United States Patent [19]

Vander Ley

[11] **3,868,156**

[45] **Feb. 25, 1975**

[54] **ROTARY CABINET ASSEMBLY**

[75] Inventor: **Robert J. Vander Ley**, Jenison, Mich.

[73] Assignee: **Lescoa, Inc.**, Grand Rapids, Mich.

[22] Filed: **Apr. 30, 1973**

[21] Appl. No.: **355,964**

[52] **U.S. Cl.** **312/238**, 211/144, 16/153

[51] **Int. Cl.** **A47b 49/00**

[58] **Field of Search** 312/238; 211/144; 16/153

[56] **References Cited**

UNITED STATES PATENTS

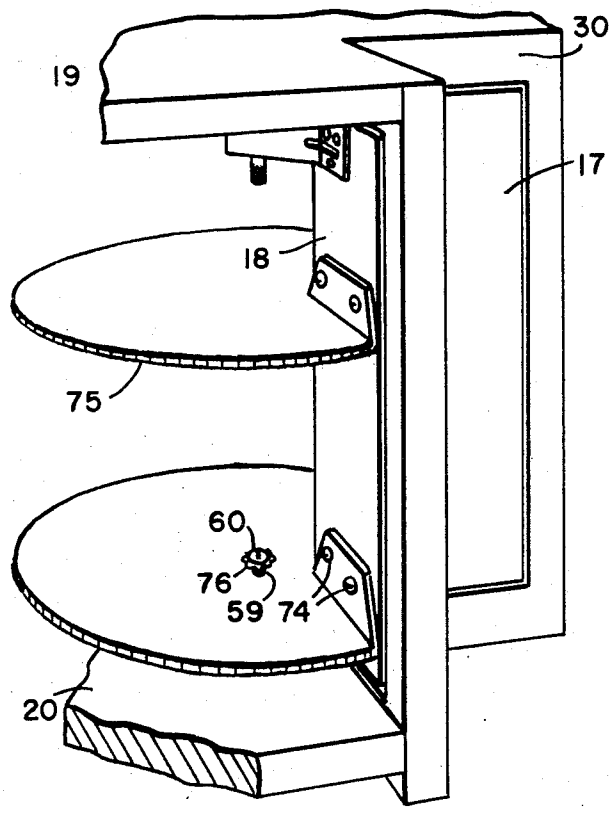
1,908,797	5/1933	Svalland	211/144 X
2,570,747	10/1951	Bailey	312/238 X
2,676,082	4/1954	Merydith	312/238
2,777,585	1/1957	Jorgensen	211/144 X
3,019,912	2/1962	Hoffman	211/144
3,160,453	12/1964	Tassell	312/238
3,260,560	7/1966	Hofstetter	312/238
3,281,197	10/1966	Anderson	312/238 X
3,722,031	3/1973	Bourgeois	16/153

Primary Examiner—Roy D. Frazier
Assistant Examiner—Peter A. Aschenbrenner
Attorney, Agent, or Firm—Glenn B. Morse

[57] **ABSTRACT**

A rotary shelf unit is adapted for installation opposite an opening at the corner junction of intersecting cabinets. Upper and lower bearing brackets position a rotor having one or more shelves, and also having intersecting panels forming a closure to the cabinet opening in one angular position of the rotor. The closure panels have sufficient freedom of vertical movement within the opening to accommodate the axial travel of a follower engaging a cam on the lower bearing bracket, which utilizes the weight of the rotor to hold the angular position corresponding to closure of the cabinet opening. The bearing brackets having locating means engageable with components of the cabinet structure, and the rotor is provided with journal brackets having locating means for accurate placement with respect to the closure panels.

