Oct. 6, 1936. J. G. L. SKAR 2,056,808

SHELF

Filed Dec. 19, 1935

Fig. 1.

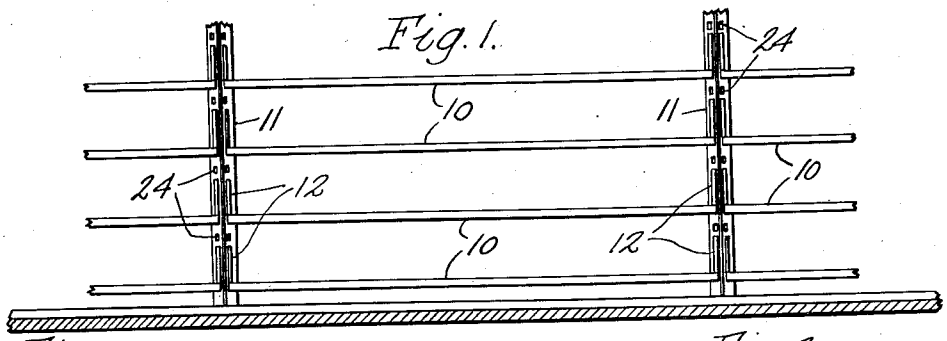


Fig. 2.

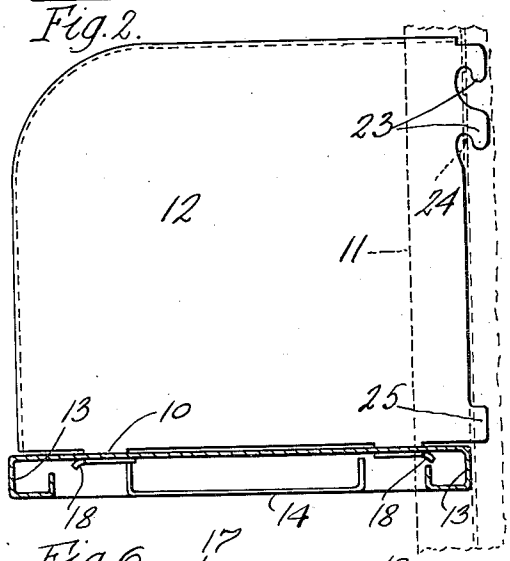


Fig. 3.

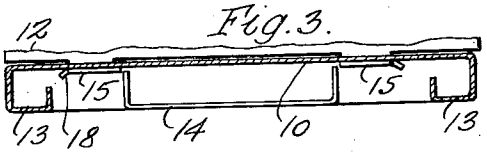


Fig. 4.

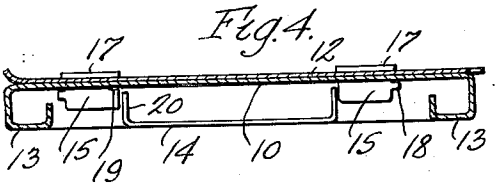


Fig. 5.

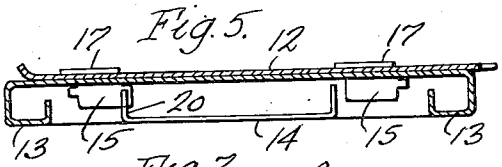


Fig. 6.

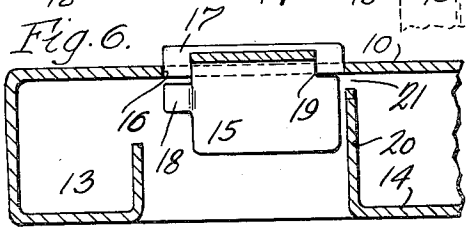


Fig. 7.

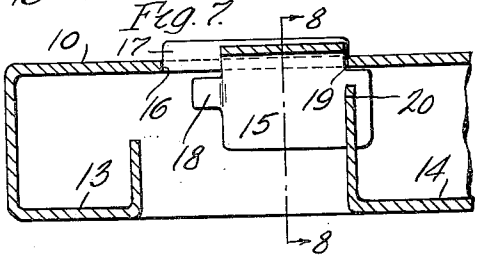


Fig. 8.

