April 4, 1961 N. O. BRANDELL 2,978,112

BOOK STACK UNITS

Filed May 22, 1957 2 Sheets-Sheet 1

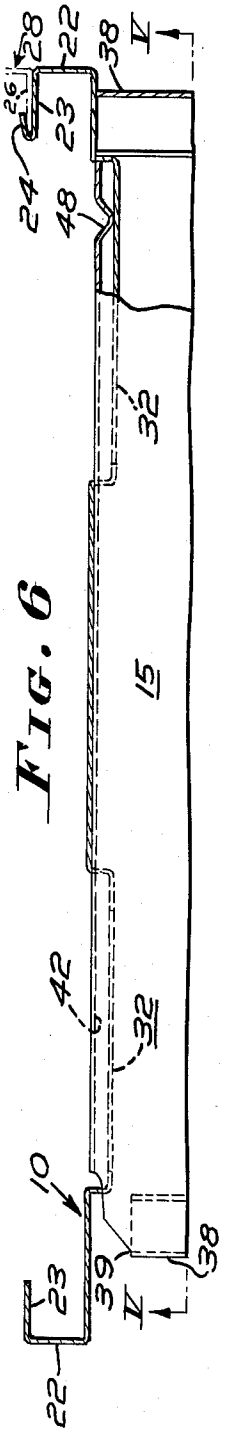


FIG. 6

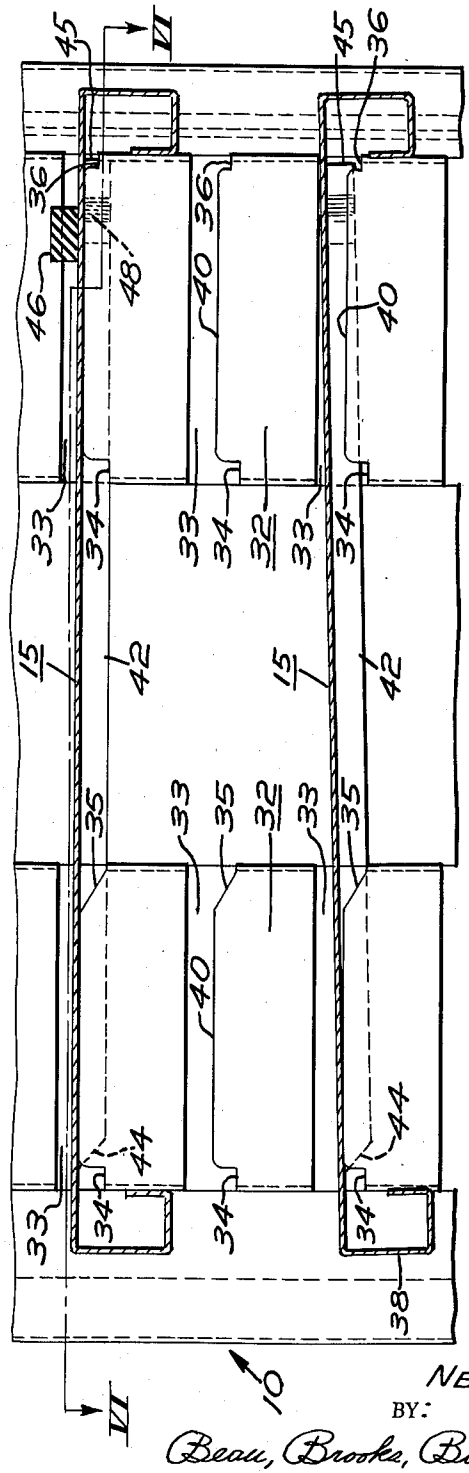


FIG. 5

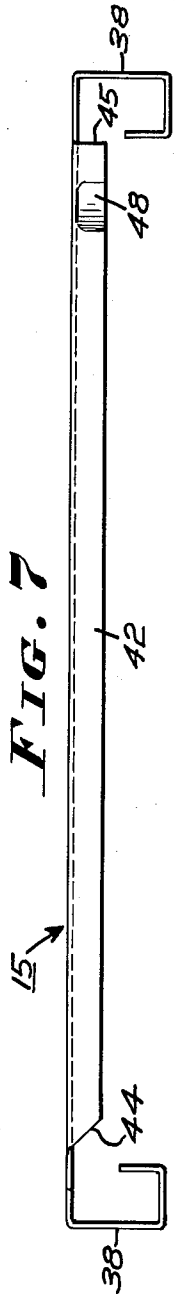


