

Jan. 8, 1963

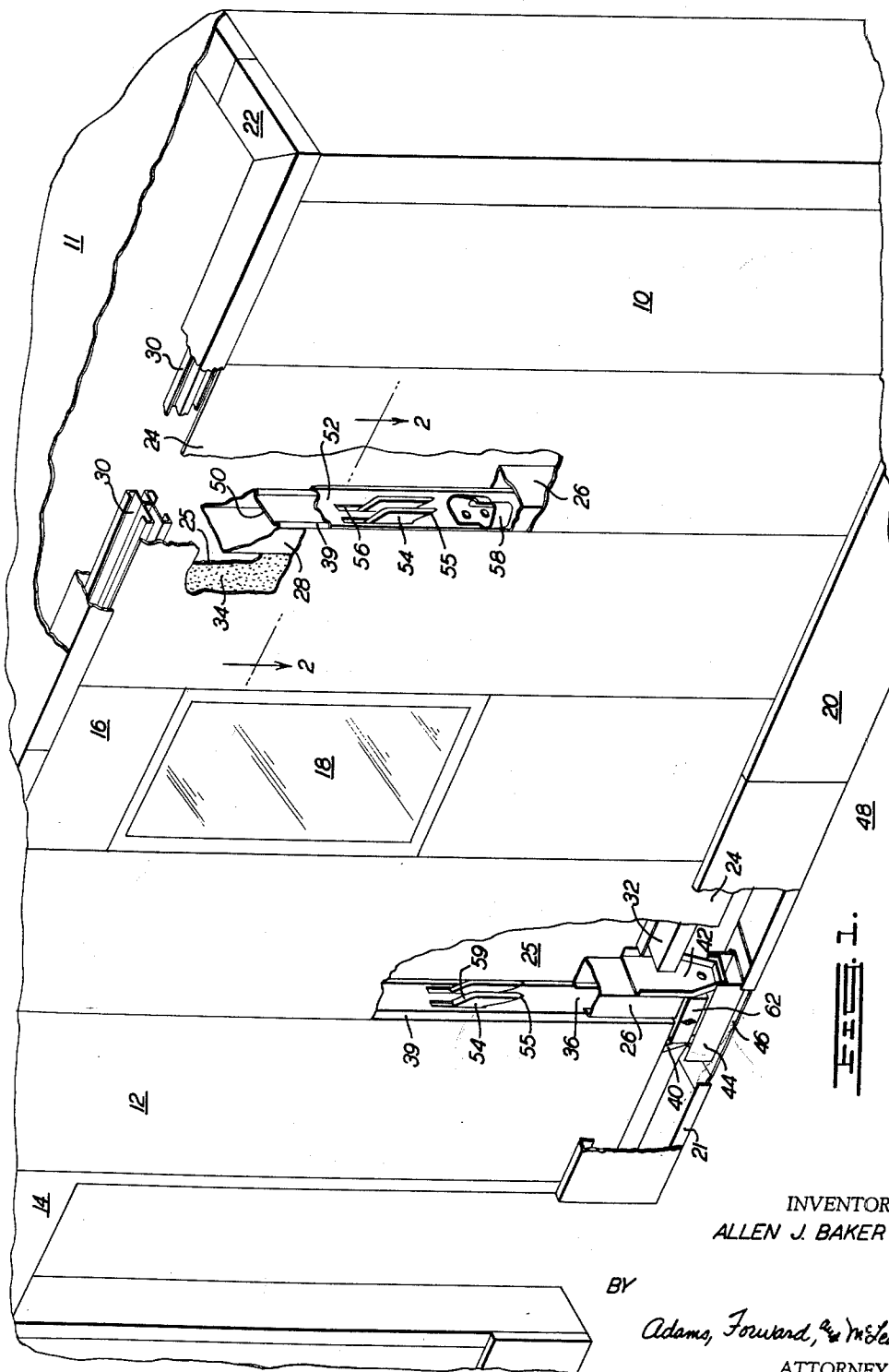
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MOVABLE PARTITION AND PANEL STRUCTURE

Filed June 18, 1959

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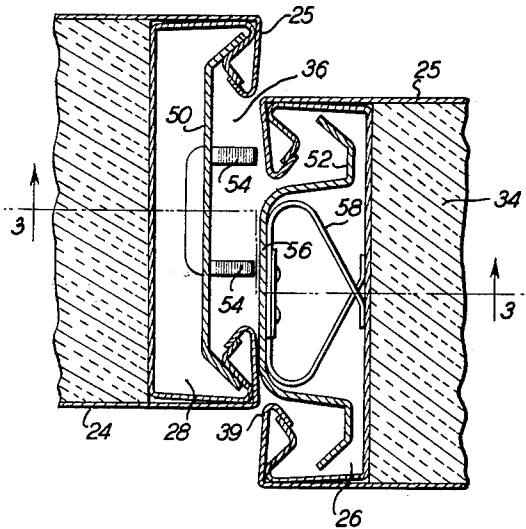


FIG. 2.

