United States Patent

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[54] **COLLAPSIBLE SECTIONAL BOOKCASE UNIT**
3 Claims, 6 Drawing Figs.

[52] **U.S. Cl.** **211/42,**
211/50, 211/132, 220/23.4, 312/108, 312/111, 312/259
[51] **Int. Cl.** **A47b 63/00**
[50] **Field of Search** ..... 211/41, 50, 40, 132, 178, 42, 149, 11, 126; 312/111, 20, 10, 108, 259, 107; 206/62 P, 62 R; 220/23.4

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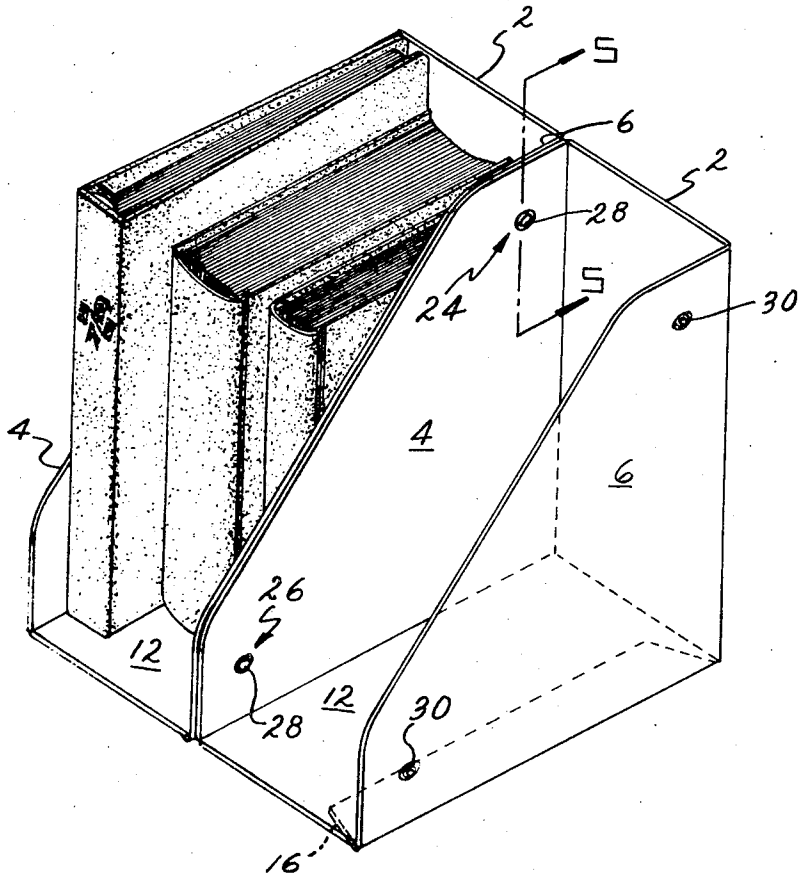
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Assistant Examiner—Abraham Frankel
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ABSTRACT: A collapsible folding bookcase construction for separate desk or tabletop use and as a sectional unit to be releasably assembled with like units, a foldable unit having hinged back, side, and bottom panels and an assembly or connector flap, the side panels having recessed fastener means for joining like units side-by-side and the panels and flap being foldable into overlying relation against each other for flat compact storage or shipping purposes.



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SHEET 1 OF 2

Fig. 1.

