

Aug. 10, 1965

T. STORY
SHELF BRACKET

3,199,821

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2 Sheets-Sheet 1

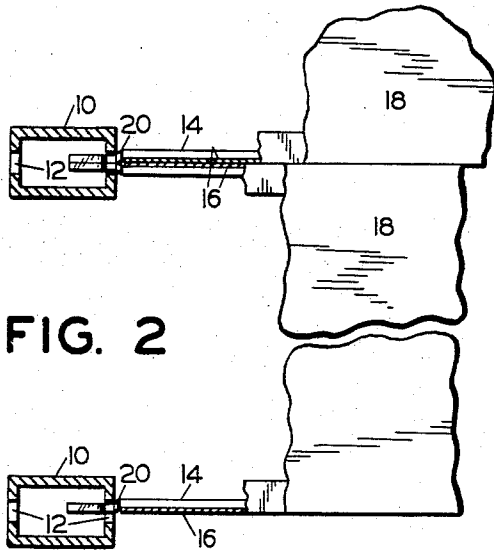
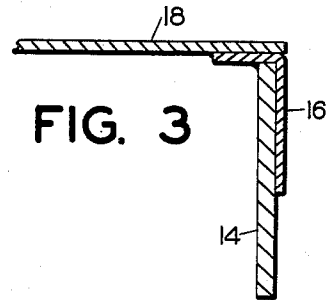
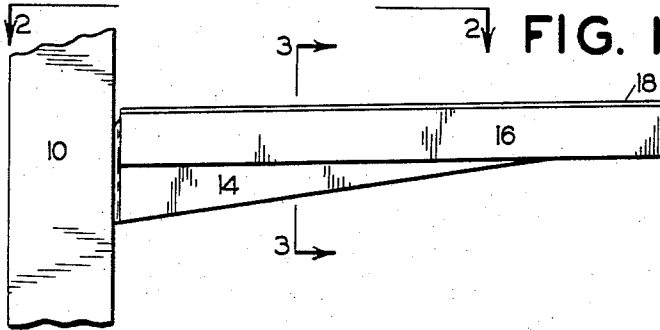


FIG. 4

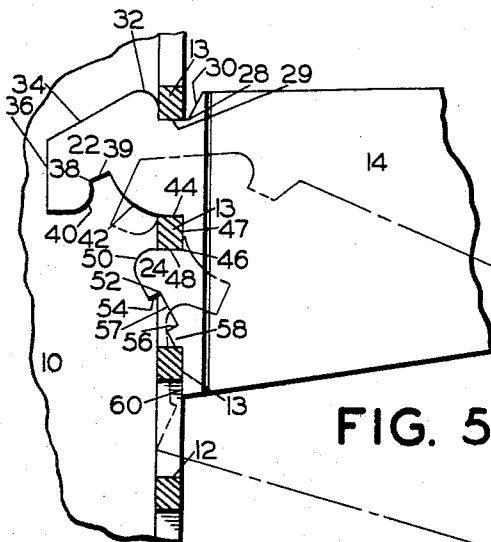
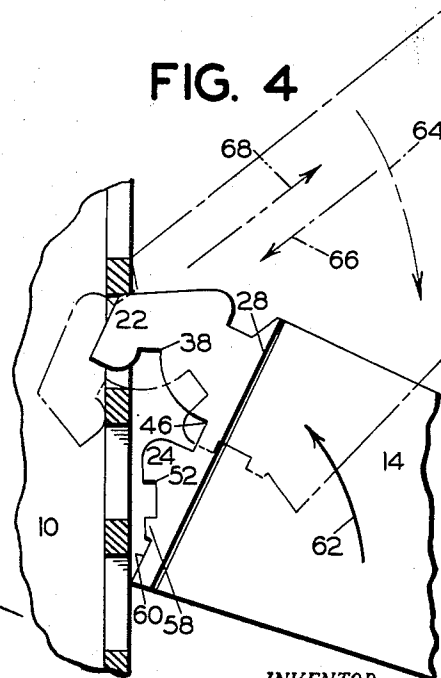


