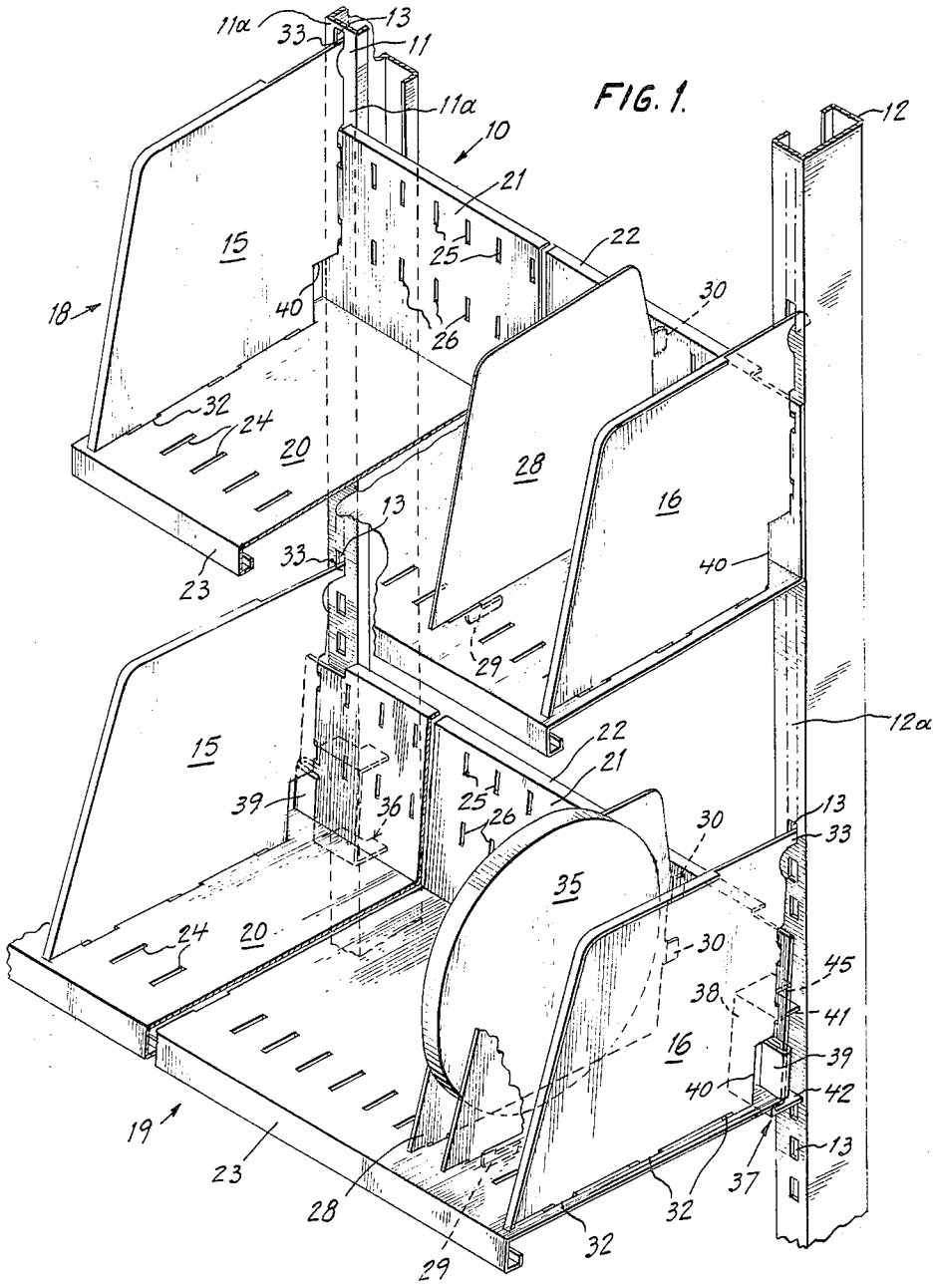
April 26, 1966 J. A. THOMSON 3,247,809

OPEN SHELF FILING STRUCTURES

Filed May 27, 1964 2 Sheets-Sheet 1

FIG. 1.



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FIG. 2.