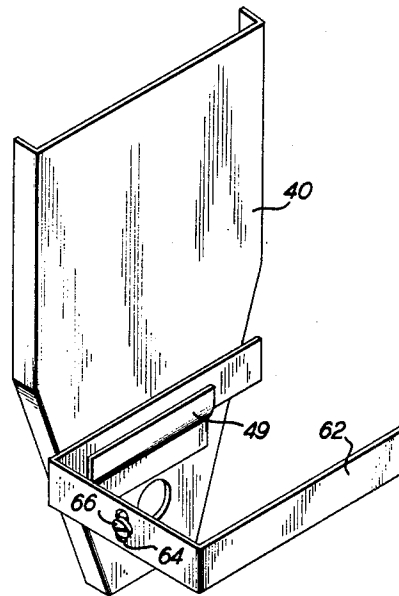


FIG. 3.

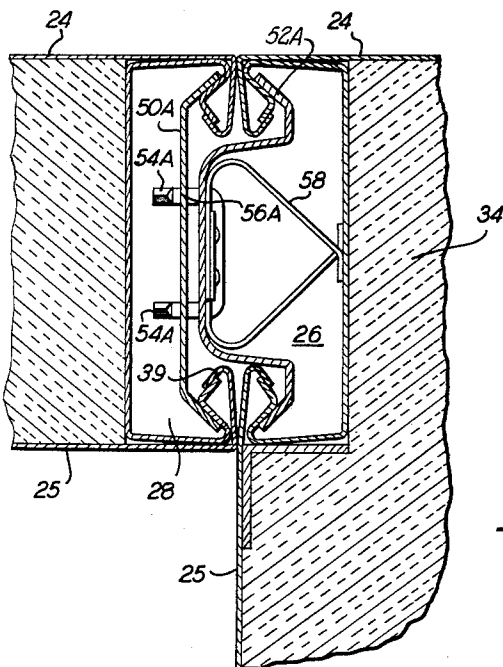


FIG. 4.

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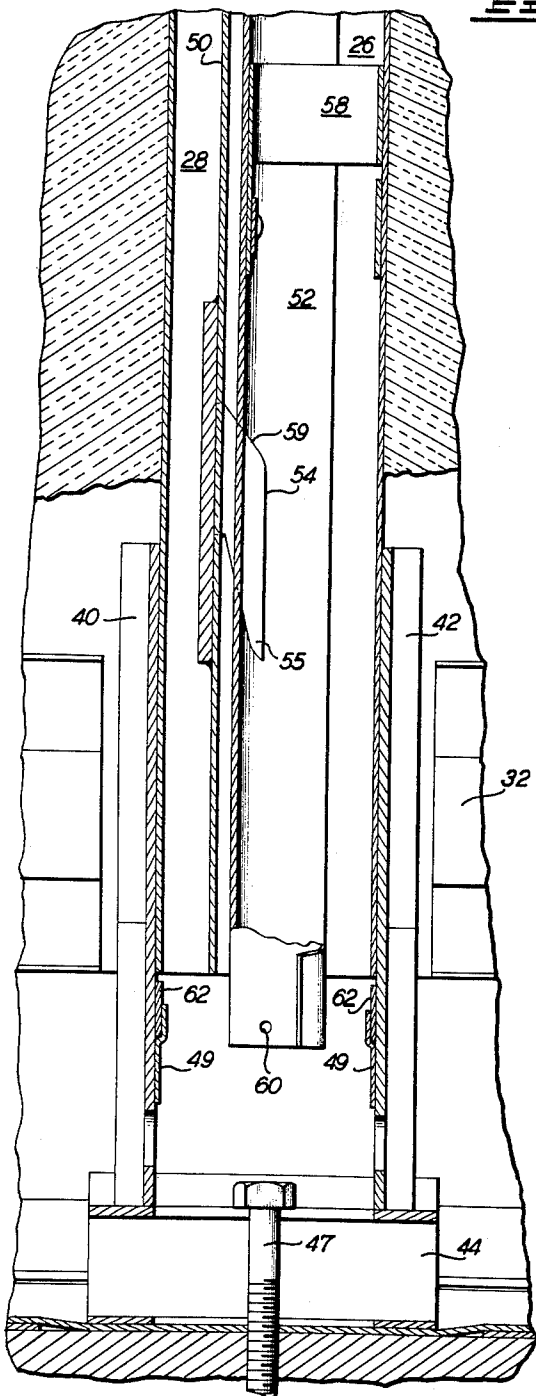


FIG. 1.