FIG. 5

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FIG. 6

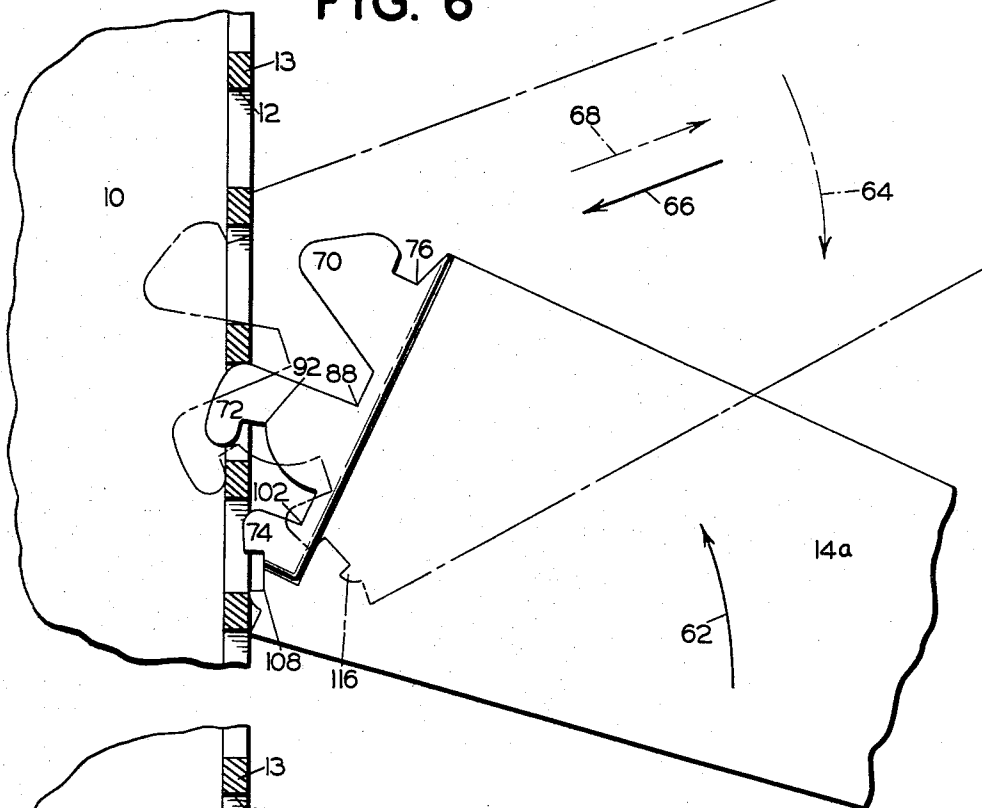
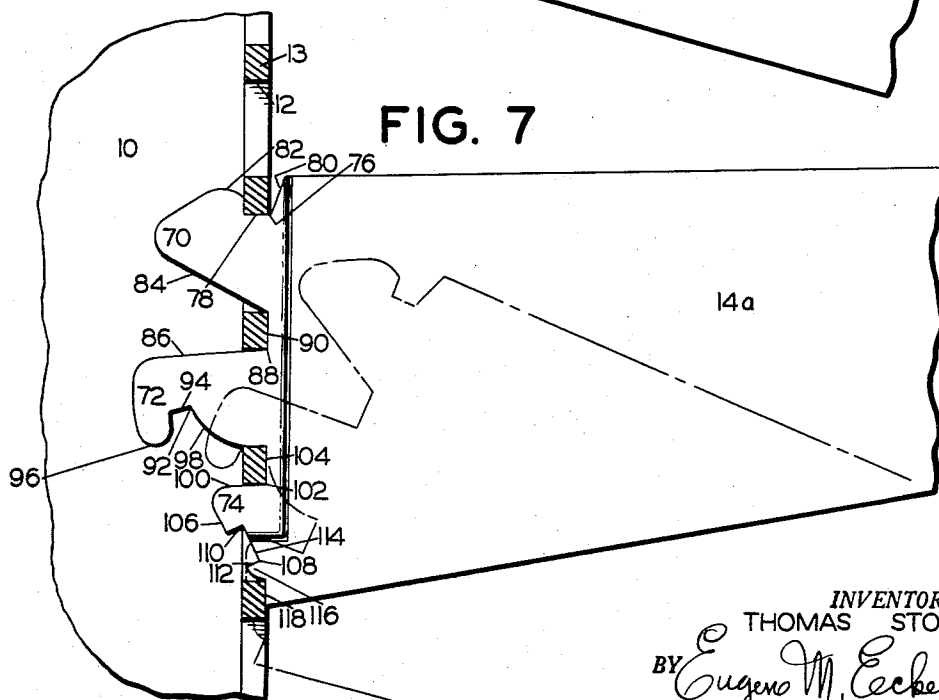


