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PARTITION MODULE CONSTRUCTION

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2 Sheets-Sheet 1

FIG. 1.

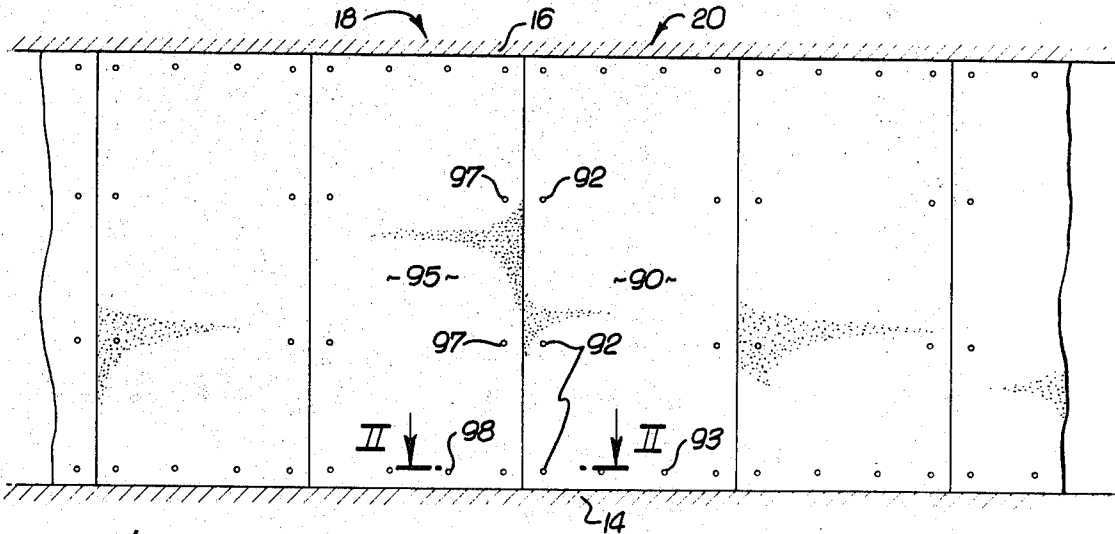


FIG. 2.

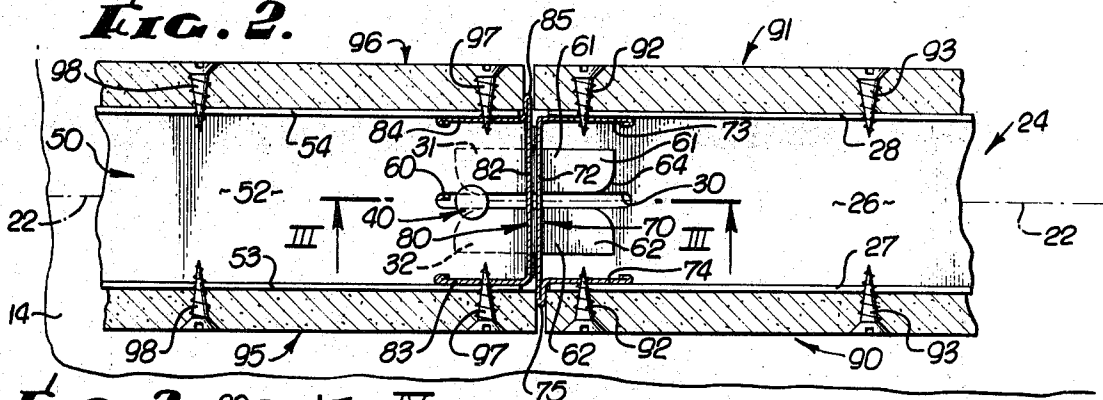


FIG. 3.

