United States Patent

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[73] Assignee **Western Wood Mfg. Co.**
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[54] **SHELF BRACKET STRUCTURE**
5 Claims, 15 Drawing Figs.

[52] **U.S. Cl.** **248/243,** 108/108, 211/90, 211/134
[51] **Int. Cl.** **A47g 29/02**
[50] **Field of Search** 248/223, 224, 225, 235, 243; 108/108, 110, 109; 211/87, 134, 90, 148; 52/36

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Attorney—Buckhorn, Blore, Klarquist and Sparkman

ABSTRACT: A shelf bracket structure made of molded plastic material includes channel-shaped support strips which can be secured in vertically extending positions to a wall. Bracing elements extend across the channels and divide the channels into equally spaced elongated recesses in the back of the strips. An opening extends through the front wall of each strip into each of the recesses. Shelf brackets each have on one end an upper hook element received in one of the openings and a lower bracket-aligning projection received in the next lower opening. There is a lateral movement stabilizer for each bracket. In one form of the invention, the stabilizer comprises a pair of lugs on the rear of the strip between which the hook of a bracket slides. In another form of the invention, the stabilizer comprises a tang on the aligning projection, receivable in a narrow slot extending downwardly from each opening. Ends of the strips are formed to overlap each other and end elements cover exposed ends of the strips.

