United States Patent

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[54] **ADJUSTABLE SHELVES AND SUPPORT THEREFOR**

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[52] **U.S. Cl.** **211/176,** 108/110

[51] **Int. Cl.** **A47f 5/10**

[58] **Field of Search** 211/176, 177, 181; 108/59, 108/106, 110, 148, 146

[56] **References Cited**

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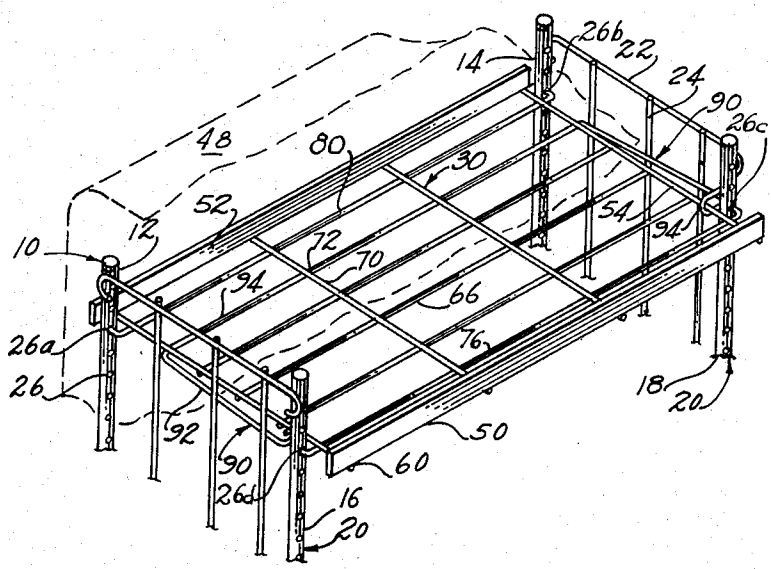
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[57] **ABSTRACT**

Especially suitable for use in confined areas such as the inside of a panel truck end support units fabricated from plated steel wire each includes vertical posts or standards drilled at spaced intervals with the holes in front post being substantially in alignment horizontally with the holes in the back post. Shelves fabricated from plated steel wire are easily located and removably attached to both of the end panels in the holes of the post thereof from one side of the assembly which may be the aisle of a panel truck. Each shelf is held in place by rearward projecting and horizontally disposed pins on each end of the shelf and each pin being inserted in their respective aligned hole in the back post of the assembly and rearwardly depending ends on each end of the front of a respective shelf which likewise is positioned in the corresponding hole in each of the front post. Shelves are positioned and placed for use by aligning the respective pins at the front and the back of the shelf with the respective openings in the vertical posts and then pushing the shelf rearwardly into position. The shelf is removed by pulling same forward. Optionally a spring member made from a piece of bent and looped wire is pressed out of the way for insertion of the shelf and permitted to spring into position behind the post once the shelf is seated in the respective holes thereby preventing accidental dislodgement of the shelf. The spring member is displaced manually by pressure from one finger while holding on to another part of the shelf.