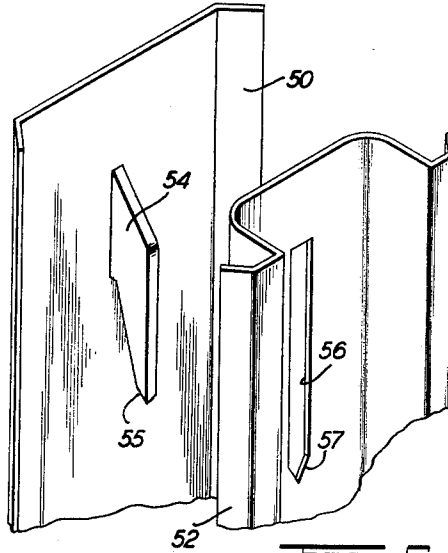


FIG. 2.

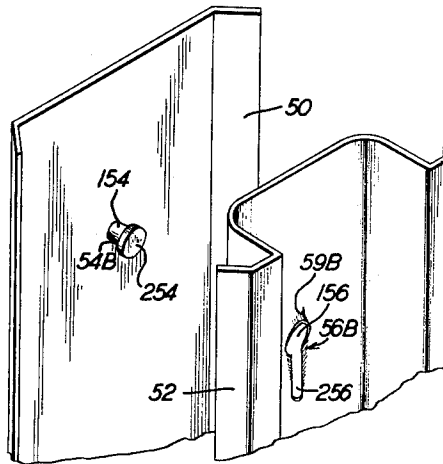


FIG. 3.

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## MOVABLE PARTITION AND PANEL STRUCTURE

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10 Claims. (Cl. 189—34)

This invention relates to a wall panel and a wall or partition assembly made of such panels which have novel engaging means for connecting adjacent panels. The engaging means at at least one abutment end of the panel is movable from a position of extension from the panel to a position of retraction to permit placing the panel between adjacent members of a partition. Preferably the panels are engaged by a combination of spring-biased action and vertical adjustment of at least one of the engaging means after adjacent panels are positioned together. The partition assembly of this invention uses panels which may present a finished wall on either side thus obviating the need for assembly of double panels, back to back. The assembly also obviates the need for any separate exposed pillars, thus saving on the installation and providing for panels to abut each other directly, presenting a cleaner appearance, that is, fewer abutment lines for the partition. A particular advantage of a partition assembly which uses the novel panel of the invention lies in the fact that the invention allows one panel to be removed and replaced without disturbing the other panels in the partition.

The invention will be better understood by reference to the accompanying drawings which are not to be considered as limiting the invention and in which:

FIGURE 1 is an isometric view, partly cut away, of a partition embodying this invention.

FIGURE 2 is a sectional view similar to a view along the line 2—2 of FIGURE 1, but showing adjacent panels out of alignment.

FIGURE 3 is a sectional view similar to a view along the line 3—3 of FIGURE 2, but showing the panels in an aligned position with the engaging means not fully engaged.

FIGURE 4 is a view of a modification showing a corner of the partition.

FIGURE 5 is an isometric detail of a stilt and clip combination which can be used to secure the engaging means.

FIGURES 6 and 7 are isometric details of the engaging means showing modifications of the coupling members or fasteners.

Partition 10 is made up of panels which are, usually, of a standard and uniform width and which may extend to the ceiling 11, or be of lesser height. The panels may be plain wall panels such as 12, or they may be the doorway panel 14, or the fenestrated panel 16, which contains the window 18. The partition is finished at the bottom by baseboard 20, which clips onto floor channel member 21 and which can conveniently be in sections of standard length, as may also be the crown molding 22, which finishes the partition at the top, covering the open space left between the panel and the ceiling.

