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MODULAR WALL PANEL WITH SELF LOCKING DETACHABLE ARTICLE SUPPORTING BRACKETS

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FIG. 3.



FIG. 1.

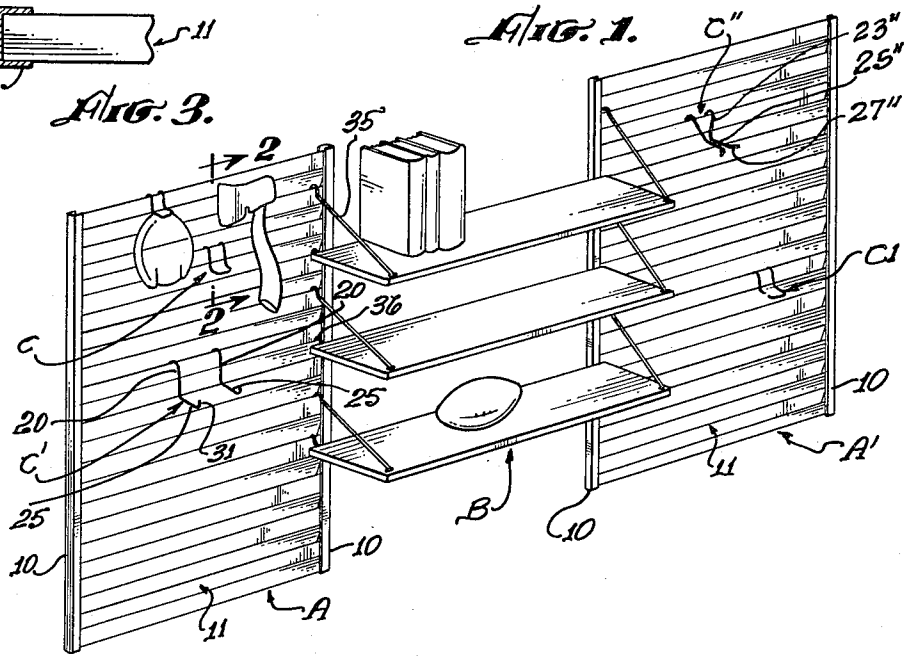


FIG. 2.

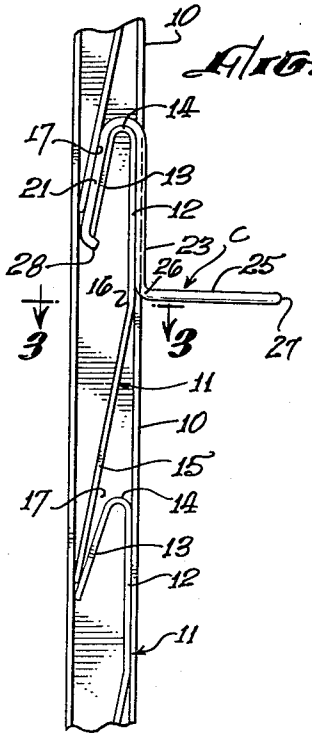


FIG. 4.

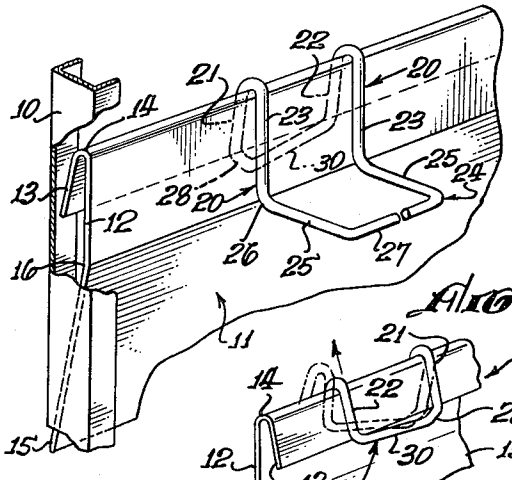


FIG. 5.

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MODULAR WALL PANEL WITH SELF LOCKING DETACHABLE ARTICLE SUPPORTING BRACKETS

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This invention relates to article-supporting apparatus of the general type exemplified by peg-boards, in which an apertured panel is adapted to be attached to a wall in a vertical plane and, in turn, to mount a plurality of article-supporting pegs, hooks or brackets in a large number of selective positions. The invention embraces the following objects:

(1) To provide an improved combination of apertured wall panel and supporting bracket having means for releasably locking the same to the panel with sufficient security to prevent accidental loosening or release from the panel.

(2) To provide such a combination wherein the support bracket, when locked to the panel, securely resists release in response to plain upward pressure against it but which is responsive to a twisting action about a horizontal axis normal to the panel, in a manner to be readily released from its locked attachment to the panel.