13 Claims, 6 Drawing Figures



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SHEET 1 OF 2

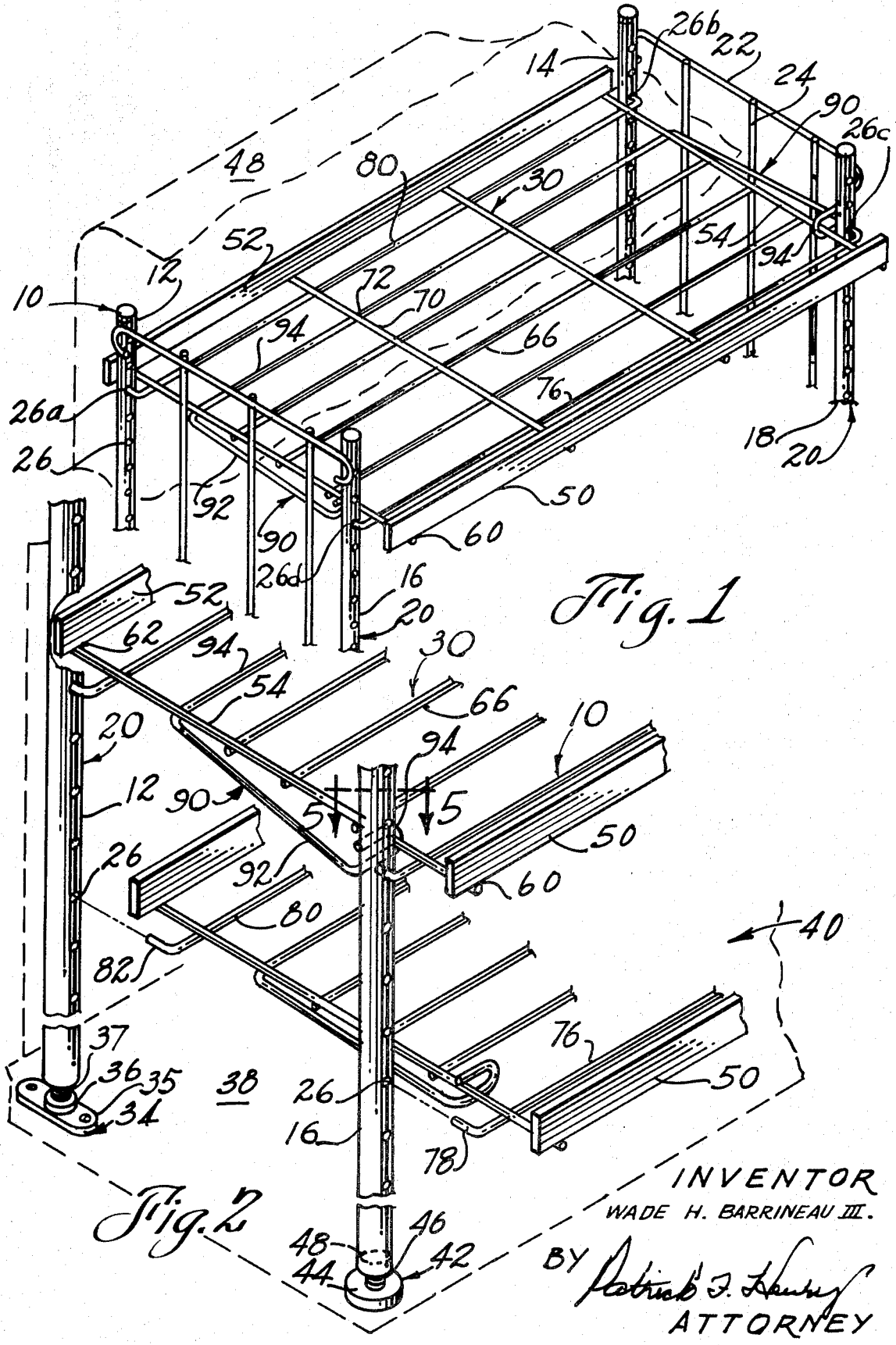


Fig. 1

Fig. 2

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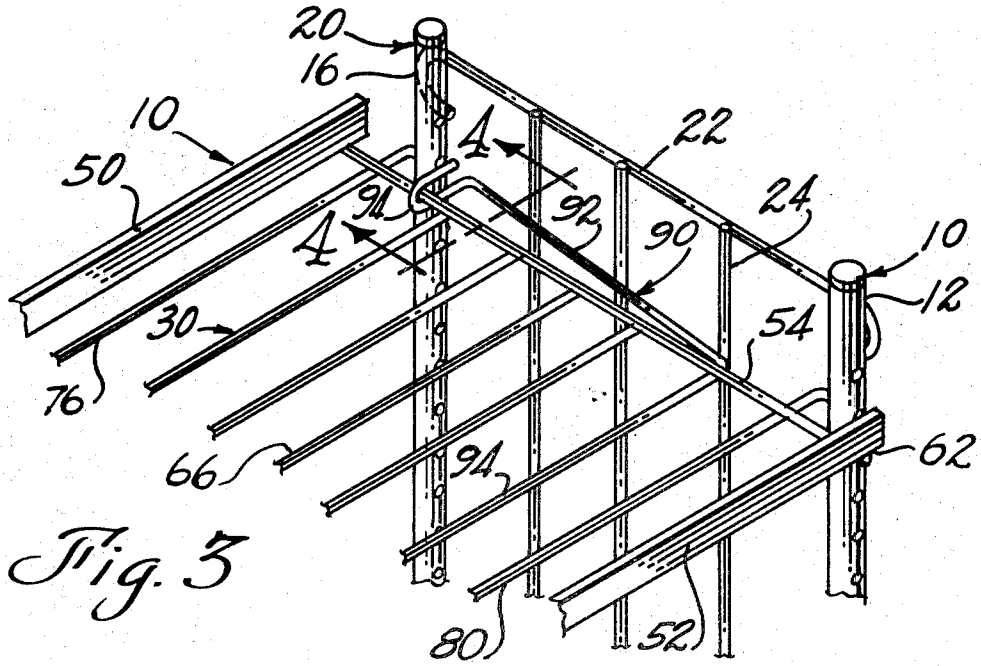


