

Jan. 26, 1971

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3,557,499

MOVABLE WALL PANEL SYSTEM

Filed July 15, 1969

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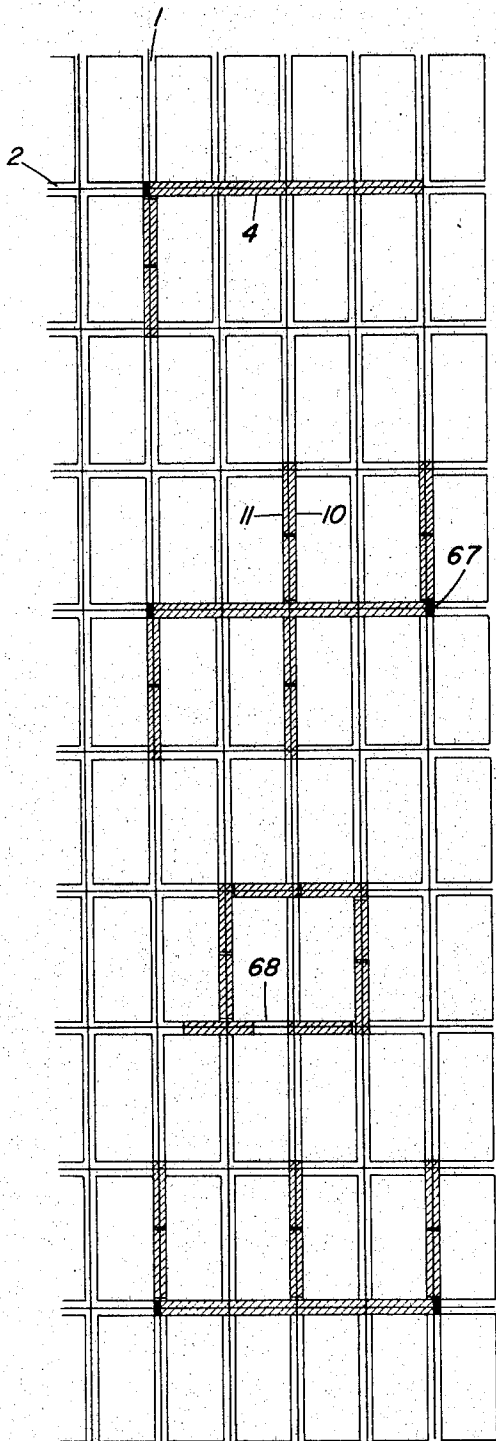


