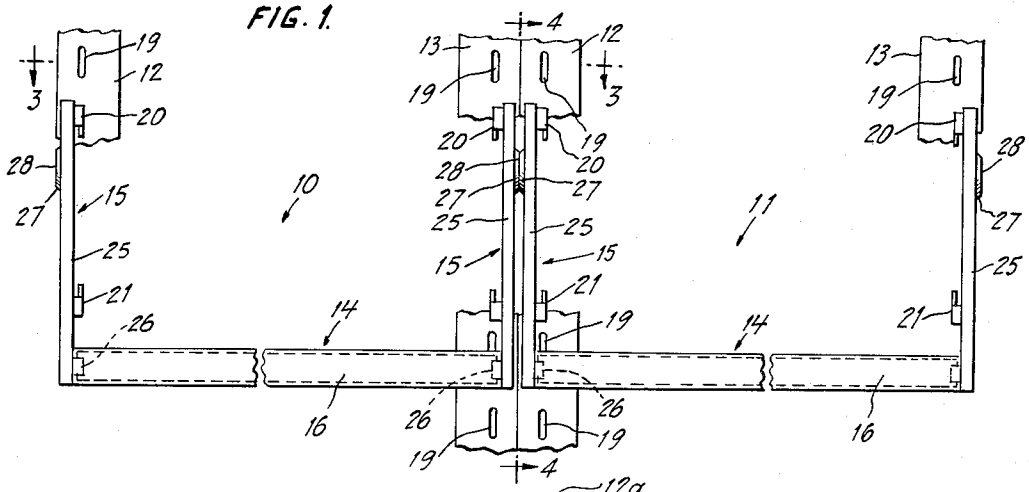
Nov. 9, 1965 D. A. GUNN 3,216,377

BOOKSTACKS

Filed Oct. 22, 1962

FIG. 1.



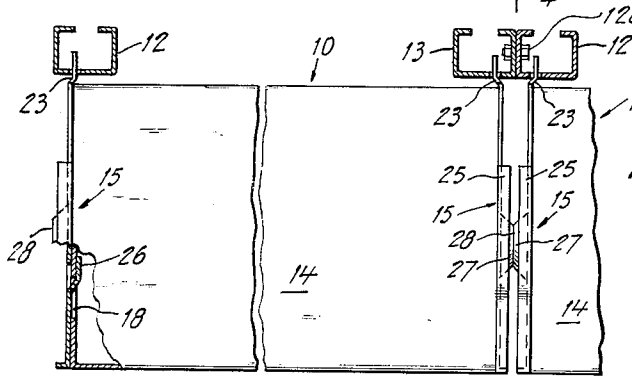
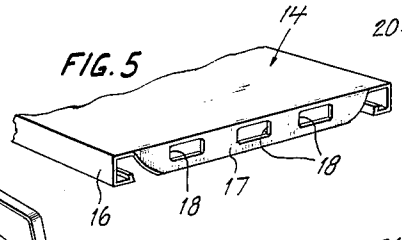


FIG. 3.

FIG. 5



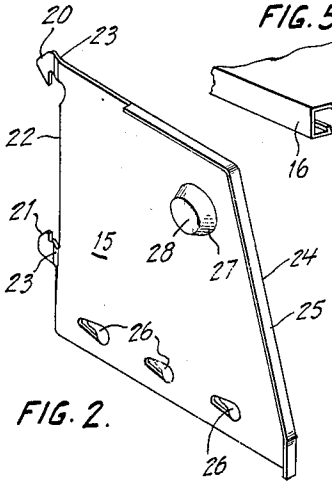


FIG. 2.

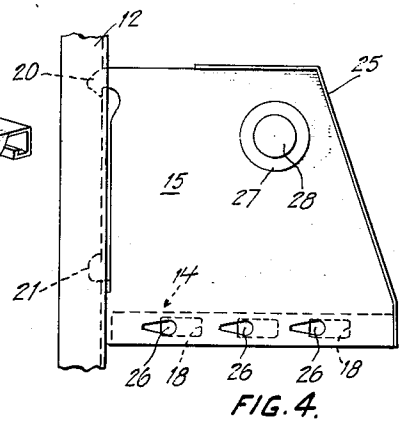


FIG. 4.

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BOOKSTACKS

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4 Claims. (Cl. 108—108)

This invention relates to new and useful improvements in bookstacks and more particularly to end brackets used therein to support the shelves.