FIG. 7

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BOOK STACK UNITS

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FIG. 2

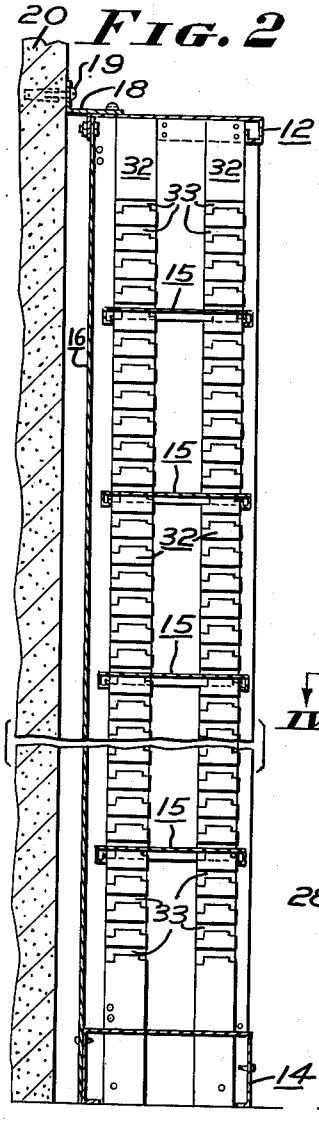
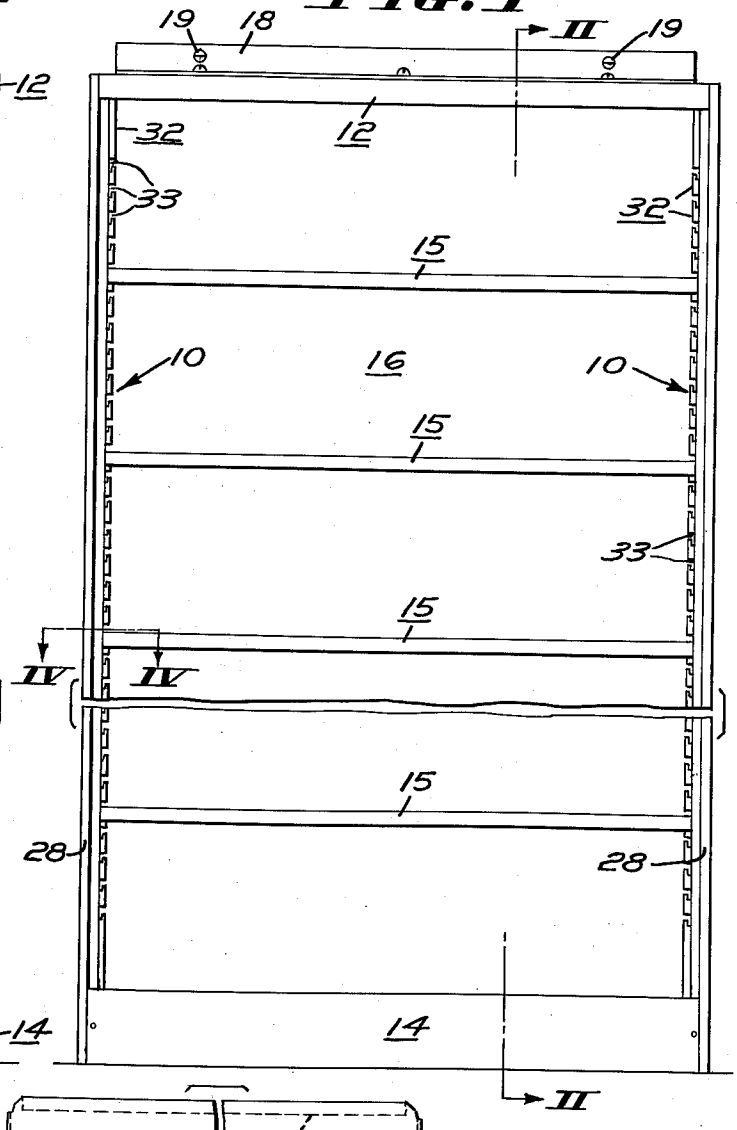