FIG. 1

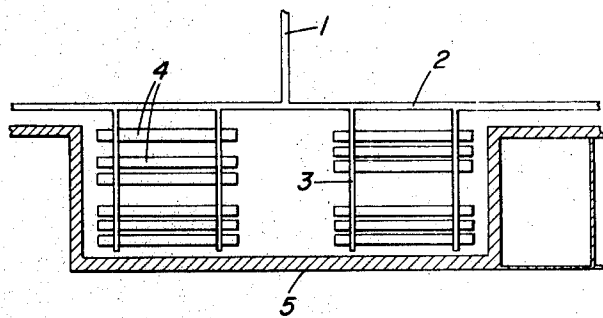


FIG. 2

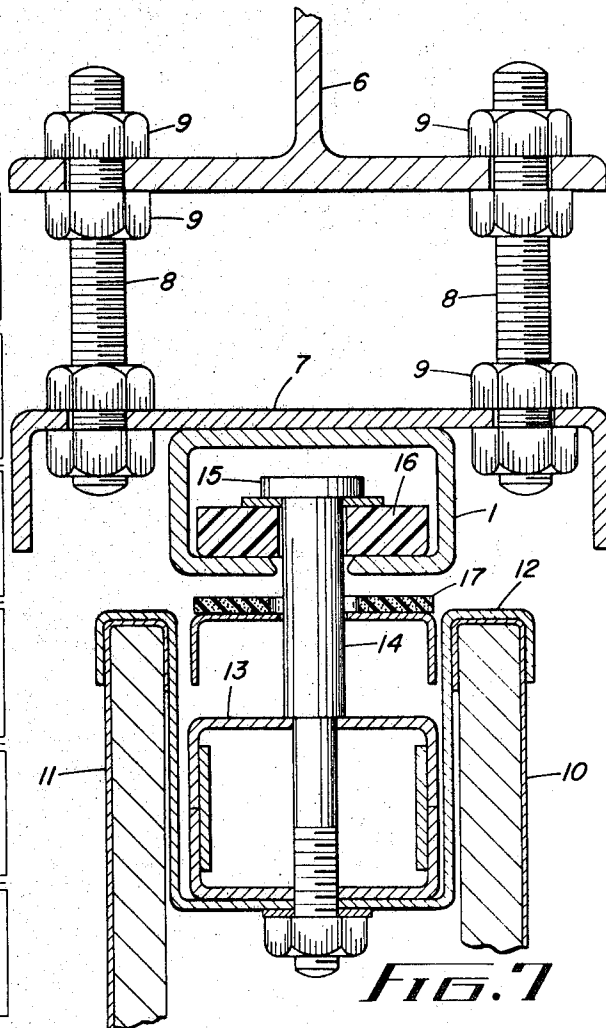


FIG. 7

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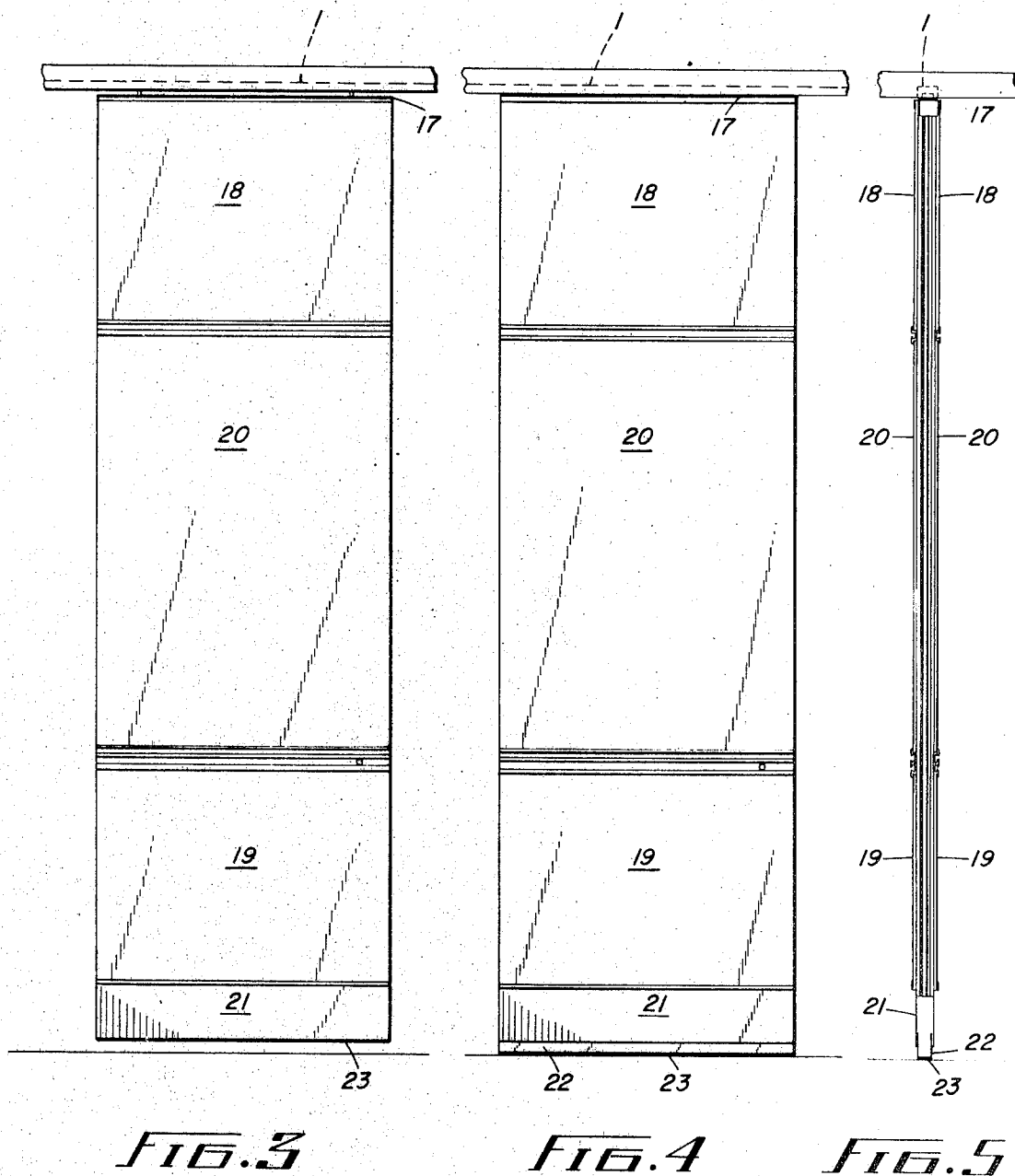
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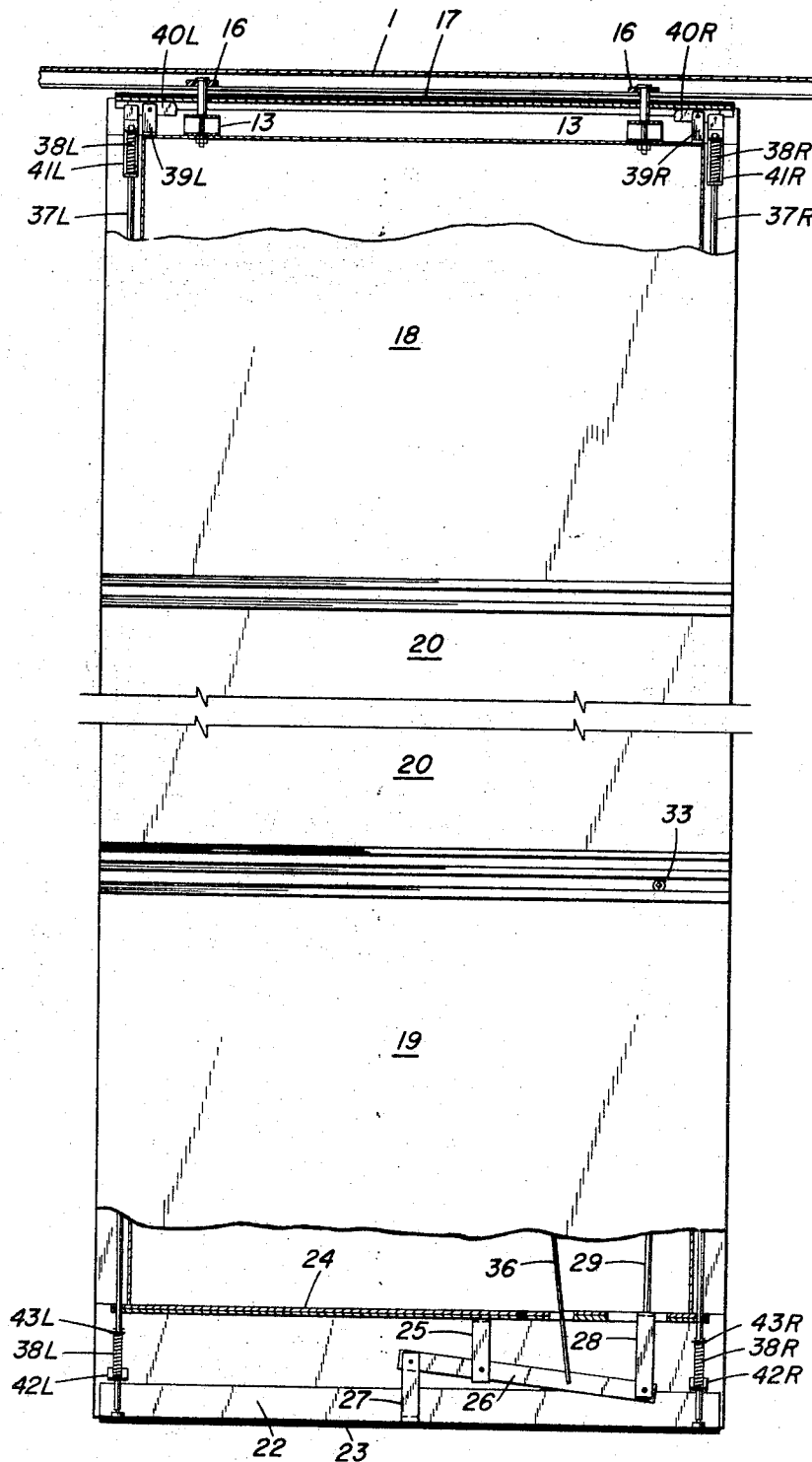