Fig. 3

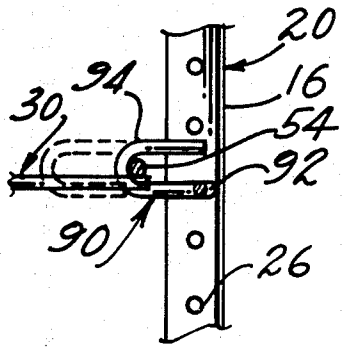


Fig. 4

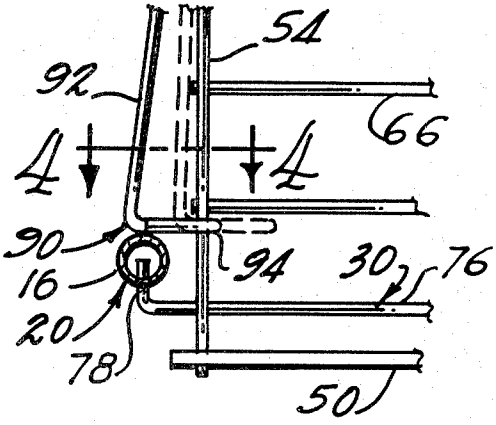


Fig. 5

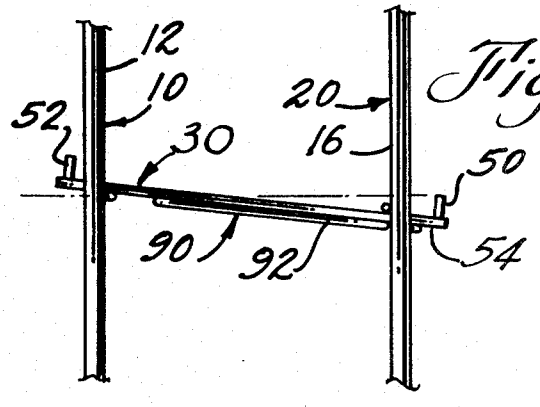


Fig. 6

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ADJUSTABLE SHELVES AND SUPPORT THEREFOR

BACKGROUND OF THE INVENTION

1. Field of the Invention — Classification

Generally supports and racks and more particularly supports having adjustable shelving thereon where the shelves are engaged in spaced locations on the supports.

2. Description of the Prior Art

The prior art includes U.S. Pat. Nos. 2,315,595; 2,447,704; 2,600,191; 2,761,568; 3,007,708; 3,101,148; 3,343,506. The use of wire shelves with ends which attach to columns or other types of vertical support means is old in the art. These shelves employ some type of engagement between the shelves and the supports which must be manipulated and disengaged and again manipulated to replace the shelves. The prior art shelves disclosed in the above noted patents are not entirely suited for use in confined spaces such as the inside of a panel truck which has only a small aisle space in the middle and shelves on both sides from which the personnel must remove merchandise or equipment as for example in repair trucks such as telephone and other similar types. While the prior art shelves can be removed and replaced in different positions the operation sometimes requires the removal of screws or other similar fasteners and the replacement thereof. This is extremely time consuming and tedious and annoying to repairmen who are mainly interested in getting the necessary repair parts onto the truck in proper place and in getting the shelves adjusted readily to receive the particular size merchandise placed thereon.

SUMMARY OF THE INVENTION

By having the vertical supports both front and rear provided with holes which face towards the front which would be the aisle of a truck and having the shelves with horizontal projecting shelf retainer members which insert by alignment into respective openings and then are readily seated by slightly pushing the shelf toward the rear the problem of manipulation has been simplified and the use of removable fasteners and brackets has been eliminated altogether. Through the use of the optional spring latching member on the shelf the problem of accidental dislodgement or disengagement of the shelf has been practically eliminated.

BRIEF DESCRIPTION OF THE DRAWING

FIG. 1 is a perspective view of a typical shelf mounted on the four vertical posts and illustrating a confined space in dotted lines.

FIG. 2 is an enlarged perspective view of one end of the shelf shown in FIG. 1.

FIG. 3 is an enlarged perspective view of one end of the shelf shown in FIG. 1 looking from the opposite direction.

FIG. 4 is a front elevation view of a portion of a latching detail, taken along lines 4—4 in FIGS. 3 and 5.

FIG. 5 is a top plan view of he portion of the latching detail shown in FIG. 4, taken along lines 5—5 in FIG. 2.

FIG. 6 is a side elevation view illustrating a variation of the installation of the shelf.