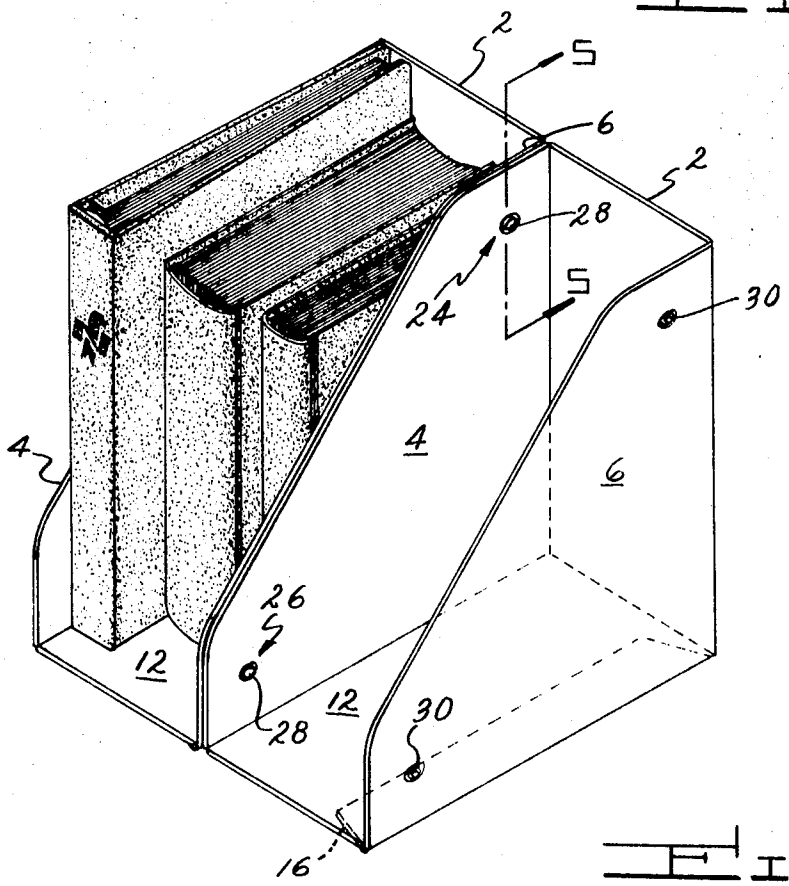
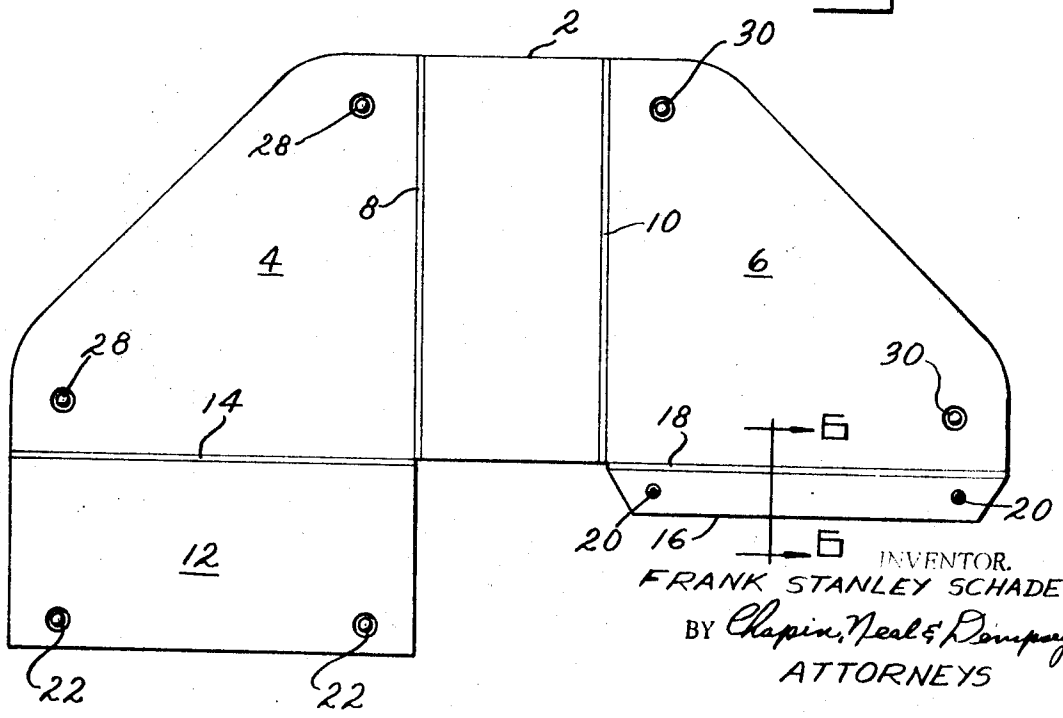


Fig. 2.



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FIG. 3.