1 Claim, 7 Drawing Figures



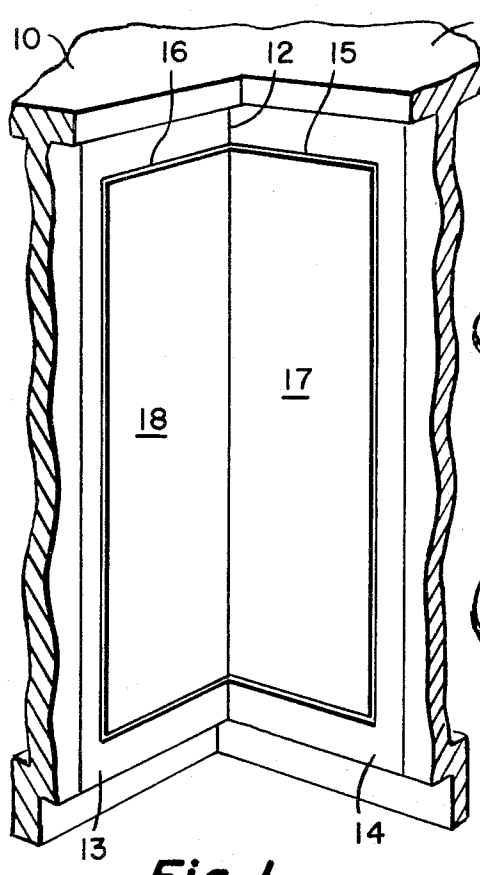


Fig. 1

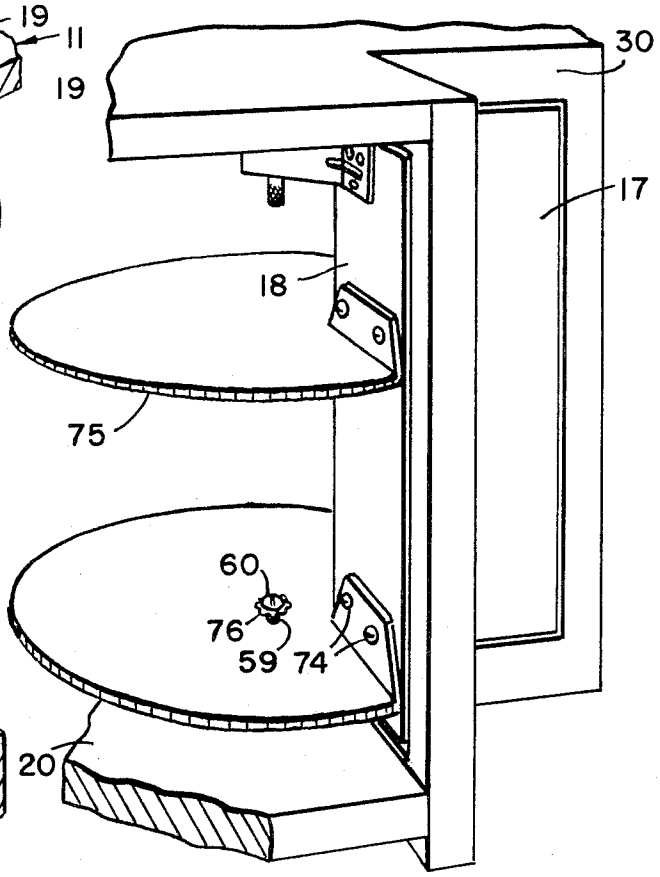


Fig. 2

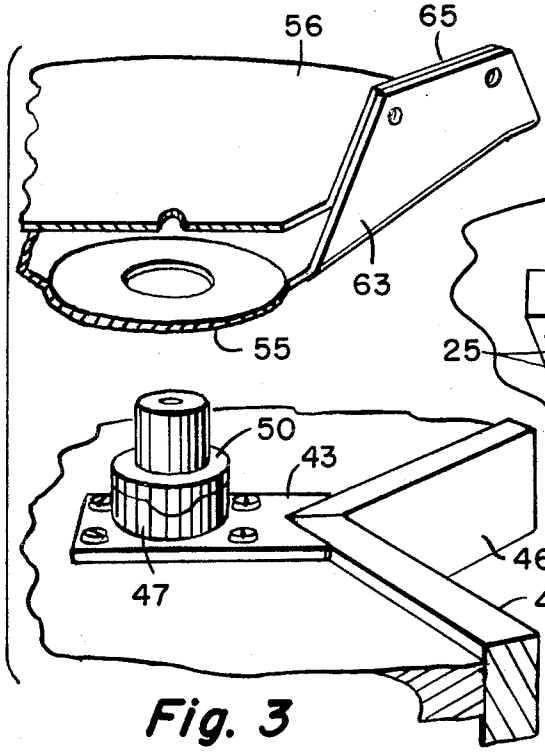


Fig. 3

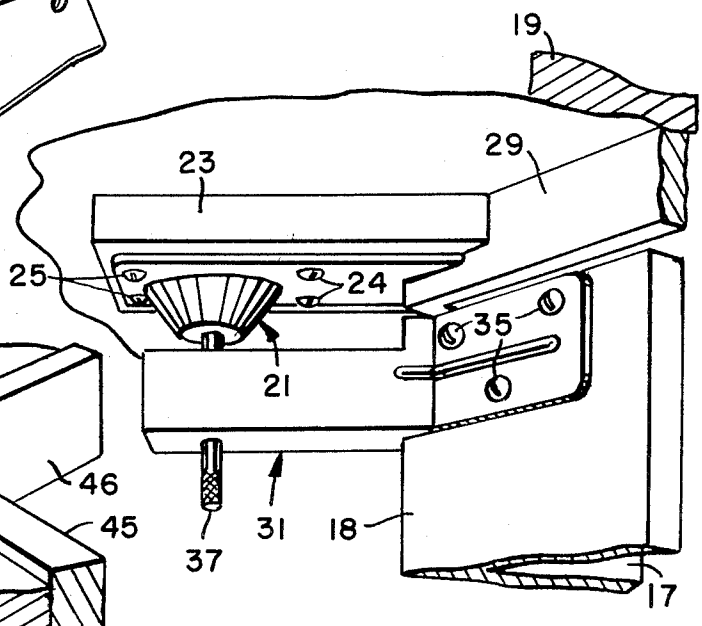


Fig. 4

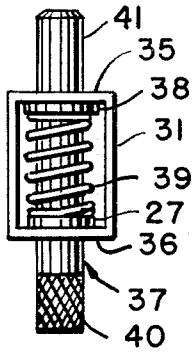


Fig. 5

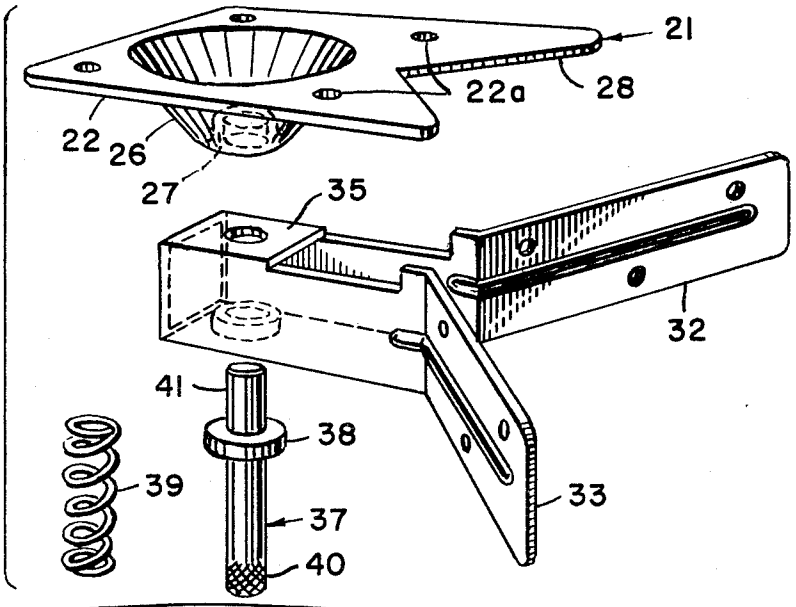


Fig. 6

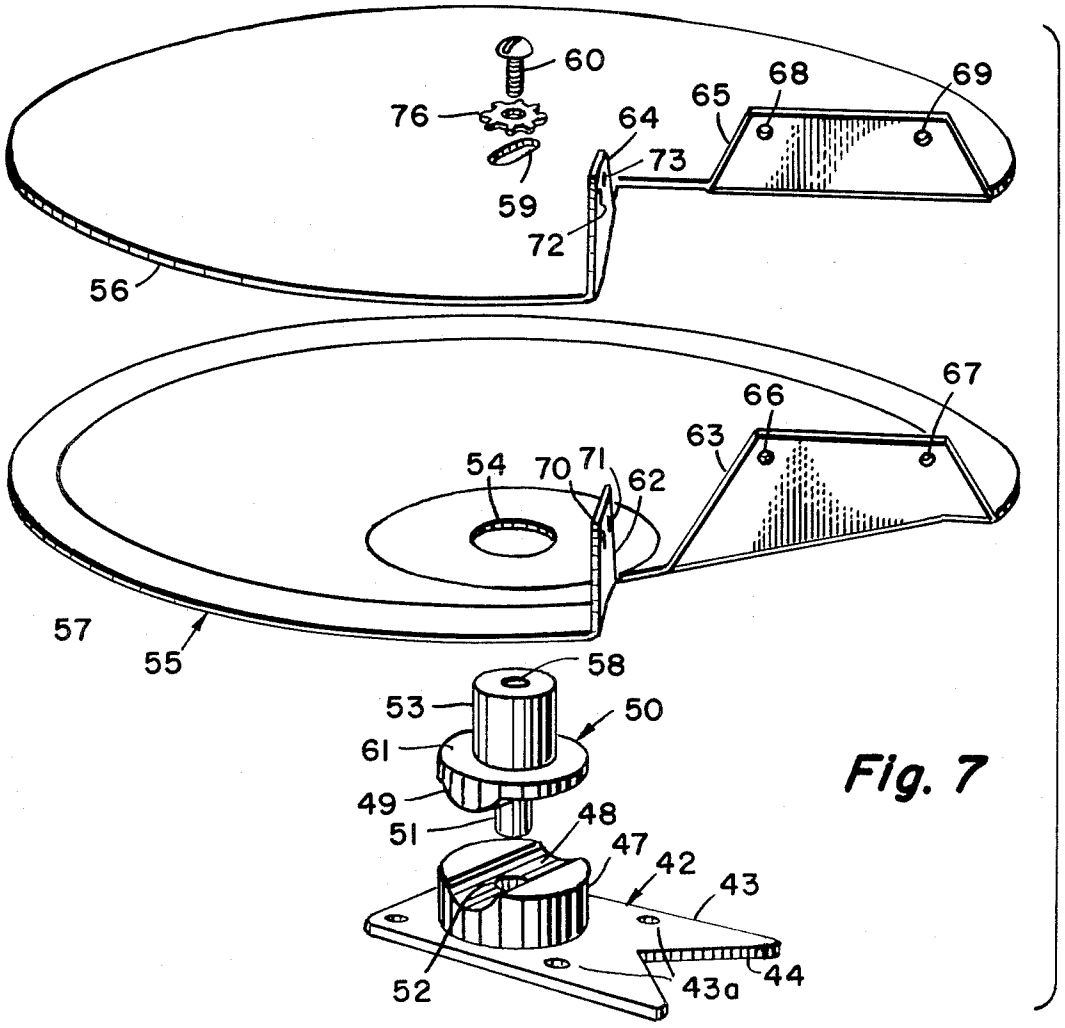


Fig. 7

ROTARY CABINET ASSEMBLY

BACKGROUND OF THE INVENTION

Cabinets extending along intersecting walls inevitably produce a corner space that is very difficult to utilize with fixed structure. Kitchen cabinets provide a common illustration of this problem, particularly when it is desirable to maintain the continuity of counter-top surfaces in the junction area. It is common practice to utilize this corner space by installing a rotary cabinet unit opposite an opening disposed in the intersecting planes defined by the outer surfaces of the cabinets at the vertical line of intersection. The opening thus extends from this line laterally for an equal distance along each of the frontal cabinet surfaces.