DESCRIPTION OF THE PREFERRED EMBODIMENT

It should be understood from the outset that while there is illustrated only one or two shelves in the present disclosure this is not a significant number by any means since the number of shelves is variable depending upon the installation and may be increased or decreased as desired.

The entire assembly is designated by reference numeral **10** and comprises four spaced vertical posts or standards **12,14,16** and **18** which for the sake of description only are referred to as the rear posts **12, 14**, and the front posts **16, 18**. Actually, rear post **12**, and the front post **16** are part of an integral end panel constructed from welded wire as are rear posts **14** and front post **18**. Each of the end panels are designated in assembly by reference numeral **20** and each comprises the respective front and rear posts **12, 16** and **14, 18** connected together transversely by welded wire members **22** which for the sake of appearance and durability are plated with chrome or other material and which are connected together vertically and longitudinally by spaced wires **24** altogether forming the rigid wire panel assembly **20**. Each of the posts **12, 14, 16** and **18** have been drilled at spaced intervals to provide openings or holes **26** which when the two panels **20** are assembled in spaced relationship in the manner shown in FIGS. **1** and **2** provide the openings **26** in spaced alignment horizontally and vertically so that a set of holes **26** on posts **12** has a corresponding hole horizontally therefrom on post **16** as does post **14** and **18**. By means of these openings or holes **26** a shelf designated generally by reference numeral **30** may be positioned in a set of holes **26** in horizontal arrangement.

Posts **12, 14, 16** and **18** may be hollow, plated tubing or conduit in which as shown in FIG. **2** may be inserted bottom support brackets which are bracket **34** having a foot **35** with an upstanding cylindrical collar **36** thereon with a threaded stud **37** inserted inside the post **12** nd screwed in place into the floor **38** of a panel truck **40**. The front posts **16, 18** may be provided with an adjustable foot **42** having a bottom disc floor engaging member **44** thereon to which is attached a threaded stud **46** adjustably threaded into a threaded bushing **48** inside the bottom end of the posts **16, 18**. With this arrangement the posts **12, 14, 16** and **18** may be installed with the respective panels **20** in spaced relationship on the floor **38** of a typical van or panel truck **40** which could be a telephone truck or similar repair truck. The entire assembly **10** may extend from the floor all the way to engage the ceiling **48** of the truck or closely thereto.

Each shelf assembly **30** comprises a longitudinal front bar **50** and a corresponding longitudinal rear or back bar **52** which may be chrome plated metal strips. The front bar **50** and the back bar **52** are connected into a rigid shelf assembly **30** by means of transverse plated wire members **54** welded wherever there is an intersection such as **60** with member **50** and **62** with member **52** and to the transverse wire members **54** there is welded a plurality of longitudinal wire members **66** arranged in spaced relationship from one end of the shelf **30** to the other end. Additional transverse strengthening means is provided by transverse wire

members **70** at spaced locations longitudinally across the shelf which are welded at points of intersection such as **72** with the respective longitudinal wire members **66**. This provides a rigid shelf assembly **30**.

One of the longitudinal wire members at the front of the shelf assembly **30** designated by reference numeral **76** projects beyond the end of the shelf assembly **30** represented generally by the members **54** and has a 90° bend in it providing a projecting member **78** on each end of the member **76** which is a pin insertable in a respective opening **26**. Another one of the longitudinal members designated by reference numeral **80** is similarly constructed to member **76** with projecting pins **82** on each end thereof which are arranged in length and dimension with respect to the distance between the end panels **20** to fit exactly into a matching and respective and corresponding opening **26**. Ordinarily a typical set of openings such as those designated for purposes of illustration as **26***a,b,c* and *d* in FIG. **1** would be in horizontal alignment to receive a shelf **30** as would be all of the other respective openings **26** above and below same. Therefore a shelf **30** and in fact any other shelves **30** may be installed in any one of the sets of holes **26** at any elevation and any other shelf **30** may be installed at the immediate next set of holes. A shelf **30** may be placed as close to another shelf above or below same as the distance between one hole **26** and the next lowermost or uppermost hole **26**. This makes it possible to provide short shelf space where coils of wire or other things are being used which do not require a great deal of head room between shelves.

Optionally, to hold the shelf securely in place and practically eliminate any chance of dislodgement thereof, a latching means designated generally by reference numeral **90** is provided on each end of the shelf **30** and it comprises a spring latching rod member **92** which is constructed by bending another one of the longitudinal shelf members **94** at each end thereof into the rod member **92** and thence into a loop **94** which is looped about the transverse member **54** of shelf **30**. The face of the loop **94** is spaced such in the construction and design as to be approximately the distance from the end of the respective member **76** discounting the length of portion **78** so that after the shelf **30** has been inserted and seated in place the latch member is behind the respective post **16** or **18** since normally these are used only on the front posts and are not necessary on the rear posts whereby the latch member may be released and will spring behind the posts **16** or **18**. This prevents the shelf **30** from being pulled forward either accidentally or intentionally until the fingers of the hand are used to depress the member **92** into almost co-extensive engagement with the member **54** so that the shelf will clear the posts **16** and **18**.

