

March 21, 1961

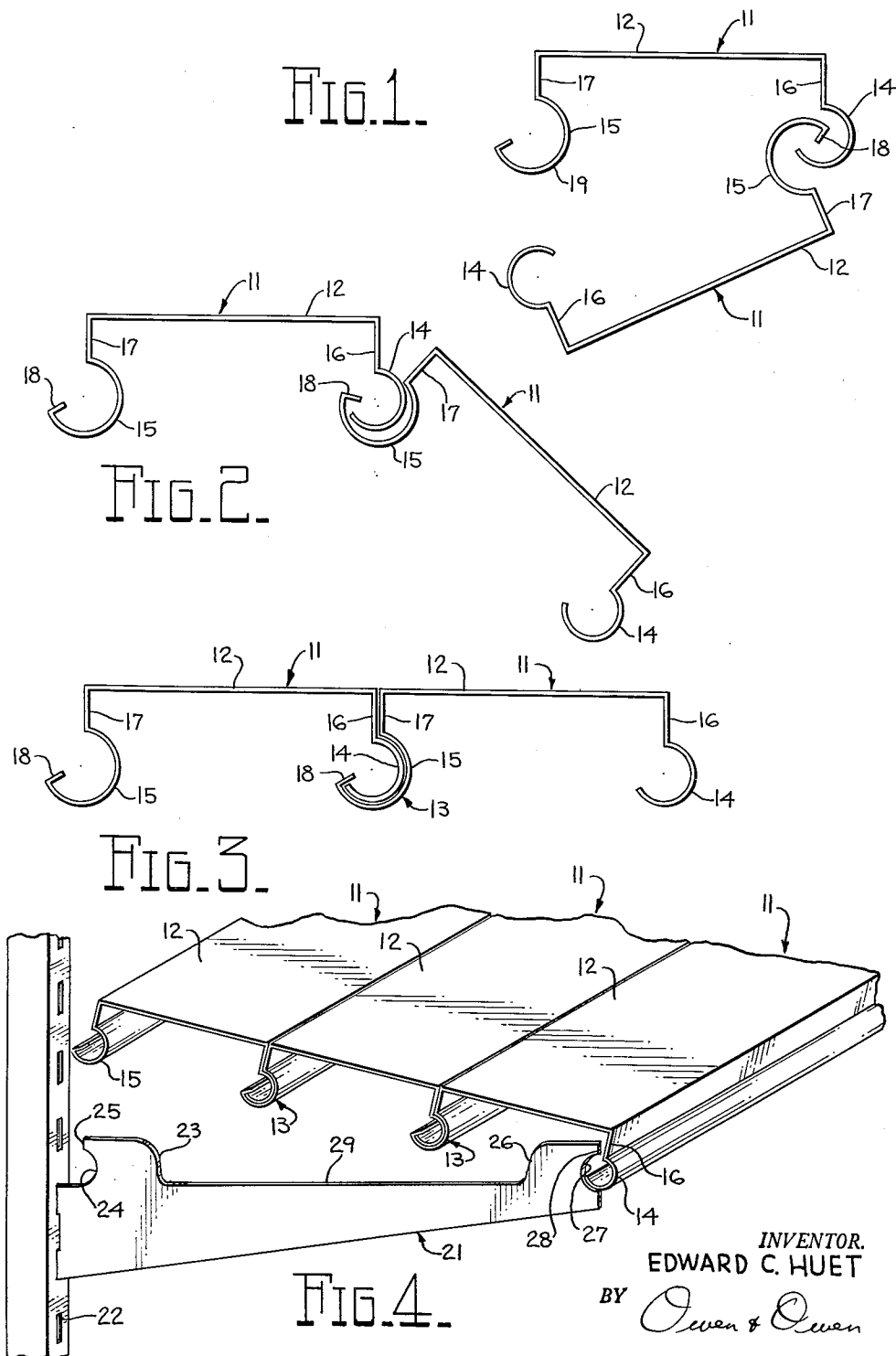
E. C. HUET

2,975,908

MODULAR SHELF ASSEMBLY

Filed Aug. 1, 1958

2 Sheets-Sheet 1



March 21, 1961

E. C. HUET

2,975,908

MODULAR SHELF ASSEMBLY

Filed Aug. 1, 1958

2 Sheets-Sheet 2

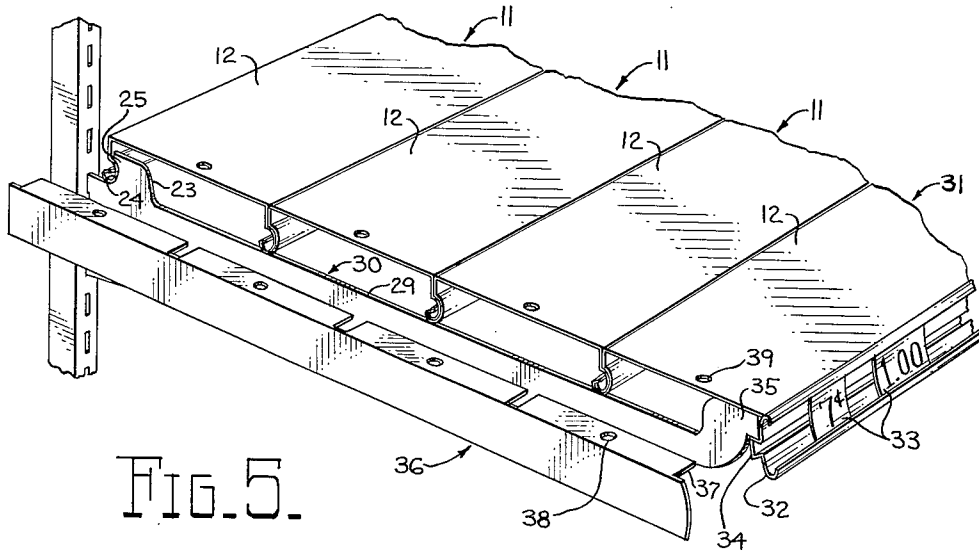


FIG. 5.

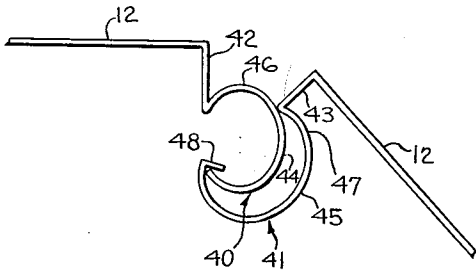


FIG. 6.

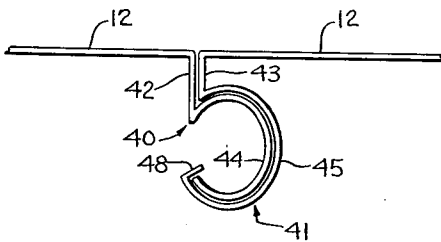


FIG. 7.

INVENTOR.
EDWARD C. HUET

BY

Owen & Owen

ATTORNEYS

1

2,975,908

MODULAR SHELF ASSEMBLY

Edward C. Huet, Coldwater, Mich., assignor to L. A. Darling Company, Bronson, Mich., a corporation of Delaware

Filed Aug. 1, 1958, Ser. No. 752,497

3 Claims. (Cl. 211-136)

This invention relates to a modular shelf assembly including interlocking shelf segments and a cooperating supporting bracket having means for engaging at least two of the segments.

A shelf assembly according to the invention is particularly advantageous for displaying articles for sale and is also useful for use in closets and the like, wherever shelves of various widths are desired. Where shelves are used for display purposes in commercial stores, such as grocery stores, shelves must be of various depths to accommodate an almost unlimited number of sizes of items for sale. These shelves must be sufficiently deep to properly support the items and yet not be excessively deep because in such case, the shelves consume more space than is necessary, and in most commercial buildings, space is of prime importance. Therefore, shelf manufacturers must carry a very large inventory of shelves in order to provide shelves of a wide variety of depths. Shelves must also be carried in several lengths and, of course, each shelf of a given depth must also be made in each of the several lengths. This situation requires twenty or thirty sizes of a given style of shelf to be carried in inventory.

