

[54] **FURNITURE SUPPORTING SYSTEM**

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[56] **References Cited**

UNITED STATES PATENTS

619,417	2/1899	Hunter	248/245
3,436,050	4/1969	Tibbals	248/278 X
3,394,507	7/1968	Doke	52/36

FOREIGN PATENTS OR APPLICATIONS

527,310 3/1955 Italy 248/245

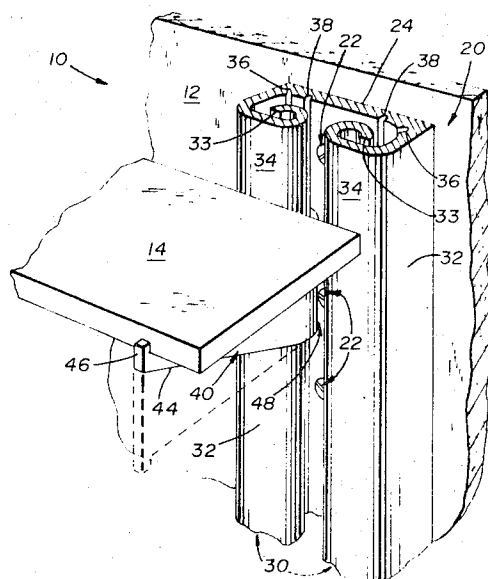
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[57] **ABSTRACT**

Bracket members and standards for hanging furniture elements from walls, the members and standards interengaging each other to permit the bracket members to be slid into an infinite number of vertical positions. Retention of the bracket members at any desired position is accomplished by loading the bracket member with a furniture element, the resultant binding between the bracket and standard being sufficient without the use of fasteners to retain said desired position. The bracket members are interchangeable between different modes of mounting the standards.