(3) To provide such a combination wherein the support bracket embodies two laterally spaced hanger hooks for suspending it from a wall panel, and wherein the wall panel embodies a plurality of horizontal support rails to be engaged by both hanger hooks so as to provide a stabilized mounting for the bracket, minimizing the tendency of the bracket to swing laterally about a single point of suspension.

(4) To provide a combination such as defined in the preceding paragraph, wherein the laterally spaced hanger hooks of the bracket are provided with locking means engageable with the back of a support rail in a manner to lock the bracket to the rail so as to resist upward displacement.

(5) To provide a wall panel for mounting a plurality of article-supporting brackets, embodying an improved structure providing a plurality of parellel, horizontal support rails defining between them a plurality of apertures in the form of extended horizontal slots in which hanger hooks of a plurality of article supporting brackets are receivable for attaching the brackets to the panel.

(6) To provide such an improved panel wherein adjacent support rails have overlapping resilient lips normally in contact or in substantially closed relation and adapted to spring apart to receive a hanger or hooks of an article supporting bracket.

(7) To provide such a mounting panel in combination with a supporting bracket which can be formed of wire, including a hanger hook for engagement between the yieldingly closing lips of the panel and with an article-supporting arm or arms projecting forwardly from the lower end of the bracket.

(8) To provide such a combination wherein the support bracket may be in the form of a wire yoke embodying laterally spaced hanger hooks having rear finger portions receivable between the retainer lips of the panel, one of said finger portions having a forwardly bent locking tip for engagement beneath the lower edge of a forward retainer lip, and joined to the end of the other finger by a diagonal bridge bar which exerts a wedging action to release the bracket from locked engagement with the retainer lip in response to a twist applied to the bracket in one direction of rotation.

Other objects and advantages will become apparent in the ensuing specification and appended drawing in which:

FIG. 1 is a perspective view of a desirable arrangement of mounting panels, book shelves bracket-supported thereon, and a plurality of article support hooks and brackets mounted in selected positions on the panels;

FIG. 2 is a fragmentary vertical sectional view through one of the panels taken on the line 2—2 of FIG. 1;

FIG. 3 is a fragmentary sectional view of one of the bracket-mounting panel rails and an associated support bracket mounted thereto, as viewed from above; and

FIG. 4 is a perspective view of a fragmentary portion of one of the mounting panels and support bracket mounted thereon;

FIG. 5 is a fragmentary perspective view of the same as viewed from the rear, a partially removed position of the bracket being shown in broken lines.

Referring now to the drawings in detail, and in particular to FIG. 1, I have shown therein, as an example of a typical wall panel installation embodying my invention, an arrangement of a pair of laterally-spaced mounting panels A and A', a plurality of book shelves B hung between these panels, and a plurality of article support brackets C mounted on the panels.

Each mounting panel comprises a pair of vertical frame bars **10** of rectangular channel section and a plurality of horizontal mounting rails, indicated generally at **11**, the ends of the rails being received and secured in the opposed open sides of the channels **10**. Each mounting rail **11** is of formed sheet material (e.g. metal), comprising a forward intermediate vertical web portion **12** and a relatively narrow resilient retainer lip **13** joined by an acute bend **14** to the upper margin of web **12** and projecting downwardly and rearwardly therefrom, in an inclined position, so as to provide an upper marginal portion of inverted V-channel section. Each rail **11** further includes a relatively wide lower retainer lip **15** joined to the lower margin of vertical web **12** by an obtuse bend **16**, the lower portion of lower lip **15** overlapping the rear side of the upper lip **13** of a next lower rail **11**, with its lower edge spaced slightly above the lower edge of the overlapping lip **13**, and engaging the latter with light yielding pressure when no hanger hook is interposed between the lips, as indicated in the lower portion of FIG. 2.

The vertical web portions **12** of the rails **11** have their respective ends secured, as by welding, to the inner face of the forward flange of a respective vertical frame bar **10**, thereby providing a rigid, fixed assembly of frame bars **10** and rails **11**. Hook-receiving apertures **17** in the form of horizontal slots are defined between the overlapping pairs of lips **13, 15**.

Article support brackets C, in a holster type as shown in FIGS. 2–4, are of formed wire, each comprising a pair of laterally spaced hanger hooks **20** including retainer fingers **21** and **22** on the rear sides thereof and downwardly extending vertical hanger arms **23** on the forward sides thereof. A support loop **24** projects forwardly on the lower ends of hanger arms **23** in a horizontal plane, said loop comprising laterally spaced parallel support arms **25** joined by respective integral bends **26** to the lower ends of hanger arms **23**, and aligned support fingers **27** bent at right angles to the respective arms **25**, with their ends in abutting or closely adjacent relation to substantially close the loop **24** on its forward side.