Sheet metal bracket type bookstacks which provide tiers of spaced horizontal shelves each suspended in cantilever manner by end brackets attached to spaced vertical upright members are well known. The height of each shelf can be adjusted to suit the particular need of the user by adjusting the shelf's end brackets in slots provided in the upright members. It is common practice in a library for example, to arrange a series of identical bookstack units in adjacent aligned relationship by interconnecting the uprights of adjacent bookstack units to thereby present one continuous bookstack. In the latter arrangement of bookstack units the shelves of one bookstack unit are usually disposed in coplanar relationship with the shelves of the next adjacent bookstack unit. However, in such an arrangement if a shelf shifts horizontally when books or other material are placed thereon the end bracket of the shifted shelf will interlock with the end bracket of the next adjacent bookstack unit. The interlocking of the end brackets causes the shifted shelf to dip which endangers a user of the bookstack should books or other material on the shelf become dislodged.

An object of the present invention is to provide a novel end bracket for a bookstack unit.

Another object is to provide a novel end bracket for a bookstack unit whereby the interlocking of end brackets of adjacently arranged bookstack units is prevented without the use of means extraneous to the end bracket.

Still another object of this invention is to provide a novel end bracket for a bookstack unit wherein means are provided on the end bracket to horizontally space the shelves of two or more adjacent bookstack units.

The present invention contemplates a bookstack unit wherein the shelf supporting end brackets are each provided with a blister shaped protuberance wherein the protuberance of the brackets of adjacently arranged bookstack units engage one another to prevent the brackets from interlocking.

The above and other objects and advantages of the present invention will appear more fully hereinafter from a consideration of the detailed description which follows taken together with the accompanying drawing wherein one embodiment of the invention is illustrated.

In the drawing:

FIG. 1 is a front elevational view of portions of two adjacent bookstack units which incorporate the novel end bracket of the present invention;

FIG. 2 is a perspective view of an end bracket shown in FIG. 1;

FIG. 3 is a sectional view taken on the line 3—3 of FIG. 1;

FIG. 4 is a sectional view taken on the line 4—4 of FIG. 1; and

FIG. 5 is a fragmentary perspective view of one end of a shelf shown in FIG. 1.

Referring now to the drawing for a more detailed description of the present invention and more particularly to FIG. 1 wherein one preferred embodiment is clearly illustrated, adjacent bookstack units (partly shown), each formed from sheet metal material and of identical construction, are generally indicated by the numerals **10** and **11** respectively and are shown as arranged in adjacent or

side by side relationship. Each bookstack unit **10** and **11** includes standards or spaced upright support members **12** and **13** respectively. Shelves **14** are each supported by and between a pair of spaced end brackets **15** and which end brackets are suspended from the upright members **12** and **13** in a manner to be hereinafter described. Upright **13** of bookstack unit **10** and an upright **12** of bookstack unit **11** may be interconnected if desired by any well known means such as by detachable bolts **12A** one of which is shown in FIG. 3.

Each shelf **14** is formed of sheet metal material and includes front and rear longitudinal marginal portions bent downwardly in a well known manner to form L-shaped stiffening flanges **16** which extend along the front (FIG. 1) and rear (not shown) of the shelf **14**. Opposite side marginal portions of each shelf **14** are also bent downwardly to form shelf side flanges **17**. Shelf side flanges **17** are provided with spaced openings **18** (FIG. 5) for purposes to be hereinafter explained. Each upright **12** and **13** has a series of vertical mounting slots **19** provided therein.

End brackets **15** are preferably formed from sheet metal and have upper and lower hook projections **20** and **21** respectively extending from a vertical side edge **22** thereof for insertion in selected spaced mounting slots **19** of an upright member. Hooks **20** and **21** are offset at **23** (FIG. 2) for purposes to be explained. Hooks **20** and **21** engage the inner wall of the upright after insertion in mounting slots **19**. The hooks **20** and **21** securely mount the bracket **15** on the upright and prevent accidental disengagement of the end bracket **15** from its upright. Bracket **15** also has a side marginal portion bent outwardly from a side edge **24** to provide a flange **25** which extends along the edge **24** of the bracket and part way along the top of the bracket (FIG. 2). Resilient tongues **26** are located near the lower edge of the end bracket (FIG. 2) and are pressed outwardly in a direction opposite to flange **25**. Shelf **14** is attached to a pair of spaced brackets **15** by inserting the tongues **26** of each bracket into openings **18** formed in opposite side flanges **17** of the shelf **14**. The fact that the bracket hook projections **20** and **21** are offset at **23** permit the sides **17** of shelf **14** to extend beyond the mounting slots **19** allowing for a shelf of increased length to be supported by the spaced brackets. Tongues **26** engage the inner walls of the flange **17** in a well known manner (FIGS. 1 and 3) to support the shelf between the brackets. A blister shaped protuberance **27** is pressed in the surface of each bracket near the upper right hand corner thereof as seen in FIG. 4. Blister **27** extends outwardly in the same direction as flange **25** and slightly beyond the free edge of flange **25**. Each blister **27** has a flat circular outer surface **28** as seen in FIG. 2 for purposes to be hereinafter described.