27 Claims, 4 Drawing Figures



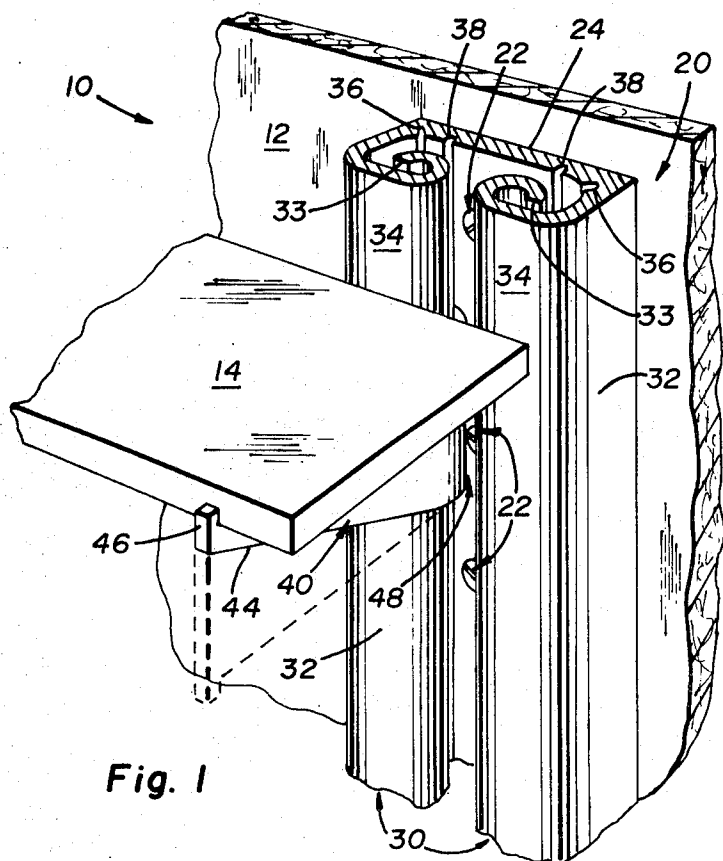


Fig. 1

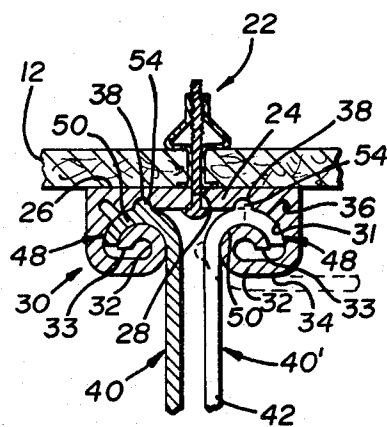


Fig. 2

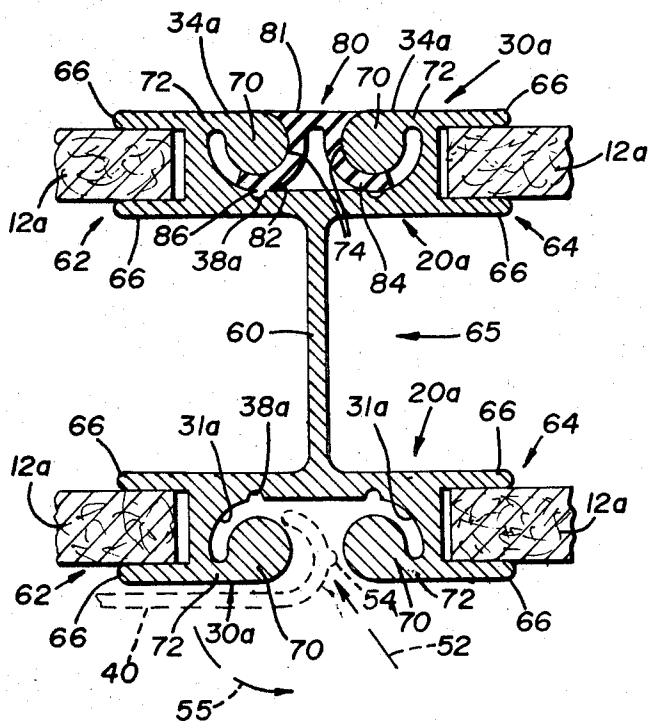


Fig. 3

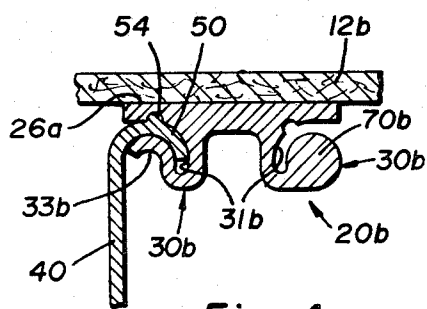


Fig. 4

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FURNITURE SUPPORTING SYSTEM

BACKGROUND OF THE INVENTION

A common method in modern wall construction for the support of various items of furniture is to provide in conjunction with the studs a bracket standard formed with vertically spaced slots for engaging the furniture supporting brackets or bracket members. See e.g. U.S. Pat. No. 3,429,090. Among other things, such construction suffers the disadvantage of permitting bracket members to be inserted at only predetermined discrete levels rather than at any level. Older systems of the types illustrated in U.S. Pat. Nos. 1,276,677 and 2,703,692 avoided this disadvantage by providing grooved standards within which bracket members could be slid. However, this system retained the bracket members at a given height by means of point projections on the members which were forced into the side wall of the standard. Not only did such projections add to the expense of the construction, they also had to be disengaged prior to changing the bracket member's elevation. The preferred manner of such disengagement was to pivot the bracket member upwardly, which of course could not be done while retaining articles on a shelf in contact with the bracket member. Thus, the item of furniture so supported had to be completely removed from the wall whenever a vertical adjustment was desired.

Yet another disadvantage of many, if not all, of the prior systems has been that the bracket and/or standard was designed for use in only one type of wall attachment. For example, the system shown in U.S. Pat. No. 3,429,540 is designed to be attached to a wallboard and not to any other elements of a wall construction such as the stud. Thus, if different wall mounting techniques are desired, an entirely different type of bracket and standard had to be used.

SUMMARY OF THE INVENTION

The disclosure relates to a bracket-type furniture supporting system which provides a simple vertical retention mechanism that permits an infinite number of vertical positions and is released merely by removing the load, but not the furniture, from the brackets. More specifically, there is provided a system comprising at least one bracket member having a vertically extending edge, a standard having at least one resilient member and means for binding at least the edge of the bracket member within at least the resilient member upon application of a load to the bracket member, the binding means providing the sole vertical retention of the bracket member relative to the standard.