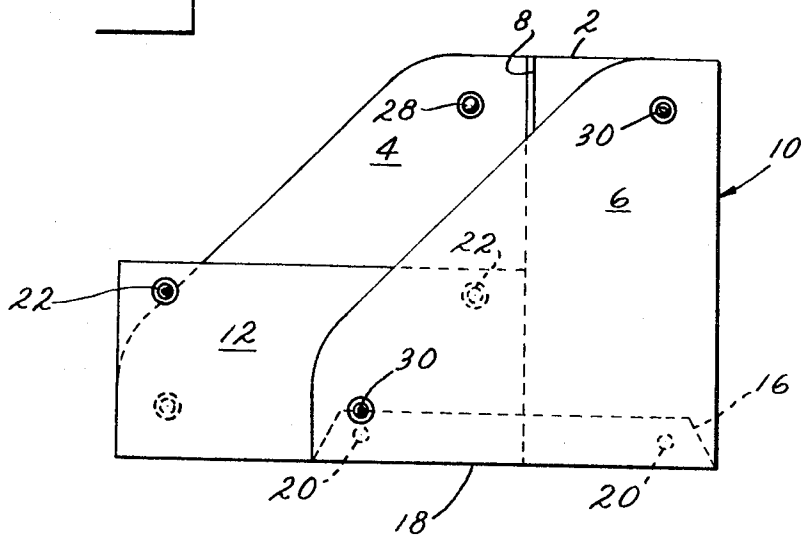
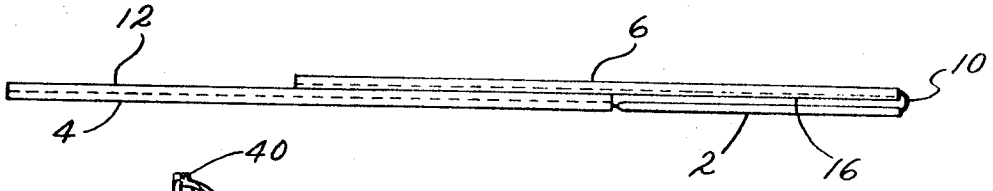
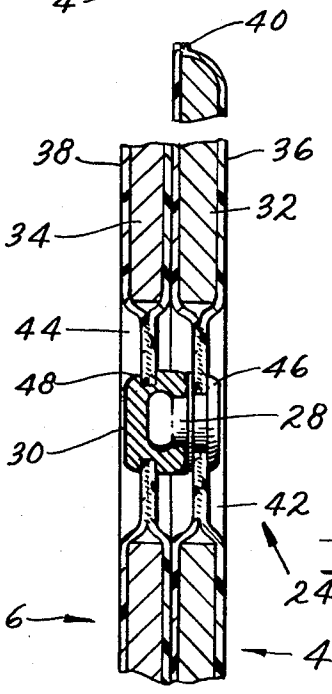


FIG. 4.





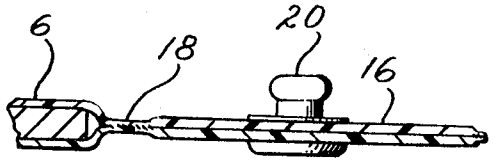


FIG. 6.

FIG. 5.

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COLLAPSIBLE SECTIONAL BOOKCASE UNIT

BACKGROUND

This invention relates to a collapsible and foldable bookcase construction and particularly to a unit of the type which may be erected for use by itself or joined at the option of the user in side by side relation to form a sectional bookcase assembly by releasable snap fastener elements built unobtrusively into each of the sidewalls thereof. Each unit is collapsible into flat compact form with the panels folded against each other for packaging, storage, or shipping purposes.

Insofar as is known prior units of this type have been relatively cumbersome in the nature either from the standpoint of constructing the same, of erecting and assembling units and requiring additional parts to join them together, or of collapsing the walls into compact form.

The principal object of the present invention is to provide an attractive self-contained separate bookcase unit available, if desired, for joining with one or more like units to form a sectional bookcase assembly for desk top or other like uses; to provide a collapsible unit which may be readily folded into flat compact form for carrying, storage or shipping with a minimum of waste space; and to provide a self-contained unit which with other like units can without more be erected and joined together without the use of tools or additional parts to hold the assembly secure.

The construction of the preferred form of unit as shown by an actual embodiment of the invention as disclosed herein utilizes a known type of panel construction which is used in some cases for bound book covers and more commonly for the hinged cover and back panel construction of conventional loose leaf ring binders. This type of structure is characterized by the enclosure of relatively stiff panel supporting members between covering sheets of heat-sealable thermoplastic material, the facing peripheral edges of the sheets and hinging areas between panels being sealed together by standard plastic welding procedures and tools. Highly attractive panel structures can thus be easily formed since thermoplastic sheet materials are now available in a wide variety of decorative colorings and designs.

