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[56]

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[54] **DISPLAY UNIT HAVING INTEGRATED
CANTILEVER SHELVES**
5 Claims, 2 Drawing Figs.

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ABSTRACT: A display unit having substantially hollow cantilever shelves which are an integral part of a decorative support surface is provided for mounting to a vertically disposed structure such as a wall or studs.

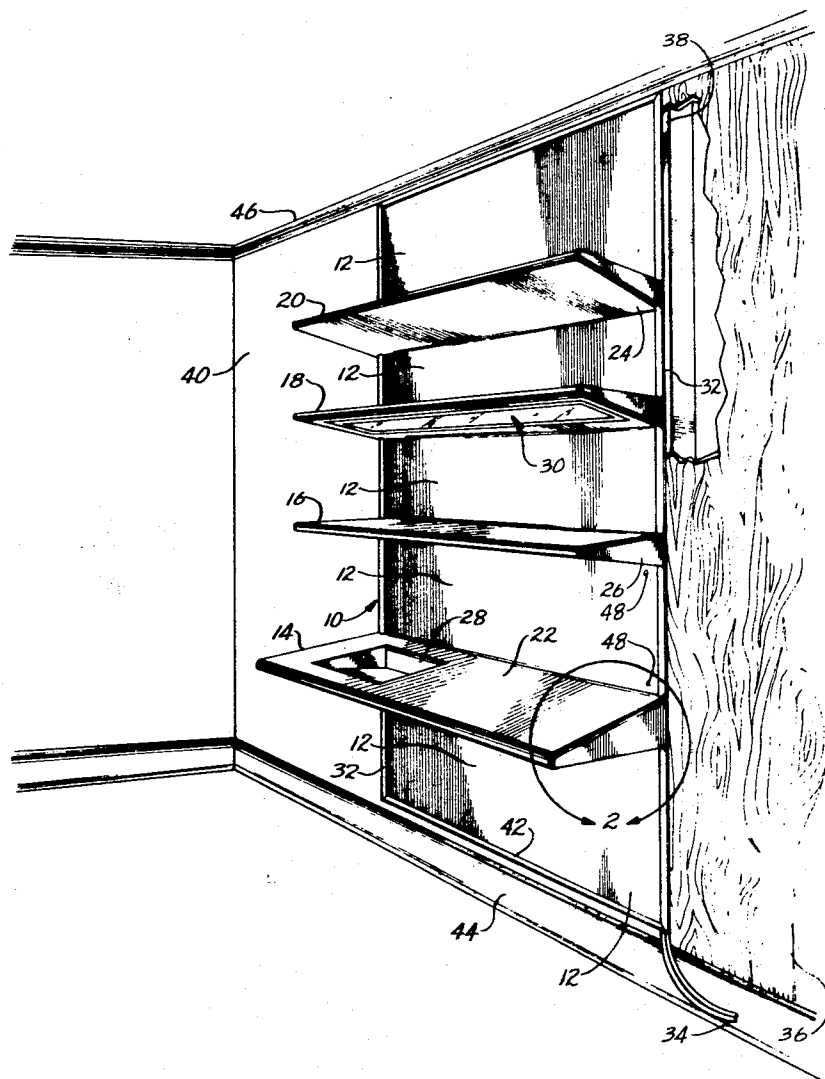


FIG. 1

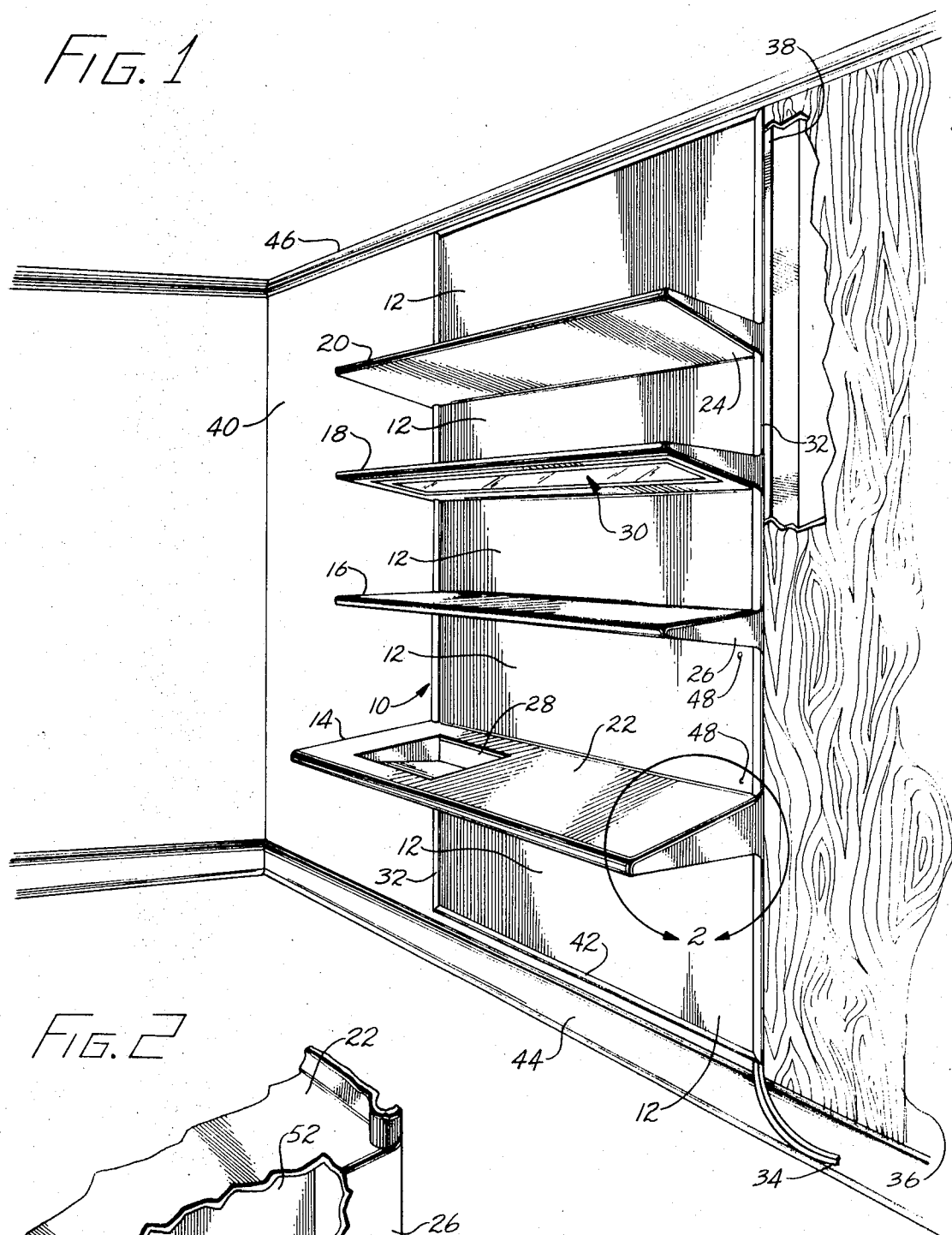
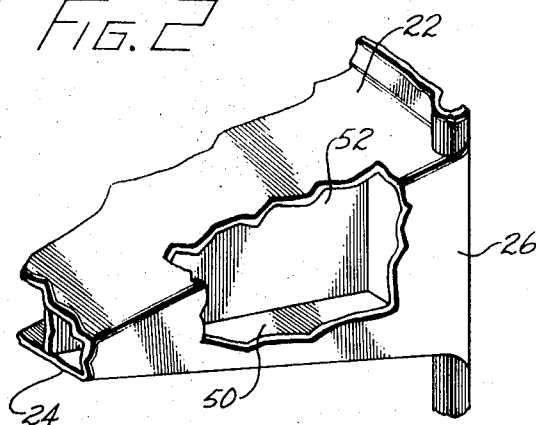


FIG. 2



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DISPLAY UNIT HAVING INTEGRATED CANTILEVER SHELVES

BACKGROUND OF THE INVENTION

The present invention relates to a display unit having substantially hollow cantilever shelves which are an integral part of a support surface for mounting to a vertically disposed structure such as a wall or studs.