Accordingly, it is an object of the invention to provide a furniture support system and components therefor, featuring brackets so constructed as to permit continuous, infinitely variable, vertical positioning of the brackets without having to completely disconnect furniture therefrom.

It is a related object of the invention to provide such a system wherein the bracket is constructed so as to retain its vertical position only by the application of a vertical load thereto so that cancellation of the load permits continuous vertical adjustment.

It is another object of the invention to provide such a system wherein the component parts are simplified in their construction and reduced in number, thereby reducing the cost of manufacture.

It is a further object of the invention to provide such a system wherein a variety of wall systems can be used to mount the same bracket.

Other objects and advantages will become apparent upon reference to the following drawings and detailed discussion.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 is a fragmentary perspective view of a furniture supporting system constructed in accordance with the invention, mounted at any position or location on a gypsum wallboard;

FIG. 2 is a fragmentary horizontal sectional view through the construction of FIG. 1, illustrating in addition a right-hand bracket vertically spaced from the left-hand bracket;

FIG. 3 is a fragmentary horizontal sectional view similar to FIG. 2, but illustrating an alternate embodiment of the standard; and

FIG. 4 is a fragmentary horizontal sectional view illustrating yet another embodiment of the standard.

DESCRIPTION OF THE PREFERRED EMBODIMENTS

The invention concerns the mounting of elements on various wall constructions by the use of brackets positioned within a standard at any desired vertical level. For convenience, the examples given illustrate furniture elements and particularly shelves, but it will be appreciated that the invention is not limited thereto. Rather, table tops, small desks, and drawer units also can be supported by the brackets of the invention, merely by the use of conventional fasteners to attach the furniture element to the bracket. Even elements such as electrical and plumbing fixtures can be mounted by the invention.

As used in this application, descriptions of orientations, such as "vertical" or "rear," apply to the members as mounted on a wall in their assembled orientation.

Turning now to FIGS. 1 and 2, there is shown a wall 10 constructed of conventional gypsum wallboard 12, from which projects a shelf 14 supported by the construction of the invention. In accordance with one aspect of the invention, the support is provided by a standard 20 mounted at any convenient vertical position by conventional expanding bolts 22, the standard in turn having engaged therewith and projecting therefrom brackets 40 and 40' which carry directly the furniture load. For convenience, bracket 40 will be designated in the left-hand bracket, as shown, while bracket 40' will be designated the right-hand bracket, as shown. The two brackets illustrate that they can be positioned at different, continuously variable vertical positions or heights, as will be further explained hereafter.

Turning specifically to the standard 20, this member of the construction comprises a body portion 24 having a back surface 26 (FIG. 2) against which the wallboard 12 abuts when the standard is assembled. To accommodate the fasteners 22 whereby the standard is fixed to the wallboard, holes 28 (FIG. 2) are drilled in the body portion 24. In accordance with another aspect of the invention, the body portion terminates with two resilient members 30 which are preferably spaced apart approximately the full width of the standard and extend

continuously the full length of the standard. The resilient member may be characterized as hooks 32 which generally spiral in upon themselves and curve toward each other, to mate with the brackets in a releasible, but load-binding, manner as described hereafter. The hooks thus are spaced from the standard so as to form a curved spiraling groove 31 (FIG. 2) into which the bracket members fit, the grooves in this embodiment curving outwardly away from each other. The inward spiralling of the hooks terminate at end portions 33 thereof. The hooks 32 must be provided with a flat exterior surface 34 to permit the insertion of the brackets, described below. To weaken the bending resistance of hooks 32 and thereby render the members 30 sufficiently flexible, a pair of vertically-extending grooves 36 may be formed, such as at the juncture of the members 30 with the body portion 24 as shown. A further pair of vertically-extending grooves 38 are also formed in the body portion of the standard to accommodate a complementary-shaped rib in the brackets. All of the vertical grooves preferably extend the full length of the standard to permit continuous vertical adjustment and an infinite number of heights at which the furniture elements may be mounted. Thus, taken as a whole, it will be immediately apparent that the standard has a longitudinally extending plane of symmetry centered within the body portion, the members 30 being mirror images of each other.