FIG. 7



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3,199,821

SHELF BRACKET

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This invention relates to new and useful improvements in shelf brackets, and more particularly is concerned with improvements in a removable type bracket which facilitates assembly and disassembly of knock-down shelving units.

A primary object of the present invention is to provide a shelf bracket of the type described having novel structure facilitating its location in two positions, one of which comprises a substantially horizontal position and the other of which comprises a downwardly inclined position.

Another object is to provide a shelf bracket of the type described which is adapted for positive placement in an apertured standard such as to prevent accidental removal.

Another object is to provide a shelf bracket of the type described which for the purpose of mounting it in an upright apertured standard may be inserted in an initial step while assuming a horizontal or downwardly inclined position whereby the operator can clearly see the apertures of the standard which are to receive the bracket and furthermore the operator can conveniently establish alignment of a pair of the brackets at the ends of a shelf unit in the standard apertures.

Still another object is to provide a shelf bracket of the type described which is readily shifted from a horizontal position to a downwardly inclined position, or vice versa, without the possibility of the bracket becoming disengaged from mounting standards, thereby eliminating the hazard of the shelving dropping from the operator's hands.

Another object of the present invention is to provide a shelf bracket having an off-set portion which facilitates reinforcing the bracket and which at the same time requires a minimum length of supporting bar therefor.

Briefly stated, the present invention resides in bracket structure for supporting a shelf on upright standards. The standards, which are of conventional construction, comprise tubular posts provided with equally spaced apertures, and the bracket of the present invention includes a pair of rearwardly extending tabs selectively spaced and contoured such as to engage the apertured standard and support the bracket in a pair of positions, comprising a horizontal position and a downwardly inclined position. The contour and spacing of the tabs is such as to provide a novel manner of inserting the bracket in the apertured standard and a novel manner of adjusting the bracket between its two positions.

The invention will be better understood and additional objects thereof will become more apparent from the accompanying specification and claims considered together with the accompanying drawings, wherein like numerals of reference indicate like parts, and wherein:

FIG. 1 is a side elevational view showing a first form of the present bracket mounted in place on an upright standard;

FIG. 2 is a foreshortened top plan view of the bracket of FIG. 1, partly in section and partly broken away and showing adjacent shelving units in which the bracket is incorporated;

FIG. 3 is an enlarged vertical sectional view taken on the line 3-3 of FIG. 1;

FIG. 4 is an enlarged fragmentary detail view of the rear mounting tabs of the bracket of FIG. 1 and illustrating in particular the methods for initially mounting the

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bracket in an apertured standard and for shifting the position of the bracket relative to the standard;

FIG. 5 is an enlarged fragmentary view similar to FIG. 4 but illustrating in particular the two mounting positions of the bracket of FIG. 1;

FIG. 6 is an enlarged fragmentary detail view of a second form of bracket and illustrating positions for mounting and shifting this bracket on the standard; and

FIG. 7 is an enlarged fragmentary view similar to FIG. 6 but illustrating mounted positions of this bracket embodiment.

Referring in detail to the drawings the bracket of the present invention is utilized with upright standards 10 suitably supported by base means, not shown, and comprising a tubular structure having front and rear edge equally spaced apertures 12. The apertures 12 form cross bars or webs 13 therebetween.

The bracket includes a rigid plate-like body portion or member 14 to which is secured, as by welding, a reinforcing angle piece 16, FIGS. 1-3, having one leg disposed horizontally across the top edge thereof. A pair of such brackets and angle pieces 16 are usually provided in one shelf unit and support a top plate 18 which preferably is secured to the horizontal leg of the angle piece 16.