The present invention provides a modular shelf assembly which greatly decreases the inventory problem. According to the invention, shelf segments are provided which can be easily assembled into a shelf of a desired depth in a matter of seconds by means of interlocking joints which do not require the use of tools or any auxiliary equipment. The segments are preferably of a narrow width, for example two inches, and can be quickly assembled to form a shelf of any desired depth in increments of two inches by means of the interlocking joints. In this manner, only a few of these segments of different lengths need be made and carried in stock. This greatly reduces inventory problems. Further, capital expenditures are less because fewer machines are required in production when segments of only one width are produced. Thus, no additional machinery is required to manufacture each shelf of different depth.

The shelf segments, after being assembled in interlocking relationship to the desired depth, are supported on novel brackets having means for maintaining the segments rigid and immovable with respect to the brackets. The segments can be quickly assembled with the brackets by merely being snapped in place with no tool, screw, or the like being necessary.

It is, therefore, a principal object of the invention to provide an improved shelf assembly including interlocked shelf segments locked in assembled relationship by a supporting bracket.

Another object of the invention is to provide a shelf assembly composed of shelf segments which can be readily assembled into shelves of varying depths.

A further object of the invention is to provide an improved shelf assembly including shelf segments of a standard width to reduce inventory and production costs.

Still another object of the invention is to provide a

2

shelf assembly comprising shelf segments assembled with interlocking joints and supported on a bracket having means for engaging spaced joints to maintain the segments rigid and immobile.

Other objects and advantages of the invention will be apparent from the following detailed description of a preferred embodiment and modifications thereof, reference being made to the accompanying drawings, in which:

Fig. 1 is an end view of two shelf segments according to the invention disposed in an initial relationship for assembly;

Fig. 2 is an end view of the two shelf segments shown in Fig. 1 with one of the segments being swung toward a nesting or assembled relationship with respect to the other;

Fig. 3 is an end view of the shelf segments shown in Figs. 1 and 2 in assembled relationship;

Fig. 4 is a view in perspective of a plurality of assembled self segments being swung into position on a support-bracket according to the invention, the bracket having means for engaging spaced locking joints of the segments;

Fig. 5 is a view in perspective of the shelf segments shown in Fig. 4 plus an additional, modified segment, which segments are in assembled relationship with respect to the supporting bracket, and showing an end plate in position for assembly with the segments;

Fig. 6 is an end view of fragments of two partially assembled shelf segments according to the invention, which segments have a modified locking joint; and

Fig. 7 is an assembled end view of the shelf segments shown in Fig. 6.

Figs. 1-3 show two shelf segments indicated generally at 11 which can be assembled with additional segments to form shelves of any suitable depth. For example, the segments 11 can be two inches wide to form shelves having depths of two inches or more in increments of two inches. Also, the segments 11 can be made in both two inch and three inch widths which can be assembled in various combinations to make shelves having depths of two inches or more in one inch increments.

The segments 11 include planar sections 12 which, when assembled, are locked in co-planar relationship by interlocking joints indicated generally at 13 (Fig. 3). The joints 13 are made by nesting of cooperating, arcuate members 14 and 15, which are provided at the front and rear of each of the segments 11. The arcuate members 14 and 15 are structurally integral with downwardly depending portions 16 and 17, respectively, which are, in turn, structurally integral with the sections 12. The portion 16 is slightly longer than the portion 17 and the arcuate member 14 has a slightly smaller radius than the arcuate member 15 so that the outer diameter of the former is approximately equal to the inner diameter of the latter. The arcuate member 15 can have a flange 18 at its outer edge to aid in locking the arcuate members 14 and 15 in nested relationship as shown in Fig. 3.