The rotary units are commonly installed opposite these openings for rotation on a vertical axis, and are usually provided with some sort of cam and follower means to establish a tendency for the rotor to align itself so that the closure panels are correctly placed in the cabinet opening. These cam arrangements have been designed either to utilize the effect of the weight of the rotor as a force urging a follower against a cam having contour in the axial direction, or a spring-loaded detent is used in bearing engagement against a cam oriented in any convenient direction.

Installations of this type are in such wide use that current development centers in the saving of cost in manufacture and installation. The components of the assembly must not only be installed easily in the cabinet structure, but must provide proper relative alignment without careful attention on the part of the installing workman. Since the closure panels of the rotary assembly are normally made by the manufacturer of the cabinet structure, with the hardware being supplied from a different source, the alignment problem is more severe than would be the case if the entire unit were produced under the control of a single manufacturer.

SUMMARY OF THE INVENTION

A rotary cabinet assembly is designed as a set of hardware components adapted for installation on cabinet structure which includes intersecting panels adapted for placement in an opening in the junction of the front cabinet surfaces. The closure panels not only function as a rotary door, but also as a beam having an angular cross section (on a horizontal plane) providing the structural strength of the rotor assembly. Upper and lower journal brackets are secured to this beam, and bearing brackets are installed in the upper and lower components of the cabinet structure. Both the journal and the bearing brackets are provided with means interfitting with the associated cabinet components for proper relative location of the vertical axis of rotation of the rotor. Interengaging cam and follower means are provided on lower journal and bearing brackets inducing a small vertical motion of the rotor as it revolves around its axis. The weight of the rotor is thus utilized as a means of placing the rotor with the closure panels properly located with respect to the cabinet opening.

DESCRIPTION OF THE DRAWINGS

FIG. 1 is a perspective view of the junction at the corner of intersecting cabinet installations, with the closure panels of the rotor unit occupying the opening in closed position.

FIG. 2 is a perspective view of the rotor assembly as it occupies the opening in the position shown in FIG. 1 showing the immediately surrounding fixed cabinet structure.

FIG. 3 is an exploded view on an enlarged scale showing the lower journal and bearing assemblies, and the associated cam and follower means.

FIG. 4 is a perspective view on an enlarged scale over FIG. 1 and 2, and illustrating the upper journal and bearing components.

FIG. 5 is a view on an enlarged scale of the retractable upper journal unit.

FIG. 6 is an exploded view of the components of the upper journal and bearing sections.

FIG. 7 is an exploded view showing the components of the lower journal and bearing sections, together with the lower shelf structure.

DESCRIPTION OF THE PREFERRED EMBODIMENT

Referring to FIGS. 1 and 2, the cabinet sections 10 and 11 extend along intersecting walls, producing a line of junction indicated at 12 of the outer cabinet surfaces 13 and 14. An opening in this junction area has portions indicated at 15 and 16 disposed in planes intersecting at an angle close to 90 degrees. The rotary shelf unit has intersecting panels 17 and 18 adapted to enter the junction opening. These closure panels are secured together at their junction to form a solid structural beam. The fixed cabinet structure includes a top 19 and a bottom 20 which the rotor assembly is positioned and supported.

The upper bearing bracket 21 has a base 22 normally secured to the corner block 23 of the fixed cabinet structure by screws as indicated at 24 and 25. The cone-shaped portion 26 of the bracket 21 is "drawn" from material integral, and originally coplanar, with the base 21. An inwardly-turned sleeve 27 forms the actual bearing. The base 22 has a "V"-shaped extension 28 adapted for interengagement with the junction of the frontal components 29 and 30 of the fixed cabinet structure for accurate location of the axis of the bearing 27 with respect to the junction opening.