FIG. 1



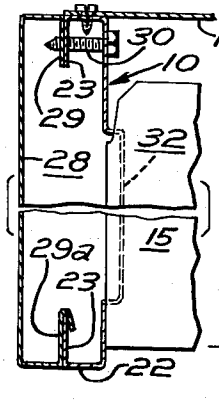


FIG. 4

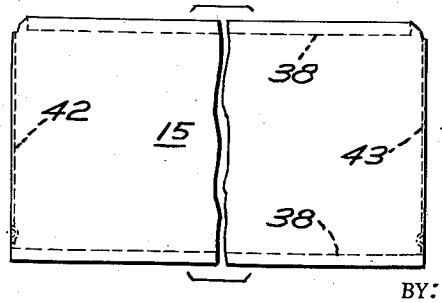


FIG. 3

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BOOK STACK UNITS

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5 Claims. (Cl. 211—136)

This invention relates to improvements in stock book stack or shelving units such as are useful for book storage or library purposes; and more particularly to book case or shelving arrangements of the general type disclosed for example in U.S. Patents 1,303,850 and 1,675,269, wherein the shelves are vertically adjustable.

It is an object of the present invention to provide in a structure as aforesaid an improved upright and shelf interlock arrangement, comprising novelly cut and formed upright and shelf parts which readily slip-fit into and out of shelf mounted positions without need of accessory devices such as bolts or clips.

Another object of the invention is to provide an improved shelving arrangement as aforesaid which consists of the minimum number of parts and which parts are easily fabricated; and whereby the shelving members are mountable and vertically adjustable relative to the upright members with improved ease and facility.

Still another object is to provide a device as aforesaid which, after assembly, is of improved rigidity yet permits at all times in a plural shelf construction vertical adjustments of the shelves individually throughout a wide range of vertical positional adjustments.

Still another object is to provide an improved upright and shelf interconnect arrangement which positively prevents accidental displacements of the shelves from their supports.

Other objects and advantages of the invention will appear from the specification hereinafter.

In the drawings:

Fig. 1 is a front elevational view of a bookcase construction embodying the features of the present invention;

Fig. 2 is a fragmentary vertical sectional view taken along line II—II of Fig. 1;

Fig. 3 is a fragmentary plan view of a shelf component of the structure;

Fig. 4 is a fragmentary section, on enlarged scale, taken along line IV—IV of Fig. 1;

Fig. 5 is a fragmentary vertical transverse sectional view through a pair of shelves; showing one shelf in locked position and the other shelf in partially unlocked position;

Fig. 6 is a fragmentary sectional view taken along line VI—VI of Fig. 5; and

Fig. 7 is an end elevation of one of the shelf components.

As shown in the drawing a bookcase embodying the invention may be constructed to generally comprise a pair of identical uprights 10—10 permanently interconnected at their top and bottom ends as by means of top plate 12 and base member 14 respectively; and a plurality of shelf members 15. A back plate as indicated at 16 may also be provided to close the rear face of the bookcase; and doors or the like may be provided if desired (not shown) to close the front face of the case. As shown in Figs. 1, 2, a stabilizing bracket 18 may also be provided to extend from the case into attachment at

19 to any adjacent wall structure 20 or the like to stabilize the case in functional position.

