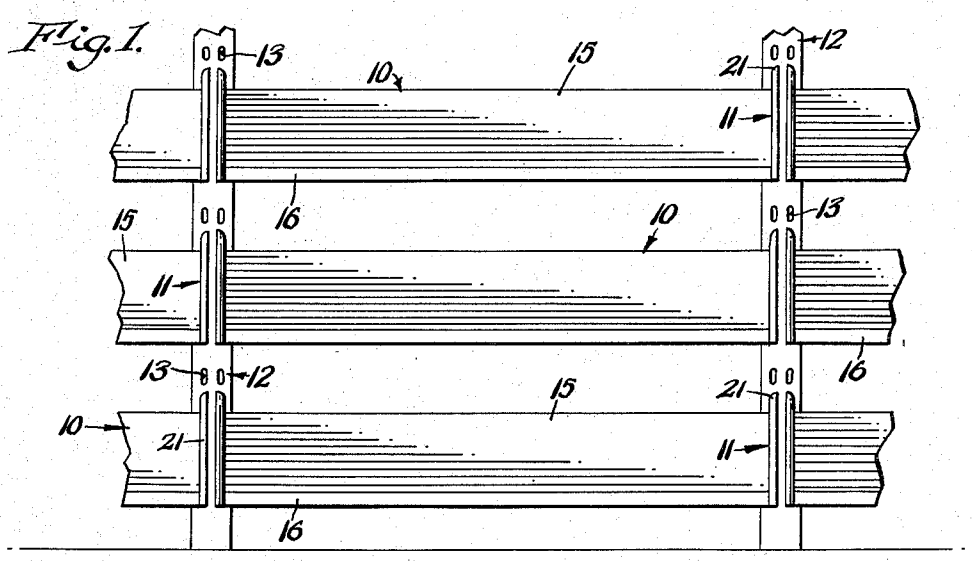
May 1, 1951 J. G. L. SKAR 2,551,062

SHELF BRACKET

Filed March 15, 1950

Fig. 1.



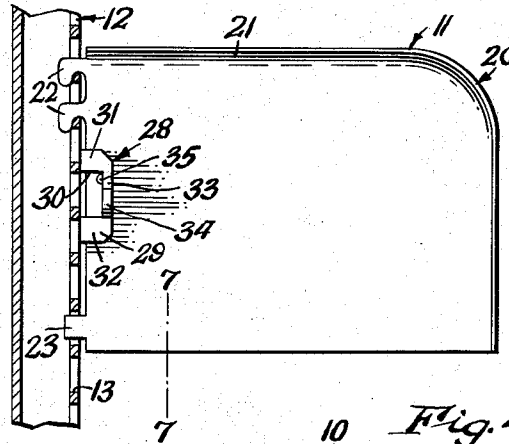




Fig. 3.

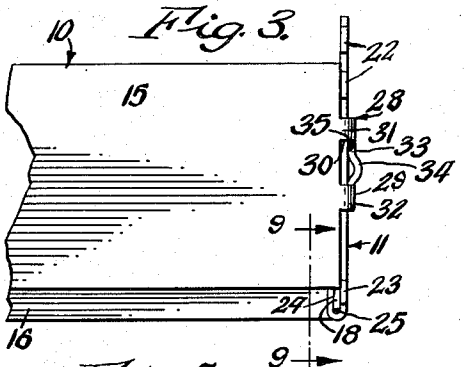



Fig. 2.

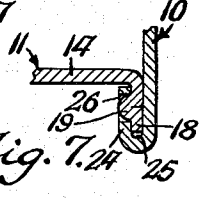



Fig. 4.

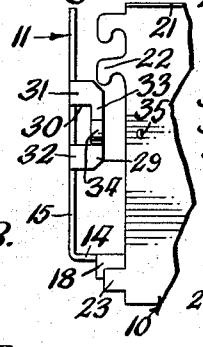



Fig. 5.

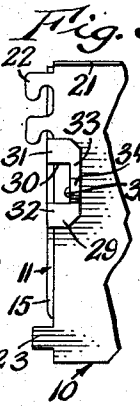



Fig. 7.

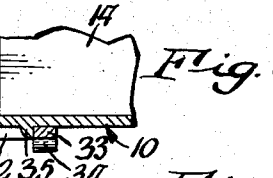



Fig. 6.