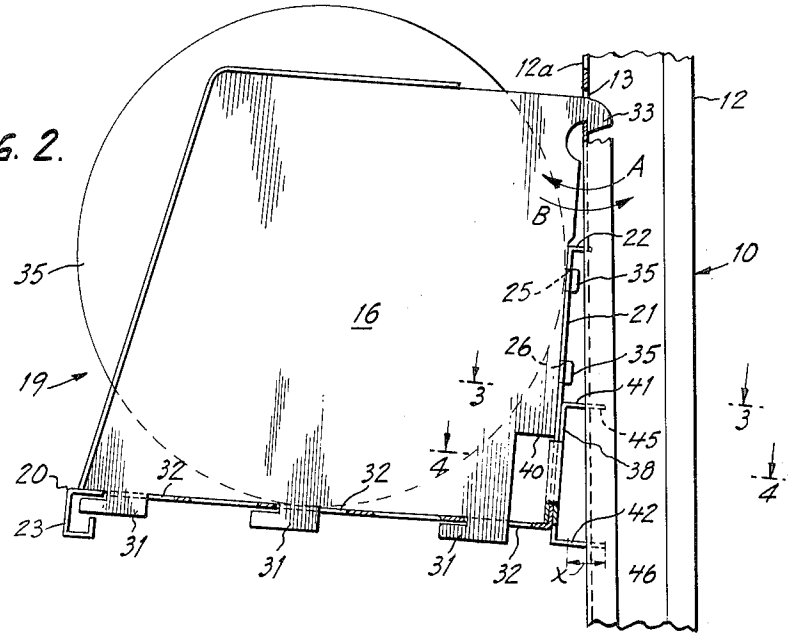


FIG. 3.

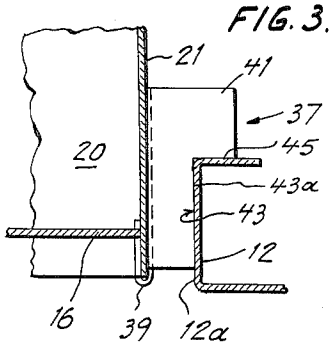
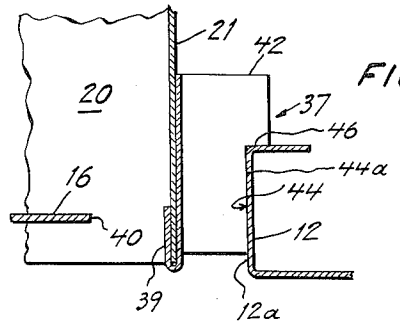


FIG. 4.



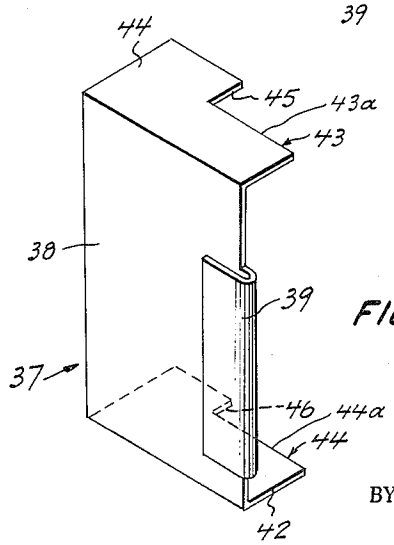


FIG. 5.

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OPEN SHELF FILING STRUCTURES

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7 Claims. (Cl. 108—6)

The present invention relates to new and useful improvements in open shelf filing structures, and, more particularly, to means for maintaining a shelf unit employed therein in a tilted position.

In certain open shelf filing structures, tiers of spaced and vertically adjustable shelf units are suspended by spaced end brackets from a pair of spaced upright members. The end brackets for each shelf unit have portions attached to the opposite ends of the shelf unit and are provided with hook portions detachably supported in mounting slots provided in the spaced upright members. Shelf units of this type are well known, and are open at the front to receive articles such as file folders, books, or the like for storage on a horizontal shelf panel of the unit.

In modern filing systems, there is an increased use in microfilm records and magnetic tape records. The microfilm and tape are stored on reels which are placed in cylindrical containers for storage. In order to file these cylindrical containers on the aforementioned open shelf units, means are required to tilt the shelf units upwardly and incline the shelf panel downwardly toward the upright members, to overcome the tendency of the containers from rolling over and off the front edge of the shelf unit. It is therefore necessary that the shelf units be readily adaptable for interchange between tilted and horizontal positions, according to the varying needs of a user. Known arrangements for effecting and maintaining a shelf unit of an open shelf filing unit in tilted position present various disadvantages in that, among others, additional structure is required to be incorporated into the basic shelf unit, or cumbersome manipulation or removal of parts is required when the shelf unit is shifted between the horizontal and the tilted position.

The object of the present invention is to provide novel means for maintaining a shelf unit of an open shelf filing unit in a tilted position.