After the shelf **14** and the end brackets have been assembled in the above manner the end brackets are mounted on the uprights as described. A plurality of units may then be located in adjacent relationship such as shown with respect to units **10** and **11** in FIG. 1. The shelves **14** of adjacent bookstack units are disposed in coplanar relationship with the shelves of the adjoining bookstack. In use of such an arrangement, if one of the shelves **14** of one bookstack unit tends to shift horizontally due to the weight of the media placed thereon blister **27** of the end bracket **15** abutting against the blister of the adjacent bracket of the adjoining bookstack unit will prevent endwise movement of the shelf. The engagement of blister surfaces **28** of the two adjacent end brackets thus prevents the flanges **25** of the adjacent end brackets from overlapping or interlocking.

It will be understood by those skilled in the art that the novel end bracket is not limited to an arrangement

as described wherein abutting end brackets **15** of bookstack units **10** and **11** are mounted on separate upright members such as upright **13** of bookstack unit **10** and upright **12** of bookstack unit **11**. The end bracket is readily adaptable to a bookstack construction of the type for example wherein the end brackets which abut one another are mounted on one upright member and which upright would be provided with two adjacent parallel rows of vertical mounting slots **19** to accommodate end brackets of two adjacent bookstacks.

It is apparent from the foregoing that the disclosed end bracket has many advantages in use. One advantage as set forth above is that the blisters **27** prevent adjacent end brackets from interlocking which interlocking if it were to occur would cause the shelf to dip thereby risking possible injury to a user of the bookstack. This invention results not only in a savings in manufacturing costs both in labor and material since no means extraneous to the end bracket are used but has the added advantage of the integrally formed blisters **27** providing means for aligning and maintaining the shelves of adjacent bookstack units in coplanar relationship with each other.

Although one embodiment of the present invention has been illustrated and described in detail it is to be expressly understood that the invention is not limited thereto. Various changes can be made in the design and arrangement of parts without departing from the spirit and scope of the invention, as the same will now be understood to those skilled in the art.

What is claimed is:

1. In a bookstack,

(a) a plurality of spaced vertical upright members,

(b) a plurality of pairs of spaced vertical end brackets,

(c) each end bracket of a said pair of end brackets detachably mounted on adjacent upright members,

(d) a plurality of horizontal shelves disposed between selected adjacent upright members,

(e) each shelf having opposite end portions attached to a pair of said spaced end brackets,

(f) a predetermined number of said shelves arranged in substantial coplanar relationship,

(g) protuberances formed on said end brackets of said predetermined number of shelves and extending outwardly of the end bracket in a direction away from the shelf attached thereto,

(h) said protuberances formed on the adjacent end brackets of an adjacent pair of said predetermined number of shelves adapted to slidably engage one another to prevent lateral movement of said pair of shelves in directions toward each other.

2. In a bookstack,

(a) a plurality of spaced vertical upright members each having a vertical row of spaced apertures in the front surface thereof,

(b) a plurality of pairs of spaced vertical end brackets,

(c) each end bracket having spaced projections on an edge thereof inserted in selected spaced apertures of a said upright member to detachably mount the end bracket to the upright member,

(d) a plurality of horizontal shelves disposed between pairs of selected adjacent upright members,

(e) each shelf having opposite end portions attached to a pair of said spaced end brackets,

(f) at least two of said shelves arranged in adjacent substantial coplanar relationship, and

(g) protuberances formed on said end brackets of said at least two shelves and each extending outwardly of the end bracket in a direction away from the shelf attached thereto,

(h) said protuberances formed on the adjacent end brackets of the said two shelves adapted to slidably engage one another to prevent lateral movement of said two shelves in directions toward each other.

3. The bookstack of claim **2** wherein each end bracket is provided with a flange portion extending outwardly from one edge thereof in a direction away from the attached shelf and said engaged protuberances preventing interlocking of the flanges of adjacent end brackets.

4. The bookstack of claim **3** wherein said protuberances on each end bracket project outwardly of said end bracket in the same direction as and beyond said flange portion.

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