Modular display systems having adjustable shelves, cabinets and the like, have become a popular means for displaying wares, books, objects d'art and the like in both commercial and domestic applications. Although such systems are, in theory, flexible, an inherent limitation exists in that at least one displayed object necessarily determines the spacing between any two display units of the system.

The hardware associated with modular systems is generally a perforated channel and interlocking brackets or support brackets which have been regarded as unattractive by many. To disguise their unattractiveness, they have been decorated with precious but costly woods, laminated precious wood back panels and the like. This increases the cost but does not truly eliminate the objectionable areas since the unused perforated portions of the channels are still visible. In addition, the more elaborate modular display systems are extremely expensive and many who desire to have a display system for semipermanent use, such as apartment dwellers, have avoided making the necessary investment in a system which may have a limited service life. The only inexpensive alternatives are the fairly naked hardware which the consumer recognizes will be undesirable in a more permanent residence.

SUMMARY OF THE INVENTION

According to the present invention, there is provided a one-piece shelf display unit having at least one substantially hollow cantilever shelf which is integrally a part of a decorative support surface that is mountable to a vertically disposed structure. The preferred unit contains a multiplicity of shelves typically spaced for a logical and aesthetic arrangement of both large and small objects.

The unit is, preferably, manufactured from a glass fiber reinforced resin which can be permanently decorated. Further, the unit may be dimensioned for compatible mating with adjacent units flush with wood panelling and stud supported wall structures. The unit is also fully adaptive for installation of lighting systems and allows for wiring to be concealed and for the installation of recessed objects in cutouts. It is particularly adaptive for low cost attachment to a supporting surface without defacement and for detachment from the supporting surface for movement to another area or locale.

DRAWING

FIG. 1 is a perspective view of the one-piece shelf display unit showing cutout installation of lighting and planters.

FIG. 2 is a cross-sectional cut of a portion of a shelf showing the substantially hollow construction of the cantilever shelf.

DESCRIPTION

According to the present invention there is provided a display unit in which at least one substantially hollow cantilever shelf is an integral part of a decorative planar surface suitable for mounting to a support structure. This unit which essentially eliminates all of the hardware associated with modular systems may be readily applied to a supporting surface and easily removed for use at another site.

With reference now to FIG. 1, a preferred unit of this invention 10 comprises self-supporting wall surfaces 12 which additionally serve as a wall covering and which have as an integral part thereof, shelves 14, 16, 18 and 20. Each shelf is substantially hollow and cantilevered. For any one shelf, the cantilever effect is created by the integral cooperating communication of an upper horizontally disposed surface 22, a lower disposed surface 24 and end walls 26. The very structure of

the shelves in cooperation with support surface 12 provides support for displayed articles such as books, vases, objects d'art and the like.

The substantially hollow cantilever shelves may be of any desired geometric configuration. Preferably, however, they are wedge-shaped as shown in FIG. 1, the wedge being provided by integral cooperating communication between surface 22, surface 24 disposed at a positive acute angle with respect to surface 22 and connecting wedge-shaped end walls 26 connecting surfaces 22 and 24. The shelves may, in addition, be of box construction (not shown) and to this extent the box may be sufficiently large and have open face and comprised of a horizontally disposed shelf surface 22, a horizontally disposed lower surface, and vertically disposed end walls 26. This would, in effect, provide a cantilevered, shelved hollow framework for the subsequent installation of doors and the like to form a cabinet whose upper, lower and sidewalls are an integral part of support surface 12. For display of magazines and the like, an angled shelf (not shown) may be provided having surface 22 disposed at a negative acute angle with respect to the vertical and end walls 26. An integral or externally attached lip would generally be added to support the lower edges of the magazines.