A typical panel, in the preferred embodiment shown in the drawings is made of metal and comprises a front sheath 24, and a back sheath 25, which may be identical and which are mounted on stiles and rails. The sheath is preferably of sheet metal, but wood or other rigid material may be used. If only one side of the partition need be finished only one of the sheaths need be used. The preferred embodiment comprises left and right stiles 26 and 28, respectively, which define the ends of the panel. Top rail 30, part of which is cut away in FIG-

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URE 1 and bottom rail 32, only half of which is shown in FIGURE 1, combine with the stiles and the sheaths to enclose a space 34, which preferably is filled with a sound and/or heat insulating material, advantageously a non-flammable material like mineral wool or glass fibers. The rails may take any form desired which is sufficient to provide the needed strength in the material used. As shown in the drawings, each of the rails is made up of two, preferably identical, more or less U-shaped members. The members are fastened to front sheath 24 and back sheath 25 and thereby complete the closing of the space 34 at the top and bottom of the panel. Other forms, such as I-beams, as will appear obvious to those skilled in the art, may also be used as the rails.

Left-end and right-end stiles 26 and 28, are spaced inwardly from the side ends of the sheaths 24 and 25 and secured thereto to provide a longitudinal opening 36, at each end of the panel. It also may be observed that these stiles can themselves be identical, aiding the mass production of the panel assembly. Also, the edges of sheaths 24 and 25 are conveniently tucked around the stiles as at 39. Left-end and right-end stiles 26 and 28 are supported on the bottom by stilts 42 and 40, respectively, which may, if desired, be integrally made with the stiles or attached to the bottoms of the stiles as by welding or other conventional means. In the preferred embodiment shown in the drawings the stilts 40 and 42 seat in the saddle 44 which rests on the floor plate 46. The saddle may be rigidly and removably fastened to the floor 48, as by bolt 47, but preferably it is provided with an elongated aperture which permits sliding the saddle to the left or right when the bolt is loosened. As can be seen, a single saddle supports the right-end stilt and stile of one panel and the left-end stilt and stile of the adjacent panel. The saddles used in a partition may vary or be regulated in height through the use of shims (not shown) if the floor is uneven. In the preferred embodiment the outboard side of each stilt is provided with the clip-holder 49. This may be a flat metal member, for example, of steel, fastened to the stilt near its bottom or lanced and formed from the stilt.

The stiles contain the engaging members 50 and 52, the lateral edges of which are held or biased against the stiles across the opening 36 in the completed assembly. The engaging members in effect present a key and a keyway respectively, so that when engaged they form a spline to prevent movement of the panels transverse to the plane of the assembled partition. The engaging members of adjacent panels face each other through the opening 36 in the adjacent ends of neighboring stiles; thus, the left-end member of one panel engages the right-end member of the adjacent panel to its left. As shown, the engaging members comprise a pair of slats 50 and 52. Slat 50, secured against movement in the right-end stile 28 of a panel, is female, but may, of course, be flat or of other configuration, while slat 52, held in the left-end stile 26 in a manner to permit movements in the vertical direction as well as horizontally in and out of opening 36, is male. As shown, the male slat preferably is tapered from front to rear to aid in assembling and disassembling the partition. The spline is formed by a pair of coupling members which in the preferred embodiment are the hooks 54, which are borne by one slat and the slots 56 borne by the slat in the adjacent stile. Either or both of the slats may be resiliently mounted and either or both of them may be capable of vertical movement. It will be noted that the stiles are open at their top and bottom as well as at the longitudinal opening 36, so that the slats may be easily inserted or detached from their stiles and may be replaced by other slats or interchanged with each other without affecting the basic structure of the panel and support. This allows

a panel to be reversed in the partition assembly quickly and easily; for example, a doorway panel may be easily reversed to provide a door that opens out from a room instead of into a room.

One of the slats, preferably the male slat, must be capable of moving from a position of retraction within its stile to a position of extension from the side of the panel. The slats advantageously are made of a material which is somewhat flexible, such as a relatively thin-gauge steel, so that the completeness or incompleteness of locking engagement of a set of coupling members along the length of the spline will not dictate the degree of locking engagement of other coupling members along the length of the spline.