Another object is to provide novel means for maintaining a shelf unit in an upwardly tilted position relative to its supporting members, and which means are economical to manufacture and readily adaptable to standard horizontally arranged shelf units.

Another object is to provide novel and economical means for maintaining a shelf unit in a tilted position, and which means do not disturb or require changing of parts of the basic shelf unit when the unit is shifted to the tilted position.

A still further object is to provide novel clip means which are readily attached to a shelf unit and effective to maintain a shelf unit in tilted position, and include means to prevent accidental endwise and vertical movement of the shelf unit in the tilted position.

The present invention contemplates novel means for maintaining a shelf unit of an open shelf filing unit in an upwardly tilted position relative to its supporting upright members. According to the present invention, the shelf unit is suspended from a pair of spaced upright members by spaced brackets, and which brackets are attached to the opposite ends of the shelf unit. The end brackets are provided with hook members adapted for insertion in mounting slots provided in the upright members to support the shelf unit in a horizontal position. The shelf unit is pivotable on the hook members to a position whereat the front of the shelf unit is inclined upwardly from

the uprights. Novel detachable clip members are provided for attachment to the opposite ends of the shelf unit, and which clip members are provided with portions which engage the upright members to maintain the shelf unit in tilted position, and prevent accidental lateral movement of the shelf unit in the tilted position.

The above and other such 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 drawings wherein one embodiment of the invention is illustrated.

In the drawings:

FIG. 1 is a fragmentary perspective view of an open shelf filing unit and shows an upper shelf unit thereof in horizontal position and a lower shelf unit in tilted position;

FIG. 2 is a side view of the lower shelf unit of FIG. 1, with portions of the filing unit broken away to show interior structure thereof;

FIG. 3 is a sectional view taken on the lines 3—3 of FIG. 2;

FIG. 4 is a sectional view taken on the lines 4—4 of FIG. 2; and

FIG. 5 is a perspective view of a clip member.

Referring now to the drawings for a more detailed description of the present invention and, more particularly, to FIG. 1, wherein one preferred embodiment is clearly illustrated, an open shelf filing unit (partly shown) is generally indicated by the reference numeral **10**. Unit **10** includes a pair of spaced channel-shaped upright support members or standards **11** and **12**. Each upright member **11** and **12** is provided with a row of vertically spaced apertures or mounting slots **13** from which pairs of end brackets **15** and **16** of storage shelf units **18** or **19** (FIG. 1) of filing unit **10** are suspended in a manner to be hereinafter described.

Shelf units **18** and **19** of filing unit **10** are identical and are preferably formed of sheet metal material. Each shelf unit **18** and **19** includes a shelf panel **20**, and a rear or back panel **21** formed integral with shelf panel **20**. Rear panel **21** is bent upwardly at right angles from the rear edge of shelf panel **20**, and is provided with an angled flanged portion **22** along the upper edge thereof. A front longitudinal marginal portion of shelf panel **20** is bent downwardly to provide an L-shaped stiffening flange **23** along the front of the shelf unit.

Each shelf panel **20** (FIG. 1) is provided with a row of laterally spaced rectangular apertures or slots **24** adjacent flange **23**. Rear panel **21** is provided with a pair of parallel rows of similarly formed laterally spaced slots **25** and **26**. Each vertical set of slots **25** and **26** in rear panel **21** is in alignment with a slot **24** in shelf panel **20**. Sheet-like divider members **28** are provided with tabs **29** and **30** on the bottom and rear edges thereof, and are adapted in a known manner for detachably mounting in a set of slots **25** and **26** and an aligned slot **24**. Divider members **28** are used to form compartments along a shelf unit in accordance with the needs of the user, in a well-known manner, and in which compartments various articles, such as file folders, books, or the like are stored.

The spaced end brackets **15** and **16** for each shelf unit **18** and **19** are each provided with lug members **31** (FIG. 2) on the bottom edges thereof which are mounted in a series of aligned slots **32** provided at the opposite ends of shelf panel **20**, to detachably secure the bracket to the shelf unit. A hook-like projection **33** extends from the top edge of each divider, and which hooks **33** are inserted in mounting slots **13** of the spaced upright members **11** and **12**. Hooks **33** engage the inner walls (FIG. 2) of upright members **11** and **12** to securely suspend the shelf unit from uprights **11** and **12**. In addition, tabs **35** are provided on the rear edge of each bracket and are arranged

in a pair of slots 25 and 26 to align the end bracket with rear panel 21 of the shelf unit.

As seen with respect to the suspended upper shelf unit 18 in FIG. 1, shelf panel 20 thereof is arranged to be in an imaginary plane which intersects uprights 11 and 12 at right angles.