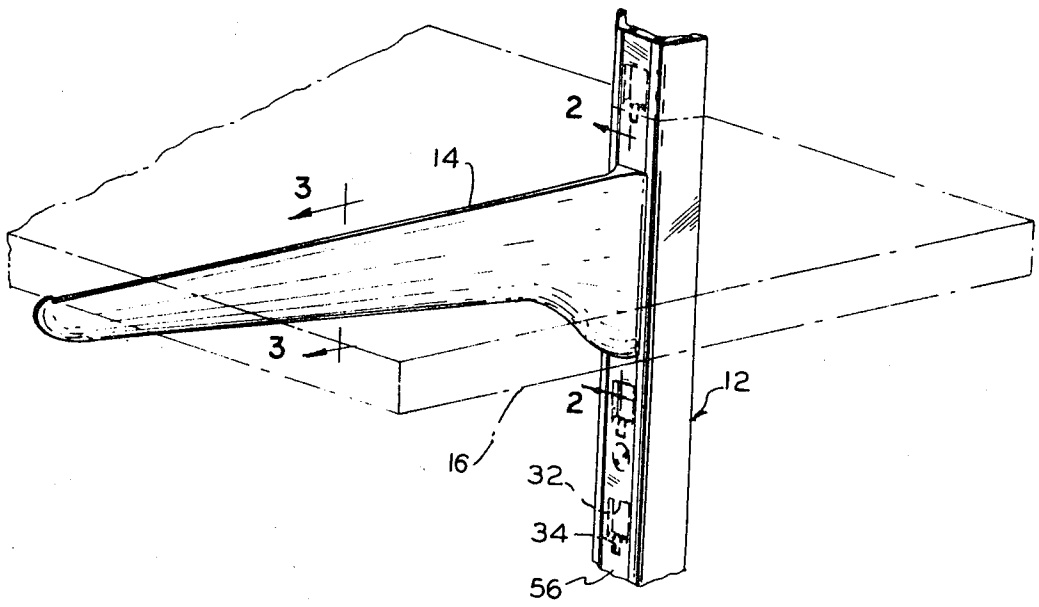


FIG. 1

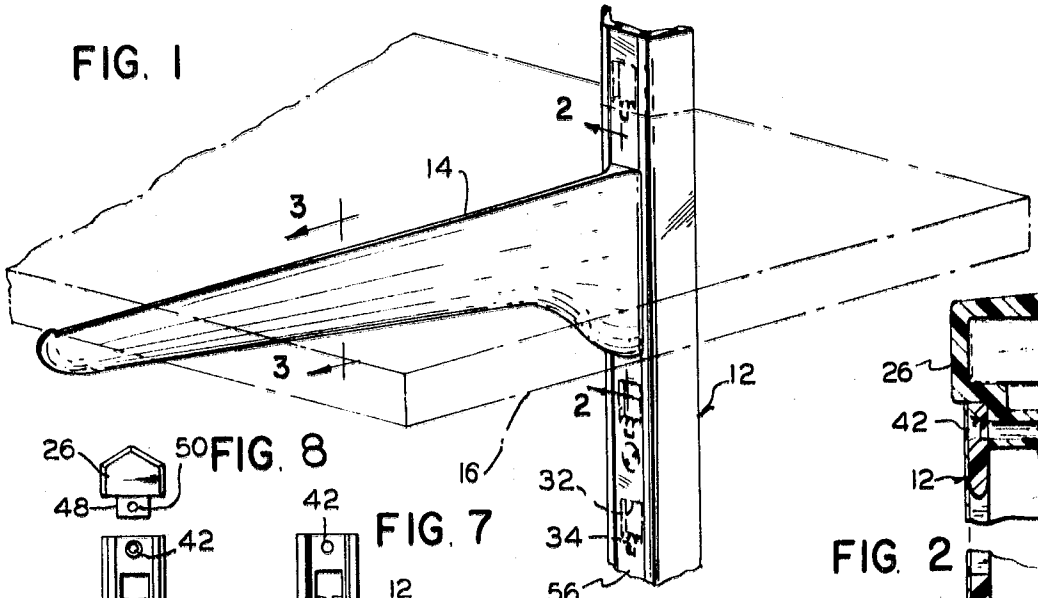


FIG. 8

FIG. 6

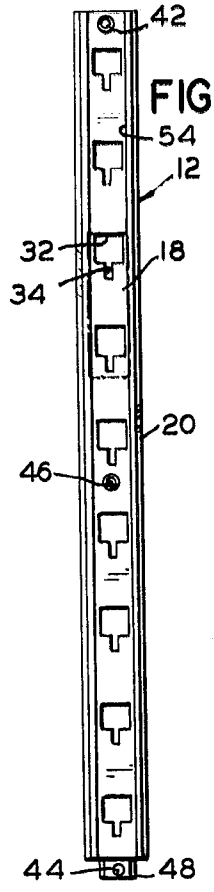


FIG. 9



FIG. 7

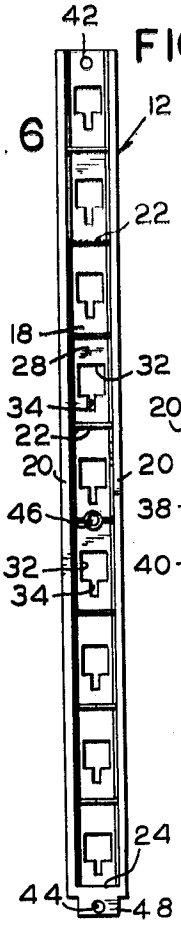


FIG. 5

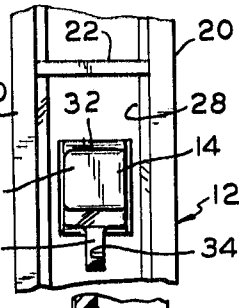


FIG. 10

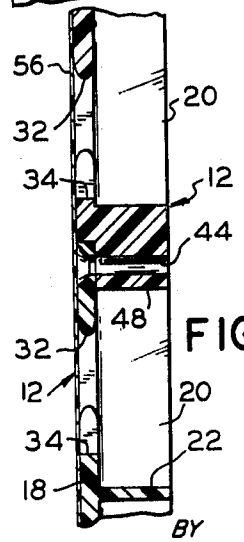


FIG. 3



FIG. 4

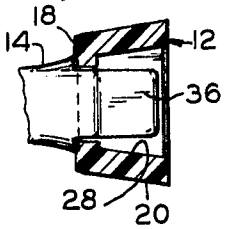


FIG. 2

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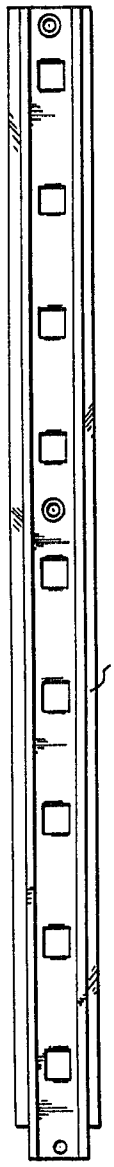