In forming the hinged back, side, and bottom panels and the connector flap of the present structure the above method of panel formation is used together with the additional provision for incorporating releasable snap fastener elements in the side panels and in the bottom panel and connector flap. The fasteners in the latter two locations are for erecting a unit; the fasteners in the side panels are for releasably joining separate units together.

The above and other objects and advantages of the invention will be apparent from the following description of a preferred embodiment thereof as shown in the accompanying drawings in which:

FIG. 1 is a perspective view of two sectional bookcase units embodying the invention and in assembled condition, the units being releasably fastened in side by side relation;

FIG. 2 is a plan view of one of the units of FIG. 1, the panel sections thereof being spread out in flat planar relation;

FIG. 3 is a plan view of the unit of FIG. 2 with the panels folded in collapsed condition for compact storage or shipping purposes;

FIG. 4 is a bottom edge view of the folded unit as shown by FIG. 3;

FIG. 5 is an enlarged fragmentary sectional view on line 5–5 of FIG. 1; and

FIG. 6 is an enlarged sectional view on line 6–6 of FIG. 2.

Referring to FIGS. 1 and 2 the sectional bookcase unit disclosed comprises a back panel 2, side panels 4 and 6 connected, respectively, by hinging portions 8 and 10 at each side of the back panel, a bottom panel 12 connected to the lower edge of panel 4 by a hinging section 14 and a connector or assembly flap 16 hinged along the lower edge of panel 6 by portion 18.

As shown by FIG. 1, the unit is erected and assembled as from the flat FIG. 2 condition by swinging the side panels forwardly into parallel relation and at right angles to the back panel while bringing the bottom panel 12 upwardly for the free edge thereof to lie along the lower edge of side panel 6. The flap 16 is then releasably fastened at the underside of the bottom panel by registration and engagement of spaced snap fastener button elements at 20 and 22 carried on the flap and bottom panel respectively. The fastener elements may be of any conventional form and are preferably of the type shown in detail by FIG. 5 as will be described.

In FIG. 5 the snap fastener connection there shown serves to releasably join together (FIG. 1) the upper rear corner sections of the side panels 4 and 6 of a pair of similarly constructed sectional units. This fastener connection is generally designated by the numeral 24. A similar connection at the lower front corner section of the same side panels is designated at 26. As will be evident from FIGS. 1 and 2 the separate elements on each side panel 4 and 6 are at corresponding positional locations so that when any two units are joined in side by side relation the walls 4 and 6 will become a common wall of a sectional assembly as in FIG. 1. As many units as necessary or desirable may be added to suit a user. It will be appreciated that the particular location and number of the fastener elements may be varied to best accommodate any given size or form of sidewall. It has been found that with the diagonally directed front edge conformation of walls 4 and 6 as herein shown, the two fastener locations at 24 and 26 serve to hold assembled units securely together. The actual embodiment shown was designed to hold not only ordinary size books but also loose leaf binders of the type and size commonly sold for school and classroom use.

As in FIG. 5 the wall 4 is fitted with a headed stud or post fastener element 28 while the wall 6 is fitted with the recessed cap element 30 for releasably receiving the head and holding the walls face to face. The same type of fastener elements are preferably used at 20 and 22 for the flap and bottom panel connection.

FIG. 5 is also illustrative of the preferred form of construction for the panel walls. Stiffener members as the boards 32 and 34 of the panels 4 and 6 are shown encased between the covering sheets 36 and 38 of thermoplastic sheet material. The boards 32 and 34 may be of stiff composition paperboard or of a stiff thickened plastic sheet material as may be desired to give a desired rigidity to the several walls. As indicated at the top of panel 4 the outer peripheral edges of the covering sheets on opposite faces of a panel are suitably heat-sealed together as indicated by the welded area at 40.

Referring to FIG. 2 the hinge areas 8, 10, 14 and 18 are likewise formed by similarly welding the inner faces of the cover plies (see FIG. 6), the width of the hinging areas, however, being of greater magnitude to enable the folding of the panels as will be described. It may be noted from FIG. 6 that the hinged connector flap is not provided with a stiffener member since this flap (FIG. 1) underlies the bottom panel 12 in erected condition. The plies of the thermoplastic covering sheets are sealed in the hinge area 18 and extended to form the flap on which the elements 20 are mounted. These plies are of a relatively thin character and do not serve to tip an erected sectional unit on a platform surface to any observable degree.