The retainer fingers **21, 22** are inclined downwardly and rearwardly in diverging relation to their respective hanger arms **23**, with an inclination corresponding generally to that of the retainer lips **13** of the hanger rails **11** as best shown in FIG. 2. Hanger finger **21** has at its lower end a forwardly bent locking tip **28** subtending an obtuse angle with its finger **21**. The forward extremity of locking tip **28** is joined to the lower extremity of hanger finger **22** by a tie bar **30** extending diagonally upwardly and rearwardly from the locking tip **28** to the

lower end of finger 22. Locking tip 28 is adapted to establish locking engagement with the lower edge of retainer lip 13 as best illustrated in FIG. 2, the length of hanger finger 21 corresponding to the width of lip 13. The other hanger finger 22 is of substantially the same length of finger 21 but it is joined directly to the tie bar 30 without any offset such as is provided by locking tip 28. Correspondingly, the lower end of hanger finger 22 does not establish locking engagement beneath the edge of retainer lip 13, although the bridging bar 30 extends diagonally beneath the lower edge of the lip 13 in closely spaced relation thereto.

Modified forms of the hanger bracket are shown at C' and C1 in FIG. 1. In bracket C1, the horizontal support loop has its gap located in one lateral arm thereof rather than in the front as in FIG. 4. In the bracket C' (a hook type), the laterally spaced support arms 25 terminate in upwardly hooked tips 31 and do not form a closed support loop. In this instance each of the support arms 25 can function as a separate supporting hook.

In the modified bracket C', the parts correspond to those of FIG. 4, as indicated by corresponding reference numerals, with the exception of the upwardly hooked tips 31 on the forward ends of arms 25.

FIG. 1 discloses another modified form of article hanger bracket at C''. This bracket is likewise the same except that the hanger arms 23'' make yielding, spring-loaded engagement with one another. The forward ends of jaw 25'' terminated in outwardly flared tips 27'' for guiding an article between the jaws 25'' and causing the jaws to spread.

While it is contemplated that the hanger hooks 20 of the bracket C' will embody the hanger fingers 21 and 22 joined by bridging bar 30 and offset locking tip 28 as in FIGS. 2–4, the hooks 20 could alternatively be separate, individual hooks not joined together and in that event each hook may be provided with a locking tip 28 on the end of its respective finger.

The book shelves B may be supported on the panels A, A' by respective long and short hanger hooks 35 and 36 respectively, hooked over vertically spaced mounting rails 11.

A support bracket, locked to a respective mounting rail 11 as in FIGS. 2–4, will normally resist upward displacement by the locking engagement of forwardly bent tip 28 against the lower edge of the retainer lip 13. However, when a twisting force is applied to the bracket (in a counterclockwise direction as viewed from the front in FIG. 4, or clockwise as indicated by the arrow when viewed from the rear in FIG. 5), the bridging bar 30 will move upwardly into camming engagement with the lower edge of retainer lip 13, and as the twisting force is continued, the point of engagement of the bridging bar 30 against the edge of lip 13 will travel toward the finger 21, the camming action gradually increasing and springing the finger 21 rearwardly until finally the point of camming engagement of bridging bar 30 against the edge of lip 13 will reach the forward end of locking tip 28, and the end of the locking tip will momentarily ride against the edge of lip 13. A slight further twist will cause the end of locking tip 28 to be released from the edge of lip 13, thus completely releasing the bracket 24 from the mounting rail 11. During the camming action of bridging bar 30 against the edge of lip 13 to effect release, the finger 21 will be sprung rearwardly to some extent, away from its opposed hanger arm 23, and at the same time the adjacent portion of retainer lip 13 will be sprung forwardly to some extent. The rearward springing of finger 21 will be transferred to the rearward retainer lip 15 and as a net result, the lips 13 and 15 will be spread apart sufficiently to permit the locking tip 28 to pass between them.

In the locked position of the bracket 24, the hanger fingers 21 and 22 will be clasped between the retainer lips 13 and 15 with a light yielding engagement (upper

portion of FIG. 2) which assists the locking action of tip 28 in retaining the bracket 24 against undesirable displacement.

The long continuous apertures 17 provide an unlimited number of positions for placement of the brackets C, C', etc. The panels A, A' have a louver-like appearance of improved effect as contrasted to the multitudinous round holes of a peg board. The ease with which article support hooks can be dislodged from their hooked engagement in the holes of a peg board is well known. This undesirable characteristic is eliminated in the present invention.