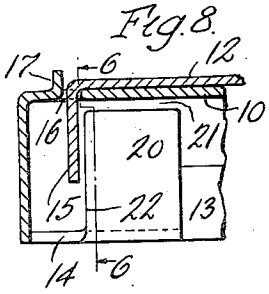


Fig. 9.

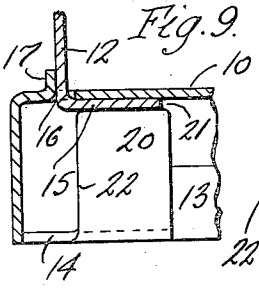
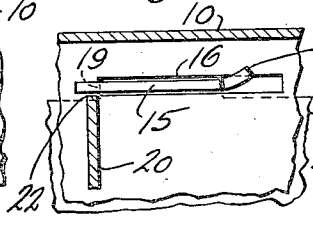


Fig. 10.



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UNITED STATES PATENT OFFICE

2,056,808

SHELF

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Application December 19, 1935, Serial No. 55,207

8 Claims. (Cl. 211—135)

This invention relates to improvements in bracket shelves and more particularly to metal shelves such as employed in library bookstacks of that sort in which the shelves are mounted on the upright columns or shelf supports of the structure by brackets which are attached to the shelves, usually at their ends, so as to serve also as end pieces or walls for the shelves, and are detachably or adjustably connected to the shelf supports.

An object of the invention is to provide a bracket shelf of this type of desirable, simple and economical construction, in which the supporting bracket or end piece is connected to the shelf so that it can remain in connection therewith and can be folded from its shelf-supporting position to a position close to or parallel with the shelf for economizing space in storing or shipping the shelves, and may be releasably retained in one or another of its positions to facilitate handling the shelves or connecting them with the shelf supports.

Other objects of the invention are to provide a shelf which has simple, reliable means for releasably retaining the supporting bracket in either its shelf-supporting or folded position against unintentional movement from such position; in which the hinge or movable connection between the shelf and the supporting bracket and the means for releasably retaining the bracket in its supporting and folded positions are formed by integral parts of the shelf and bracket; and also to provide a bracket self which has the other features of advantage and improvement hereinafter described and set forth in the claims;

In the accompanying drawing:

Fig. 1 is a fragmentary, front elevation, on a reduced scale, of a library stack or shelving structure having bracket shelves embodying my invention.

Fig. 2 is a transverse sectional elevation on an enlarged scale, of one of the bracket shelves, showing the bracket in shelf-supporting position.

Fig. 3 is a similar section showing the bracket shifted to position for folding it toward the shelf.

Fig. 4 is a similar section showing the bracket folded against the shelf.

Fig. 5 is a section similar to Fig. 4, but showing the bracket shifted to the postion in which it is retained in its folded position.

Fig. 6 is an enlarged, fragmentary transverse section, on line 6—6, Fig. 8, showing the same position of the parts as Fig. 4.

Fig. 7 is a view similar to Fig. 6, but showing the parts in the position shown in Fig. 5.

Fig. 8 is a fragmentary, longitudinal section on line 8—8, Fig. 7, showing the folded position of the bracket.

Fig. 9 is a similar section but showing the position of the parts when the bracket is in shelf-supporting position.

Fig. 10 is a fragmentary, sectional plan view of the shelf as viewed from below.

10 represents the shelves and 11 the upright columns or supports of a library stack or shelf structure, and 12 represents brackets at the opposite ends of each shelf and attached to the shelf and to the columns 11 so as to support the shelf from the columns. The shelves may be of the usual or any suitable construction and, as shown, each shelf consists of a sheet metal plate bent along its front and rear edges to provide downwardly, inwardly and upwardly-turned stiffening flanges 13, and bent at its ends to provide down-turned stiffening end flanges having inwardly projecting horizontal flange portions 14.