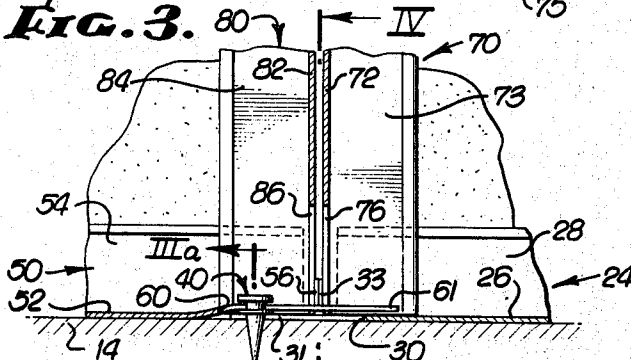


FIG. 3a.

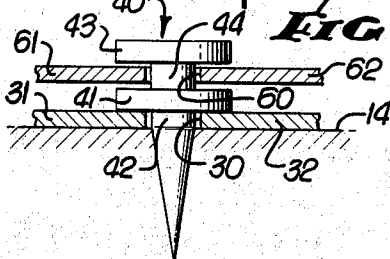
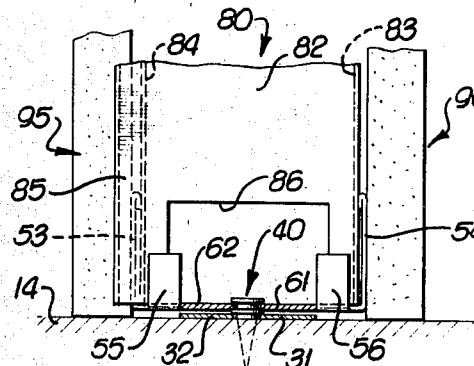


FIG. 4.



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PARTITION MODULE CONSTRUCTION

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ABSTRACT OF THE DISCLOSURE

Module construction including a framework to which may be attached modular panels of wallboard or the like, including longitudinal U-shaped trackway sections, preferably formed of sheet metal, for attachment to existing floor and ceiling, at least the floor trackway having an end portion, either integral or formed in a removable splice plate and provided with a slot formed centrally of a bifurcated tongue projecting beyond the nominal trackway end and virtually coplanar with the base of the trackway for embracing a shank portion of a removable attachment member such as a doubleheaded nail driven into the floor or ceiling, the trackway end portion also having one or more integral tabs lying in vertical planes normal to the trackway axis and serving to abuttingly contact tabs of an adjacent trackway section similarly provided with a central slot for slidably embracing another shank portion of the attachment member, the tabs serving also, when folded outwardly of the general outline of the trackway, as alignment flanges against which wallboard panel edges may be abutted for accuracy of alignment; and further including vertically extending studs for mounting in combination with such trackway sections, a preferred form of stud being provided with an integrally formed vertically extending fin or abutment flange projecting transversely of the trackway axis, a side panel of the trackway having its edge spaced inwardly from the end of the trackway proper to define, with the side panel edge of an adjacent trackway, a vertical recess or slot through which the abutment flange projects to serve as an alignment means for wallboard panels to be mounted on the trackways and studs; the slotted end portions of the trackways and the double-headed attachment member permitting rapid and easy assembly of a module into a partition or wall, and rapid and easy disassembly of the wall into its component modules for subsequent reuse.

BACKGROUND OF THE INVENTION

In many fields of construction, particularly in commercial buildings, it is necessary to divide a large area with a building into separate smaller work areas, individual offices and the like. A number of systems have been proposed to accomplish this, utilizing basically horizontally extending runner members fixed to the floor and ceiling, a number of vertically extending spaced parallel studs attached to the runners and extending between floor and ceiling, the runners and studs thus constituting a vertical framework, and wallboard units which are attached to the framework, the wallboard units being typically of modular size, such as four feet in width and eight feet in height.

Not infrequently it becomes necessary to change the arrangement of partitions defining various work areas, offices and the like within a large room, thus necessitating dismounting of the partitions and the runners and studs of the supporting framework, and repositioning the framework as desired and then mounting the wallboard units upon the repositioned framework. For economy and speed, it is very desirable that erection and dismantling of the framework and wallboard units be accomplished

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easily and rapidly, and that as many as possible of the component parts be reuseable.