Referring again to FIG. 5 it will further be noted that the panel stiffener members 32 and 34 are provided with apertured sections in the openings 42 and 44 of which the interfaces of the covering sheets are welded together. The openings are circular (FIGS. 1 and 2) and the sealed areas are circular in outline. At the center of these sealed areas suitable openings are cut for mounting the fastener elements 28 and 30 by the conventional gripping or riveting flanges as at 46 and 48 respectively. Thus the fastener elements are at least in part recessed in the panel walls and the holes in the sealed areas of the plies in the openings 42 and 44 do not allow leakage of air into the pockets containing the stiffener members as at 32 and

34 of the panels. The stiffeners being completely sealed from atmosphere will thus preserve a smooth flat hugging relationship of the covering sheets against the panel surfaces. The passage of air into the pockets will otherwise cause the covering sheets in time to become wavy or slightly rumpled when lying against a relatively large surface and thus detract from the initial smooth flat stretched appearance which is desired over the useful life of the unit. With a surface of no appreciable width as in the case of flap **16** a smooth stretched appearance is of no real consequence, and since no stiffener member is provided the fastener element need not be sealed off.

Referring now to FIGS. **3** and **4** the folded packaging condition is shown. For a most compact collapsed relation the bottom panel **12** (with reference to FIG. **1**) is folded upwardly against the inner face of panel **4**, the flap **16** tucked upwardly against panel **6**, and the panel **6** and flap then folded as to the left over the back panel, the outer portion of panel **6** thus overlying panels **12** and **4**. A thin flat planar type of package thus results for ease in handling and occupying a minimum of space. The extremely thin character of the folded panels will be obvious from the FIG. **4** relation of the parts.

What I claim is:

1. A collapsible sectional bookcase unit for desk top use and the like comprising

a back panel and hingedly connected at each side thereof a side panel,

a bottom panel hingedly connected to the base of one of said side panels,

and a connector flap hingedly connected to the base of the other side panel,

the hingedly connected panels and flap being foldable into overlying relation against adjacent panels for a flat collapsed condition,

said bottom panel and connector flap having registrable releasably engageable fastener elements for erection of said unit with said bottom panel being held at right angles to and extending from the base of said back panel and said side panels being thereby arranged in spaced parallel position to support books and the like therebetween,

said side panels further having releasable fastener elements at corresponding positional locations thereon and facing outwardly thereof with the elements of one side panel being of a type for releasable engagement with the elements facing outwardly of the other panel to thereby optionally secure a plurality of like units in side by side relation, and

said panels at each of said corresponding positional locations of the fastener elements having sections of reduced wall thickness recessed inwardly of both panel wall surfaces, said fastener elements being mounted in said sections with the inner portions of the fastener elements being recessed within the panel walls and the outwardly facing portions thereof being in part recessed within said panel walls.

2. A collapsible sectional bookcase unit for desk top use and the like comprising

a back panel and hingedly connected at each side thereof a side panel,

a bottom panel hingedly connected to the base of one of said side panels,

and a connector flap hingedly connected to the base of the other side panel,

all said panels comprising flat stiffener members with covering sheets of thermoplastic material enclosing said members,

the hingedly connected panels and flap being foldable into overlying relation against adjacent panels for a flat collapsed condition,

said bottom panel and connector flap having registrable releasably engageable fastener elements for erection of said unit with said bottom panel being held at right angles to and extending from the base of said back panel and said side panels being thereby arranged in spaced parallel position to support books and the like therebetween,

said side panels further having releasable fastener elements at corresponding positional locations thereon and facing outwardly thereof with the elements of one side panel being of a type for releasable engagement with the elements facing outwardly of the other panel to thereby optionally secure a plurality of like units in side by side relation,

said stiffener members at said corresponding positional locations of the fastener elements having apertured portions, and

said fastener elements being mounted in said apertures on sections of the covering sheets from opposite sides of said members for at least in part recessing said fastener elements.

3. The unit as set forth in claim **2**; in which

said covering sheets at opposite sides of the panels are heat-sealed together in the areas between adjacent panels and form the hinge connections for folding said panels together,

said connector flap is formed by extensions of said covering sheet material and is connected to the base of said other side panel along a similarly sealed hinging area, and

said sheets are heat-sealed around the peripheral edges of the unit and the sections of the sheets in said apertures of the stiffener members are heat-sealed together for mounting said fastener elements.