further comprehends a novel construction of shelving which is constructed in such manner that the same shelves and upright may be employed for either a bolted or adjustable type construction so that the shelves and upright will be standard for both types of construction. It further comprehends a novel construction and arrangement of uprights, a novel construction of shelves, and a novel construction of clips which have locking tongues to extend laterally through the shelves and upright and

adapted to interlock with the upright when the clips and shelf are moved a short distance relatively to the stationary upright.

It further comprehends other novel features of construction which will hereinafter more clearly appear in the detailed description of my invention.

For the purpose of illustrating my invention, I have shown in the accompanying drawings a preferred embodiment of it. It is, however, to be understood that the various instrumentalities of which my invention consists can be variously arranged and organized and that the invention is not limited to the precise arrangement and organization of these instrumentalities as herein set forth.

Figure 1 represents, in perspective, a portion of the shelving, showing the manner in which the shelves interlock with the upright.

Fig. 2 represents a section on line 2—2 of Fig. 1.

Fig. 3 represents a section on line 3—3 of Fig. 1.

Fig. 4 represents, in side elevation, a portion of an upright, showing more particularly the construction and arrangement of the apertures therethrough.

Fig. 5 represents, in side elevation, a portion of a shelf flange on one side of the upright, showing more particularly the construction and arrangement of the apertures therethrough.

Fig. 6 represents, in side elevation, a portion of the shelf flange to be used on the opposite side of the upright and showing the construction and arrangement of the apertures.

Fig. 7 represents, in perspective, a locking clip employed.

Fig. 8 represents a section on line 8—8 of Fig. 9, showing two rows of shelves and the manner in which the rear walls are interlocked and the manner in which the shelves are interlocked with the upright.

Fig. 9 represents a section on line 9—9 of Fig. 8.

Fig. 10 represents, in perspective, a type of clip which may be employed at the front end of the shelf.

Similar numerals of reference indicate corresponding parts.

Referring to the drawings, 1 designates the uprights which are provided at their forward ends with flanges 2

of any desired construction. The uprights are provided with two lines of slots 3 and 4, respectively, and with a single line of bolt holes 5, preferably positioned between the slots 3 and 4 and, as illustrated, the slots 3 and 4 and the bolt holes 5 open into each other but this is not necessary in all cases arising in practice. It is, however, desirable, from the standpoint of manufacture, to have the bolt holes open into the slots since the slots and the bolt holes can then be readily formed in a single stamping operation, as will be understood by those skilled in the art.

The slots 3 and 4 formed in the upright are preferably disposed in parallel alignment and are preferably of the same dimensions.

6 designates a shelf on one side of the upright 1 and 7 designates a corresponding shelf to be used on the opposite side of an upright 1. Each shelf has its front wall reinforced by means of a reinforcing bar of any desired type such as for example a channel 8 around which the material of the shelf is bent in the usual manner, as will be understood by reference to Fig. 1. The ends of each channel 8 are bent rearwardly, as indicated at 9, see Figs. 1 and 8. One line of shelves as for example the shelves 6, see Fig. 5, is provided with two lines of slots 10 and 11, respectively, and a single line of bolt holes 12. The slot 11 is of the same width as the slot 10 but is made a little longer and extends through the bottom of the shelf flange. The juxtaposed line of shelves, as the shelves 7, are provided with two lines of slots 13 and 14, respectively, and a single line of bolt holes 15. The slot 13 is of the same width as the slot 14 but is preferably slightly longer than the slot 14 and extends through the bottom of the shelf flange. 16 and 17 represent, respectively, a novel construction of clips which are employed, it being seen that on account of the enlargement formed by the channel 8, it is necessary to offset the clips 16 more than the clips 17, while the clips 16 have to accommodate the upwardly deflected portion 18 of the side flange 19 depending from the floor of the shelf.

I will first explain the construction of the clip 16 reference being directed more particularly to Fig. 7. Each clip 16 is provided with an offset 20, thereby forming a seat 21, an upper extending portion 22 and a downwardly extending lower portion 23, such portions having faces conforming to the juxtaposed faces of the shelf and upright. Near the upper end of the clip 16, I provide a laterally extending locking tongue 24 having a downwardly deflected hook forming extension 25 at its free end. In proximity to the tongue 24, I provide an aperture or bolt hole 26. On the downwardly extending portion

23 of the clip, I provide the laterally extending portion 27 which terminates at its forward end in a downwardly extending hook forming portion 28. In proximity to this laterally extending tongue 27, I provide through the portion 23 a bolt hole or aperture 29. I have preferred to illustrate the locking tongues 24 and 27 as projecting from opposite edges of the clip but it will be apparent that they would perform the same function in many respects if they extend from the same side of the clip.

The clips 16 are provided with one or more reinforcing ribs 30 of any desired formation. The clips 17 conform substantially in construction to the clips 16 except that they are not offset to the same extent. Each clip 17 is offset, as at 31, and near its upper end is provided with a locking tongue 32 extending laterally from it and terminating in a hook forming portion 33. A bolt hole 34 is provided in proximity to the locking tongue 32.