SUMMARY OF THE INVENTION

The present invention is an improvement over existing and known constructions of the type referred to, in providing a trackway of generally U-shaped configuration and attachable by suitable removable means to horizontal structural members such as the floor and the ceiling. At least one end portion of the longitudinal trackway is provided with an opening or slot formed centrally of the trackway, through which may extend a double-headed nail or other removable fastening element driven into the floor or ceiling. The trackway end portion is also provided with means positively abutting against similar means on an adjacent trackway, whereby to insure that successive trackway sections are in proper position, in order to preserve the modular arrangement of the framework and of the wallboard units to be mounted thereon. In one form of the invention, such abutment means may take the form of tabs formed integrally with the trackway and folded so as to lie in vertical planes normal to the trackway longitudinal axis. The opening or slot in the trackway end portion is desirably formed by a bifurcated tongue formed integrally with the trackway and disposed in coplanar relationship with the trackway base. Each trackway is desirably also provided with alignment means against which wallboard units may be abutted when being mounted upon the partition framework. Such alignment means necessarily project outwardly of the general configuration of the trackway, and in a preferred form of the invention take the form of tabs lying in vertical planes normal to the trackway axis, the tabs being folded outwardly from side panel portions of the trackway proper and may also serve as the abutment means relative to an adjacent trackway, as mentioned previously.

The invention contemplates also that the alignment means against which the wallboard units may be abutted, may be provided by the studs themselves. Thus, in this form of the invention, the stud may be provided with a vertically extending fin or flange means, and the side panel of the trackway may be modified in construction, in order to provide, in conjunction with the edge of the side panel of an adjacent trackway, a vertically extending recess or slot through which the stud flange means may project, it being understood that the flange projects beyond the trackway side panel sufficiently to serve as the alignment means for wallboard units. In this form of the invention, there is accordingly provided a strong, interlocking arrangement of trackway, stud and wallboard unit, whereby to provide unusual strength and rigidity during use, while preserving the advantages of ready assembly and disassembly.

The trackway end slot desirably extends an inch or so on either side of the nominal end of the trackway section, as determined by the abutment means or tabs defining a modular plane, and the removable double-headed attachment member is driven into the floor or ceiling about 3/4 inch on one side or the other of the modular plane, depending upon the direction in which the modules are being assembled into a continuous wall.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 is an elevational view of an array of aligned modules forming a partition in accordance with the present invention.

FIG. 2 is a fragmentary sectional view, on an enlarged scale, looking downwardly on the arrows II-II of FIG. 1.

FIG. 3 is a fragmentary sectional view taken on the arrows III-III of FIG. 2.

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FIGS. 3a and 4 are sectional views taken respectively on the arrows IIIa—IIIa and IV—IV of FIG. 3.

FIG. 5 is a fragmentary perspective view of the end portion of a trackway and the lower portion of a stud embodying one form of the present invention.

FIG. 6 is a view similar to FIG. 5 showing another form of the present invention.

FIG. 7 is a sectional view, similar to FIG. 2, showing the use of a splice plate in the invention.

FIG. 8 is a fragmentary sectional view taken on the arrows VIII—VIII of FIG. 7.

FIG. 9 is a perspective view of a splice plate as used in the embodiment of the invention seen in FIG. 7.

DETAILED DESCRIPTION

A preferred form of partition module construction in accordance with the present invention will be described by reference to FIGS. 1, 2, 3, and 4. Therein, as best appears in FIG. 1, a wall construction including an array of aligned partition modules is shown extending from a floor indicated generally at 14 to a ceiling indicated generally at 16 and including in the array adjacent partition modules indicated generally at 18 and 20, described in greater detail hereinafter.

