

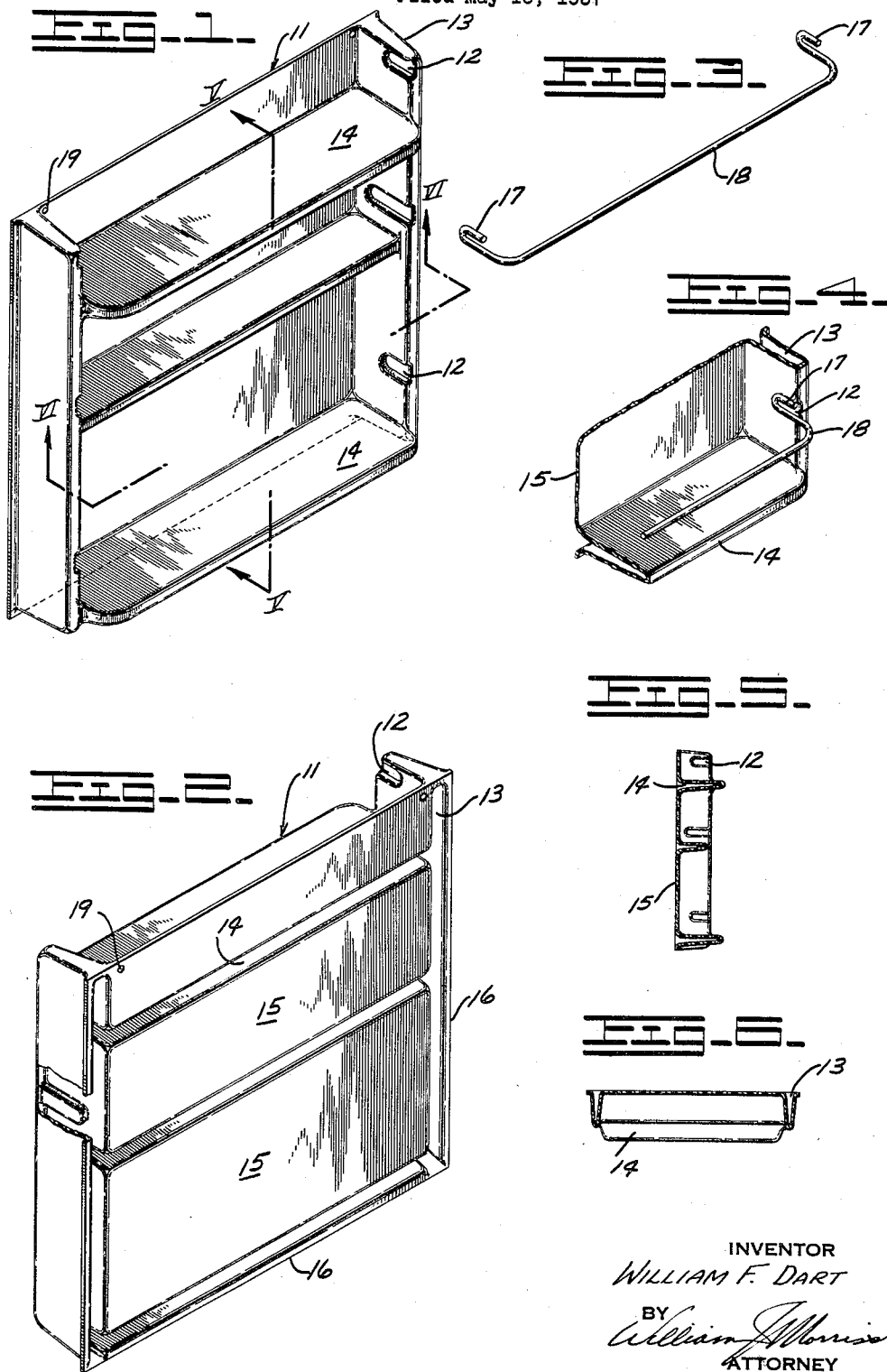
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WALL MOUNTABLE SHELF UNIT

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WALL MOUNTABLE SHELF UNIT

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This invention relates to a one-piece wall mountable shelving unit and more particularly to a hollow-walled shelving unit having guard rail retaining members and formed from a single sheet of stock so as to provide a stable, structurally strong, cheaply and easily fabricated, professional-looking shelf unit capable of being installed with a minimum of effort.

In recent years building construction activity, both residential and commercial, has and continues to increase at a fantastic rate. This surge of building activity has naturally placed a great premium on the services of carpenters and masons. In addition to the rise in labor costs, a commensurate increase has occurred in the cost of materials. Not only has it become mandatory to devise means of reducing costs while maintaining quality in the construction of new buildings, but the need for savings is equally as great in the field of remodeling and improving older buildings.

Over and above the problem of cost of labor and materials, another hindrance has arisen. The question of availability of labor and materials is today a very real problem. The majority of trained carpenters are employed by construction companies who utilize them in large scale new building or remodeling projects. A person desiring to hire a carpenter to construct a small scale item such as a shelf unit must be prepared to pay a premium price, if he can find a carpenter to take time to do it at all.