FIG. 6

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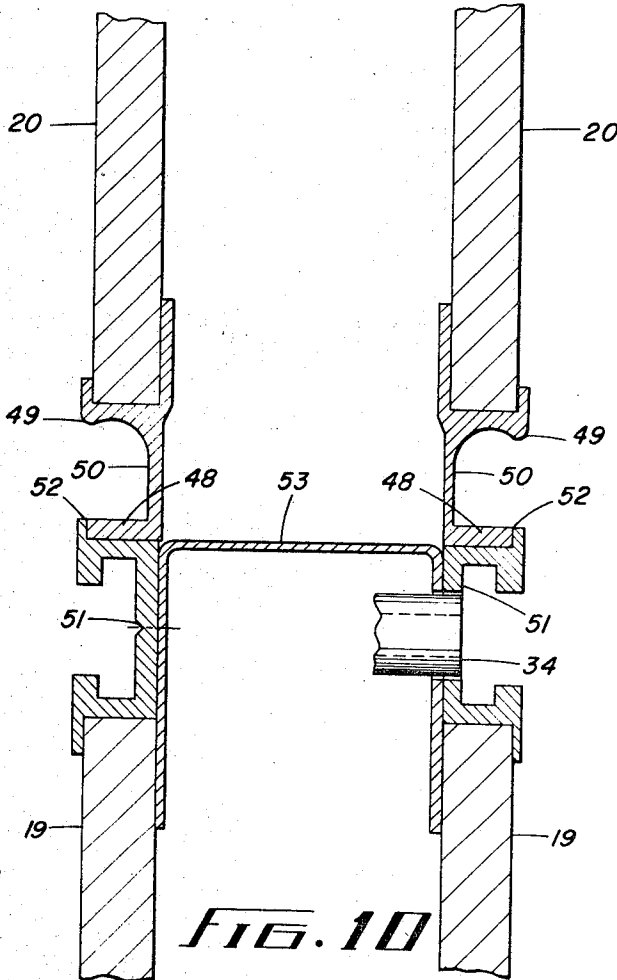
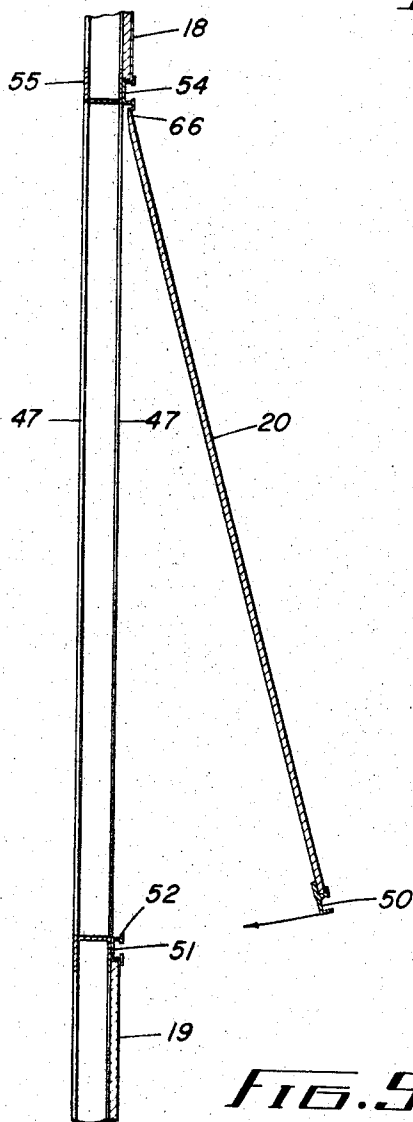
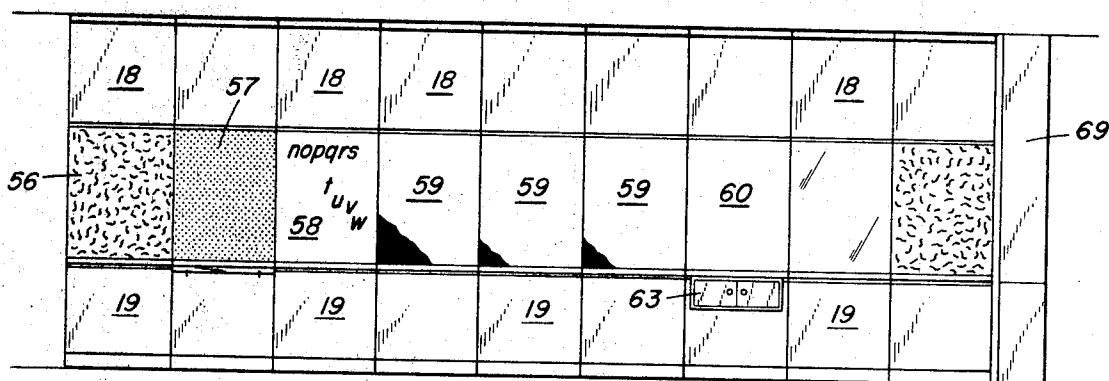
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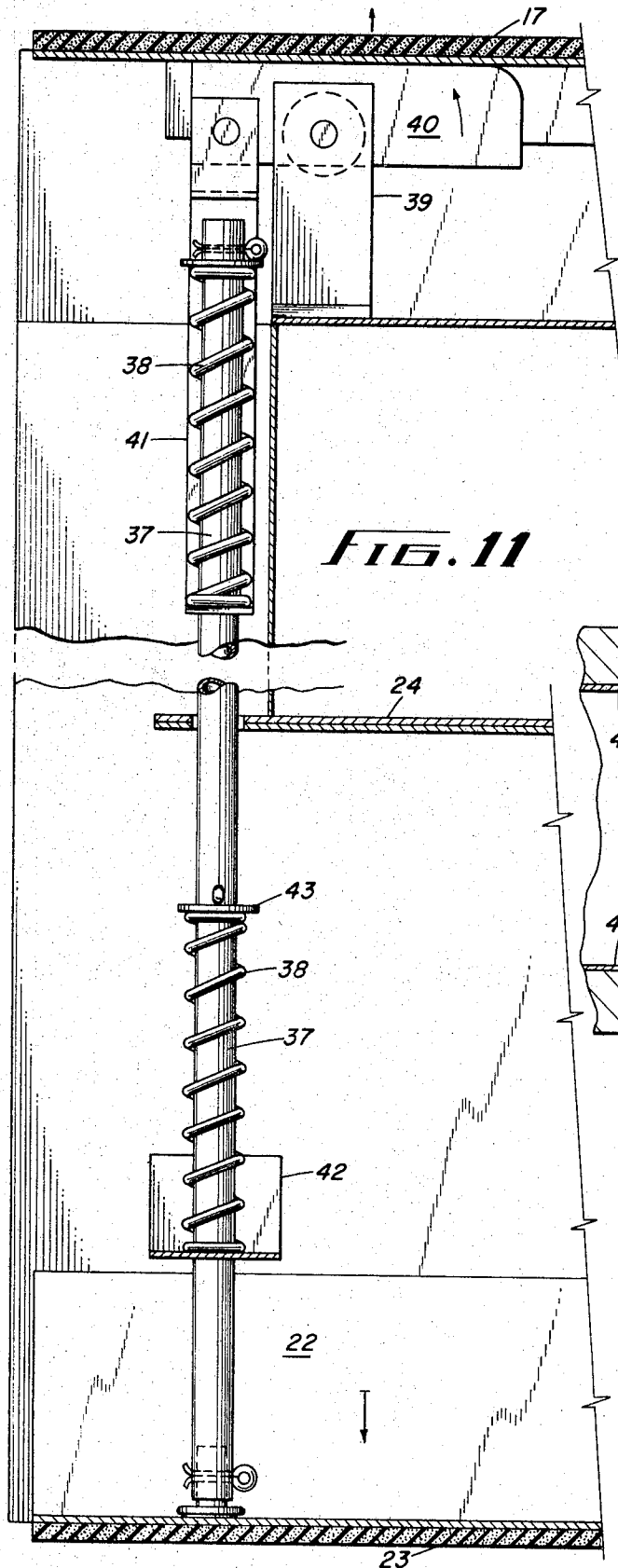