The upper journal bracket 31 is provided with the opposite tabs 32 and 33 disposed in perpendicular relationship, with these tabs being received solidly against the closure panels 17 and 18, respectively, and secured by screws as shown at 35. The opposite extremity of the bracket 31 has upper and lower plates 35 and 36 provided with openings for slidably receiving the journal pin 37. This pin has a flange 38 limiting the upward movement of the pin 37 under the action of the compression spring 39. A knurled portion 40 on the pin 37 provides a handle that can be grasped to pull the journal pin 37 downward to disengage the journal 41 from the bearing 27. The installation of the journal 41 into the bearing 27 can be accomplished by using the conical surface 26 as a cam with respect to lateral forces generated by pushing the rotor assembly against the surface 26. This interaction will establish a tendency to retract the pin 37 to permit the entrance of the journal 41 into the bearing 27.

At the lower extremity of the assembly, the bearing bracket generally indicated at 42 has a base 43 provided with a V-shaped extension 44 for interengagement with the junction of the lower frontal components 45 and 46 of the fixed cabinet structure. The bases 22

and 43 are provided with holes 22*a* and 43*a* to receive screws securing these units to the cabinet structure. A bearing section 47 is secured to the base 43, and has an axially facing cam surface 48 engaged by the follower 49 secured to the rotor assembly to establish a tendency for the rotor to assume a closed position as shown in FIGS. 1 and 2. The unit 50 also functions as a journal bracket providing the journal extension 51 normally received in the bearing opening 52. A central cylindrical portion 53 on the bracket unit 50 is received within the opening 54 in the dish-shaped plate 55 of the lower rotor tray. This tray is completed by the presence of the flat plate 56, with the vertical extent of the cylindrical portion 53 being sufficient to extend across the distance between the plates 55 and 56 at the center of the assembly. The plate 55 is essentially conical in configuration, with a rim portion 57 bearing directly on the underside of the plate 56, and preferably spot-welded to it to form a rigid structure. The top surface of the cylindrical portion 53 extends only to the underside of the panel 56, with the central threaded hole 58 being opposite the elongated hole 59 in the plate 56. A screw 60 traverses the hole 59, and engages the threaded hole 58 to lock the unit 50 rotatively and within the range of lateral adjustment provided by the elongated hole 59. The opening 54 is sufficiently larger than the cylindrical portion 53 to accomodate this range of lateral adjustability. In the installed position, the shoulder 61 of the bracket unit 50 will bear against the underside of the conical plate 55.

The location of the journal bracket 50 with respect to the closure panels 17 and 18 is provided by the flanges 62–63 on the plate 55 and 64–65 on the plate 56. The flanges 64–65 bear against the outer surfaces of the flanges 62 and 63, with the inner surfaces of the flanges 62 and 63 bearing against the panels 17 and 18 to establish the locating function. The holes 66 and 67 of the flange 63 are in alignment with the holes 68 and 69 of the flange 65, and the holes 70 and 71 of the flange 62 are in alignment with the holes 72 and 73 of the flange 64. Screws as shown at 74 are installed through these aligned openings to secure the relative position of the components with respect to the panels 17 and 18. These screws also establish a solid transfer of stresses between the assembled panels 55–56 and the closure panels 17 and 18. Additional tray components of standard configuration as shown at 75 may be installed along the vertical extent of the panels 17 and 18 as desired.

The installation of the rotor assembly into the fixed structure of the cabinet is accomplished preferably by the retracting the pin 37 after the lower journal 51 has been engaged with the bearing opening 52. When the assembly has been thus completed, the lateral placement of the lower portion of the assembly, as well as the rotary position of the panels 17 and 18 with respect to the cam and follower system are secured by tightening the screw 60 against the lock washer 76, with attention being given to the proper lateral placement of the assembly within the junction opening in the cabinet. In the design of the panels 17 and 18, it must be noted that sufficient clearance should be established within the corner opening of the fixed cabinet structure to accommodate the vertical travel of the cam follower 49 with respect to the cam surface 48. With the usual weight to be expected, this travel will not normally need to be much in excess of an eighth of an inch.