FIG. 11

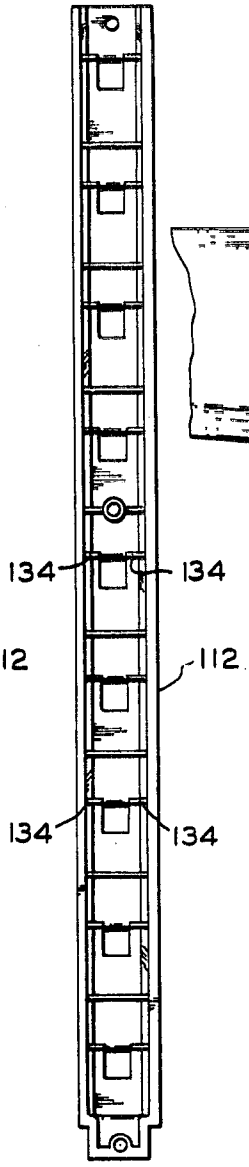


FIG. 12

FIG. 13

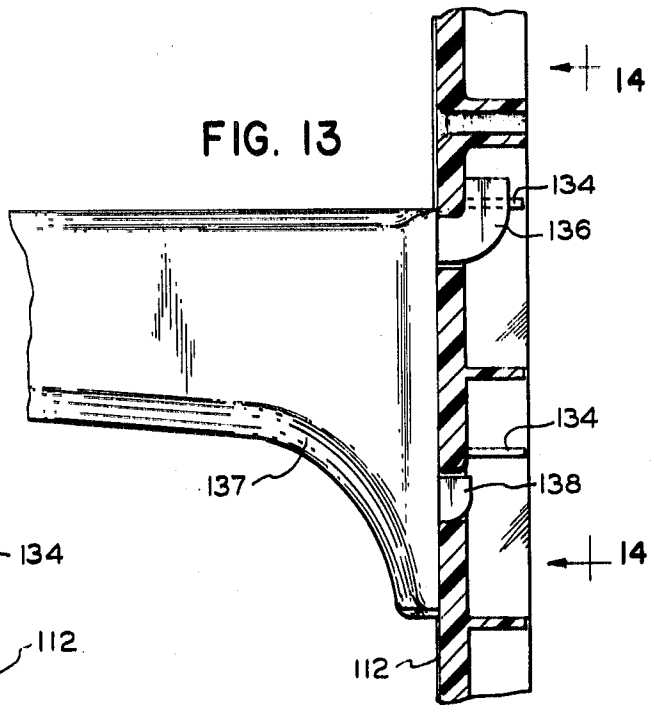
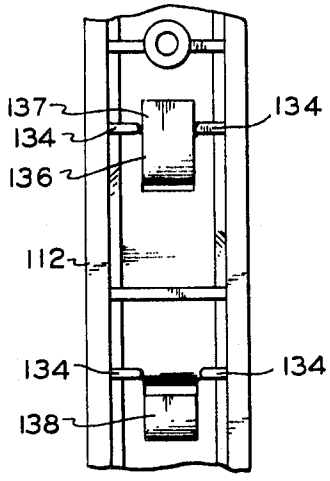