In FIG. **6** it is illustrated how a shelf **30** may be misaligned in a set of openings **26** so that the rear of the shelf at member **52** is higher than the front shelf at member **50** and obviously to one skilled in the art the shelf could be mis-aligned in the other direction so that it tilts backwards instead of forward and vice versa. This may be advantageous when storing certain types of merchandise where it is desired that the merchandise be dispensed from the front.

The posts **12,14,16, 18** can be a free standing structure rather than installed in a truck with brackets **34** and foot **42**. Posts **12**, etc. can be connected in any manner to make them free standing whether or not in a truck, on the ground, a floor, etc.

While I have shown and described a particular embodiment of my invention together with a suggested mode of operation thereof and a particular desirable type of installation this is by way of illustration only and does not constitute any sort of limitation on the scope of the invention since various alterations, changes, deviations, substitutions, eliminations, additions, integrations, subtractions, removals, combinings and other departures may be made in the embodiment shown and described without departing from the scope of the invention as defined by a proper interpretation of the appended claims.

What is claimed is:

1. In an adjustable shelf assembly:

a. vertical support members supported to extend upwardly and having spaced openings arranged vertically therein, there being front and rear vertical support members at opposite ends of said structure,

b. a rigid quadrilateral shelf structure having front and rear insertion members at opposite ends thereof insertable in respective front and rear openings in said front and rear support means, said openings in said supports facing outwardly in the same direction so that the shelf is inserted from the front only by engaging both said front and rear insertion members in the respective openings at the same level and pushing said insertion members into said openings whereby said shelf may be installed or removed from the front when the rear is closed as for example on one side of the inside of a truck.

2. The device claimed in claim **1**, wherein:

said insertion members are located adjacent each of the four corners of said shelf and all of said insertion members project in the same direction rearwardly.

3. The arrangement claimed in claim **1**, wherein:

there are four sets of spaced, vertical openings on said support members and each of said support members is located at a respective corner of said assembly.

4. The device in claim **3**:

said rigid shelf structure being of quadralateral form and having a projecting insertion member adjacent each corner thereof and all of said projecting insertion members extending in the same direction towards the direction of insertion of said shelf into said openings whereby each of said insertion members is aligned in a respective opening in said supports and said shelf is inserted on said supports by pushing same in one direction into said openings.

5. The device claimed in claim **3**:

said openings being vertically spaced and facing all in the same direction and said insertion members being substantially horizontally arranged on said shelf structure for insertion in said openings.

6. The device claimed in claim **1**:

a latching member on said shelf manually movable to permit the insertion of the insertion members in the supports and being movable after the shelf is in place to be on the opposite side of said support

from the opening in which said insertion member is inserted.

7. The shelf apparatus claimed in claim 1, wherein:

said support means includes floor posts arranged in spaced relation both longitudinally and transversely to provide four corners of the structure,

each of said posts having spaced openings therein and said openings corresponding to one another and all of said posts to represent a shelf location at a particular horizontal elevation,

said shelf structure being a rigid assembly of longitudinal and transverse members including a longitudinal front member and a longitudinal back member and said insertion members being extensions of said longitudinal members and extending therefrom substantially transversely on the ends of and adjacent the corners of each shelf.

8. The device in claim 1:

said vertical support means including a plurality of vertical members in spaced relation defining a three dimensional structure,

said shelf structure having horizontal projecting insertion members near opposite ends thereof.

9. The device in claim 8: a latch means movable to permit insertion of the shelf and then into position thereagainst to prevent dislodgement thereof.

10. The device in claim 9: said latch means comprising a latch member spring biased into latch position.

11. The device in claim 10: said latch member being a spring member carried by said shelf and extending along one side thereof, said latch member being bendable towards said shelf to clear said support members and springing into place in the way of said support members to prevent dislodgement of said shelf.

12. The device in claim 11: said latch member being an elongated member attached to one end of said shelf and having the other end thereof bent into a loop forming the engagement means to prevent said shelf from dislodging.

13. The device claimed in claim 12: there being a latch member on each end of said shelf and said latch member being constructed from a continuous length of wire attached across the length of said shelf and bent at each end to form said latch member.

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