Turning now specifically to the brackets 40 and 40', these members are mirror images of each other, and accordingly the same reference numerals are applied without distinction as to right or left hand. Thus, each bracket is provided with an arm portion having a top edge 42 (FIG. 2), a bottom edge 44, a front hook 46, and a vertically-extending rear edge 48. The top edge and hook 46 serve to support and engage the shelf 14. The edge 48, which preferably extends from edge 42 to edge 44, is characterized by a hook 50 which is curved to form approximately one-half a loop, the radius of curvature of which mates with the radius of curvature of end portion 33 of the standard members 30. Each hook 50 is directed the direction in which the corresponding groove 31 curves. To preclude the bracket from being displaced laterally from engagement with the standard's members 30 by lateral forces, a rib 54 (FIG. 2) fixed to edge 48 extends the full length of hook 50 and projects outwardly therefrom away from bracket hook 46. The shape of the rib is shown as being semi-cylindrical, but any shape is acceptable as long as it complements the shape of groove 38 and can be forced thereinto.

Thus, it will be apparent that the bracket member can be inserted into the standard in the fashion indicated in phantom in FIG. 2. The bracket is caused to rotate from a position flush to surface 34, into one in which the hook is forced into the groove 31 until the rib 54 snaps into place within the notch on groove 38. The flat surface 34 of hook 32 is preferable for the initial insertion of the bracket hook. The resiliency of the hook 32, especially as aided by groove 36, permits hook 32 to be displaced horizontally due to the rib 54 being forced into groove 31 just before it snaps into place in groove 38. The fit of the rib 54 into the groove, and hook 50 into the resilient hook 32, is such that the bracket member can be caused with little effort to slide

vertically within the standard to any position, as long as substantially no vertical load is placed on the bracket. However, upon placement of a vertical load, such as furniture elements, upon the bracket, the vertical load, being disposed a horizontal distance from the support, produces a couple tending to cause rotation of the bracket 40. Such rotation is resisted by confinement of bracket 40 in groove 31. Horizontal components of reaction forces resisting rotation develop frictional resistance to vertical movement of the bracket. The magnitude of the resisting horizontal forces will be a function of the length of edge 48 as well as the magnitude of the load applied and its horizontal distance from the support. Thus for a given load to be applied at a given location, the length of edge 48 can be designed to accommodate the intended load and the strength of the materials used. The bracket is thus retained at its desired vertical location without the aid of fasteners or teeth projecting into the wall of the standard. Subsequently, the brackets can be moved to a new vertical location simply by cancelling out the vertical load upon them, and sliding them as desired.

Any number of brackets 40 and 40' can be mounted upon the same standard, to support similar or different furniture elements at different heights. If the slope of the bottom edge 44 is not required for aesthetic purposes, then bottom edge 44 can be a mirror image of top edge 42 as shown in phantom, FIG. 1. The result is that the same bracket can be used for the right-hand bracket 40 or the left-hand bracket 40', simply by turning it over. The result is to reduce the number of component parts and simplify the work of the person assembling the parts.

FIG. 3 illustrates an alternate embodiment wherein the standard has been modified so as to function, among other things, as a stud supporting the wall. Parts similar to those previously described bear the same reference numeral to which the distinguishing suffix *a* has been added. Thus, standard 20a has two resilient members 30a which are spaced apart approximately the width of the standard, and away from the body of the standard to form grooves 31a which curve away from each other. The same brackets 40 as in the previous embodiment are engaged within the members 30a, the rib 54 being snapped into grooves 38a as depicted in phantom by arrows 52 and 55 to prevent lateral displacement of the bracket member away from member 30a. In these respects, the embodiment of FIG. 3 is the same as the previously described embodiment. However, two standards 20a and 20a' are formed together with a connecting, vertically extending center web 60, and parallel tracks 62 and 64 extend from each side of the standards so that the standards become wall-supporting studs 65. That is, each track 62 and 64 comprises wall-supporting flanges 66 which accommodate therebetween the edge of a wallboard 12a. Yet another difference in the embodiment of FIG. 3 is that the resilient members 30a have been modified so that, instead of a hook, a full-sized bead 70 is provided. Such a construction has the advantage of permitting more ready extrusion than the in-spiralling construction of hook 32 of the previous embodiment. A further modification is the elimination of groove 36 used for weakening the member 30a, the groove 31a extending sufficiently far to give the connection 72 of bead 70 to the