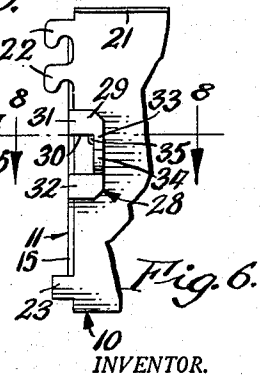
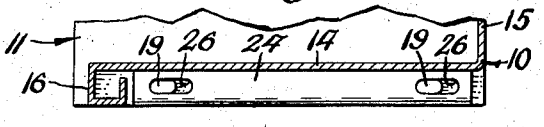



Fig. 8.




Fig. 9.




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# UNITED STATES PATENT OFFICE

2,551,062

## SHELF BRACKET

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Application March 15, 1950, Serial No. 149,749

2 Claims. (Cl. 211—148)

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This invention relates to bracket shelves made of sheet metal such as are employed in library bookstacks or the like and of the type in which the shelf units are mounted on upright metal columns by vertical end brackets detachably secured to each end of each shelf unit and which serve as the end walls for each shelf and are detachably connected to the upright columns.

One of the principal objects of the present invention is to provide a simple and inexpensive interlock for detachably connecting each shelf unit to its companion pair of end brackets and which permits these brackets to be removed from the shelf unit for economizing space in storage or shipping.

Another object is to provide such a bracket and shelf interlock which is strong and durable in construction and will securely hold the end brackets in united relation with its shelf unit until deliberately detached by a predetermined manipulation of the end brackets relative to the shelf unit.

Another object is to provide such a bracket and shelf interlock in which the end brackets can be readily applied to and readily detached from the shelf unit when it is desired to do so.

Other objects and advantages of the invention will appear from the following description and drawings in which:

Fig. 1 is a fragmentary front elevational view, on a reduced scale, of a metal library bookstack or shelving structure having bracket shelves embodying the present invention.

Fig. 2 is an end elevational view of a bracket shelf embodying the present invention and showing the supporting column in section, this view being on an enlarged scale.

Fig. 3 is a fragmentary rear elevational view of one end of a shelf unit and bracket embodying the present invention.

Figs. 4, 5, and 6 are fragmentary and elevational views similar to Fig. 2 and showing the manner in which the end bracket is manipulated with reference to the shelf unit to detachably interlock the bracket with the shelf unit.

Fig. 7 is an enlarged fragmentary vertical section taken on line 7—7, Fig. 2.

Fig. 8 is an enlarged fragmentary horizontal section taken on line 8—8, Fig. 6.

Fig. 9 is a fragmentary vertical section taken on line 9—9, Fig. 3.

The library bookstacks or like shelving to which the present invention is applied is shown as composed of a plurality of metal shelf units, indicated generally at 10, each having a pair of brackets 11 detachably interlocked with its opposite ends, and these brackets being supported by upright columns 12, which are shown as being of square tubular form and each provided along its front side with two vertical series of vertical slots 13.

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Each of the shelf units 10 is made of sheet metal and is shown as comprising a rectangular bottom wall or shelf 14 and a rectangular integral rear wall 15 rising from the rear edge of the bottom wall 14. The bottom wall 14 is shown as reinforced on its front edge by a bead 16 which can be conveniently formed by providing a depending reversely formed or C-shaped flange along the front longitudinal edge of the bottom wall 14 as best shown in Fig. 9. At its opposite ends the bottom wall 14 of each shelf unit is provided with a depending flange 18. Each of these flanges 18 is provided at each end with a horizontally elongated teat 19 which is struck from the metal of the flange so as to protrude toward the center of the shelf.

Each end bracket 11 is made of sheet metal and of generally rectangular form with its upper outer corner preferably rounded, as indicated at 20, and this rounded part 20 and the front and upper edges of the upper end bracket preferably being formed to provide a rounded outwardly projecting bead or shallow flange 21. Each bracket is also provided along the upper part of its rear edge with a pair of rearwardly projecting downwardly directed hooks 22 and which are adapted to enter a corresponding pair of the vertical slots 13 of the supporting column 12 and hold the bracket against downward and forward displacement. Each bracket 11 is also provided along the lower part of its rear edge with a rearwardly projecting square lug or extension 23 which is adapted to enter a lower slot 13 of the series supporting the hooks 22 and hold the lower part of the end bracket against sidewise displacement.

Each bracket is also provided along its lower edge with an upwardly extending reversely formed supporting flange 24 which extends along the inner face of the end bracket and is spaced therefrom so as to form a relatively deep and narrow channel 25 for receiving the corresponding downwardly extending flange 18 at the end of the bottom 14 of the metal shelf unit 10. This upwardly extending reversely formed flange 24 of each end bracket 11 is provided at its opposite ends with a horizontally elongated slot 26. These slots 26 are arranged to register with the teats 19 in the depending end flanges 18 of the shelf.