Two segments 11 are assembled by first placing one of the segments in an inverted position with the tip of its arcuate member 15 within the open top of the arcuate member 14 of the other segment as shown in Fig. 1, and then swinging the inverted segment 11 in a counterclockwise direction through the position shown in Fig. 2, with a pivot point established at the line of contact between the edge of the member 14 and the member 15, and to the assembled position shown in Fig. 3. As the inverted segment 11 is swung upwardly during assembly, the arcuate member 14 is nested within the arcuate member 15, and the portion 17 of the rotated segment 11 is moved into abutting relationship with the portion 16 of the stationary segment 11. In this position, the planar sections 12 of the two segments 11 are in contiguous, co-

planar relationship. No further upward movement of the rotated segment 11 can occur unless sufficient force is applied to deform one of the segments. The flange 18 minimizes the chance that the arcuate member 15 will be accidentally deformed by effectively locking such member to the nested member 14.

The segments 11 are preferably made of a single sheet of metal to eliminate the need for screws, welds, or other fastening means. The metal used in forming the segments 11 can be much thinner than that required for shelves made in a single unit because the arcuate members 14 and 15 and the portions 16 and 17, besides nesting to form joints, as discussed, act as reinforcing means extending along the length of the shelves.

Fig. 4 shows three of the segments 11 in assembled, interlocking relationship, and in a position of assembly with a supporting bracket 21. The bracket 21 can be held in any suitable manner, as by means of a slotted vertical strip 22 which can be affixed to a wall, post, etc., and hold the bracket 21 by means of lugs (not shown) on the bracket 21 which are inserted in slots in the strip 22. The bracket 21 has a rear projection 23 which forms a generally C-shaped notch 24 contoured approximately to the shape and size of the arcuate member 15 of the segments 11. The projection 23 also has a straight portion 25. A forward projection 26 of the bracket 21 forms a generally C-shaped notch 27, which notch is contoured approximately to the shape and size of the edge portion of the arcuate member 14. The upper edge of the notch 27 extends beyond the edge of the curved portion 14 to a straight portion 28.

In assembling the interlocked segments 11 with two or more of the brackets 21, the free arcuate member 14 of the forward one of the segments 11 is placed in the notches 27 of the brackets, and the interlocked segments 11 are then swung as a unit to bring the arcuate member 15 of the rear segment 11 over the straight portion 25 of the projection 23 and into the notch 24. A straight upper edge 29 of each of the brackets 21 then contacts the arcuate member 15 of the intermediate locking joints 13 to provide additional support for the assembled shelf and help maintain the planar sections 12 in co-planar relationship. The segments 11 and the bracket 21 are easily assembled in a matter of seconds and the segments 11 are maintained securely in place in their assembled condition. The shelf segments 11 are, therefore, maintained immobile with respect to the brackets 21 and cannot accidentally be tilted upwardly and spill the items thereon, for example, if bumped by a shopper's shoulder.

The notches 24 and 27 can also be spaced slightly farther apart than the arcuate members 14 and 15 which they engage. In this case, the segments 11 are maintained under a slight tension which establishes a greater degree of rigidity and overcomes any looseness which might be present between nested members 14 and 15 in the joints 13.

Fig. 5 shows a shelf fabricated from the segments 11 attached to a modified bracket 30, which shelf also includes a forward segment 31 having a planar section 12 and an arcuate member 15 which interlocks with the arcuate member 14 of the adjacent segment 11. The segment 31 differs from the segments 11, however, in that it has a shallow arcuate member or track 32 depending from the forward longitudinal edge thereof, in which price tickets 33 can be held. The track 31 is provided with an offset 34 extending along the length of the track, which offset enables the track to be spread apart for insertion of the tickets 33. The bracket 30 is similar to the bracket 21 except that the bracket 30 is longer and has a projection 35 in place of the projection 26. The projection 35 has a straight portion corresponding to the straight portion 28 of the projection 26 but has no notch corresponding to the notch 27. The straight portion of the projection 35 abuts the upper portion of the track 32 between the offset 34 and the planar sec-

tion 12; the shelf is thus maintained immobile and is prevented from accidental upward tilting by the cooperation between the projection 35 and the offset 34. The projections 23 and 35 can be spaced slightly farther apart than the arcuate member 15 and the track 31 which they engage to place the segments under slight tension.