With reference now to FIG. 2, partition modules 18 and 20 are seen fragmentarily in greater detail, particularly as to their attachment to floor 14. Details of attachment to the floor seen in FIG. 2 are identical to details of attachment to the ceiling 16.

In the description of the present invention, it will be assumed that the completed wall of FIG. 1 is being constructed from right to left as seen in FIGS. 1, 2 and 3. Furthermore, it will also be assumed that the partition is being erected on a centerline marked on the floor, and in vertical alignment therewith, such a centerline on the ceiling. Installation of partition modules in accordance with the present invention at or near other walls, in corners, at doorways and in other similar environments will be briefly described later.

Thus in FIG. 2 a centerline on floor 14 is indicated at 22, and may be made, for example, by snapping a chalked string or in other suitable manner. Partition module 20 includes, as its lowermost member, a horizontally extending trackway indicated generally at 24, the trackway being desirably U-shaped in section (see FIG. 4), and including a horizontally disposed central panel 26, flanked by a pair of integrally formed vertically extending side panels 27 and 28.

As will be best understood by reference to FIG. 5, the end portion of the trackway 24 is provided with alignment means, here shown as including a slot 30 formed centrally of the horizontal central panel 26, and means are further provided, extending beyond the nominal end of the horizontal central panel whereby the effective length of slot 30 is extended. Such means just referred to include a pair of laterally spaced tongues 31 and 32, the outer portion of slot 30 constituting, in effect, a bifurcation between the tongues 31 and 32. As further shown in FIG. 5, the end portion of trackway 24 is provided with abutment tabs 33 and 34, lying in a common vertical plane, which may be referred to as a modular plane, formed of up-turned portions of the central panel 26 of the trackway. Slot 30 may be flared outwardly at its extreme outer end as indicated at 36, in order to facilitate its use, as will be later understood. Except for the flared portion 36, slot 30 is of uniform width throughout its length, and typically extends at least about one inch inwardly and outwardly of the modular plane defined by the outer surfaces of abutment tabs 33 and 34. The other end of trackway section 24 is similarly configured.

With further reference to FIG. 2, the installer adjusts the end of trackway 24 so that centerline 22 bisects slot 30, and the longitudinal axis of trackway 24 thus coincides with the centerline. A removable fastening element is provided in accordance with the invention to retain the trackway in this aligned position. Thus a double-headed

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fastening element indicated generally at 40 is driven into floor 14 on centerline 22, in the outer portion of slot 30, spaced from the modular plane of tabs 33 and 34 by a suitable distance, preferably of the order of $\frac{3}{4}$ inch. As best appears in FIG. 3a, the lower head of 41 of element 40 overlies edge portions of tongues 31 and 32, and the diameter of the shank 42 of fastening element 40, immediately beneath the lower head 41, is substantially equal to, and in any event no larger than, the width of slot 30. Thus the fastening element 40 securely retains trackway 24 against lateral movement, with its longitudinal axis coincident with centerline 22.

The lower trackway for the next panel module 18 may then be placed in position. With continued reference to FIGS. 2, 3 and 3a, the lower trackway of panel module 18 is indicated generally at 50, and it will be understood that the construction of the end portion of trackway 50 seen in FIGS. 2, 3 and 3a is identical to that of trackway 24, seen in detail in FIG. 5. Thus trackway 50 includes a central horizontal panel 52 and flanking vertically disposed side panels 53 and 54, formed integrally with the horizontal panel 52 and extending upwardly therefrom. In the horizontal central panel 52 there is formed a slot 60, corresponding in position and extent to slot 30 heretofore described in connection with trackway 24. Slot 60 effectively bifurcates the two tongues 61 and 62, which are essentially planar extensions of the central panel 52, and the outer end of slot 60 is desirably outwardly flared at 64.