As illustrated in the drawing, each upright member 10 may comprise a sheet metal plate of rectangular plan form having its longitudinal side edges bent rearwardly as indicated at 22 (Figs. 4, 6) and thence inwardly as indicated at 23 in order to stiffen the members and to finish off their exposed edges. Furthermore as shown in Fig. 6, the portion 23 at the front of the case at one end thereof is preferably reversely bent as indicated at 24 to accommodate slip-fitted insertion of the flange 26 of a detachable end closure plate 28. As shown in Fig. 4, an opposite edge flange portion 29 of the cover plate 28 is arranged to mate with the rear flange portion 23 of the member 10, and suitably spaced screws 30 or the like are employed to fix the end closure 28 to the upright 10 to give the case an overall finished appearance. The end cover plates 28 also include along one edge a reversely bent flange 29*a* for gripping the edges of the flanges 23 at one end of the case (Fig. 4). However, in event the case is to be employed in side-by-side relation with respect to other similar bookcases, the cover plates 28 will not be employed except at the opposite ends of the bank of cases; the upright members 10 of adjacent bookcases being then adapted to relatively nest as in the manner of the interfitting shown in Fig. 4, and thereby providing a front view overall finished appearance.

In end view the central plate portions of the uprights 10 are pressed inwardly to provide a pair of parallel vertically and inwardly extending ridges as indicated at 32—32 extending into the book space of the case. These ridges 32—32 are horizontally slotted as indicated at 33—33 transversely throughout the ridge-like portions 32—32 and in horizontal mutual alignment. The corner portions of the slots 33 at the bottom levels thereof are relieved by notches 34, 35, 36 (Fig. 5) for purposes to be explained hereinafter. Thus, it will be appreciated that the uprights 10 are easily fabricated by simple die stamping and forming operations of simple sheet metal stock; and because the finished forms thereof are symmetrical they are interchangeable.

Each shelf member 15 comprises a single sheet metal stock piece of generally rectangular plan form having its longitudinal edges bent preferably into box-section flange form or the like as indicated at 38, to provide the shelf with the required longitudinal stiffness. Whereas the flanges 38 at the front edge of the shelf run to the extreme ends thereof, the flanges 38 at the rear edges of the shelves are cut back as indicated at 39 (Fig. 6) to permit the shelves to be slip-fitted into functional positions supported horizontally upon the upstanding edge portions 40 (Fig. 5) of the rib sections 32—32 of the upright members. Furthermore, the shelves 15 are formed at their opposite ends with downwardly turned flanges 42 of such vertical dimensions as to freely slip-fit through the notched end portions 34, 35 of the slots 33 in the uprights 10. At their rear edges the flanges 42 are cam-shaped as indicated at 44 (Fig. 7), while being square-shaped as indicated at 45 at their front ends. The notches 36 in the ridge portions 32 at the front of the case are of lesser depth than are the notches 34, 35; and the vertical distance between the bottom of each notch 36 and the adjacent top edge of the slot 33 is only slightly more than the vertical dimension of the shelf end flanges 42.

Thus it will be appreciated that relative assembly and automatic locking of the shelf and upright components may be effected by simple horizontal and vertical movements of the shelves relative to the uprights. For example, assuming the uprights are previously assembled in a bookcase construction as referred to hereinabove, a shelf may be slip-fitted therein at the desired eleva-

tion by a simple horizontal rearwardly movement of the shelf while guiding its end flanges 42—42 to slide first into the notches 36 and thence rearwardly through notches 34, 35 until the shelf reaches its functional position in the case. At this point the front edges 45 of the end flanges 42 slip downwardly behind the notched portions 36, as from the position occupied by the lower shelf in Fig. 5 to the position occupied by the upper shelf in Fig. 5. Reversal of the operation permits the shelves to be easily removed from the uprights.

Hence it will be seen that the forces of gravity as well as the bookshelf load will normally maintain the shelf down in locked position. If desired, wedges such as indicated at 46 (Fig. 5) may be inserted between the shelf and the upper edge of the slot 33 to hold the shelf in locked condition during transit or other handling of the empty bookcase. As indicated at 48 (Figs. 5–7) the shelf flanges 42 are preferably "blistered" or otherwise deformed adjacent their front ends so as to snug the shelves against longitudinally shifting when assembled between the uprights.