The body portion 14 of the bracket has a rear vertical offset 20, and the angle piece 16 leads from the offset 20 to the forward end of the assembly. The amount of offset is similar to the body thickness of the angle piece 16 and thus a pair of the brackets may be closely positioned in a common aperture 12 in order that the top plates 18 of adjacent shelving units will be substantially continuous.

As noted in FIG. 2, the apertures 12 are slightly wider than the combined thickness of two tabs to provide for lateral shifting adjustment of the shelf units. Since the offsets allow the tabs to take up a minimum of space in the said apertures, the lateral adjustment of the shelf units may be accomplished and yet the width of the apertures 12 maintained at a minimum in order that the cross bars 13 therebetween will be as short as possible for strength purposes.

FIGS. 4 and 5 show a first form of tab structure for mounting bracket on a standard 10. To describe these tabs in detail, there is an upper tab or projection 22 and a lower tab or projection 24. The top edge of body portion 14 has a rearwardly disposed notch 28 the bottom 29 of which is parallel to the top edge of the bracket and the forward edge 30 of which is rearwardly inclined. The rear 32 of the notch 28 is rounded at its upper portion and this rounded edge leads into a somewhat elongated, straight, rearwardly inclined edge portion 34. Leading down from the edge portion 34 normal to the top edge of the bracket is a rear edge portion 36.

The lower edge of tab 22 has a notch 38 the bottom 39 of which is rearwardly inclined and substantially parallel to the edge 34, and this notch is defined by a rounded rear edge 40 and a rounded forward edge 42 which leads into a substantially straight edge portion 44 forming the upper defining edge of a notch 46. The bottom 47 of notch 46 is normal to the top edge of the bracket.

The lower tab 24 has a straight, rearwardly extending edge portion 48 leading from the bottom of notch 46, and this straight edge portion leads into a rounded edge portion 50. Rounded edge portion 50 leads into a notch 52 having parallel, rearwardly inclined upper and lower edge portions 54 and 56 respectively and a bottom 57. Lower edge 56 of notch 52 forms the upper edge of a third tab 58 from which leads a lowermost rear edge portion 60. This latter edge portion is linearly aligned with the bottom 47 of notch 46.

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The present bracket, by means of the tab structure described, is adapted for mounting in a standard 10 in a horizontal position, shown in full lines in FIG. 5, or in a downwardly inclined position shown in broken lines in this same view. In the horizontally mounted position of the bracket, a first bar 13 is engaged in notch 28, the next lower bar 13 is engaged in notch 46 and a third lower bar 13 is engaged by the edge portion 60. Thus the weight of the shelving or articles thereon causes the rear edge 32 of notch 28 to bear against the rear of its bar 13 and the edge 60 bears against the front of its bar 13. Some weight of course is also borne by the top wall 44 of notch 46.

In a downwardly inclined position, a bar 13 is engaged in the notch 38 and the next lower bar is engaged in notch 52. Thus, the rear edge 40 of notch 38 engages the rear of its bar 13 and the bottom of notch 52 engages the front of the next lower bar. Although it is to be noted that in this position the height of the tab 22 is less than the height dimension of the aperture 12 the lower edge 56 of notch 52 bears against the under edge of the lower bar 13 and the bracket cannot move upwardly. Thus in both positions the bracket is locked securely in place and cannot accidentally be displaced from its supporting standard.

To insert the tabs in the apertured standard, the shelf unit is initially directed toward said standards while held in a horizontal position or preferably in a downwardly inclined position as shown in full lines in FIG. 4. Since a dimension which is normal to the top edge of the bracket and which intersects the upper edge 32 of tab 22 is greater than the vertical dimension of aperture 12, the tabs 22 cannot be fully inserted while the bracket is positioned horizontally or inclined downwardly as aforesaid. Thus in an inclined position, or even in a horizontal position the apertures to receive the upper tabs 22 are clearly visible to the operator for inserting the said tabs as well as for aligning the two upper tabs of brackets in the apertures 12 of spaced posts 10 for supporting opposite ends of the shelving unit.