I claim:

1. A rotary shelf and closure panel assembly for use in a corner structure having top and bottom panels and means defining two vertical faces of said structure extending between said upper and lower panels and at right angles to one another, each of said faces having an opening extending from the line of intersection of said faces and said means including upper and lower frontal components extending, respectively, across the upper and lower edges of said openings and projecting, respectively, below said top panel and above said bottom panel, comprising:

a pair of closure panels secured to each other along one edge and extending at right angles to one another, said panels substantially filling said openings;

a journal bracket secured to said closure panels adjacent the upper edges thereof and projecting therefrom along the bisector of the angle formed by said closure panels;

a first pin slidably carried by said journal bracket and projecting upwardly therefrom;

spring means biasing said first pin upwardly;

an upper bearing bracket having a base portion adapted for flush engagement with the underside of said top panel, one edge of said base portion being provided with a V-notch for engagement with said upper frontal components whereby said upper bearing bracket is precisely located relative to said openings, said upper bearing bracket also having a downwardly projecting truncated concial portion the lower end of which has a hole for receiving the upper end of said first pin and providing a bearing therefor;

a shelf assembly secured to said closure panels adjacent the lower edges thereof, said shelf assembly including upper and lower plates secured to one another at the edges thereof and spaced from one another at their center portions, the center portion of the lower one of said plates having an opening therein in vertical alignment with the axis of said fisrt pin, said lower plate having a pair of upturned flanges bearing against said closure panels, said upper plate having a pair of upturned flanges overlying said flanges of said lower plate, said shelf assembly including fastener means securing said flanges to one another and to said closure panels;

a lower bearing bracket having a base portion adapted for flush engagement with the upper surface of said lower panel of said cabinet structure, one edge of said base portion being provided with a V-notch for engagement with said lower frontal components whereby said lower bearing bracket is precisely located relative to said opening, said lower bearing bracket also including a bearing block projecting upwardly from said base portion and having a vertically extending hole aligned with the vertical axis of said first pin when said bearing brackets are in their mounted positions and a camming surface on the upper end thereof;

a second pin having a lower portion of a first diameter adapted for sliding and rotating engagement with said hole in said bearing block, an intermediate portion of enlarged diameter, the lower surface of which includes a camming portion cooperating with camming surface of said bearing block and an upper surface engaging the underside of the center

portion of said lower plate of said shelf assembly, and an upper portion of lesser diameter than that of said intermediate portion, said upper portion extending through said hole in said lower plate of said shelf assembly and engaging the underside of said upper plate of said shelf assembly; and

means to secure said second pin in non-rotating relation to said shelf assembly.

* * * * *

UNITED STATES PATENT OFFICE

CERTIFICATE OF CORRECTION

PATENT NO. : 3,868,156

DATED : February 25, 1975

INVENTOR(S) : Robert J. Vander Ley

It is certified that error appears in the above-identified patent and that said Letters Patent are hereby corrected as shown below:

Column 2, line 31 --20 which-- should be --20 between which--

Claim 1, line 42 --fisrt-- should be --first--

Signed and sealed this 17th day of June 1975.

(SEAL)
Attest:

RUTH C. MASON
Attesting Officer

C. MARSHALL DANN
Commissioner of Patents
and Trademarks

UNITED STATES PATENT OFFICE

CERTIFICATE OF CORRECTION

PATENT NO. : 3,868,156

DATED : February 25, 1975

INVENTOR(S) : Robert J. Vander Ley

It is certified that error appears in the above-identified patent and that said Letters Patent are hereby corrected as shown below:

Column 2, line 31 --20 which-- should be --20 between which--

Claim 1, line 42 --fisrt-- should be --first--

Signed and sealed this 17th day of June 1975.

(SEAL)
Attest:

RUTH C. MASON
Attesting Officer

C. MARSHALL DANN
Commissioner of Patents
and Trademarks