Trackway 50 is also provided with a pair of upstanding abutment tabs 55 and 56. The installer positions trackway 50 with its tongues 61 and 62 on either side of the portion of fastening element 40 between its lower head 41 and its upper head 43. This portion of the shank, indicated at 44, is of substantially the same diameter as the portion 42 of the shank immediately below the lower head 41. Thus, assisted by flare 64, the shank portion 44 is received in slot 60 of trackway 50, and the installer moves trackway 50 so that abutment flanges 55 and 56 are in contact with the corresponding abutment flanges 33 and 34 of trackway 24. It will be understood that the other end of trackway 50 is then positioned in proper relationship with centerline 22 in the same manner as heretofore described in connection with the left end of trackway 24, and is retained in such position by another double-headed fastener element driven into the floor.

A similar method of attachment is employed for the trackway sections fastened to the ceiling 16, each trackway section being in vertical alignment with a trackway section fastened to the floor 14 as heretofore described.

Construction of the module proper may then be completed, by insertion in the vertically aligned trackways vertically extending studs, and by fastening to the studs, and to the trackways if desired, panels of appropriate construction, such as of Masonite or similar wallboard.

Thus vertically extending studs are placed in position at each end of the trackway sections. In the present embodiment of the invention, as will be best understood by reference to FIGS. 2 and 5, a stud indicated generally at 70 is generally U-shaped in section, and includes a central panel 72 and a pair of side panels 73 and 74, lying in spaced parallel planes perpendicular to the central panel 72. Additionally, stud 70 is provided with a fin means constituting a flange 75 lying in the plane of central section 72 and projecting beyond the side panel 74 to serve as an alignment means for a vertical edge of a wallboard panel. Stud 70 is placed in position in trackway 24, with side panels 73 and 74 of the stud in adjacent relation with, respectively, side panels 28 and 27 of trackways 24, lying within the trackway side panels; and central panel 72 is abutted against the inner surfaces of abutment tabs 33 and 34.

It will be noted that the near edge 29 of side panel 27 is recessed away from the modular plane of abutment tabs 33 and 34 by an appreciable distance indicated at 37, whereby to provide a gap through which flange 75

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may extend as shown. It will also be noted that the central panel 72 of stud 70 is provided, at its lower end, with an enlarged central recess 76.

The other end of trackway section 24 similarly receives a vertically extending stud, in a manner similar to the positioning of a stud at the right end of trackway section 50, seen in detail in FIG. 2. Thus, such a stud at the right end of a trackway section is indicated generally at 80 in FIGS. 2 and 3, and includes a central panel 82 and a pair of flanking sidewall panels 83 and 84. The stud 80 is also provided with fin means constituting a flange 85 projecting outwardly of the plane of side wall 84, and serving as an alignment means for a vertical edge of a wallboard panel to be later mounted on the stud. Stud 80 is positioned with its central panel 82 abutted against abutment tabs 55 and 56.

The partition modules are then completed by the attachment of wallboard panels to the studs and trackways of each module framework. With continued reference to FIG. 2, partition module 20 includes a pair of such wallboard panels, indicated generally at 90 and 91, attached to the sidewalls 73 and 74 of stud 70 by suitable fastening members such as self-tapping screws 92. The wallboard panels may also be attached by similar fasteners 93 to the vertically disposed sidewall panels of the trackway section, for added rigidity and strength. In module 18, wallboard panels 95 and 96 are fastened to stud 80 by screws 97, and to trackway 50 by screws 98.

It will now be seen that each partition module is a self-contained unit, made up of a framework consisting of lower and upper horizontal trackways and studs extending therebetween, and having mounted upon such framework the wallboard panels constituting the finished surfaces of the wall. A major advantage of the present construction is that it permits reuse of component partition modules with virtually no loss of parts, and with very rapid and easy disassembly and subsequent reassembly of the modules into a desired configuration to form a wall. Thus, if subsequent relocation of the wall is desired, the wallboard panels, such as those referred to at 90, 91, 95 and 96 in the foregoing description, are not removed from the partition framework. Instead, a complete partition module, once assembled, remains in such assembled condition throughout subsequent disassembly of a complete wall and reassembly thereof as desired.