Only one shelf may be provided in accordance with the practice of this invention since supporting surface 12 is, itself, a decorative wall covering. Preferably, however, a group of integrally connected shelves are provided. More preferably, one of the shelves, such as shelf 14 of FIG. 1 has a greater horizontal width than the remaining shelves. This shelf is ideally suited for the display of large objects and ideally suited for the installation of a planting arrangement in cutout 28 in surface 22 of the substantially hollow shelf 14. Shelves 16, 18 and 20 are generally respectively positioned for the display of a variety of articles of varying sizes to meet a variety of tastes in the aesthetic presentation of objects. Where an object is to be ideally displayed with overhead lighting there may be installed in a cutout, overhead lighting fixture 30 in the under side of any one of the shelves as shown, or in the alternative, in a cut in upper surface 22 of any shelf for underlighting.

Although the unit 10 is sufficiently rigid for mounting to any vertically disposed support surface there is preferably provided essentially hollow channels 32 as an integral part of support surfaces 12 and preferably at the vertically disposed edges thereof. Channels 32 serve a dual function. As any one of the shelves are adaptive to provide a display lighting or a source of electricity such as a plug, channels 32 provide a convenient conduit for running the wiring to service the fixture or plug. The wires 34 may conveniently exit at the base of either one of columns 32 for connection with a conduit.

Because the unitary cantilever shelves structure of this invention can be fabricated from fairly thin but strong materials of construction without a sacrifice of load support, overall wall thickness may be substantially less than used in more conventional house construction materials such as plaster wall-board, wood paneling and the like.

Channels 32 may be suitably dimensioned for smooth butting with existing adjacent wall construction such as a wooden panel 36 when both are mounted to studs or equally well applied over an existing vertically disposed construction such as a plaster wall 40. In the former instance, although in a final installation, the support surfaces 12 are recessed, channels 32 allow flush communication with adjacent panels 36.

For both surface and recessed installation, unit 10 may be further provided with channels 42 which provide a picture frame molding around edges of unit 10. The unit is, as indicated, equally adaptive to mounting against a fully integrous support structure such as a plastered wall, paneling and the like. It may be mounted with or without channels 32 or 42 but their presence generally improves rigidity of wall 12 to allow attachment to a support means with a minimum of attaching means.

Attaching means may vary widely. There may be used nails, screws, toggle bolts and the like and in addition to an adhesive

surface applied to the back of supporting structure 12 as well as adhesive strips running vertically, horizontally, or otherwise along the back of supports 12. The adhesive may be permanent or temporary. Where mechanical means of attachment are employed the unit may be provided with indentations 48 used to suggest points of attachment.

The general dimensions of the shelf unit of this invention are not narrowly critical. However, it is ideally sized to allow installation against the supporting studs 38, spaced in accordance with local building codes and provide an exposed stud area for installation of adjacent wall covering including one or more butting units 10, spaced units 10 separated by paneling and gypsum board and like materials of construction or just one segment of a total wall covering. In the alternative, one or more units 10 may be applied in butting or spaced relationship to any existing wall surface permanently or temporarily.

The height of unit 10 may vary widely. Ideal heights, however, are those which will generally provide butting contact with conventional baseboard 44 and ceiling trim 46 to allow installation of any support structure without modifying unit 10 or trims 44 and 46 associated therewith. It may also, however, be fabricated in abbreviated heights for installation where there is to be provided exposed upper and lower wall surfaces.

A display unit of this invention may be fabricated of any material of construction adaptive for fabrication to one piece three dimensional structures. It may be, for instance, pressed from steel, aluminum, copper and the like and used as such or surface coated with paints, fabrics, decorative films and the like. Also within the ambit of this invention is construction whereby a planar back surface 12 is formed as a unit with cutouts into which lipped shelves are inserted and adhered or welded to support surface 12 and seams filled to provide net integral construction. One piece seamless construction is, however, preferred.