Each bracket is preferably formed from a sheet metal blank provided with outturned, rounded front and top edges which stiffen the bracket and provide a smooth finish for these edges. Preferably a bracket is provided at each end of the shelf and the bracket is connected or hinged at its lower edge to the shelf by integral hinge lugs 15 which are bent to project inwardly at right angles from one edge of the bracket and extend through narrow slots 16 in the horizontal plate of the shelf parallel with and spaced inwardly somewhat from the adjacent end of the shelf. The lugs are offset from the hinge edge of the bracket a distance about equal to the thickness of the shelf plate and are adapted to turn in the slots 16 to permit the bracket to fold or swing from its upright or shelf-supporting position to a position in which it lies flat against or close to the shelf. When the bracket is in its upright position, the hinge lugs will bear against the underface of the shelf plate and thus prevent the bracket from swinging outwardly beyond the intended vertical position. The hinge slots 16 are preferably formed by punching out from the shelf plate narrow tongues or lips 17 which are bent upwardly so as to serve as stops to engage the bracket and cooperate with the hinge lugs to prevent the bracket from being swung outwardly beyond perpendicularity to the shelf. The provision of the stop lips 17 lessens the liability of the hinge lugs being bent out of their intended position by outward pressure on the bracket.

The hinge lugs are of a length to pass through the slots 16, but in order to prevent the disen-

gagement of the lugs from the slots, and thus maintain the bracket in permanent connection with the shelf, each hinge lug is preferably provided at one end with a reduced extension 18 which, after the hinge lugs are inserted through the slots 16, are bent laterally out of the plane of the lugs and slots, as best shown in Figs. 2, 3 and 10 so that these bent extensions will engage the edges of the slots and thus prevent removal of the lugs from the slots. These bent parts 18, however, do not interfere with the turning of the hinge lugs in the slots in the swinging movements of the bracket to and from its shelf-supporting and folded positions.

In order to releasably retain the bracket in its shelf-supporting position perpendicularly to the shelf and also in its folded position against the shelf, one of the hinge lugs 15, for instance the lug adjacent the front edge of the bracket, is preferably undercut or notched at 19 at one end of that portion of the lug which occupies the slot 16 so as to permit the lug to shift in its slot 16 lengthwise of the latter or transversely of the shelf, and the shelf is provided with a retaining projection or part 20 with which the notched end of the lug is engaged by shifting the bracket transversely of the shelf. The engagement of the end of the hinge lug with the retaining part 20 will prevent swinging movement of the bracket. As shown, the retaining projection or part 20 is formed by an upbent integral portion of the inturned end flange 14 of the shelf. This retaining projection 20 is spaced inwardly away from the vertical portion of the end flange of the shelf and its upper end is also separated from the bottom face of the shelf by a space 21, so that by shifting the bracket rearwardly or transversely of the shelf when the bracket is in its perpendicular shelf-supporting position, the inner end of the hinge lug 15, which then extends horizontally against the under face of the shelf, will be moved into the space 21 above the top edge of the retaining projection 20, and by engagement therewith, will prevent the bracket from swinging out of its perpendicular position. Similarly, by shifting the bracket rearwardly or transversely of the shelf when it is in its folded position, the end of the hinge lug 15, which then depends vertically below the shelf, will be placed behind the upright outer edge 22 of the retaining projection 20 and, by engagement therewith, will prevent the bracket from swinging out of its folded position unless the bracket is first shifted forwardly to disengage the hinge lug from the retaining projection. The hinge lugs and hinge slots are so positioned on the bracket and the shelf that when the bracket is swung to its upright position and shifted rearwardly to engage the hinge lug with the retaining projection, the bracket will be in its proper shelf-supporting position in which it can be connected with the column or shelf support 11.

The brackets can be removably secured to the columns or supports 11, for supporting the shelf in position in the stack or shelving structure, in any suitable way, the brackets for this purpose being preferably provided at the upper portions of their rear edges with rearwardly and downwardly directed hooks 23 adapted to engage in vertical slots 24 in the columns or shelf supports. As usual, these slots for the reception of the hooks 23 are spaced vertically along the columns or supports so as to permit the brackets to be engaged therewith to support the shelves at different desired elevations, and the brackets are preferably provided at the lower portions of their rear edges with rearwardly extending projections 25, each adapted to enter one of the slots of a column or support to cooperate with the hooks 23 in holding the shelves rigid on the supports or columns. The relation of the parts of the shelf and brackets is such that when the brackets have been shifted rearwardly to engage their hinge lugs 15 with the projections 20 to retain the brackets in shelf-supporting position, the hooks 23 and projections 25 on the rear edges of the brackets will be in position for engagement in the slots in the shelf supports, and when the brackets are engaged with the shelf supports, the rear edge of the shelf will be in a position to engage the front faces of the supports so that the shelves will be stationarily and rigidly held in place on the supports.