It is moreover to be noted that the present construction provides studs having alignment means in the form of flanges 75 and 85 by which wallboard panels are accurately and quickly aligned during construction. Conventionally, such wallboard panels are available in modular sizes, typically four feet in width by eight feet in height. The advantages of alignment means for the wallboard panels to be mounted on the partition framework may be provided in accordance with another embodiment of the present invention, employing conventional studs rather than studs like 70 and 80 having integrally formed flanges 75 and 85, as heretofore described.

Such an arrangement is illustrated in the fragmentary view of FIG. 6, corresponding in its showing to that of FIG. 5 heretofore discussed. Thus a trackway section indicated generally at 124 includes a central horizontal panel 126 flanked by vertically extending parallel side panels 127 and 128. At the near end of trackway section 124, the central horizontal panel 126 projects outwardly in the form of a pair of tongues 131 and 132, bifurcated by a centrally disposed longitudinally extending slot 130, desirably provided at its outermost end with an outwardly flared portion 136. The slot 130 extends rearwardly into the major body portion of trackway section 124 by a distance of about one inch, approximately the same distance as the outward extension of tongues 131 and 132. It will accordingly be understood that the parts just described correspond generally to the parts shown in FIG. 5, identified by reference characters one hundred less than the reference characters just referred to.

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Means are provided in accordance with the embodiment of the invention shown in FIG. 6 for affording abutment against which a vertically extending stud may be placed, and for abutting against similarly arranged abutment means on adjacent trackway sections. In the present form of the invention, such abutment means take the form of tabs 133 and 134, constituting internal extensions of side panels 128 and 127 of the trackway 124. Additionally, alignment means for wallboard panels are also provided, here shown as including tabs 135 and 136, constituting outwardly turned end portions of sidewall panels 128 and 127 of the trackway section.

In accordance with the invention, a stud indicated generally at 170 includes a generally flat central portion 172 flanked by a pair of sidewall panel portions 173 and 174, and the stud is received within the trackway section 124 in the manner shown with the sidewall portions 173, 174 of the stud in juxtaposition with and immediately inwardly of side panels 128 and 127.

In the form of the invention of FIG. 6, the tongue portions 131 and 132 are shown as substantially wider than tongues 31, 32 heretofore shown. It will be understood that, if tongue portions 131 and 132 were of narrower width, the abutment tabs 133 and 134 could be formed by upturned portions of the central horizontal panel 126 of the trackway 124, as in the case of abutment tabs 33 and 34 previously described. Under certain conditions, manufacturing economies in forming the horizontal trackway sections may be achieved by the arrangement just mentioned, thereby avoiding the necessity of providing folding equipment in the manufacturing process for folding tabs 133, 134 inwardly and tabs 135, 136 outwardly from their respective side panels.

Under certain circumstances it may become necessary to cut off the portions of the tongues which project beyond the nominal end of a trackway section. This necessity may arise, for example, when commencing the construction of a wall in accordance with the invention from an existing wall or other structure. Such modules may nevertheless be adapted for reuse in a later rearrangement of modules by providing, in effect, a substitute for the integrally formed tongues heretofore illustrated and described. An arrangement of this kind is illustrated in FIGS. 7, 8 and 9, and contemplates the use of a splice plate shown in perspective in FIG. 9 and indicated generally at 200.

Splice plate 200 includes a base portion 202 bounded laterally by side edges 203 and 204, which are spaced apart by a distance equal to the width of a horizontal trackway section, between its side panels. The forward portions of side edges 203 and 204 may be inwardly recessed at 205 and 206 respectively, to accommodate the side panels of a vertically extending stud when the splice plate is positioned within the trackway, as will be now described.