In inserting the brackets of a shelf unit, the tabs 22 are first partially inserted in the desired apertures 12 while holding the shelf unit in a downwardly inclined position, as shown in full lines in FIG. 4. This initial step may be accomplished while holding the shelf unit in a horizontal position, however, if such position is more convenient to the operator to insert it and for viewing the apertures which are to receive the tabs. Thereupon, the operator applies forces in the direction of arrow 62, comprising an upward force simultaneously with an inward force. As the bracket reaches a selected upper position, shown in broken lines in FIG. 4, the vertical dimension between notches 28 and 38 is less than the height dimension of the associated aperture and the outer portion of the tab 22 moves behind bars 13. The shelving unit is then ready for lowering, and depending upon whether inner or outer forces are applied thereto in the lowering step it may be selectively located in a desired one of its positions.

To explain further, by rotating the shelving unit down in the direction of broken arrow 64 while at the same time exerting an inward pressure in the direction of broken arrow 66, the notch 28 will remain associated with its bar 13 and the rounded edge 42 will turn on the top edge of the next lower bar 13. In this function the rounded rear edge 32 of notch 28 clears the bottom of the upper bar, the notch 46 receives the next lower bar 13, and the rear edge 60 abuts against the third lower bar. The bracket thus assumes the horizontal position shown in full lines in FIG. 5.

If it is desired to locate the shelf in its inclined position it is lowered from the dotted line position of FIG. 4 as above but instead of applying inward pressure thereto an outward pull is applied in the direction of broken arrow 68. This outward pull causes the rounded rear edge 32 of tab 22 to move forwardly out of the opening 12,

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but since the forward edge 40 of the tab 22 is still engaged behind its bar 13 the bracket will remain engaged with the standard 10. Said shelving unit then may be lowered to the broken line position of FIG. 5 wherein a bar 13 is engaged in notch 38 and a lower bar 13 is engaged in notch 52.

The manner of detaching the shelving unit from the standard will now be described. When it is disposed in its inclined mounted position it must first be rotated upwardly an amount sufficient to disengage notch 52 from its bar 13, i.e. to almost a horizontal position. The rear portion of said unit is then lifted upwardly to clear the edge 40 from its bar 13. Then the unit is moved bodily outwardly away from the standard. To remove the shelving unit from the standard when it is disposed in its horizontal position, it is first rotated upwardly to the broken line position of FIG. 4 and then rotated downwardly while exerting a pulling force outwardly in the direction of arrow 68 which puts it in the inclined position of FIG. 5, whereupon it then may be removed as described above, or of course an upward force can be applied to the rear portion of the unit while rotating it downwardly, and the upper tab will be disengaged from its aperture 12 at about a horizontal position of the unit.

FIGS. 6 and 7 illustrate a second form of tab structure on a bracket 14a, and similar to the first embodiment this bracket is capable of mounting in two positions, namely those positions shown in FIG. 7. In this form, there are three rearwardly extending tabs 70, 72 and 74. The first tab is set off from the body of the bracket by a notch 76 the bottom 78 of which is parallel to the top edge of the bracket and the forward edge 80 of which is rearwardly inclined. The rear 82 of the notch is rounded at its upper portion.

The bottom edge 84 of tab 70 and the top edge of 86 of tab 72 define a notch 88 therebetween the bottom 90 of which is normal to the top edge of the bracket. Tab 72 has a lower notch 92 the bottom 94 of which is rearwardly inclined, this notch being defined by a rounded rear edge 96 and a rounded forward bottom edge 98.

The bottom edge 98 of tab 72 and the top edge 100 of tab 74 define another notch, designated by the numeral 102, the bottom 104 of which is linearly aligned with the bottom 90 of notch 88. Tab 74 has a forwardly inclined rear edge 106 in which is provided a notch 108 defined by upper and lower edge portions 110 and 112, respectively, and a bottom 114. Lower edge 112 of notch 108 forms the upper edge of a fourth tab 116 from which leads a lowermost rear edge portion 118 linearly aligned with the bottom of notches 88 and 102.

The bracket embodiment of FIGS. 6 and 7 is adapted for mounting in a standard 10 in a horizontal position, shown in full lines in FIG. 7 or in a downwardly inclined position shown in broken lines in this same view. In the horizontally mounted position of this embodiment, a first bar 13 is engaged in notch 76, the next lower bar 13 is engaged in notch 88, the next lower notch is engaged in notch 102, and the next lower bar is engaged against lowermost edge portion 118. In this embodiment, it is apparent that in the horizontal position the weight is borne by four front bars 13 and thus this bracket is capable of supporting heavy loads.