FIG. 11

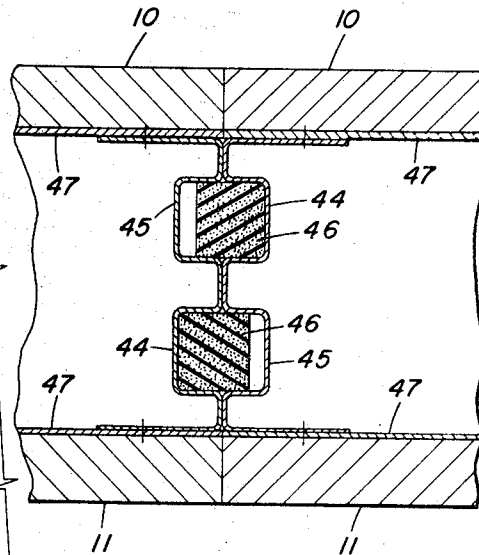


FIG. 12

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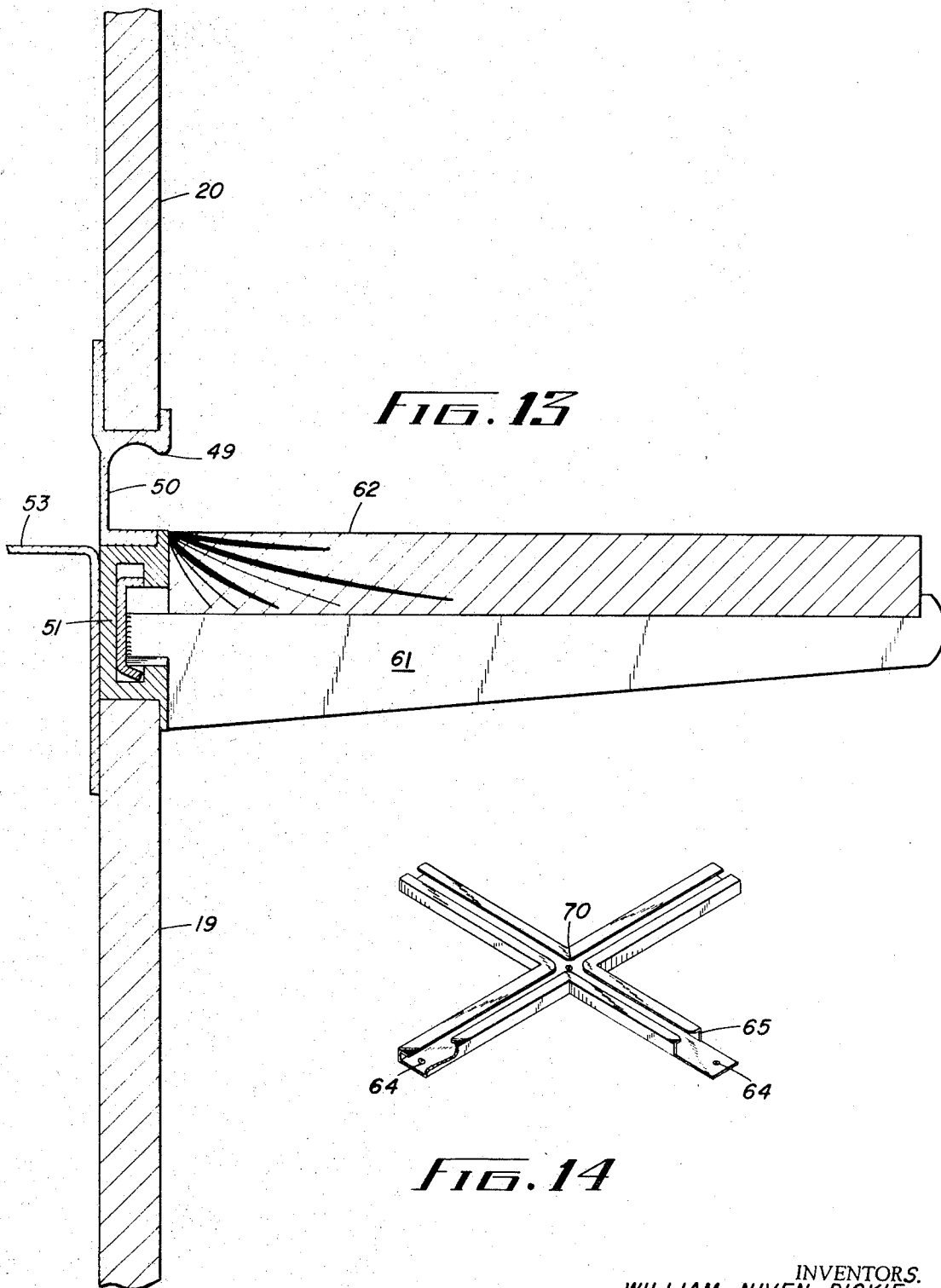
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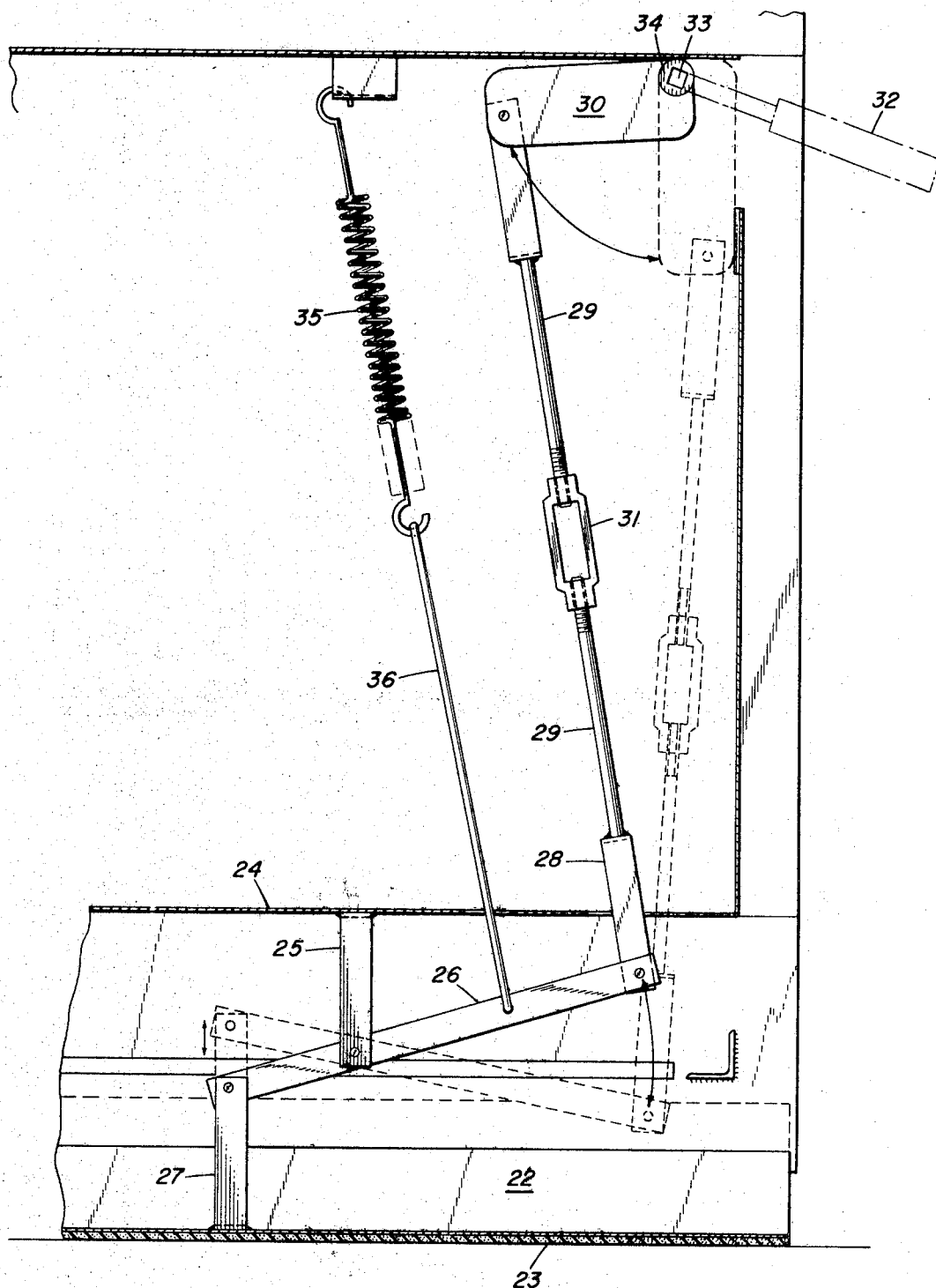


FIG. 15

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MOVABLE WALL PANEL SYSTEM

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Claims priority, application Canada, Sept. 16, 1968, 30,117

Int. Cl. E04d 3/16; E04b 7/10
U.S. Cl. 52—36

9 Claims

ABSTRACT OF THE DISCLOSURE

A movable wall panel system is described in which the panels move on overhead track and are double and hollow, provided with removable center panels, mating side edges with acoustical insulation and means for pressing resilient top and bottom pieces against the ceiling track and the floor when a panel is in position. The same means provides for automatic leveling to compensate for tract unevenness or floor unevenness.