standard sufficient resiliency to accommodate the rib 54a being forced into place in groove 38a. It will be readily apparent that these latter modifications to the resilient member 30a could also be applied to the previous embodiment shown in FIGS. 1 and 2.

Yet another feature which can be provided in conjunction with the studs 65 is the use of a decorative batten 80 if standard 20a' thereof, for example, is not to be used to support bracket members. That is, although bracket members 40 may be required in conjunction with standard 20a, they may not be in conjunction with standard 20a' on the opposite side of the wall. In that case, a batten 80 extruded or otherwise formed from a resilient elastomeric material may be forced into place, hiding the recess formed by the beads 70. The batten features a generally planar base 81 or other decorative shape and a pair of hooks 82 and 84 curved away from each other and having radii of curvature which match that of the surface 74 of the beads 70. As with the brackets, a rib 86 may be formed on hook 82 to snap into groove 38a, or it may be eliminated as on hook 84. The resiliency of the batten is such that the hooks 82 and 84 are readily bent sufficiently to be inserted between beads 70 until the external surface 81 thereof is flush with the flat faces 34a of the members 30a and the flanges 66. Alternatively, the batten can be extruded from aluminum, in which case the hooks 82 and 84 must be somewhat shorter in length to permit them to snap into the grooves 31a.

Turning now to FIG. 4, there is illustrated yet another embodiment of the standard wherein the resilient members thereof are positioned oppositely to the position they occupy in the embodiment of FIGS. 1 and 2. Parts similar to those previously described bear the same reference numeral to which the distinguishing suffix *b* has been added. Thus, standard 20b is mounted at its back surface 26a on a wallboard 12b by suitable fasteners, not shown, and has extending from its front face resilient members 30b, which can be either hooks 32b or beads 70b, or both. Unlike previous embodiments, the resilient members 30b face away from each other so that the grooves 31b formed by their spacing from the front face of the standard curve inwardly towards each other. The same bracket member 40 as used in the previous embodiments is mounted and can be slid, if not loaded, within the resilient members by means of hook 50 fitting within groove 31b, the rib 54 acting as before to prevent lateral displacement.

It will be recognized that the invention thus described has the advantage of using the same bracket members regardless whether the standard is mounted on the face of a wallboard, or is formed as part of a stud supporting the wallboard. Thus, considerable versatility is achieved.

Although the invention has been described in connection with certain preferred embodiments, it is not intended that it be limited thereto. Rather, it is intended that it cover all embodiments, equivalents, and arrangements as may be included within the scope of the following claims.

What is claimed is:

1. A furniture supporting system comprising at least one bracket member having a vertically extending edge, a standard having at least one resilient member, and means for binding at least the edge of the bracket

member within at least the resilient member upon application of a load to the bracket member, the standard and the bracket member being free of horizontally extending, interlocking projections, whereby said binding means provides the sole vertical retention of the bracket member relative to the standard.

2. The furniture supporting system as defined in claim 1, and further including means fixed to said edge for retaining the bracket member within the standard against lateral deflection.

3. The furniture supporting system as defined in claim 2, wherein said retaining means includes a vertically extending rib projecting from at least a portion of said vertically extending edge, the standard being cooperatively shaped to receive the rib therewithin.

4. The furniture supporting system as defined in claim 1, wherein the vertically extending edge is cooperatively shaped to mate with, and be slidably mounted in a vertical direction within said resilient member.

5. The furniture supporting system as defined in claim 4, wherein the resilient member and the vertically extending edge include interengaging surfaces curved to mate with one another.