In the construction illustrated in the drawing and above described, the bracket is arranged to fold downwardly upon the top of the shelf from a shelf-supporting position in which it extends upwardly from the shelf, but manifestly the bracket could be arranged to fold upwardly under the shelf from a shelf-supporting position in which it extends downwardly from the shelf. This would require only an obvious reversal of the parts with the slots 16 for the bracket hinge lugs 15 formed in the horizontal end flange 14 of the shelf.

I claim as my invention:

1. The combination of a shelf, a supporting bracket therefor connected to the shelf to move from a shelf-supporting position to a folded position substantially parallel with the shelf, said bracket being also shiftable relatively to the shelf in a direction different from said folding movement, and parts on said bracket and shelf which cooperate when said bracket is so shifted for releasably retaining the bracket in at least one of its said positions in opposition to said folding movement.

2. The combination of a shelf, a supporting bracket therefor connected to the shelf to move from a shelf-supporting position to a folded position substantially parallel with the shelf, said bracket being also shiftable in each of its said positions relatively to the shelf in a direction different from said folding movement, and parts on said bracket and shelf which cooperate when said bracket is so shifted for releasably retaining the bracket in its folded and shelf-supporting positions in opposition to said folding movement.

3. The combination of a shelf, a supporting bracket therefor having an integral hinge lug entering and shaped to turn in a slot in the shelf to permit the bracket to swing from a shelf supporting position to a folded position, said bracket being also shiftable in a direction different from the direction of its swinging movement, and a part on said shelf with which said hinge lug is engaged by such shifting of the bracket for releasably retaining the bracket in at least one of its said positions.

4. The combination of a shelf, a supporting bracket therefor having an integral hinge lug entering and shaped to turn in a slot in the shelf to permit the bracket to swing from a shelf-supporting position to a folded position, said bracket being also shiftable in a direction different from the direction of its folding movement, and a part on said shelf with which said hinge lug is engaged by such shifting of the bracket when in either of said positions for releasably retaining the bracket in either its folded or shelf-supporting position.

5. The combination of a shelf, a supporting

bracket therefor having an integral hinge lug entering and shaped to turn in a slot in the shelf in a plane transverse to the length of the slot to permit the bracket to swing from a shelf-supporting position to a folded position, said lug being also shiftable lengthwise in said slot, and a part with which said hinge lug is engaged by shifting the lug lengthwise for releasably retaining said bracket in one of its said positions.

6. The combination of a shelf, a supporting bracket therefor having an integral hinge lug entering and shaped to turn in a slot in the shelf to permit the bracket to swing from a shelf-supporting position to a folded position, said lug being also slidable in the slot, and a fixed projection on said shelf with which said hinge lug is engaged by sliding the lug in said slot in a direction different from the direction of its turning movement for releasably retaining the bracket in at least one of its said positions.

7. The combination of a shelf, a supporting bracket therefor having an integral hinge lug entering and shaped to turn in a slot in the shelf to permit the bracket to swing from a shelf-supporting position to a folded position, said lug being also slidable in the slot, and a fixed projection on said shelf with which said hinge lug is engaged by sliding the lug in said slot when the bracket is in either of its said positions for releasably retaining the bracket in either its folded or shelf-supporting position.

8. The combination of a shelf, a supporting bracket therefor having an integral hinge lug entering and shaped to turn in a narrow slot in the shelf to permit the bracket to swing from a shelf-supporting position to a folded position adjacent the shelf, said lug having a portion bent at an angle to said slot to prevent disengagement of the lug from the slot, and parts on said bracket and shelf which are engaged by shifting the bracket relatively to the shelf for releasably retaining the bracket in at least one of its said positions.

JOHN G. L. SKAR.