FIG. 14



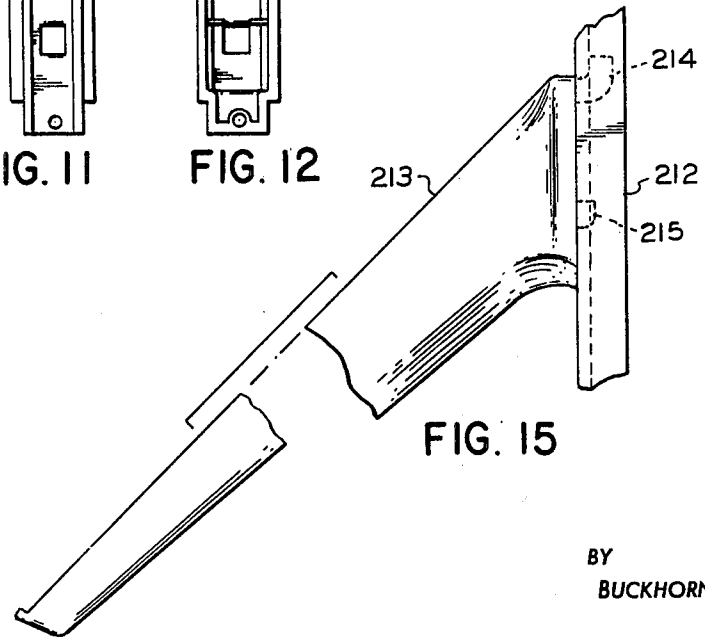


FIG. 15

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SHELF BRACKET STRUCTURE

BACKGROUND OF THE INVENTION

A considerable number of adjustable shelf bracket structures involving support strips which can be secured in vertically extending positions on walls or other vertically extending surfaces and shelf brackets having ends detachably connected to the strips at any one of a plurality of vertically spaced positions are commercially available. Such structures usually have been made of wood or metal, and in general have vertically spaced holes through the strips into which fastening elements on one end of the brackets are inserted, including an upper hook element inserted in one of such holes and a lower aligning projection insertable in the next lower hole.

Molded plastic structures can be inexpensively produced in attractive forms and provided with attractive surface ornamentation, for example, surfaces simulating finished wood surfaces. A number of such plastic materials have sufficient mechanical strength to be employed to form the bracket, if the hooked-shaped fastening element on such bracket has vertical and horizontal dimensions providing a cross-sectional area of sufficient size to take the stress to which the hook members are subjected. This requires holes through the support strips of sufficient size to receive the hook-shaped fastening member.

It is desirable to make all of the holes in strips of the same size and shape so that the hook member can be inserted into any of the holes and this in turn makes it desirable to make the cross-sectional area of the aligning projections of the same size as that of the hook elements. The resulting relatively large sizes of the fastening elements on the brackets and of the holes through the support strips make it difficult to hold the dimensions of these holes and fastening elements to sufficiently close tolerances so as to provide for ready assembly and yet restrict lateral wiggle of the brackets.

SUMMARY

In one form of the present invention, I provide a pair of stabilizer lugs for each opening to engage the sides of the hook of the associated bracket. In another form of the invention, the holes in the support strips have downwardly extending slot portions which are considerably narrower than the holes. Also the aligning projections on the ends of the shelf brackets are provided with downwardly extending aligning lugs fitting the slot portions. The narrow slot and the narrow aligning lug can be held to sufficiently close tolerances in the respective molding operations for the support strips and shelf brackets, that the lateral pivoting of the shelf brackets is substantially reduced. By making the support strips of channel formation with bracing elements extending across the channels and positioned between holes in the web members of the channels forming the front walls of the strips, the strips may be made of sufficient mechanical strength to support the shelf brackets and shelves while providing recesses behind the web members of the support strips for reception of the hook-shaped fastening elements on the shelf brackets.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 is an isometric view of a portion of a support strip for a shelf bracket with a shelf bracket in position on the strip and also showing a portion of a shelf in phantom view;

FIG. 2 is a fragmentary vertical section on an enlarged scale taken on the line 2—2 of FIG. 1, showing a portion only of the shelf bracket, and also showing added fragmentary vertical sections of upper and lower end portions of the support strip including upper and lower end elements for the support strip;

FIG. 3 is a vertical section through the shelf bracket on an enlarged scale taken on the line 3—3 of FIG. 1;

FIG. 4 is a fragmentary horizontal section on an enlarged scale taken on the line 4—4 of FIG. 2;

FIG. 5 is a fragmentary rear elevation of the support strip and an aligning projection on the shelf bracket viewed along the line 5—5 of FIG. 2;

FIG. 6 is a front elevation of the support strip partly shown in FIG. 1;

FIG. 7 is a rear elevation of the support strip of FIG. 6;

FIG. 8 is a front elevation of an upper end element for the support strip of FIGS. 6 and 7;

FIG. 9 is a front elevation of a lower end element for the support strip of FIGS. 6 and 7;

FIG. 10 is a vertical sectional view similar to FIG. 2 showing how the upper and lower ends of two of the support strips of FIGS. 6 and 7 can be joined to provide a resulting vertically extending support strip of greater length;

FIG. 11 is a front elevation of a preferred form of support strip;

FIG. 12 is a rear elevation of the support strip of FIG. 11;

FIG. 13 is a vertical midsectional view through a portion of the support strip in FIGS. 11 and 12, showing a modified form of bracket mounted in place on the strip;

FIG. 14 is a rear view of a portion of the structure in FIG. 13, taken in the direction of the arrows 14—14 of FIG. 13; and

FIG. 15 shows a modified form of bracket intended for supporting magazine shelves.