The invention is essentially directed to an in-

terlocking connection between each of the end brackets 11 and its shelf unit 10 whereby these parts are detachably joined together but which permits the end brackets 11 to be removed from the shelf unit for economizing in shipping and storage space. Each end bracket 11 is secured to the corresponding end of its companion shelf unit 10 by a pair of such interlocking connections and which are indicated generally at 28.

Each interlock 28 comprises a generally rectangular ear 29 which is formed integrally with the back wall 15 of the shelf unit and projects forwardly from the corresponding vertical end edge thereof in position to embrace or lie against the outer face of the corresponding end bracket 14. Each of these generally rectangular ears 29 provided with a vertically elongated rectangular opening 30 which forms the vertical leg or part of an L-shaped channel, as hereinafter described. Each ear 29 is therefore in the form of a rectangular frame having upper and lower portions 31, 32 which connect it to the back wall 15 of the shelf unit and a vertical crosspiece 33 which is disposed forwardly from the back wall 15. The lower part of each vertical crosspiece 33 is offset outwardly to form a bridge or arch 34 which forms the horizontal leg or part of an L-shaped channel which is adapted to receive and guide the passage of a small teat 35 provided on each of the end brackets 11 and protruding outwardly therefrom. This teat 35 is preferably half moon-shaped in form with its straight side forming a vertically elongated shoulder facing forwardly. Each of these teats 35 is also located to register with the arch or bridge 34 of the crosspiece 33 when the depending flange 18 of the shelf unit is located immediately above the channel 25 of the end bracket 11 which receives this depending flange.

For shipping or storage the end brackets 11 are detached from the shelf units 10 so that these shelves can be nested for economy in space. When it is desired to assemble the bookstack an end bracket 11 is interlocked with each end of each of the shelf units 10. For this purpose each end bracket 11 is placed against the end of the shelf unit 10 in the position illustrated in Fig. 4. In this position the depending flange 18 at the end of the bottom wall 14 of the shelf unit is arranged against the inner face of the end bracket 11 and in a position immediately above the channel 25 which receives this depending flange in the interlocked condition of the unit. In this initial position of the parts illustrated in Fig. 4 the rear vertical edge of the end bracket 11 is also spaced forwardly from the back wall 15 of the shelf unit. In this initial position of the parts the moon-shaped teat 35 of the end bracket is also horizontally in alinement with the arch or bridge 34 of the vertical crosspiece 33 of the generally rectangular ear 31.

The end bracket 11 is now moved horizontally rearwardly relative to the shelf unit 10. This causes the moon-shaped teat 35 to pass through the arch 34 of the crosspiece 33 of the ear 28 and into the rectangular opening 30 in this ear. In this position of the parts the rear vertical edge of the end bracket 11 is in alinement with the front face of the rear wall 15 of the shelf unit. To complete the interlock, the end bracket 11 is now moved vertically upward relative to the shelf unit 10. This causes the straight or vertically elongated, forwardly facing shoulder of the moon-shaped teat 35 to travel upwardly in the channel provided by the rectangular opening 30 along the rear edge of the vertical crosspiece 33 of the generally rectangular ear 28. This also causes the depending flange at the corresponding end of the bottom wall 14 of the shelf unit to enter the channel 25 formed by the reversely bent upwardly projecting supporting flange 24 at the bottom of the end bracket 11. When the teat 35 reaches the upper end of the rectangular opening 30, the teats 19 of the corresponding depending flange 18 enter the slots 26 of the upwardly projecting reversely formed supporting flanges 24 of the end bracket 11.

Accordingly the shelf unit 10 is held against upward displacement relative to the end bracket 11 by the teats 19. At the same time the shelf unit 10 is held against downward displacement relative to the end brackets 11 by the seating of the depending end flanges 18 thereof in the upwardly opening channels 25 provided by the supporting flanges 24 of these end brackets. The shelf unit 10 is also held against forward displacement relative to the end brackets 11 by the ears 28 which extend around the rear vertical edges of these end brackets. The shelf unit 10 is also held against rearward displacement relative to the end brackets 11, or, conversely, the end brackets 11 against forward displacement relative to the shelf unit 10, by the vertically elongated, forwardly facing shoulders of the half-moon shaped teats 35 engaging the rear edges of the crosspieces 33 of the generally rectangular, forwardly projecting ears 28 of the back wall 15 of the shelf unit. Accordingly, it will be seen that before the shelf unit 10 and its end brackets 11 are hung upon the vertical posts 12, each end bracket 11 is securely and positively united to this shelf unit.