The third problem that arises in new construction is that of time. One of the most tedious and time-consuming portions of construction is that of finishing. A great amount of time is spent in preparing and building in shelving in new buildings.

In summary, the problems that confront the building industry and private home owner today are those of cost of labor and materials, availability of labor and materials, time delay in accomplishing the desired construction.

A need, therefore, has arisen for a shelving unit that has been pre-formed and is easily installed on any desired wall. Not only would such a unit release skilled carpenters for actual building construction work, but it would provide the average "do-it-yourself" home owner with the ability to improve his home by installing shelving units in his garage, workshop, bathroom, and kitchen. Not only is he provided with ease of installation, but the presence of a non-professional, shoddily-built shelf unit is avoided. In addition, the use of such a unit is particularly well received in the low cost prefabricated or volume produced development type home.

Finally, a need has arisen for a pre-formed unit that is structurally and integrally complete after forming. Such a unit needs no further fabrication or assembly to achieve stability or strength because, through its design it is, in effect, a self-supporting and pressure-distributing unit. No time is wasted providing such a unit with support members.

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It is therefore an object of this invention to provide a pre-formed shelving unit, that is easily mountable upon any desired wall.

A further other object of this invention is to provide a wall mountable shelving unit that is integrally formed from a single sheet of stock and yet is stable, structurally strong, and is capable of distributing any load it carries to the bearing wall.

A still further object is to provide a cheaply produced shelving unit that is provided with guard rail retaining members to retain articles placed on the shelves of the unit.

Another object is to provide a simple trouble-free structure capable of being mass produced and having the trim functionality of a professional installation when placed in use.

Other objects and advantages found in the construction of my invention will be apparent from a consideration of the following specification in connection with the appended claims and the accompanying drawings.

In the drawings:

Figure 1 is a front perspective view of the shelving unit showing the fillet-round edge construction and the guard-rail retaining notches.

Figure 2 is a rear perspective view of the shelving unit showing the pressure-distributing rear surfaces of the unit and the double-wall construction of the sides and shelves.

Figure 3 is a perspective view of the guard rail retaining member showing its bent-over ends.

Figure 4 is an enlarged break-away portion of the shelving unit showing a juncture of a shelf, a sidewall, and the guard rail member in place within a notch.

Figure 5 is a cross-section taken on line V—V of Figure 1.

Figure 6 is a cross-section taken on line VI—VI of Figure 1.

General description

In general, a wall-mountable self-sustaining shelving unit formed from a single sheet of stock or molded plastic is provided which can be easily and cheaply fabricated at a resultant saving in labor and materials. This unit has received wide-spread acceptance among wholesale distributors in the building trades who are of the opinion that it solves a long felt need in the mass-produced low-cost new home field and in the home-improvement do-it-yourself field. In the preferred embodiment, the shelving-unit is fabricated by vacuum-forming plastic sheet stock into a structure having hollow side-walls and shelves. The rear walls are of single thickness construction and lie flat against the supporting wall. In this manner, the hollow side walls and shelves are structurally strong due to the hollow construction. The single sheet plastic stock is pliable, resilient, and cannot be used as a support in its sheet state, but, much as a sheet of paper rolled into a hollow tube acquires structural strength due to the shape into which it is formed, so the shelving acquires structural strength. It will be noted that this cross-bracing action of the hollow horizontal shelves against the vertical hollow sides gives the entire structure torsional strength that insures stability during shipment and installation. In addition, the rear walls of the unit, pressing against the wall as they do, give the unit greater load carrying utility in that they act as pressure-distributing and dispersing means for the hollow structural members. This unique double-wall construction, wherein each juncture is accomplished by fillet-round edges, gives this shelving unit a solidarity that increases the utility of this invention.

An additional feature which gives the unit added utility is the incorporation of guard rail members above each

shelf as desired. In the preferred embodiment, notches are integrally formed in the inside walls of the hollow sidewalls slightly above each shelf. Guard rail members, having each end formed so as to provide a spring action when compressed slightly, are sprung into the notches. In this position, the guard rail members act as retainers to keep items, such as small bottles, on the shelf. This is particularly important when the shelved unit is to be mounted on a movable wall, such as the face or rear of a door or large cabinet. It will be seen as the description becomes more specific that the guard rail retaining members can be attached in other ways.

Specific description

The preferred embodiment of the present invention, as shown in Figure 1, is vacuum-formed from single sheet stock into a wall mountable shelved unit 11 provided with notches 12 integrally formed therein. The plastic utilized in the preferred embodiment is preferably of the high impact type polystyrene; however, other types of plastic may be utilized. It is contemplated that sheet metals such as aluminum, aluminum alloys or steel can be stamped to achieve the same desired structural form. The sides 13 of the unit 11 are hollow, as shown in Figure 2 and Figure 6, thus forming a double wall construction. The shelf portion 14 is also hollow and is integrally formed to merge into the side walls 13 and the rear walls 15, as shown in Figures 2 and 5. This positioning of the hollow shelves 14, hollow sides 13, and rear walls 15 provides a structure having a great amount of stability and strength that is not inherent in the raw material used in fabricating the unit. The rear walls 15 of the unit 11 are designed to fit flush against the wall on which the unit 11 is mounted. The outer edges 16 of the unit 11 fit similarly against supporting wall. The flush fitting position of the single thickness rear walls 15 and outer edges 16 not only provides added strength and stability, but provides, in addition, a pressure-distributing area to transmit the load carried on the shelves 14, directly to the wall on which the unit 11 is mounted.