6. The furniture supporting system as defined in claim 5, wherein the standard further includes a second resilient member shaped to mate with a bracket, both of said resilient members being provided with curved grooves therewithin, said grooves curving outwardly away from each other.

7. The furniture supporting system as defined in claim 6, wherein said resilient members each have a generally flat exterior surface for cooperation with said bracket members in the assembly of the same with the standard, and wherein said resilient members are spaced outwardly away from the standard and from each other, creating a gap between them which breaks up the appearance of a flat plane created by said flat surfaces.

8. The furniture supporting system as defined in claim 7, and further including a decorative strip having a generally planar, exterior surface and means for accommodating the strip within said grooves so as to position said planar surface generally flush with said flat surfaces, whereby said gap is covered from view.

9. The furniture supporting system as defined in claim 5, wherein the standard further includes a second resilient member shaped to mate with a bracket, both of said resilient members being provided with curved grooves therewithin, said grooves curving inwardly towards each other.

10. The furniture supporting system as defined in claim 1, wherein the standard includes at least one notch extending substantially the full length of the standard.

11. The furniture supporting system as defined in claim 10, wherein the notch is positioned so as to weaken the bending resistance of said resilient member, whereby its resiliency is increased.

12. The furniture supporting system as defined in claim 10, wherein at least a portion of said vertically extending edge projects into said notch so as to retain the bracket member within the standard against lateral forces tending to displace the bracket member laterally with respect to the standard.

13. The furniture supporting system as defined in claim 12, and further including a second notch within said standard positioned so as to weaken the bending resistance of said resilient member, whereby its resiliency is increased.

14. The furniture supporting system as defined in claim 1, wherein said resilient member extends continuously the full length of the standard.

15. The furniture supporting system as defined in claim 1, wherein said standard further includes a body portion having means for fixing the standard to a wall, said means including a back surface, said resilient member projecting outwardly away from the body portion and the back surface.

16. The furniture supporting system as defined in claim 15, and further including a second resilient member projecting outwardly away from said body portion and back surface, said one and second resilient members being spaced apart approximately the full width of the standard.

17. The furniture supporting system as defined in claim 16, wherein the standard has a plane of symmetry extending longitudinally through the body portion whereby said resilient members are mirror images of each other.

18. The furniture supporting system as defined in claim 1, wherein said standard further includes a wall-supporting portion, whereby said standard functions also as a stud.

19. The furniture supporting system as defined in claim 18, and further including a second resilient member projecting outwardly away from said wall-supporting portion, said one and second resilient members being spaced apart approximately the full width of the standard.

20. The furniture supporting system as defined in claim 19, wherein the standard has a plane of symmetry extending longitudinally through the wall-supporting portion whereby said resilient members are mirror images of each other.

21. A furniture supporting bracket member for use with a standard, comprising an arm portion having means for engaging furniture, and an edge portion, said edge portion being characterized by a hook, said hook having means for retaining the edge within the standard against lateral displacement, said retaining means including a rib fixed to said edge portion and projecting outwardly away from and extending along at least a portion of said edge portion away from said furniture-engaging means.

22. A standard for engaging and supporting furniture-supporting bracket members so as to project from a wall, said standard comprising a body portion having means for fixing the standard to the wall and at least one resilient member projecting outwardly away from said body portion, said member being characterized by an inwardly spiraling groove curved to accommodate a cooperatively shaped bracket, said groove being free of horizontally extending, bracket-engaging projections.

23. The standard as defined in claim 22, and further including a second resilient member projecting outwardly away from said body portion, said one and second resilient members being spaced apart approximately the full width of the standard.

24. The standard as defined in claim 23, wherein the standard has a plane of symmetry extending longitudinally through the body portion whereby said resilient members are mirror images of each other.

25. The standard as defined in claim 22, wherein said standard further includes a wall-supporting portion, whereby said standard functions also as a stud.

26. The standard as defined in claim 25, and further including a second resilient member projecting outwardly away from said wall-supporting portion, said one and second resilient members being spaced apart approximately the full width of the standard.

27. The standard as defined in claim 26, wherein the standard has a plane of symmetry extending longitudinally through the wall-supporting portion whereby said resilient edges are mirror images of each other.

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