It will also be seen that the shelf unit 10 can be readily disassembled from its end brackets 11 by a reverse of the procedure that is described. Thus, to place each shelf unit in condition for storage or shipping, the shelf unit 10, together with its two end brackets 11, are first removed from the vertical posts 12 by swinging the lower part thereof outwardly sufficient to disengage the square lugs 23 thereof from the corresponding slots 13 of the post 12. The shelf unit 10, together with its end brackets 11, attached thereto, can thereupon be readily lifted so as to free the hooks 22 from the slots 13 and permit the complete removal of the shelf unit 10 together with its end brackets.

To remove each end bracket 11 from the shelf unit 10, this end bracket is then pushed downwardly to the position shown in Fig. 5, in which its half-moon shaped teat 35 is brought to the bottom of the rectangular opening 30 in the ear 28 and in horizontal alinement with the arch 34 of the vertical crosspiece 33 of this ear. In this position the teats of the corresponding depending flange end 18 having been withdrawn from the slots 26 of the upwardly extending reversely formed supporting flange 24 of the end bracket 11 and this depending end flange 18 has been removed from the channel 25 formed by this reversely formed supporting flange 24 of the end bracket. Accordingly upon now displacing the end bracket 11 horizontally forwardly, its half-moon shaped teat 35 is drawn forwardly through the arch 34 of the ear 29 so as to completely free the end bracket 11 from the shelf unit. With the end bracket 11 so removed from the shelf unit 10, the shelves can be conveniently nested together for economy in storage and shipping and

the end brackets 11 can similarly be stored in face-to-face relation.

It will be seen that the arch 34 and opening 30 of each ear 29 essentially form an L-shaped channel opposing the outer face of the adjacent end bracket 11 and having a lower horizontal part formed by the arch 34 leading rearwardly from the forward edge of the ear to a vertical part of the L-shaped channel formed by the opening 30. This L-shaped channel guides the teat 35 to follow a corresponding path to insure an interlock which can only be operated by a predetermined manipulation of the end brackets 11 relative to the shelf units 10 as above described.

From the foregoing it will be seen that the present invention provides shelf and end bracket units for libary bookstacks or the like in which each end bracket is detachably secured to the shelf unit in such manner that it can readily be removed from the shelf unit for storage or transit and in which each bracket is detachably secured to the shelf unit by a simple interlocking connection which adds no substantial expense to the cost of the shelving and which is strong and at the same time readily released. Further, the parts of the detachable interlocking connection between each shelf unit and its end brackets can be formed and assembled without the use of special tools or any complicated manipulative procedure.

I claim:

1. In a shelf unit for library bookstacks and the like having a generally rectangular sheet metal shelf, a back wall extending vertically from the rear edge of said shelf, and a perpendicular end bracket member disposed against one end of said back wall, the combination therewith of a detachable interlock between said end bracket member and said back wall, comprising an ear member projecting forwardly from said one end of said back wall and arranged alongside the outer face of said end bracket member, and an L-shaped channel and teat connection between said end bracket member and ear member and comprising a teat on one of said members and protruding into an L-shaped channel provided in the other of said members, said L-shaped channel having a lower horizontal portion leading to a vertical portion extending upwardly therefrom to guide said end bracket member to move horizontally rearwardly and thence vertically upwardly relative to said shelf in interlocking said end bracket member in position.



2. In a shelf unit for library bookstacks and the like having a generally rectangular sheet metal shelf, a back wall extending vertically from the rear edge of said shelf, and a perpendicular end bracket disposed against one end of said back wall, the combination therewith of a detachable interlock between said end bracket and said back wall, comprising an ear projecting forwardly from said one end of said back wall and arranged alongside the outer face of said end bracket, said ear being provided with a vertically elongated opening forming a vertical crosspiece along the forward side of said ear and said vertical crosspiece being provided at its lower end with an outwardly arched portion, said opening and arched portion jointly providing an L-shaped channel in said ear opening toward said end bracket and having a lower horizontal portion provided by said arched portion and leading rearwardly to a vertical portion extending upwardly therefrom and provided by said opening, and a teat protruding outwardly from the outer face of said end bracket into said channel thereby to guide said end bracket to move horizontally rearwardly and thence vertically upwardly relative to said shelf in interlocking said end bracket in position.

JOHN G. L. SKAR.


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