In a downwardly inclined position, a bar 13 is engaged in notch 92 and the next lower bar is engaged in notch 108. The bracket is installed, removed, or shifted from one position to the other in a manner identical to that described in connection with the FIG. 1 embodiment and otherwise has the same features and advantages. That is, in inserting a shelf unit employing the present brackets, the shelf unit is initially directed toward the standards while held in a horizontal position or preferably a downwardly inclined position as shown in full lines in FIG. 6. The tab 72 is initially inserted and the operator applies forces in the direction of arrow 62.

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After the bracket has reached a selected upper position, shown in broken lines in FIG. 6, in order that the tabs 70 and 72 will have been worked into their respective apertures 12, it may be lowered (arrow 64), and depending upon whether an inward (arrow 66) or outward (arrow 68) pressure is applied thereto the horizontal or inclined positions will be assumed. The manner of detachment is also similar to that of the FIG. 1 embodiment in that if disposed in its inclined position it is rotated upwardly an amount sufficient to clear tab 116 from its bar 13 and the rear portion of the shelf unit lifted upwardly and moved bodily outwardly. If disposed in its horizontal position, the shelf unit is first rotated upwardly to the broken line position of FIG. 6 and then rotated downwardly while exerting a pulling force outwardly in the direction of arrow 68 which puts it in the inclined position of FIG. 7 whereupon it then may be removed as described above.

Thus, in accordance with the principles of the present invention there is provided a shelf-mounting bracket which has structure facilitating its mounting in two positions of engagement each of which positively and safely attaches the bracket to the standard. By simple manipulation of the shelf unit it may be lowered to an inclined position and since it must be lifted bodily for complete removal, it is not very possible that it will accidentally become disengaged from its standard when shifted from one position to the other, thereby substantially eliminating the possibility of the operator dropping the shelf unit.

It is to be understood that the forms of my invention herein shown and described are to be taken as preferred examples of the same and that various other changes in the shape, size and arrangement of parts may be resorted to without departing from the spirit of my invention or the scope of the subjoined claims.

Having thus described my invention, I claim:

1. A shelf bracket adapted for use with a vertical standard having spaced horizontal supporting bars defining apertures therebetween, comprising a plate-like body portion adapted to support a shelf plate on its upper edge, upper and lower integral projections extending rearwardly from said body portion, means defining an upwardly opening first notch in the top edge of said first projection adjacent the juncture of the latter with said body portion, means defining a rearwardly opening second notch intermediate said first and second projections, the distance between the bottom of the first notch and the top of the second notch being substantially the same as the distance between the horizontal supporting bars and said notches being arranged for engagement with the supporting bars for holding the body portion in an outward projecting horizontal plane, the vertical dimension of said first projection immediately rearwardly of the first notch being greater than the distance between the horizontal supporting bars and the first projection being narrowed rearwardly from said first notch to an outer end dimension less than the distance between the horizontal supporting bars whereby the projections are arranged to be directed into apertures between the horizontal supporting bars while the body portion is downwardly inclined, and means defining a downwardly opening third notch in the lower edge of said first projection, said third notch being disposed rearwardly of said first notch and being arranged to engage a supporting bar in lieu of said first notch for holding the body portion in a downwardly inclined plane.

2. A shelf bracket adapted for use with a vertical standard having spaced horizontal supporting bars defining apertures therebetween, comprising a plate-like body portion adapted to support a shelf plate on its upper edge, upper and lower integral projections extending rearwardly from said body portion, means defining an upwardly opening first notch in the top edge of said first projection adjacent the juncture of the latter

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with said body portion, means defining a rearwardly opening second notch intermediate said first and second projections, the distance between the bottom of the first notch and the top of the second notch being substantially the same as the distance between the horizontal supporting bars and said notches being arranged for engagement with the supporting bars for holding the body portion in an outward projecting horizontal plane, the vertical dimension of said first projection immediately rearwardly of the first notch being greater than the distance between the horizontal supporting bars and the first projection being narrowed rearwardly from said first notch to an outer end dimension less than the distance between the horizontal supporting bars whereby the projections are arranged to be directed into apertures between the horizontal bars while the body portion is downwardly inclined, and means defining a downwardly opening third notch in the lower edge of said first projection, said third notch being disposed rearwardly of said first notch and being arranged to engage a supporting bar in lieu of said first notch for holding the body portion in a downwardly inclined plane, and means defining a lower abutting edge arranged to engage a supporting bar to operate with said third notch in holding the body portion in a downwardly inclined plane.