BACKGROUND OF THE INVENTION

It is quite common to provide movable wall panel systems, and it has been proposed to provide panels which move on ceiling tracks and which can be clamped to ceiling and floor when in position. The clamping mechanism, for example a cam, however, does not provide complete self-leveling where floors or ceiling tracks are not absolutely level. In the systems which have been used in the past, for the most part multiple-wheel trolleys have been used and this has usually made it necessary to provide ceiling tracks at different levels.

Another problem is presented by acoustic and other insulation between vertical panel edges when they are assembled to form a wall. A further problem is presented where it is desired to have panels with special panel sections other than doors, as for example in systems for use in schools and other uses where, for example, panels have blackboards, magnetic boards, pin boards, projection screens, and the like. It is, of course, possible to have special panels with such facilities, but this requires having in stock in the building a number of different kinds of panels and is inconvenient. The matter is not quite so serious with projection screens which can be hung up, but still panels providing such surfaces would represent a very desirable type of system.

Another disadvantage of the movable panel wall systems hitherto proposed is that they are just that, walls and nothing more. Any horizontal surfaces have to be provided by special equipment, such as tables and the like. There are no built-in desk surfaces or containers for objects extending out horizontally from the wall.

SUMMARY OF THE INVENTION

The present invention is directed to a greatly improved and much more versatile movable panel wall system. The panels, which are hollow and have two separate side panels, are carried on tracks in the ceiling which are all at the same level and hanging means are provided, such as horizontal discs or rollers which can readily pass from one track to another. For example, if the tracks are in rectangular arrangement in the ceiling, a common configuration, if a panel is to be moved along one track and then in a direction on another track at right angles, this can be done with the round disc hangers of the present invention without any problem of sticking or requiring special equipment.

The hangers are single discs on bolts and therefore do

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not present the problems of multiple-wheel trolleys, which have been frequently used in the past and which do not readily turn corners.

The hollow panels of the present invention, in common with some of those proposed in the past, are provided with sealing means against the ceiling tracks and the floor to provide acoustic and other insulation. However, the improved means of the present invention, which moves two elements, one top and one bottom, is provided with automatic resilient leveling means which permit an accurate seal even though a particular ceiling track and correspondingly a particular piece of floor may not be absolutely parallel. Essentially the locking and sealing means comprise a lower portion of the panels which can slide up and down and which is moved by suitable linkages with a removable operating handle. Self-leveling is effected by connecting an upper movable sealing piece through rods and springs to the lower sealing piece so that when the latter is moved down and locked against the floor, it causes the upper sealing piece to lock against the track. As the spring pressed rods are at the two edges of each panel, they provide for automatic leveling. For example, if either the floor or the ceiling track is not quite level, or both, and is not parallel, one end of the upper sealing member can move more than the other to produce a true seal even if there is a significant lack of parallelism between track and floor. Essentially the same effect is obtained in the floor locking piece by having the linkage connected to it through a pivot in or near its center so that it may tilt with respect to the pivot if the floor is not perfectly level.

It is important to have a firm and well insulated connection between pairs of panels which have their edges abut. This insulation should be both against drafts and to be an effective sound insulation. This is accomplished in the present invention by having the side edges of each panel provided with double-grooved channels, one channel having a projecting rubber or other elastic insert which mates with an open channel in the other panel. The rubber being pressed into the open channel provides a tight and acoustically well insulated joint. Each panel edge has one channel of one kind with a rubber insert and one with no insert, so disposed that they mate with the corresponding channels on the next abutting panel. These edge channels have flanges which extend for a considerable distance, a number of inches, along the panels themselves. Two important functions are effected: one a stiffening and strengthening of the whole structure, and another, which is a very important function, providing for removable center panels as will be described below. Looking at the ordinary panel unit as having a top, center and bottom section or sub-panel, duplicated of course on the other side of the hollow unit, the center panels are removable, and when so removed the edges of abutting panels present channels extending for several inches which brace the whole unit and also provide for removable center panel sections without loss of strength or rigidity.

The bottom of the top section of each panel is provided with channels on each face, the channels having a downwardly extending flange or shoulder into which the top of removable center panel sections can be inserted, as will be described. The top edges of the bottom sections of each panel are similarly provided with a channel of essentially similar configuration. Internal bracing of the permanent top and bottom sections can be effected by suitable U-shaped metal reinforcements at the top of the bottom section and bottom of the top section. In general the channels must be fairly strong and rigid and are usually formed of extruded metal, extruded aluminum being a very suitable material as it does not corrode, is light, and shows good dimensional stability in reasonable sections. The invention is, of course, not limited to the

particular material used in these channels, but extruded noncorroding metal is greatly preferred.

The panel sections themselves may be of any suitable material having the requisite physical strength and are preferably of suitably rigid materials. For example, the top and bottom fixed panels may be baked enamel metal surfaces, porcelainized metal surfaces, vinyl, thermosetting laminated plastic, and the like. Wood is, of course, also possible but is heavier. The surfaces, which may be decorative, may be in the form of a sandwich with a light core, such as Fiberglas, which is strong and also has desirable additional acoustic insulating properties. Sandwich panels are not new with the present invention as such, but it is an advantage of the present invention that such excellent materials may be used without adversely affecting the improved features of the present invention. It is also possible to put sound insulating material between the two sides of the hollow panel, but ordinarily this is not required as adequate acoustic and thermal insulation is provided by the hollow panel in any event.

Removable center sections, an important feature of the present invention, utilize sections with an upper edge which can be pressed into the lower channel resulting from the shoulder on the horizontal channel at the bottom of the fixed top panel section and the bottom of the center section is also provided with a channel, for example of extruded metal, developed to form a suitable finger grip so that the panel can be moved up slightly into the groove formed in the channel at the bottom of the fixed top sections and then snapped down into the upper channel formed by a shoulder on the channel at the top of the fixed bottom sections. When it is desired to change the removable center panel sections the section is lifted slightly by the finger grip channel section, swung out, and removed.

The removable center sections provide for a very wide range of surfaces. They may be developed as, for example, tack boards, illuminated acrylic sheets, magnetic boards, blackboard surfaces, reflected projection screen surfaces, and the like. They may also be of the same decorative surface as the fixed panel, because often in a wall it may not be desirable to have specialized center panel sections extending all the way around the wall. Great flexibility is made possible, and where a decorative surface is used this may match the fixed panels or may be in suitable contrast thereto. It should be noted that the two sides of the panel sections permit different center panel sections to be inserted on the different sides. For example, when the panels form a wall the center section of one side might be a chalkboard surface and on the other side a decorative surface or another type of specialized surface, such as reflecting screen and the like. A very wide range of arrangements becomes possible as it is not necessary to have separate panels for each type of specialized use. The panels may be all uniform and a sufficient supply of the specialized surface, removable center sections provided.