The structure thus far described represents, more or less, conventional structure as found in known open shelf filing units, wherein the shelf units are vertically adjustable to different positions on uprights 11 and 12 to adjust the height and spacing between shelf units. It has been found in utilization of this type filing unit that when it is desired to store certain articles, as for example, cylindrical containers 35 (FIG. 1), that it is necessary to tilt a shelf unit upwardly whereby shelf panel 20 thereof is arranged in an imaginary plane inclined upwardly from the uprights to overcome the tendency of container 35 to roll over and off the front edge of the shelf panel 20.

To this end, as shown, with respect to lower shelf unit 19 in FIG. 1, there are provided novel means for maintaining shelf unit 19 in tilted position. These means include a pair of spaced clip members 36 and 37 at opposite ends of shelf unit 19. Clip members 36 and 37 are mirror images of each other, and a detailed description thereof is therefore directed to only clip 37 at the right (FIG. 1) of shelf unit 19. Clip member 37 includes a main body portion 38 provided with a folded over marginal portion or clip 39. Clip portion 39 extends through a cutout corner portion 40 of end bracket 16 (FIGS. 1, 2, 3 and 4), and embraces a lower corner portion of rear panel 21 securing clip member 37 to shelf unit 19. Flanges 41 and 42 are bent at right angles away from the top and bottom edges, respectively, of body portion 38. A notched or recessed corner portion 43 is provided in upper flange 41, and a similar recessed corner portion 44 is provided in bottom flange 42. Recess 43 (FIG. 3) extends inwardly in flange 41 towards body portion 38 to a greater depth than recess 44 (FIG. 4) in bottom flange 42, whereby edge surface 43*a* of recess 43 is closer to the top edge of body portion 38 (FIG. 5) than edge surface 44*a* of recess 44 is to the bottom edge of body portion 38. As a result of the varying depths of recesses 43 and 44, both edge surfaces 43*a* and 44*a* thereof engage the front surface 12*a* of upright 12 in the tilted position of shelf unit 19.

Side edge surfaces 45 and 46 (FIGS. 3 and 4) of notch portions 43 and 44, respectively, rest against the side wall surface of upright member 12 and in cooperation with the corresponding surfaces of clip member 36 at the opposite end of shelf unit 19, restrict endwise or lateral movement of shelf unit 19. In addition, vertical movement of clip member 37, on back panel 21, is prevented by the engagement of the bottom edge of clip portion 39 with shelf panel 20. As a result of the positioning of clip members 36 and 37, the lower portion of shelf unit 19 (FIG. 1) is spaced from uprights 11 and 12, and shelf panel 20 is tilted upwardly.

In accordance with the described arrangement, let it be assumed that a user elects to remove clip members 36 and 37 and shift shelf unit 19 from a tilted position to a horizontal position, without removing shelf unit 19 from uprights 11 and 12. Firstly, the user grasps stiffening flange 23 of shelf unit 19, and moves shelf unit 19 upwardly pivoting hooks 33 of end brackets 15 and 16 against the edges of mounting slots 13 in uprights 11 and 12 in the direction designated by arrow A in FIG. 2, moving shelf unit 19 and attached clip members 36 and 37 a sufficient distance designated "*x*," in FIG. 2. In this position, flanges 41 and 42 of clip members 36 and 37 are moved clear of the front surfaces 11*a* and 12*a*, respectively, of uprights 11 and 12, and the user then slides folded clip portions 31 of clips 36 and 37 at opposite ends of shelf member 19 off rear panel 21. Shelf unit 19 is then released, and hooks 33 pivot about the edges of slots 13 in the direction designated by the arrow "B" (FIG. 2) until rear panel 21 engages front surfaces 11*a* and 12*a* of uprights 11 and 12 as shelf unit 19 assumes horizontal position.

If it is further assumed that the user then elects to shift shelf unit 19 to a tilted position, clips 36 and 37 are remounted on shelf unit 19 following a reverse procedure. The user grasps stiffening flange 23 of shelf unit 19 and pivots shelf unit 19 upwardly in the direction of arrow A (FIG. 2) the distance designated "*x*," and in which position clip portions 39 of clip members 36 and 37 are then snapped onto the lower corner portions of rear panel 21. The user then releases the shelf unit 19, and the unit pivots about hooks 33 until the wall portions of notches 43 and 44 of clip flanges 41 and 42 engage front surfaces 11*a* and 12*a* of uprights 11 and 12 in the manner previously described, whereby shelf unit 19 is shifted and maintained in a tilted position.