In the embodiment of FIGURES 1, 2 and 3, female slat 50 is provided with hooks 54 which point downward and male slat 52 is provided with the slots 56. In the embodiment of FIGURE 4, female slat 50A is provided with the slots 56A, while male slat 52A is provided with the hooks 54A which point upwards. Although it is preferred to use the hooks and slots in pairs, a single set of coupling members may be provided at intervals along the length of the spline, such as in FIGURE 6. In order to aid the alignment of the panels by centering the hooks in the slots, the slot is given a V-shape as at 57. Also, the hooks are preferably given a wedge-shape, so that upon vertical adjustment of the vertically adjustable slat the retractable and extensible slat may be drawn into locking engagement with the other slat so that the partition assembly will be given rigidity and the passage of light or sound thru the line of abutment will be eliminated or minimized. Also, the face of the hook may be tapered, as at 59, to provide for easier disassembly of the engaging members.

As shown in FIGURE 7, the coupling members may be the button 54B and the eye 56B. The button consists of the stalk 154 and the knob 254, which has a larger diameter than the stalk. The eye consists of the keyhole 156 which is large enough to admit passage of the knob 254, and the keyway 256 which is large enough to admit passage of the stalk 154 but too narrow to admit passage of the knob 254. The slat which bears the eye 56B is formed, in the vicinity of the eye, so that the keyway is tapered, putting the keyhole 156 further outboard with respect to its panel than the extremity of the keyway 256. This, again, provides for locking engagement of the engaging members upon vertical adjustment of the vertically adjustable member. Also, the eye may be provided with a lid 59B, by forming the slat above the eye to give it a sufficient inboard position above the keyhole to aid in clearing the knob on disassembly.

The coupling members are so aligned on mating slats that the hooks, for example, pass through the slots when their panels are adjacent each other and thus the cooperating hooks and slots are shown as being spaced approximately equal distance from the ends of the slats. The slots are slightly longer than the hooks to permit insertion of the latter through the slots. The slats preferably are the same length as the height of the panels or longer and may be provided with any number of coupling members that may be found feasible after weighing the desired rigidity of the panel abutment against the cost involved. The male slat 52 is biased away from its stile and panel by the flat spring 58. The female slat 50 may likewise be provided with a flat spring, not shown, but preferably is held in a non-reciprocating or immovable position in its stile 28.

One of the slats 50 and 52, preferably the male slat 52, is free to move vertically within its stile, and its lower portion contains a threaded hole 60. The joint assembly also includes the clip 62 which is advantageously U-shaped, as shown in FIGURE 5, and contains a vertically elongated perforation 64 which loosely receives the screw 66. Alternatively, the perforation 64 may be made directly in the stile 26 which contains the movable slat. In its assembled condition, the coupling members are held together

er by preventing vertical movement of the vertically movable slat. This movement is prevented by the pressure of the head of screw 66 against the sides of the perforation when the screw is threaded into the hole 60. For example, when the hooks 54 are engaged with the slots 56, clip 62 is inserted and held in place by screw 66 entering perforation 64 and hole 60, preventing up and down motion of the movable slat 52.

This is how a single panel may be changed in the partition assembly; for example, the fenestrated panel 16 may be replaced by a doorway panel such as 14 in the following manner: The section or sections of baseboard 20, which cover the lower portion of the panel are removed by unclipping them from the floor channel member 21, revealing a saddle 44 at each end of the panel in question and revealing the screws 66 and clips 62 holding the movable slats in the panel in question and in an adjacent panel. In the modification shown in FIGURE 1 this adjacent panel would be the panel to the right of the panel to be removed. Both of these screws and clips are removed allowing the movable slats to be moved downward to disengage the hooks and slots.

The bolt 47 which holds the saddle 44 to the floor is loosened and the left saddle is moved to the left and the right saddle to the right to a distance which clears their respective stilts in the panel being removed, permitting the panel to be lowered from within cornice 20. Pressure is applied to both male slats, most conveniently at their lower or extending end, to force apart the male and female slats. In the modification shown, the pressure causes the male slat to move inboard in its panel against the pressure of the spring 58, withdrawing the slots from around the hooks. The lower end of the panel is then pulled forward, causing the male slat to be moved further inboard by contact with the stile of the adjacent panel or the tuck line 39. Preferably the initial outward movement of the panel is directed primarily to its bottom. This disengagement of the top, bottom and side allows complete removal of the panel.