The preferred materials of construction are, however, structural thermoplastic and thermosetting polymeric systems. Illustrative but nowise limiting of polymeric systems there may be mentioned acetal resins, acrylic resins, such as methyl methacrylate, methyl methacrylate-styrene copolymers and the like; polycarbonates, polyethers, polysulfones, polyurethane; styrene polymers such as acrylonitrile-styrene-butadiene complexes; vinyl polymers such as polyvinyl chloride, polyvinyl acetate and like thermoplastics.

An illustrative, but nowise limiting of the thermosetting polymers which may be employed are epoxy resins, such as those based on bisphenol "A" and epoxidized cyclopentadiene, phenol-formaldehyde resins, diallyl phthalate resins, melamine-formaldehyde resins, phenol-furfural resins, resins, urethane resins and like thermosetting resins which have good structural properties.

For maximum strength, the resin systems preferably contain compatible reinforcing fibers such as glass fibers. There may be also included in the polymeric systems antioxidants, flameproofing agents and like materials for stability and safety. Ideally, there is also included colorants, decorative sheeting and like materials which will, when molded as an inherent part of unit 10, provide lasting aesthetic appeal. In the alternative, the unit, once molded, may be covered with an adhesively applied fabric or film such as vinyl film.

The units of this invention are manufacturable at a cost competitive with wall paneling and unlike most conventional display systems may be installed as a substitute wall covering with or without other wall coverings.

Wall thickness of the unit is not narrowly critical and may vary widely depending on materials of construction. Generally a wall thickness less than 0.25 inch is contemplated and for most applications generally from about three thirty-seconds to one-eighth inch.

Hollow shelf construction may be understood with reference now to FIG. 2 which is a section cut from shelf 14 of FIG. 1. Shelf construction consists of the upper surface 22 and lower surface 24 which are provided with cantilever function by end wall 26. The shelves are normally substantially hollow and provide an inner floor 50 for supporting objects inserted in cutouts or mounting lighting units.

Where it is anticipated that the objects will be extraordinarily heavy, with any one or more of the shelves the units may be provided with internal support ribs 52. Ribs also serve to provide convenient vertical plane to which a unit can be cut for corner mounting on a wall of limited width. In the alternative, the substantially hollow shelves may be filled with any media which may provide additional support or insulation.

For convenience in storage and consumer display, end sections 26 may be angled inwardly slightly to allow stacking of a number of units having hollow shelves.

What is claimed is:

1. A display unit for mounting to a vertically disposed support structure each unit comprising:

- a. a plurality of exposed planar surfaces adapted for mounting to a vertically disposed support structure, at least each of the outer vertically mounting edges of said planar surfaces each having an outwardly projecting integrally formed, substantially hollow, vertically disposed channel, said planar surfaces integrally formed with and spaced by:
 - b. substantially hollow wedge shaped cantilever shelves each shelf having:
 - i. an upper outwardly extending surface disposed at right angles to and merging into a lower edge of an adjacent planar surface;
 - ii. a sloped outwardly extending lower surface integrally connected to the upper surface along an outer edge thereof at an acute angle thereto and merging at the opposed end into an upper edge of an adjacent planar surface; and
 - iii. a pair of outwardly extending wedge shaped end walls integrally formed with said upper surface and said lower surface along the width of each of said surfaces; said display unit being of unitized construction.
2. A display unit as claimed in claim 1 in which the width of the lowermost cantilever shelf exceeds the width of the remaining shelves of said display unit.
3. A display unit as claimed in claim 1 which includes at least one shelf having an upper surface disposed at a negative acute angle with respect to one said planar surface.
4. A display unit as claimed in claim 1 molded from glass fiber reinforced resin.
5. A display unit as claimed in claim 2 molded from glass fiber reinforced resin.