3. A shelf bracket adapted for use with a vertical standard having spaced horizontal supporting bars defining apertures therebetween, comprising a plate-like body portion adapted to support a shelf plate on its upper edge, upper and lower integral projections extending rearwardly from said body portion, means defining an upwardly opening first notch in the top edge of said first projection adjacent the juncture of the latter with said body portion, means defining a rearwardly opening second notch intermediate said first and second projections, the distance between the bottom of the first notch and the top of the second notch being substantially the same as the distance between the horizontal supporting bars and said notches being arranged for engagement with the supporting bars for holding the body portion in an outward projecting horizontal plane, the vertical dimension of said first projection immediately rearwardly of the first notch being greater than the distance between the horizontal supporting bars and the first projection being narrowed rearwardly from said first notch to an outer end dimension less than the distance between the horizontal supporting bars whereby the projections are arranged to be directed into apertures between the horizontal supporting bars while the body portion is downwardly inclined, and means defining a downwardly opening third notch in the lower edge of said first projection, said notch being disposed rearwardly of said first notch and being arranged to engage a supporting bar in lieu of said first notch for holding the body portion in a downwardly inclined plane, the distance between said first and third notches being less than the distance between the horizontal supporting bars to permit adjustable rotation of the bracket between horizontal and inclined planes.

4. A shelf bracket adapted for use with a vertical standard having spaced horizontal supporting bars defining apertures therebetween, comprising a plate-like body portion adapted to support a shelf plate on its upper edge, upper and lower integral projections extending rearwardly from said body portion, means defining an upwardly opening first notch in the top edge of said first projection adjacent the juncture of the latter with said body portion, means defining a rearwardly opening second notch intermediate said first and second projections, the distance between the bottom of the first notch and the top of the second notch being substantially the same as the distance between the horizontal supporting bars and said notches being arranged for engagement with the supporting bars for holding the body portion in an outward projecting horizontal plane, the vertical

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dimension of said first projection immediately rearwardly of the first notch being greater than the distance between the horizontal supporting bars and the first projection being narrowed rearwardly from said first notch to an outer end dimension less than the distance between the horizontal supporting bars whereby the projections are arranged to be directed into apertures between the horizontal supporting bars while the body portion is downwardly inclined, a third projection on said body portion, and means defining a downwardly opening third notch in the lower edge of said third projection, said third notch being disposed rearwardly of said first notch and being arranged to engage a supporting bar in lieu of said first notch for holding the body portion in a downwardly inclined plane.

5. A shelf bracket adapted for use with a vertical standard having spaced horizontal supporting bars defining apertures therebetween, comprising a plate-like body portion adapted to support a shelf plate on its upper edge, upper and lower integral projections extending rearwardly from said body portion, means defining first and second notches, said first notch being in the top edge of said body portion adjacent the rear end of said body portion and said second notch being disposed between said projections, means defining a third notch,

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said third notch opening downwardly and being spaced rearwardly from said body portion for engagement behind a bar of a standard, a lower abutting edge on the body portion, said first and second notches and said lower abutting edge being engageable with bars in the standard for supporting the bracket in a horizontal position, and means defining a fourth notch above said lower abutting edge, said third and fourth notches engaging bars in the standard for supporting the bracket in a downwardly inclined position.

References Cited by the Examiner

UNITED STATES PATENTS

15	870,439	11/07	Kade	248—243
	2,700,476	1/55	Maintain	211—148
	2,790,559	4/57	Stephenson	248—243
	3,089,675	5/63	Lozier	248—242
	3,101,923	8/63	Streater	248—242

FOREIGN PATENTS

877,284 9/61 Great Britain.

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