My improved wall panel and article hanger bracket structure can be installed as a decorative panel structure on the wall of a room as indicated in FIG. 1, or can be installed on the back side of a pantry or closet door, or between the studding of unfinished walls in a garage, or on suitable vertical frame supports in a store room or locker room where the panel themselves may constitute separating partitions between aisles or cubicles.

I claim:

1. In combination, a vertical wall panel comprising a plurality of horizontal mounting rails disposed in adjacent, vertically spaced pairs defining horizontal hook-receiving slots between them; and an article support bracket having a hanger hook adapted to be hooked over the upper margin of a selected mounting rail, said hook terminating in a retainer finger receivable in the respective slot defined between said selected rail thereabove, each bracket further including a cantilever support arm projecting forwardly from said hanger hook for supporting engagement with an article, said rails being of formed sheet material, each including an upper marginal portion of inverted chanel section embodying a forward web portion and a retainer lip behind the same and extending downwardly from the upper margin thereof; said hanger hook including a forward, downwardly extending hanger arm adapted to fulcrum against said forward web portion while said retainer finger abuts said retainer lip, said retainer finger having at its lower end a forwardly bent latch tip engageable with the lower edge of said retainer lip to lock the bracket to its mounting rail, and wherein said upper marginal rail portion is of V-channel section, said forward web portion being vertical and said retainer lip inclined downwardly and rearwardly, and wherein said hanger hook is of correspondingly V-shape.

2. In combination; a vertical wall panel comprising a plurality of horizontal mounting rails disposed in adjacent, vertically spaced pairs defining horizontal hook-receiving slots between them; and an article-support bracket having a hanger hook adapted to be hooked over the upper margin of a selected mounting rail, said hook terminating in a retainer finger receivable in the respective slot defined between said selected rail and the adjacent rail thereabove, each bracket further including a cantilever support arm projecting forwardly from said hanger hook for supporting engagement with an article, and wherein said rails are of formed resilient sheet metal, each including an upper marginal portion of inverted V-channel section embodying a forward web portion and an upper retainer lip behind the same joined thereto by an obtuse bend, and inclined downwardly and rearwardly from the upper margin thereof, each rail further including a lower retainer lip joined by an obtuse bend to the lower side of said forward web portion and inclined downwardly therefrom behind the upper retainer lip of the next lower rail in converging, lapping relation thereto and cooperating therewith to define a respective retainer slot and to grasp a retainer finger therein with a light, yielding retaining engagement.

3. In combination: a vertical wall panel comprising a plurality of vertically spaced parallel horizontal mounting rails of formed sheet material each including an upper marginal portion of inverted V-channel section embodying a forward vertical web portion and an upper re-

tainer lip joined by an acute dihedral bend to the upper margin of said web portion and inclined downwardly and rearwardly behind the same; and an article-support bracket comprising a pair of hanger hooks adapted to be hooked over the upper margin of a selected mounting rail, said hooks comprising forward vertical hanger arms adapted to fulcrum against said vertical web portion and rear retainer fingers engageable against the rear side of a respective retainer lip, a tie bar bridging between and adjoining the lower ends of said fingers, and cantilever article support arms projecting forwardly from the lower ends of said hanger arms.

4. The combination defined in claim 3, including a latch tip inclined downwardly and forwardly from the lower end of one of said retainer fingers and engageable beneath the edge of the respective retainer lip to latch the bracket to its supporting rail, said tie bar at one end being joined to the lower forward end of said latch tip and said tie bar being thereby disposed diagonally with respect to the ends of said fingers, so as to exert a camming action against said retainer lip edge, thereby to facilitate release of said latch tip from said retainer lip.

5. In combination: a vertical wall panel comprising a plurality of vertically spaced parallel horizontal mounting rails of formed sheet material each including an upper marginal portion of inverted V-channel section embodying a forward vertical web portion and an upper retainer lip joined by an acute dihedral bend to the upper margin of said web portion and inclined downwardly and rearwardly behind the same, each rail further including a lower retainer lip joined by an obtuse bend to the lower side of said forward web portion, inclined downwardly therefrom behind the upper retainer lip of the next lower rail in converging, lapping relation thereto and cooperating therewith to define a retainer slot; and an article-support bracket comprising a pair of hanger hooks adapted to be hooked over the upper margin of a selected mounting rail, said hooks comprising forward vertical hanger arms adapted to fulcrum against said vertical web portion and rear retainer fingers engageable against the rear side of a respective retainer lip, a tie bar bridging between and joining the lower ends of said fingers, and cantilever article support arms projecting forwardly from the lower ends of said hanger arms, said retainer fingers being engageable between said lapping retainer lips of an adjacent pair of mounting rails, with a light yielding engagement by said lips.

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