Near the lower end of the clip 17, I provide a laterally extending locking tongue 35 which terminates in a hook forming portion 36, and a bolt hole 37 is formed in proximity to the locking tongue 35. The locking tongues 32 and 35 are preferably projected from opposite edges of the clip 17.

It will be noted that when the holes in the flanges 19 of the shelves on opposite sides of the upright 1 are brought into register, the longer slot in one shelf is diametrically opposite the longer slot in the other shelf. Each channel 8 is provided with two rows of slots 38 and 39, respectively, as will be understood by reference to Fig. 3, and with a bolt hole 40, see Fig. 8.

The manner in which the shelves are secured with respect to the upright 1 will now be readily apparent to those skilled in the art and is as follows:—

When it is desired to secure a shelf in place, or to adjust its position with respect to the upright, the operator brings the shelf into such position that the slots 10 and 11 or the slots 13 and 14 will be in register with the slots 3 and 4 of the upright. The locking clips 17 are then placed in position so that the locking tongues 34 and 35 pass through different slots, as will be understood by reference to Figs. 1 and 2.

It will be understood from Figs. 1 and 3 that the locking clips 16 interlock with the shelf and the upright in a similar manner except that their locking tongues pass through apertures in the channel beam. As soon as the clips are in position the shelf and the clips are lowered so that the hooks 33 and 36 of the clips 17 and the hooks 25 and 28 of the clips 16 will secure the shelves in proper assembled position with respect to the upright.

Special attention is directed to the man-

ner in which one vertical row of shelving can be adjusted independently of the adjoining vertical row of shelving. The clips 17 seen in Fig. 1, owing to the provision of the longer slot in the shelf, can be raised with the shelf so that the locking clips on one side of an upright can be removed without affecting in any manner the position of the shelf on the opposite side of the upright. If two shelves of two adjoining vertical rows are to be located in the same horizontal plane they are assembled in the manner seen in Figs. 1, 2 and 3. From this it will be seen that the locking tongues at the upper ends of the clips pass through in different directions the diametrically located slots in the shelves and in the upright while the locking tongues of different clips pass through diametrically located slots in the upright. By such construction any lateral play of the clips with respect to the upright is prevented and the shelves are rigidly secured in their adjusted position so that under load they will retain the position in which they have been adjusted. Each bracket is preferably provided with a locking tongue to engage both lines of slots, one in a shelf and one in an upright.

In so far as I am aware, I am the first in the art to devise a locking clip or bracket such as 16 or 17 provided with laterally extending locking tongues which pass through the shelf and into the upright to interlock with the upright when the shelf is lowered and in all cases the locking clip or bracket may be inserted or removed without the necessity of employing any tools. I have preferred to show the locking tongues located in such a position that one is located above the other but these locking tongues may be brought nearer together or located in the same horizontal plane or presented from the same edge of the bracket instead of from opposite edges and still be within the spirit or scope of the invention. It will also be apparent that the line of bolt holes may be dispensed with in many cases arising in practice and only the two lines of slots employed. If the bolt holes are employed, they do not necessarily have to open into the slots. These bolt holes are simply an accessory which may be employed in order to enable one to eliminate the brackets when a permanent type of shelving is desired as the brackets are more expensive than the bolts. The slots in the shelves are preferably slightly wider than the slots in the upright and the locking tongues have a snug fit in the slots of the upright to prevent any rocking or lateral movement. The locking clips or brackets are preferably stiffened especially where they are bent or offset to support the channel and they are preferably also provided with any desired type of ribs to effect their reinforcement.

It is also within the scope of my invention to construct the shelving in such a manner that the bracket does not have to be arranged vertically to be removed but can be removed by a horizontal sliding movement.

It will be apparent from the foregoing that in accordance with my present invention when the shelves on opposite sides of the upright are arranged in horizontal alignment any shelf on one side of the upright can be removed or adjusted without affecting the locked condition of the shelf on the opposite side of such upright.

It will further be apparent that while my present invention relates more particularly to shelving which is adjustable if it is desirable to have the shelving at any time made more rigid all that it is necessary to do is to insert a bolt through the bolt holes and affix nuts to the bolts.

It will be apparent that while I have shown my present invention as applied to shelving, it is not limited thereto in its broad and generic application but is intended to cover any construction wherein two or more members are locked together in the manner herein shown and wherein when an inner and outer and an intermediate member are employed, one outer member or inner member may be removed independently of the other and without affecting the locked condition of the other by simply removing the clips on one side of the intermediate member and it is to be understood that my claims to such features are to receive the broad interpretation to which a generic invention is entitled.

It will now be apparent that I have devised a novel and useful construction of adjustable shelving which embodies the features of advantage enumerated as desirable in the statement of the invention and the above description and while I have, in the present instance, shown and described a preferred embodiment thereof which will give in practice satisfactory and reliable results, it is to be understood that such embodiment is susceptible of modification in various particulars without departing from the spirit or scope of the invention or sacrificing any of its advantages.

Having thus described my invention, what I claim as new and desire to secure by Letters Patent, is:—

1. In shelving, the combination with a shelf having a pair of slots therein, of an upright having two lines of spaced slots therein arranged in pairs, and a locking device having a plurality of locking members passing through slots in each line in both the shelf and the upright to lock a shelf in adjustable position with respect to the upright.