This unique type of structural formation utilizing hollow double-wall construction has the further advantage of providing resistance to torsional stresses encountered during fabrication, handling, and shipment of the unit 11. The fillet-round construction on all edges and junctures gives additional strength to the unit 11. This is best illustrated in the cross section view of Figures 5 and 6.

The notches 12 are integrally formed on the inner face of the hollow side walls 13 and slightly above the hollow shelves 14. The break-away portion of Figure 2 shows the back of the integrally formed notches. The notches 12 are simultaneously formed during the vacuum-forming of the unit 11. The bent ends 17 of the guard-rail retaining members 18 are fitted into the notches 12 under a slight tension, as shown in Figure 4 and act to retain the contents of the shelf.

The guard rail retaining members 18 are preferably made from heavy gage steel wire and bent into the desired shape. However, they can also be cast or extruded utilizing any desired type of metal or plastic.

The snap-in feature of the guard-rail ends 17 into the notches 12 provides ease of removal when it is desired to clean the shelves 14 or wash the unit 11.

The unit 11 can be mounted on any wall by merely placing nails or screws through retaining holes 19 provided in the rear walls 15 as desired. Additional retaining holes may be provided in the rear wall, as desired.

Although a three shelf unit has been illustrated, it is contemplated that any size unit can be built having any desired number of shelves. Guard rail retaining members 18 can be provided for all, a selected number, or none of the shelves on a given model of the unit 11, as desired.

Operation

The wall mountable shelving unit 11 provided with guard rail retaining members 18 is flush mounted on any desired wall or door. The guard-rail retaining members 18 can be removed as desired in order to clean the shelves 14. The ends 17 of the guard rail member 18 are bent so as to be retained in the notches 12 under a slight tension. This tension can be varied by changing the degree of bend in the ends 17 of the guard rail members 18.

The use of guard-rail members 18 permits the mounting of the shelving unit 11 on a movable wall surface such as basement doors, cabinet doors, and garage or workshop doors. Articles placed on shelving units thus mounted and equipped will not fall when the doors are opened quickly or slammed shut.

The unit 11 can easily be mounted by any unskilled person who can use a screw-driver or a hammer. The unit 11 is held in the desired position while nails or screws are driven into the bearing wall through the retaining holes 19 provided in the unit 11. The ends 17 of the guard rail members 18 are adjusted as desired and the guard-rail members 18 are placed into the notches 12 provided on the inner faces of the side walls 13. The unit 11 is then ready for use. No skilled labor has been required and no construction debris has resulted.

Although the present embodiment of this invention has used notches 12 placed on the inside of the side walls 13, it is equally as operative to form the notches in the outside surface of the side walls. It is also possible to eliminate the notches entirely and provide a guard rail member that "clips" on to the side walls in any desired position as desired. Any means for providing and retaining a guard rail member for each shelf of the unit may be utilized.

Various modifications of the invention may be made without departing from the principle thereof. Each of these modifications is to be considered as included in the hereinafter appended claims unless these claims by their language expressly provide otherwise.

Having thus set forth the nature of my invention, I claim the following:

1. A wall mountable shelving unit formed of single sheet stock comprising: rear wall portions; hollow side walls extending outwardly from said rear wall portions and integrally formed therewith; a plurality of hollow horizontal shelves extending outwardly from said rear wall portions and integrally formed therewith, said hollow shelves contained between said hollow side walls and integrally formed therewith so as to cooperate with said rear wall portions and said hollow sidewalls to form a stable, structurally strong, weight carrying mountable shelved unit.

2. A wall mountable shelving retaining unit as claimed in claim 4 in which the hollow side walls are formed to have a plurality of elongated guard rail retaining notches on the inside face of said side walls and positioned so that they are proximate to and above the hollow shelves; and elongated guard rail members having ends formed so that said guard rail members may fit into said notches under tension and be retained in a plane horizontal to said shelves so as to prevent articles placed on said shelves from falling.

3. A wall mountable shelving unit formed of single sheet stock comprising: rear wall portions; hollow side walls extending outwardly from said rear wall portions and integrally formed therewith; a plurality of hollow horizontal shelves extending outwardly from said rear wall portions and integrally formed therewith, said hollow shelves contained between said hollow sidewalls and integrally formed therewith so as to cooperate with said rear wall portions and said hollow side walls to form a stable, structurally strong, weight carrying mountable shelved unit; guard rail members provided to co-

operate with said shelved unit so as to retain items upon said shelves; means to attach said guard rail members to said side walls so that one of said guard rail members is provided any desired distance above one of said shelves; and means to secure said unit to a wall.

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