It is possible, of course, also to have a panel which has built into it a door. This is a specialized type of panel which has been used before and does not differ when used in the present invention except, of course, that the automatic leveling, ready movement around portions of track where the direction is changed are retained. It is also possible, of course, to have panels which are provided with windows, but usually special panels are not necessary for this purpose as window removable center sections will perform the same function. Of course if a window is desired, both sides of the panel section would have to have the transparent center sections. Sometimes it is desirable to let light through from one area to another without providing visibility, and in such cases center sections of frosted glass or similar translucent but not transparent materials may be used and are, of course, included in the invention.

The readiness with which panels of the present invention can be moved from one track to the other has a

further advantage in making it practical to store the panels in a recess in a permanent outer wall and move them out into the room on short track sections and then move them in the desired direction in the room where they are to be used. Where the walls are frequently changed, as for example in schools, conference room, areas that are sometimes used for auditorium purposes and sometimes for class room purposes, the compact storage for panels which are not being used to make walls is of real practical advantage.

Since the walls made up of the panels of the present invention are strong, rigid and well sealed both acoustically and otherwise, they lend themselves readily to making walls which are of a more permanent character. Thus, for example, a wall may be used for a whole season as part of a classroom wall and then changed, for example if in a school in the summer session a different configuration is desirable. This combines the strength, rigidity and sealing of more or less permanent walls with the flexibility which permits changing their nature at any time. Even if a wall is more or less permanent, for example in a classroom, it is still an advantage of the present invention that the center panel sections may be changed as the demand varies.

One of the serious drawbacks to movable panel wall system that have been proposed in the past is the lack of provision for horizontal surfaces. In the present invention this is simply provided by the top horizontal channels on the bottom sections of the panels. These channels are designed with shoulders which can receive suitable bracket elements for supporting a shelf which may be used for writing or other purposes or to provide for a shelf with storage compartments. Such horizontal projections can be rapidly and simply changed at will as the changing requirements for a particular wall system vary. An illustration of one particular typical use of such surfaces is in language study cubicles, where it is sometimes desirable to have a place for a tape recorder and supplies. Other uses are where a particular wall is to be used for display purposes of an exhibit that requires placing elements of the exhibit on a horizontal surface. Such surfaces may also serve as temporary or more or less permanent bookshelves, and the character of the surfaces may be changed at will as the need arises. Of course when panels are to be stored in an alcove or other recess in the permanent wall, it is ordinarily necessary to remove the projecting horizontal surfaces in order to conserve space. This is done quickly and readily and constitutes an additional example of the flexibility and versatility of the present invention.

Another variant of the horizontal surface modification is encountered where one or a number of chalkboard center panel sections are being used. A narrow shelf with an outer lip can be provided for holding chalk, erasers, and the like and is readily mounted or removed.

Sometimes it is desirable to hang such elements as a map or screen and this can readily be effected by inserting hangers in the horizontal channel at the bottom of the top sections of the panels. The hangers can be readily snapped in or removed, which is a practical advantage. Sometimes panels are used to form a closet, and in such cases hangers may be provided for clothing and it is often advantageous to have longer brackets which can hold a number of coats. These longer brackets, of course, fit into the horizontal channel of the bottom part of the top sections. As an alternate a hollow rod with brackets at each end can be fitted in, and for some purposes this is advantageous.

When two panels meet with their edges at right angles to each other, this can leave a somewhat raw corner as the channels on the edges of the panels are exposed. In such a case it is a simple matter to have a suitable smooth cap post which fits into the channels and has a smooth, rounded outer surface. The cap post of course does not have to seal tight to the floor or ceiling track and can, therefore, be held by the protruding rubber in the chan-

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nels at the edge of the panels, the cap post of course having suitable recesses. Occasionally it may occur that there is some open space left where the panels are used with rooms that are not completely modular. In such cases narrow panels can be provided to take up the needed space and of course are provided with the same type of hardware so that they move on the overhead track and can be caused to seal tightly against the overhead track and the floor.

When a panel with a door is provided, alignment of the movable bottom section which is formed as a suitable sill can occasionally present problems if the floor is not level. In such cases it is possible to have two adjustments for effecting the seal, one in one jamb section and one in the other. Of course, if there is a door, central operation of the lower section is not practical. Thus even with specialized panels which include a door, the advantages of top and bottom leveling with rods and linkages operating against spring pressure are retained. In other words, these important features of the present invention are applicable to specialized types of panels as well as the normal form of panels, and this adds a desirable additional flexibility.

In describing various types of removable center sections of panels, only illustrative types have been mentioned, and of course any other surface desired may be used. In this connection, it should be noted that the reference to a chalkboard panel is used generically and is not limited to a panel which is black in color; it may be green or any other color which is suitable for use and of course the surface of the desired nature to accept chalk readily.

In designing the overhead track there can be some straight portions or there can be cross-overs in the form of crosses, T sections, for example where a panel is to be stopped and the like. Ordinarily at some point a portion of the channel of the overhead track has a portion cut away so that new panels can be inserted.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 is a plan view of panel tracks in a ceiling taken from below;

FIG. 2 is a plan view looking from above of a recess in a permanent wall with panels stored, the permanent wall is in section;

FIG. 3 is a side elevation of a panel unit in position to be moved along the tracks;

FIG. 4 is a similar side elevation of a panel unit in place after upper and lower sealing sections have been moved into place;

FIG. 5 is an edge elevation of a panel section with sealing members engaged;

FIG. 6 is an enlarged side elevation, partly broken away, of a panel unit;

FIG. 7 is an enlarged section through ceiling track on the top of a panel;

FIG. 8 is a diagrammatic side elevation of a panel wall showing different types of center sections;

FIG. 9 is an edge section through a panel showing one center section being engaged;

FIG. 10 is an enlarged edge section showing two center panels engaged;

FIG. 11 is an enlarged side section through a portion of a panel unit;

FIG. 12 is an enlarged vertical section of two panels engaged edge to edge;

FIG. 13 is an edge section on an enlarged scale of half a panel, showing shelf attachment;

FIG. 14 is a plan view looking up at a track cross-over, and

FIG. 15 is a detailed enlarged vertical section through a bottom panel.

DESCRIPTION OF THE PREFERRED EMBODIMENTS

FIG. 1 shows in somewhat diagrammatic form ceiling

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angles 2. Panel sections are shown in general at 4 with side panels 10 and 11, which can be seen more clearly track sections with sections in one direction 1 and at right in FIG. 7. As FIG. 1 is a purely diagrammatic showing, the panels are not shown hollow nor are the details of the edges where one panel abuts another illustrated in order not to confuse FIG. 1. These connections will be described in detail in conjunction with FIG. 12. It will be seen in FIG. 1 that the panels have been located to form rooms, alcoves and a large closet. In FIG. 1 the cap posts, which finish off the edges where two panels abut at right angles to each other, are shown diagrammatically at 67, as the particular detailed design and construction of these cap posts form as such no part of the present invention. In FIG. 1 the panel sections forming a closet or small room also illustrate a panel section having a door 68.