The new panel is inserted by merely reversing these steps. With the male slat in the left-end stile free to move longitudinally in its stile the top of the new panel is placed within the cornice 22. The rest of the panel is then pushed into the plane of the partition, the male slat being pushed inboard by contact with the sheath of the adjacent panel and the new panel itself pushing inboard the male slat of the panel to its right in the embodiment of FIGURE 1. The saddles are slid back into supporting position under the stilts and the bolts which secure the saddles to the floor are tightened. When vertical alignment of the coupling members is achieved, the spring 58 causes outboard movement of the slat 52 which results in placing point 55 of the wedge-shaped hook 54 within the slot 56, while the bottom of the slat 52 approaches and may rest on the saddle 44. This slat is now lifted causing the edge of the slot to be engaged by the hook, moving the slat 52 further outboard the more that it is lifted due to the wedge-shape of the hook. The clip 62 is inserted in the clip holders 49 attached to the stilts, and when the movable slat has been raised as far as possible, the screw 66 is inserted through perforation 64 and tightened in threaded hole 60 to hold the slat in position. The exact holding position of the movable slat can be varied due to the elongated shape of perforation 64. This insures a secure and tight connection between adjacent panels. In the assembled condition slat 52 is preferably closely engaged with its stile 26. The loose slat in the stile of the adjacent panel is likewise lifted and the screw inserted. All that remains for total assembly is to replace the proper sections of the baseboard 20.

It thus can be seen that the coupling members provide a spline which prevents transverse movement of the panel once it is in place. The elongated perforation 64 may be provided in the stile of the movable slat, as mentioned, or the entire screw arrangement may be replaced by a

wedge driven between the saddle and the bottom of the movable slat to support the slat in locked position. Also, the novel hook-slot arrangement may be provided for in an assembly where the movable slat is raised to break the engagement between hook and slot. In any case, the hook can be mounted pointing upwards or pointing downwards, to provide a spline which prevents transverse movement of the panel once it is in place.

It is claimed:

1. A movable wall partition assembly comprising first and second edge abutting wall panels, locking means mounted on a slat at said first panel at said abutting edge, said slat extending across the edge face of said panel, locking means on said second panel engageable with the locking means of said first panel, said slat being movable horizontally in the plane of the panel from a position of retraction to a position of extension across the abutting edge to put its locking means in an overlapping relationship with the locking means on said second panel, and means mounting one of said locking means for relative longitudinal movement with respect to the other panel for mutual locking engagement.

2. The structure of claim 1 in which the locking means form hook-slot connections with the locking means of adjacent partition members.

3. The wall panel assembly of claim 1 in which the slat is resiliently mounted.

4. A movable wall partition assembly comprising first and second abutting wall panels, locking means on each of said panels at said abutting edge engageable with each other, the locking means on one panel being mounted for horizontal movement in the plane of the panel from a position of retraction to a position of extension across the abutting edges to put the said locking means in an overlapping relationship with the locking means on the other panel and means mounting the locking means on one panel for relative longitudinal movement with respect to the other locking means, said longitudinal movement in one direction bringing said locking means into engagement with a cam face, thereby causing said locking means to be cammed to its final locked position, longitudinal movement in the opposite direction bringing said locking means into engagement with a second cam face in order to cam said locking means back to its unlocked position.

5. The structure of claim 4 in which the cam faces are in the form of a hook and the locking means is in the form of a slot.

6. A wall panel assembly which comprises first and second edge abutting wall panels, locking means resiliently mounted on said first panel at said abutting edge and being movable horizontally in the plane of the panel from a position of extension from the edge to one of retraction inside the panel, locking means mounted on said second panel to resist horizontal movement, and engageable with the locking means of said first panel to lock the panels in edge-to-edge abutment and slat means extending across the edge face of said panel, mounting locking means on one panel for relative longitudinal movement with respect to the other panel for mutual locking engagement.

7. The structure of claim 6 in which one locking means is in the form of a hook and another locking means is in the form of a slot.

8. The assembly of claim 7 in which the hooks are wedge-shaped to cause locking engagement of the slats upon vertical movement of a slat to draw said panels together.

9. A movable wall partition assembly comprising edge abutting panels, each of said panels having a support at the abutting edge, providing a longitudinal opening on each facing edge, each of said supports containing a slat which extends across the face of said opening and mounts locking means, means resiliently biasing the slat in at least one support beyond the opening in its own support and providing for horizontal movement of the slat in the plane of the panel across the abutting edge into the opening in the abutting support, to bring said locking means into an overlapping relationship, the slat in the other of said supports being mounted to resist horizontal motion, the slat in at least one support having relative longitudinal movement with respect to the slat in the other support for mutual locking engagement.

10. The wall panel assembly of claim 9 in which the slats are detachable from the supports and interchangeable with each other in the supports.

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