DESCRIPTION OF THE PREFERRED EMBODIMENT

A portion of a support strip **12** for a shelf bracket **14** with the shelf bracket in position on the strip is shown in FIGS. **1** and **2**. A portion of a shelf **16** in position on the bracket **12** is also shown in phantom view in FIG. **1**.

As most clearly shown in FIG. **4**, the support strip **12** is of channel form having a web portion or front wall **18** and sidewalls **20** forming the rear portion of the strip. Bracing elements **22**, also shown in FIGS. **2** and **7**, are spaced along the support strip. These bracing elements are integral with the front and sidewall of the strip and extend across the channel between the sidewalls. The bracing elements **22**, in conjunction with an end wall **24** of the support strip at the lower end of the support strip and an end wall provided by an upper end element **26** for the strip, divide the channel in the support strip into a plurality of recesses **28** in the rear portion of the strip. The upper end element **26** and a lower end element **30** provide finished ends for the support strip **12**.

Each support strip **12** has a hole **32** extending through the web element or front wall **18** into each of the recesses **28**. These holes and recesses are spaced equal distances along the support strip. In the specific embodiment shown in the drawings, each of these holes **32** includes a substantially square upper portion of a width which is a major part of the width of the web portion **18** of the support strip and which approaches the width of such web portion. Each hole **32** also includes a slot portion **34** extending downwardly from the square portion of the hole. The slot portion **34** is substantially narrower than the square portion of the hole **32** and has a width which is a minor portion of the width of the web element **18** of the support strip or the width of the square portion of this hole.

The rear end of the shelf bracket **14** has an integral hook-shaped upper fastening element **36** shown in FIGS. **2** and **4**, which is received in the square portion of a selected one of the holes **32**. An integral aligning projection **38** on the lower portion of the rear end of the shelf bracket has a substantially square body portion which is received in the square portion of the next lower hole **32** of the support strip. This projection includes a downwardly extending aligning lug **40** which is received in and fits the slot portion **34** of the hole **32**. This aligning lug is substantially narrower than the body portion of the aligning projection **38** and preferably has a width which is a minor portion of the width of such body portion. The dimension of the aligning lug **40** perpendicular to the web portion **18** of the support strip may also be substantially less than the length of the body portion of the aligning lug **40**.

The hook-shaped fastening element **36** must have a cross section of substantial area where it joins the body portion of the shelf bracket **14**. This requires that the holes **32** also be of substantial size. The body portions of the aligning projections

38 must also be of substantial width if they are to fit the holes 32. Tolerance problems in the molding operations for the support strips 12 and shelf brackets 14, however, made it necessary to mold the hook-shaped elements 36 and the body portions 38 of the aligning projections narrower than the holes 32. There results some looseness in fit of the elements 36 and 38 in the holes 32 allowing the shelf brackets 14 to wiggle or pivot laterally of the support strips to an undesirable extent.

By providing a narrow slot portion 34 extending longitudinally of the support strip from the square portion of the holes 32 and a corresponding narrow aligning lug 40 extending similarly from the body portion of the aligning projection 38, it was possible to hold the width tolerances of the slot portion and lug 40 in this small portion of the device sufficiently close that the sides of the aligning lug 40 will closely fit the sides of the slot portion 34 to thus restrict the extent of the lateral pivoting of the shelf bracket to an acceptable amount. Since the narrow aligning lug 40 is braced by being joined at one of its ends to the larger body portion of the aligning projection 38, this aligning lug has substantial mechanical strength.

The support strips 14 are provided with holes 42 and 44 in their upper and lower ends, respectively, as well as a similar hole 46 intermediate the ends of the strip for receiving wood screws or other similar attaching elements for securing the strips to a supporting surface.

The upper ends of the upper recesses 28 of each support strip 12 are open as shown in FIGS. 2 and 7 and each upper end element 26 has a downwardly extending projection 48 received in the upper recess 28. This projection has a hole 50 in alignment with the hole 42 in the upper end of the support strip so that an attaching element passing through the holes 42 and 50 also holds the upper end element 26 in position.

The lower end of the support strip also has a projection 48 containing a hole 44. The lower end element 30 has a recess receiving the projection 44 on the lower end of the support strip and is provided with a hole 52 which aligns with the hole 44 in the support strip to receive an attaching element holding the lower end element 30 in position.