The tracks are shown in detailed section in FIG. 7 and are channels 1 welded to a plate 7 which is suspended from a ceiling beam 6 by adjusting bolts 8 and adjusting and lock nuts 9. In place of welding to the plate 7, it is also possible to have the track channels proper fastened by countersunk bolts in holes which are shown at 64 in FIG. 14. This figure also illustrates a section with a portion of the channel 65 cut away to permit hanging new panels into the track. Frequently this form of entrance would occur at a side, but to save figures it is shown in FIG. 14. It will be noted that at the cross-over the edges of the channel portion of the track, shown at 70, are rounded.

The two panels 10 and 11, as best seen in FIG. 7, are held by a U-shaped member 12 with channel sections over the top of each of the two panels. A box section 13 is fastened to the plate 12 with a bolt and nut, the top portion 14 of which, of enlarged cross-section, extends up to a head 15 on a plastic disc 16 in the channel 1 of the track. This plastic is preferably one having a very low coefficient of friction, such as Teflon. The bolt 14 extends through holes in a U-shaped plate with a rubber sealing layer 17, the purpose of which will be described below. There are usually two bolts 14 and discs 16 for each panel near the corners thereof, as can be seen in FIG. 2. This figure also shows a number of panels for stored and short stub track sections in a recess 5 in a permanent wall. The figure is diagrammatic and does not show the details of the top structure of the panels.

When panels are to be taken out of their storage recess or alcove, they move on the short pieces of track 3 to T cross-overs on one of the tracks 2 at the end of the track system. As each panel is moved into the track section 2 it can then be moved along it, and whenever it encounters a track section 1 at right angles, as is also indicated in FIG. 2, the panel can then be turned and moved on that track if it is to occupy a position that would require movement at right angles to the track 2. Since the hangers with their bolts 14 are single bolts, they can move around the rounded edges 70 of track cross-overs easily and the problems of multiple-wheel trolleys, which have been referred to above, in earlier systems are not encountered, and multiple tracks are therefore not necessary at different levels.

When panels are moved into the position in which they are to be locked to the floor and sealed at the top track, they at first do not touch the floor or the track as is shown in FIG. 3. As a result there is no additional friction and the panels move readily along the tracks. When they come to the position desired, a channel 22 slides in the bottom portion 21 of the bottom section 19 of each panel and its sealing strip of rubber or other elastic material 23 is forced against the floor, as will be described, locking the panel in place. At the same time the section 17 in the top panel section 18 is forced up in contact with the track, forming a complete seal. This position is illustrated in FIGS. 4 and 5.

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The operation of sealing is shown in FIGS. 6, 11 and 15. Above the sliding bottom section 22 there is a cross member 24 with a projection 25 in which a lever 26 is pivoted. The left hand end of the lever, which is the shorter arm, is pivoted in a linkage 27, which contacts the bottom of the channel 22. The long arm of the lever 26 is pivotably connected to a plate 28 and a rod 29. The operation is best seen in FIG. 15. The rod 29 is in two parts, with right and left threaded ends which screw into a turnbuckle 31. The upper end is pivoted in a plate 30 which in turn turns about a bearing 34. The plate 30 is provided with a square opening 33, and when it is desired to lock or unlock the panel, a handle 32 having a turned square end is inserted through the opening into the square opening 33 of the plate 30. Turning the plate up, as is shown in full lines in FIG. 15, lifts the long arm of the lever 26 and forces the sliding section 22 to slide down until the sealing strip 23 contacts the floor. The linkage is held in this position under the tension of the spring 35 which connects to the long arm of lever 26 through a rod 36. It will be noted that the section 22 is moved down from a position near its center, and as the short arm of the lever 26 is pivoted to the connection 27 the member 22 can assume a position level to the floor even though the floor may not be absolutely true. When the panel is to be unlocked, the handle 32 is again inserted into the square opening 33 and raised, the plate 30 is turned to the bottom position, shown in dashed lines. In this position the section 22 is raised against the increasing tension of the spring 35. However, as the plate 30 nears its extreme position, it becomes practically in line with the rods 29 and a toggle action results so that the tension of the spring 35 does not tend to cause the section 22 to rise, and so the panel is held in the unlocked position for moving and/or storage. Of course the handle 32 is removed when the panel is to be moved. In order to minimize confusion of lines in the drawing, the rod 36 is not shown in its dashed position but the end of the spring 35 is.

Turning now to FIGS. 6 and 11, it will be seen that the channel section 22 is connected at its ends with rods 37. As the mechanism is shown in FIG. 6 duplicated for the left hand and right hand sides of a panel, the same number is used with a letter L for the left hand mechanism and R for the right hand mechanism. In FIG. 11, which shows only one rod, the lettering is not used. The rods 37 move against springs 38. At the bottom there is a washer 43 and a plate 42, and at the top there is a spring housing 41 on each side. The rods 37 L and R are pivoted into plates 40 L and R, each of which in turn is pivoted on an extension 39 L and R at the top of the panel. FIG. 6 shows the linkages in the unlocked position but FIG. 11 shows one in the locked position. In this latter position the plates 40 are turned up and force the sealing strips 17 tightly against the overhead track. If there is any misalignment of level of floor and sealing track, the two rods 37 can move different amounts under spring pressure and so the top and bottom sealing strips 17 and 23 can be tightly locked against the overhead track and floor respectively even though the two are not absolutely parallel. This produces an automatic leveling of the panel in locked position.

Where the edges of two panels abut, as is shown in FIG. 12, sealing results because each edge has a double-grooved channel fastened to the panel by the legs 47. One of the grooves 44 of one panel has a rubber or other elastic insert 46 extending above the groove, and so when the panels are abutted edge to edge these elastic inserts move a short ways into the empty grooves 45, producing a firm seal and aiding in both sealing against drafts and acoustic sealing. As has been mentioned before, when two panels join at right angles to each other a suitable cap post fills the otherwise ugly corner and is suitably rounded for esthetic and improved sealing purposes. As has been described, the cap post has elastic

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inserts which cooperate with the grooves in the two abutting panels.

It will be noted that in FIGS. 3 to 6, each panel has three sections: a top section 18, a bottom section 19, and a center section 20. The latter is removable, and this is best illustrated in connection with FIGS. 9 and 10. In the former figure the bottom of each top section panel 18 is provided with a reinforcing U-shaped member 55 which keeps the two panels separated and increases their rigidity. On each side of this U-shaped member there is a channel member 54 with shoulders on its legs. FIG. 9 shows only one side of this channel member for clarity. Near the side edges of the panel section there extends for a short distance, several inches, members 47 which constitute shelves or supporting shoulders at the two sides for the removable panels 20. The panel 20 in FIG. 9 is shown in the position just before it is snapped into place. Its upper edge 66 is slid underneath the lower shoulder of the channel 54 and its bottom, is provided with a channel member 50 developed into a curved hand grip portion 49 and a straight locking portion 48. This is best seen in FIG. 10. The section 20 is grasped by the finger grip 49 and slid up behind the lower shoulder of the channel member 54. This is shown in FIG. 9. The lower edge of the panel 20 is then moved over to channel member 51, which is attached to a U-shaped reinforcement 53 at the top of the lower panel sections 19, as can be seen in FIG. 10. This channel member is of essentially the same shape as the corresponding channel member 54 at the bottom of the top sections of the panels and its relation to the reinforcing plate 53 is similar to the relation of the channel section 54 to the plate 55. The channel section 51, however, is reversed in direction so that the protruding shoulders 52 are at the top instead of at the bottom in the case of channel members 54. As the bottom of the middle section 20 moves across the shoulders 52 until the panel strikes the members 47, it is then permitted to drop slightly so that its straight or locking portion 48 locks back of the shoulders 52 of the channel members 51. This position is shown in FIG. 10. The movement is quite small and is considerably less than sufficient to allow the top of the center section to drop below the downwardly projecting shoulder of the channel 54.