It will be apparent from the foregoing description that the novel clip means and shelf unit arrangement described has many advantages in use. One advantage is that a shelf unit is readily maintained in a tilted position with a minimum amount of effort. A further advantage is that the shifting of the shelf unit between positions is accomplished, if desired, without the necessity of removing the shelf units from the uprights; and in addition, the clip members do not interfere with the storage area of the shelf unit. Economical means for maintaining a shelf unit in tilted position are therefore provided without modification in the shelf unit itself, which results in a standardization of parts in that the same clips members are adaptable to shelf units of varying dimensions.

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 filing unit of the class described,
   (a) a pair of spaced vertical upright support members,
   (b) a shelf unit disposed between said upright members,
   (c) said shelf including a shelf panel and a rear panel extending substantially vertically and at right angles to the shelf panel,
   (d) spaced bracket means connected to the spaced opposite ends of said shelf unit to mount said shelf on said spaced upright members,
   (e) said bracket means including means mounted on said upright members to support said shelf for pivotal movement between a first position wherein said shelf panel is arranged in an imaginary plane intersecting said upright members at right angles and a second position arranged in a second imaginary plane inclined upwardly from said upright members, and
   (f) clip means having first portions detachably secured to the spaced side edges of said rear panel and second portions in engagement with said upright members to maintain said shelf unit in said inclined second position.

2. In a filing unit of the class described,
   (a) a pair of spaced vertical upright support members each having a vertical row of spaced slots in the front surface thereof,
   (b) a shelf unit disposed between said upright members,
   (c) said shelf unit including a shelf panel and a rear panel extending substantially vertically and at right angles to the shelf panel,
   (d) spaced bracket members connected to spaced opposite ends of said shelf unit,
   (e) a hook projection on each bracket member inserted in a selected slot of an adjacent one of said

upright members to mount said shelf unit on said spaced upright members,

(f) said hook members being pivotable in said selected slots to allow for movement of said shelf unit between a first position wherein said shelf panel is arranged in an imaginary plane intersecting said upright members at right angles and a second position arranged in a second imaginary plane inclined upwardly from said upright members, and

(g) spaced clip members each having first portions detachably secured to the spaced side edges of said rear panel and second portions in engagement with said upright members to maintain said shelf in said inclined second position.

3. In a filing unit of the class described,

(a) a pair of spaced vertical upright support members each having a vertical row of spaced slots in the front surface thereof,

(b) a shelf unit disposed between said upright members,

(c) said shelf including a shelf panel and a rear panel extending substantially vertically and at right angles to the horizontal panel,

(d) spaced bracket members having portions connected to said shelf panel,

(e) a hook member on each of said bracket members extending from the top edge thereof and inserted in a selected slot of an adjacent upright member to mount said shelf unit on said upright member,

(f) said hook members being pivotable in said slots to allow for movement of said shelf unit between a first position wherein said shelf panel is arranged in an imaginary plane intersecting said upright members at right angles and a second position arranged in a second imaginary plane inclined upwardly from said upright members, and

(g) clip means for maintaining said shelf unit in said second position,

(h) said clip means including spaced clip members each having a folded clip portion detachably connected to the spaced side edges of said rear panel, and

(i) second portions extending from said clip members and in engagement with said upright members.

4. The shelf unit of claim 3 wherein said second portions on said clip members each include a pair of spaced flanged portions having recess portions therein with edge wall portions of said recess portions adapted to engage

said upright members to prevent endwise movement of said shelf unit.

5. In a filing unit of the class described,

(a) a pair of spaced vertical upright support members,

(b) a shelf unit disposed between said vertical upright members,

(c) said shelf unit including a shelf panel and a rear panel extending substantially vertically and at right angles to the shelf panel,

(d) spaced bracket members having first portions attached to the opposite ends of said shelf unit and second portions attached to said upright members to suspend said shelf unit from said upright members, and

(e) tilting means for maintaining the lower portion of said shelf unit spaced from said upright members whereby said shelf unit lies in an imaginary plane inclined upwardly from said uprights,

(f) said tilting means including spaced clip members arranged at opposite ends of said shelf unit,

(g) each clip member having a clip portion connected to a lower corner portion of said shelf unit and second portions extending from said clip portion to engage said upright members.

6. The filing unit of claim 5 wherein said first clip portion includes a folded-over marginal portion of a said clip member adapted to embrace a side edge portion of said rear panel of the shelf unit, and said second portions including flange portions extending from said clip members in a direction opposite to said clip portion.

7. The filng unit of claim 6 wherein said flange portions on said clip members are provided with notched portions having wall surfaces in engagement with said upright members to prevent endwise movement of said shelf unit.

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