If desired, the bracket 21 can be used to support this shelf, with the projection 26 engaging the arcuate member 15 at the rear longitudinal edge of the segment 31 and leaving the front edge unsupported. To establish the required support and to improve the appearance of the shelf assembly, an end plate 36 is provided. This plate 36 is shown in a position ready to be affixed to the ends of the segments 11 which can be accomplished by means of tabs 37 inserted under the planar sections 12 and between the joints 13. The tabs 37 have holes 38 which are aligned with holes 39 near the ends of the segments for bolts or sheet metal screws. The end plate 36 can also be assembled with respect to the shelf assembly by other means such as snaps or welds. Thus, the plate 36 improves the appearance of the ends of the segments 11 and 31 whether the bracket 21 or 30 is employed, and holds the outer segment 31 rigid with respect to the other segments 11, when the bracket 21 is employed and only the inner longitudinal edge of the segment 31 is supported by the bracket 21.

The segments 11 can also be provided with modified appendages 40 and 41, as shown in Figs. 6 and 7, which comprise straight portions 42 and 43 and arcuate members 44 and 45. The straight portion 42 is slightly longer than the straight portion 43 and the arcuate member 44 is sized to fit snugly in the arcuate member 45. The appendages 40 and 41 differ from the corresponding parts of the segments 11 in that the arcuate members 44 and 45 extend upwardly and outwardly from the lower extremities of the straight portions 42 and 43 rather than extending substantially perpendicular outwardly therefrom as is true of the arcuate members 14 and 15 of the segments 11. This relationship between the arcuate members 44 and 45 and the straight portions 42 and 43 establishes humped areas 46 and 47 in the members 44 and 45. The junction of the straight portion 43 and the member 45 must then ride over the humped area 46 of the member 44 and slightly compress it before passing over center and snapping into place with the straight portions 42 and 43 in abutting relationship, as shown in Fig. 7. A snug joint is more readily assured with the appendages 40 and 41 because they are constantly urged together and a greater force is necessary to separate them. A flange 48 can also be provided on the arcuate member 45 to make accidental separation even more difficult.

From the above discussion, it will be readily understood that a shelf assembly according to the invention basically comprises shelf segments having interlocking joints established by appendages depending from the longitudinal edges of the segments and a supporting bracket provided with means for engaging two spaced appendages to hold the shelf segments securely in place.

Many modifications and variations will be suggested from the above detailed description and the accompanying drawings and such modifications can be made without departing from the scope and spirit of the invention as defined by the accompanying claims.

What I claim is:

1. A modular shelf assembly comprising, in combination, shelf means including a plurality of shelf segments, means for interlocking each of said segments relative to each adjacent segment, and effective to prevent any motion of each segment relative to an adjacent segment except rotation in one direction about said interlocking means, and a bracket engaging at least two of said segments, and effective to prevent any vertical movement of each engaged segment and rotation of each of the shelf

5

segments relative to each adjacent segment in said one direction.

2. A modular shelf assembly comprising a plurality of shelf segments having arcuate members at longitudinal edges thereof with adjacent members disposed in nesting relationship to prevent lateral separation of adjacent segments, a bracket, and means associated with said bracket engaging at least two spatially remote arcuate members, maintaining portions of said segments in co-planar relationship and preventing relative movement of each of said segments with respect to said bracket. 10

3. A support for a modular shelf, which shelf is comprised of a plurality of segments, and means associated with each segment for interlocking adjacent segments relative to one another to prevent any motion of a segment relative to an adjacent segment except rotation in one direction about the joint means, the support com- 15

6

prising a bracket having means adapted for cooperative engagement with an upright member, and means associated with said bracket for engaging and holding at least two spatially remote interlocking means to prevent rotation of each of the shelf segments relative to each adjacent segment.

References Cited in the file of this patent

UNITED STATES PATENTS

225,172	Smith	Mar. 2, 1880
1,706,924	Kane	Mar. 26, 1929
1,830,230	Gwyer	Nov. 3, 1931
1,925,371	Charter	Sept. 5, 1933
2,259,382	Ingels	Oct. 14, 1941
2,517,284	Calvert	Aug. 1, 1950
2,833,420	Streater	May 6, 1958