2. In shelving, the combination with the upright having lines of slots therein, of a

shelf having slots to register with predetermined lines of slots in the upright, and locking clips having locking tongues to pass through each line of slots in the upright and lock the shelves in adjusted position with respect to the upright.

3. In shelving, the combination with the upright having a plurality of lines of spaced slots with the slots of substantially the same dimensions, of a shelf having slots to register with predetermined slots in the upright, one of the slots in the shelf being longer than the other, and a locking clip having a plurality of locking members extending into spaced slots in the upright, one of said members passing through a slot in said shelf.

4. In adjustable shelving, the combination with the uprights and the shelves, of locking clips passing through the shelves into the uprights, in opposite directions, the clip on one side of the upright overlapping the clip on the other side of the upright, said clips being constructed to be removed and inserted without the use of tools.

5. In shelving, the combination with an upright having vertically extending lines of spaced slots arranged in pairs, of a shelf having a flange provided with slots to register with a pair of slots in the upright, one of the flange slots being closed and the other flange slot being longer than the first slot, and a clip having a pair of locking members one of which passes through one slot of a pair in the shelf and upright and the other of which passes through a different slot in the upright to prevent rocking or wobbling of the shelf.

6. In shelving, the combination with an upright having vertical lines of slots arranged in pairs, of shelves on opposite sides of the upright having flanges, each flange being provided with a pair of slots to register with a pair of slots in the upright, one slot of a pair opening through the bottom of the flange, and clips each having an upper locking member to pass through a flanged slot in each shelf and a slot in the upright and having a lower locking member passing through a different slot in the upright, whereby a locking clip on one side of an upright can be independently removed and the shelf which is locked removed without affecting the locked condition of the shelf on the opposite side of the upright.

7. In shelving, a shelf, an upright having lines of laterally spaced slots, and a shelf locking device passing through a pair of slots in the upright to lock the shelf to it.

8. In shelving, as a new article of manufacture, an upright having two lines of spaced slots with a bolt hole between pairs of slots.

9. As a new article of manufacture, an upright for shelving having two lines of slots therein with the slots arranged in pairs

and with a bolt hole between a pair of slots and opening thereinto.

10. As a new article of manufacture, a locking clip for shelving offset intermediate its ends and provided with a locking member at its upper end and a locking member at its lower end.

11. As a new article of manufacture, a locking clip for shelving, comprising a member offset intermediate its ends, having a laterally extending tongue at its upper end terminating in a hook and having at its lower end a laterally extending tongue terminating in a hook.

12. As a new article of manufacture, a locking clip for shelving, comprising a member offset intermediate its ends, having a laterally extending tongue at its upper end and terminating in a hook and having at its lower end a laterally extending tongue terminating in a hook, said tongues being projected from opposite sides of the body portion of the clip and extending in substantially the same direction.

13. As a new article of manufacture, a locking clip for shelving, comprising a body portion offset intermediate its ends, and having a plurality of laterally extending locking tongues, said body portion having a bolt hole through it.

14. As a new article of manufacture, a shelf having a pair of spaced slots with a bolt hole between the slots and opening into them.

15. In shelving, the combination with an upright having lines of slots arranged in pairs, of a shelf to be secured to one side of the upright having a plurality of spaced slots adapted to register with predetermined slots in the upright, a shelf to be secured to the opposite side of the upright and provided with a plurality of slots to register with predetermined slots of the upright and with the slots in the other shelf, one slot in the first shelf being open at its lower end and one slot in the second shelf being open at its lower end, a locking clip on each side of the upright, each clip having a locking member to pass through registering slots in the shelves and upright and provided with a locking member to pass through opposite slots in a different line of slots in the upright and thereby prevent any lateral or rocking movement of the shelf with respect to the upright.

16. The combination of two members having registering slots, of a locking clip having means to pass through said slots and lock the two members together, said means preventing the rocking of one member with respect to the other.

17. The combination of an outer, inner and intermediate member having registering slots, and a pair of clips having locking means to pass through opposed slots in op-

posite directions to lock the members together, said inner or outer member being removable without affecting the other when its respective clip is detached.

5 18. As a new article of manufacture, a locking clip comprising a body portion having extending in the same direction from opposite edges of it locking members terminating in downwardly deflected portions.

10 19. In shelving, the combination with an upright, of shelves arranged in horizontal alinement on opposite sides of the upright, a detachable locking device passing through a shelf on one side of the upright and interlocking with it to secure said shelf in adjusted position, and a locking device for the other horizontally alined shelf passing

through the shelf and the upright and interlocking with the latter, whereby two shelves can be locked in horizontal alinement to the upright, the locking device of one shelf being removable without affecting the locked condition of the horizontally alined shelf on the other side of the upright. 20

20. In an adjustable shelving, an upright, a shelf and manually locking members passing through the shelf and interlocking with the upright and having integral means thereon to prevent relative movement of the shelf and upright. 25

ALBERT H. LEVENE.

Witnesses:

H. S. FAIRBANKS,
C. D. MCVAY,