FIG. 10 illustrates how the projection 48 on the lower end of a support strip 12 fits into the recess 28 on the upper end of another support strip 12 so that the holes 42 and 44 for an attaching element align with each other. This enables two or more of the support strips 12 to be easily attached to a supporting surface in vertical alignment providing a resulting support structure of greater length. The upper and lower end portions of the two support strips of FIG. 10 are of such lengths that the holes 32 adjacent the abutting ends of the strips 12 are spaced to receive the hook element 36 and aligning projection 38 of a shelf bracket so that the shelf bracket 14 may be supported along vertical support structures including one or more support strips 12 at vertical intervals equal to the distance between any pair of holes 32.

The support strip 12 has a shallow groove 54 in the front surface of the front wall or web portion 18 of the strip which is of less width than the width of the end of the shelf bracket 14 in contact with the front wall. In order to conceal the holes 32 in this front wall which are not covered by the shelf bracket, a thin cover strip 56 of material such as a strip cut from a sheet of polyvinyl chloride and having a film of pressure-sensitive adhesive on the back surface may be cut to length and inserted in the groove. This cover strip may have a front surface colored to correspond to the other surfaces of the support strip. For example, the exposed surfaces of the cover strip and of the support strip 12, as well as of the bracket 14, may be colored and textured to simulate the same type of finished wood.

FIGS. 11–14 show a preferred form of the invention. The strip 112 in FIGS. 11–13 is formed in the same manner as strip 12 of FIGS. 6 and 7, except that there is no stabilizer slot 34. Instead, a pair of stabilizer lugs 134 are molded into the rear of each strip just above each opening and are spaced to slidably receive the hook 136 (FIG. 13) of a bracket 137. This prevents undesirable wiggle of the bracket.

The bracket has a plain lower lug 138 (without a tang 40). The lower edge of the bracket has a single curve rather than a double curve as in FIG. 2.

FIG. 15 shows a strip 212 which can be like strip 12 or 112. A bracket 213 has a hook 214 and an aligning projection 215 to mount the bracket on the strip. The arm portion of the bracket is inclined downwardly at the proper angle to support a magazine shelf (not shown).

What is claimed is:

1. A molded, plastic shelf bracket structure comprising:
an elongated support strip for attachment in a vertical position to a supporting surface and having a front wall and rearwardly extending portions spacing said front wall from said surface,
said strip having a plurality of holes extending through said front wall and spaced uniformly along said strip,
a shelf bracket having a first projection in the form of an integral hook-shaped fastening element on the upper portion of one end of the shelf bracket extending through one of the holes,
a second projection in the form of an aligning projection on the lower portion of said end of the shelf bracket having a body portion extending through one of the lower holes in said front wall,
said bracket and strip having stabilizing means for stabilizing said bracket against unwanted wiggle,
said stabilizing means including a pair of lugs at the rear of the front wall and engaging the opposite sides of one of said projections.

2. The shelf bracket structure of claim 1 in which the recess at one end of the support strip has an open end and the other end of said support strip has a projection thereon of a size to fit said open end so that said projection on the other end of one strip may be inserted into said open end of another of said support strips to provide a resulting support strip of greater length,
and in which said one end of said strip and said projection on said other end of the strip have holes therein which are aligned when said projection on said other end of one of said strips is inserted into said open end of another of said strips.

3. A molded, plastic shelf bracket structure comprising:
an elongated channellike, support strip for attachment in a vertical position to a supporting surface and having a front wall and sidewalls spacing said front wall from said surface,
said strip having a plurality of holes extending through said front wall and spaced along said strip,
a shelf bracket having a first projection in the form of an integral hook-shaped fastening element on the upper portion of one end of one end of the shelf bracket extending through one of the holes and having an upturned hook portion,
a second projection in the form of an aligning projection on the lower portion of said end of the shelf bracket having a body portion extending through one of the lower holes in said front wall,
said strip having a pair of lugs extending from the sidewalls toward one another and engaging the opposite sides of one of said projections to stabilize said bracket against wiggle.

4. The shelf bracket structure of claim 3 wherein the lugs are positioned above the opening through which projects the hook-shaped fastening element and engage the sides of the hook portion.

5. The shelf bracket structure of claim 3 wherein the lugs are gussetlike and are integral with the front wall and the sidewalls.