Thus it will be understood that by virtue of the novel formations of the interconnecting parts of the upright and shelf members, the parts may be easily and economically fabricated yet are adapted to slip-fit together into rigidly locked position at any selected elevation. Similarly, the shelves are easily dismountable without the use of tools or the like.

I claim:

1. A book stack construction comprising a plurality of stack units, each of said units comprising vertically extending spaced end panels supporting therebetween book shelves, each of said panels being formed of sheet metal to each include a major web portion having its longitudinal edges reversely bent to provide a pair of finishing edge flanges of opposed channel form on the same side of said major web portion, the marginal edge portion of one of said flanges being again reversely bent to provide a channel facing forwardly from the unit, whereby the edges of flange portions of adjacently disposed units may be slip-fitted into relatively nested positions within the channels of the next adjacent units for locking the units together and presenting to view from forwardly of the construction an enclosed unit junction effect.

2. In a bookstack construction comprising a plurality of cases, each of said cases comprising vertically extending spaced end panels having book shelves therebetween, said panels each being formed of sheet metal to include a major web portion having its longitudinal edges reversely bent to provide a pair of finishing edge flanges of opposed channel form on the same side of said major web portion, the marginal edge portion of one of said flanges at one front end of each of said cases being again reversely bent to provide a channel facing forwardly from the case, whereby the edges of flange portions of adjacently disposed cases may be slip-fitted into relatively nested positions into said channels for locking the front edges of the cases together, and a construction end closure panel comprising an end plate portion having its front and rear edges reversely bent and one of its bent edges then again reversely bent providing a groove receiving the bent edge of the outer end panel of one of said cases, thereby presenting to view from forwardly of the construction a closed end and case junction effect.

3. In a book stack construction comprising a plurality of cases, each of said cases comprising vertically extending spaced end panels having book shelves therebetween, said panels each being formed of sheet metal

to include a major web portion formed to include an inwardly pressed vertical ridge portion and having its longitudinal edges outwardly and reversely bent to provide a pair of finishing edge flanges of opposed channel form on one side of said major web portion, said ridge portions being provided with series of vertically spaced horizontal slots into which said shelves are directly slip-fitted, the marginal edge portion of one of said flanges at one front end of each of said cases being again reversely bent to provide a channel facing forwardly from the case, the edges of flange portions of adjacently disposed cases being slip-fitted into relatively nested positions with said cases being disposed in frontally aligned relation.

4. A book stack comprising a pair of parallel uprights arranged in vertical standing fixed spaced relation and supporting a plurality of bookshelves therebetween, each upright comprising a generally rectangular sheet metal plate having a pair of vertically continuous ridge portions pressed inwardly therefrom, said ridge portions being horizontally slotted to provide a series of vertically spaced and horizontally alined slots extending throughout the inwardly pressed extents of said ridge portions, said ridge portions having notched portions opening into the bottoms of said slots at the front and rear thereof in the ridge portions at the front of said stack and at the front thereof in the ridge portions at the rear of said stack, said shelves each comprising a main plate portion having end flanges extending downwardly therefrom slide-fitted into said slots so that said shelf plate portions overhang the bottom edges of said slots and said flanges are thereby hooked upon said upright ridge portions, the notched portions at the front of said stack being of less depth than the height of said end flanges, whereby the latter slip downwardly behind said front notched portions to prevent horizontal forward movement of said shelves, the vertical spacing of said slots being sufficient to enable said end flanges to clear said front notched portions upon lifting said shelves, said shelf plate portions having stiffening flanges depending from opposite sides thereof, the stiffening flanges along the rear side of said shelf plate portions being spaced from the opposite ends thereof to permit said plate portions to be slide-fitted through said slots, and the stiffening flanges along the front side of said plate portions extending substantially to said opposite ends to abut said ridge portions and thereby stop rearward horizontal movement of said shelves.

5. A book stack as set forth in claim 4, wherein the rear edges of said end flanges are cam-shaped to facilitate rearward sliding of said shelves over said notched portions and into said slots.

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