As FIG. 10 is taken as a section through the panel at the point of the opening 34, the members 47 do not appear. In order to avoid confusion of FIG. 10 the turning plate 30 is not shown.

FIG. 8 illustrates a wall with a number of center panel sections of different types. Thus 56 is a tack board, 57 a back-lighted plastic screen, 58 a magnetic board; the three sections 59 are chalkboard sections, and the sections 60 are reflecting screen sections. The figure illustrates a number of typical center section types, but of course other removable sections may be used. It will also be obvious that the other side of the wall need not have center panels corresponding to those shown in FIG. 8, because of course on either side any particular desired center panel can be installed. FIG. 8 also illustrates a narrower section 69 where the wall is not an exact multiple of panel width. This section is locked in the same manner as full size panel sections and is merely illustrated diagrammatically in FIG. 8 to show the applicability of such special width panels. Normally rooms are on panel width modules and such narrower panels are not needed.

The channel sections 51 perform a second important function which is illustrated in FIG. 13. Brackets 61 can be clipped into the channel 51 and support a shelf 62, which is shown for illustrative purposes as a wooden shelf. As many brackets as needed can be clipped in depending on the length of the shelf 62. Also, the length of the brackets depends on the width of the shelf and, as has been described above, where a narrow shelf to hold chalk and erasers under blackboard center sections is desired, such a narrow shelf can be supported by much shorter brackets 61. The method of support, how-

ever, is the same as is illustrated in FIG. 13 for wider shelves. The shelf 62 need not be a plain shelf. It may have bottom compartments 63, which are diagrammatically illustrated in FIG. 8. This is of particular use where a panel is to be used in forming a cubicle for language instruction as the shelf and storage compartments underneath it can be used for a tape recorder and supplies.

As has been described, hooks for hanging maps or for other purposes may be attached to the channel 54 at the bottom of the top sections of the panels. The attachment is the same as with the larger brackets shown in FIG. 13 and therefore is not specifically illustrated. When the panels are to be used for a closet, brackets similar to 61 may be used which provide for hanging more coats or they may support a rod or pipe between them. As the connection into the channels 51 is the same they are also not specifically illustrated.

We claim:

1. A movable partition wall system comprising in combination,

- (a) a ceiling track grid formed of channel sections with central grooves along their bottom and parallel to the direction of the track, all of the tracks being at a uniform level,
- (b) a plurality of movable panels, the upper edge of each panel being provided with a plurality of upwardly projecting headed bolt members, the diameter of the bolt being less than track groove width and the head greater, and sliding cushions beneath the head of each bolt,
- (c) at least one track section of the track grid being provided with an end portion free from channel section for a distance greater than the cross-section of a bolt head, whereby panel bolts can be introduced into the track and the panels hung therefrom and moved therealong,
- (d) each panel being provided with a vertically movable top strip the top of which is provided with an elastic cushioning member and a bottom member vertically slidable and slidable within the panel and provided along its bottom edge with an elastic sealing strip,
- (e) linkage means within each panel for sliding the bottom slidable member up and down and resilient connecting means at the ends of the bottom slidable member connecting to the top member with its sealing strip in a reverse direction, whereby when the bottom slidable member is moved down into sealing contact with a building floor the ends of the upper sealing member are moved up to press the sealing member against the track above it, and
- (f) removable means for actuating the linkage moving the bottom slidable element, whereby when the linkage is actuated and the floor and ceiling track sealing strips are moved to sealing position, the panel is sealed to floor and track regardless of slight lack of parallelness of floor and ceiling track.

2. A system according to claim 1 in which each panel is hollow and is formed of top, bottom and middle sections, the middle sections having a narrow upper edge and a lower channel-shaped member with a channel opening out, means along the bottom edge of each top section including a projecting shoulder, side members connecting the top and bottom sections of each panel at its side edges, the members being sufficiently recessed to form shelves spaced from the shoulders of the member attached to the lower edges of the top sections sufficiently so that when a movable center section is inserted back of the shoulder it substantially fills the space to the side

members, a member along the top of each of the bottom sections of a panel provided with an upwardly extending shoulder of lesser length than the downwardly extending shoulder from the member attached to the bottom of the top sections, and a channel member at the bottom of each movable center panel having a lower horizontal section adapted to be slid over the upper shoulder of the member on the bottom sections when the upper edge of the center section is moved up in the groove formed by the shoulder in the member of the top section, whereby when the upper edge of the center section member, the bottom of the center section swung in past the shoulder in the member on the bottom section and allowed to drop slightly, the center sections are locked into the panel.

3. A system according to claim 2 in which the side edges of each panel are provided with sealing means comprising a plurality of channels with elastic sealing inserts in one channel projecting beyond the channel by an amount less than the depth of an empty channel on an abutting panel, the channel being oriented so that they mate with a corresponding channel on another panel and provide lateral sealing of abutting panels.

4. A system according to claim 3 in which corner caps are provided where panel sections abut at right angles to each other, the corner caps being provided with mating sealing means cooperating with the sealing channels of the edges of the panels.

5. A system according to claim 3 in which the members along the bottom edge of the top sections and the top edges of the bottom sections are of outwardly opening channel form adapted to receive horizontally projecting support members.

6. A system according to claim 3 in which the slidable member at the bottom of each panel has slight play and the actuating linkage is a pivoted linkage connecting substantially to the center thereof, whereby when slid down into sealing contact with the floor the sliding member can tilt slightly to compensate for slight lack of parallelism of floor and ceiling track.

7. A system according to claim 6 in which the means for moving the upper ceiling track sealing member comprise rods near each edge of the panel and within it contacting the sliding bottom member and moving the top sealing member against spring pressure.

8. A system according to claim 7 in which the linkage moving the bottom sealing member is against spring pressure which urges the bottom member to move down.

9. A system according to claim 8 in which the linkage moving the bottom sliding member is formed to produce a toggle action when the bottom sliding member is raised to its highest position, whereby to prevent said spring pressure from moving the sliding member from its raised position.

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UNITED STATES PATENT OFFICE
CERTIFICATE OF CORRECTION

Patent No. 3,557,499 Dated January 26, 1971

Inventor(s) William N. Dickie and Norman J. Bennett

It is certified that error appears in the above-identified patent and that said Letters Patent are hereby corrected as shown below:

Column 6, line 3, after "which can be seen more clearly" on line 2 - entire line 3 should be line 1 of column 6. Line 3 reads "track sections with sections in one direction 1 and at right".

Column 9, line 59, word "botom" should be "bottom".

Column 9, line 61, word "shiped" should be "shaped".

Column 10, lines 11,12, after "whereby when the upper edge of the center section", insert "is moved up into the groove at the bottom of the top section".

Signed and sealed this 8th day of June 1971.

(SEAL)
Attest:

EDWARD M. FLETCHER, JR.
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