FIG. 7 is a view corresponding in major respects to FIG. 2 heretofore described, and in FIG. 7 the parts are referred to by reference characters two hundred greater than the corresponding parts in FIG. 2. Thus a horizontally extending trackway indicated generally at 224 includes a central horizontal panel 226 bounded laterally by side panels 227 and 228, and a vertically extending stud indicated generally at 270 is generally U-shaped in section, and is disposed with its parallel sidewall portions 273 and 274 received in close juxtaposition with the sidewalls 228 and 227 respectively of trackway 224. Splice plate 200 is positioned in trackway 224, being inserted therein through the enlarged recess 276 formed in the lower edge of stud 270, similar to recesses 76, 86 and 176 in studs 70, 80 and 170 respectively. Side edges 203 and 204 of the splice plate are snugly received between the side panels 228 and 227 of the trackway, with the notched edges 205 and 206 similarly received snugly between the side panels 273 and 274 of stud 270.

Projecting forwardly from the base 202 of the splice plate is a pair of tongues 231 and 232, effectively bi-

furcated by a longitudinally extending central slot 230, desirably flared outwardly at 236 at its outer end.

The module as thus provided with splice plate 200 is then fastened down in place on the floor in a manner similar to that heretofore described in connection with FIG. 2. Thus the slot 230 of the splice plate is centered on the centerline 222 of the floor, and a double headed fastening element indicated generally at 240 is driven through the slot firmly into the floor. As best appears in FIG. 8, the fastening element 240 includes a lower head 241, which then tightly overlies portions of tongues 231 and 232 immediately adjacent to slot 230, thereby retaining the splice plate, and consequently trackway section 224 of the module, in proper location relative to the centerline 222.

As seen in FIG. 7, the left module includes horizontal trackway section 250, and it may be assumed that the portions of its tongues projecting beyond the nominal end of the module have also been cut off. The trackway section is provided with a slot 260, flanked by the base portions 261 and 262 of the truncated tongues. Thus the module is positioned by sliding it rightwardly as seen in FIG. 7, so that the portions 261 and 262 are received above the lower head 241 and below the upper head 243 of the double headed fastening element 240. Thereafter, construction of the wall proceeds in the same manner as heretofore described.

In the practice of the present invention, it is assumed that the horizontal trackway sections and the vertically extending studs are made of sheet metal or material of equivalent characteristics, as is conventional in the building industry; the gage of such sheet metal may for example be about 16. The splice plate 200, when used, is desirably of somewhat thicker metal, preferably 12 gage or somewhat heavier, so that it will more accurately maintain the module with which it is used in accurate alignment through the life of the wall.

It is furthermore contemplated in accordance of the present invention that the walls will be finished in conventional manner, after the wallboard panels have been mounted on the partition framework. Such conventional finishing techniques may include, for example, batten strips, taping or the like. Such details are not illustrated in detail in the present invention, since they are well known in the art and form no part of the present invention as such.

I claim:

1. In a partition module construction, a longitudinally extending trackway having a central longitudinal axis and comprising a horizontal central panel positionable on a horizontal structural surface and integrally formed side panels flanking the central panel and extending vertically therefrom,

the trackway side panels being disposed between vertical modular planes normal to said axis and defining the nominal trackway length,

one end portion of the trackway including tongue means coplanar with the central panel and bifurcated by a longitudinal slot formed therein centered on the trackway longitudinal axis;

and a double-headed fastening element driven through said slot into the structural surface and spaced from the adjacent modular plane for retaining the trackway in position.

2. The invention as defined in claim 1 wherein end portions of the trackway are provided with integrally formed abutment tabs folded from the trackway side panels and lying in said modular planes.

3. The invention as defined in claim 1 including a splice plate having an inner portion overlying an end portion of the central panel and provided with side edges snugly contacting the inner faces of the side panels, and an outer extension projecting beyond the adjacent modular plane and provided with tongue means bifurcated by a longitudinal slot centered on the trackway longitudinal axis.

4. The invention as defined in claim 1 wherein an end of the trackway is provided with a wallboard panel alignment tab integrally formed with and folded outwardly from a trackway side panel and lying in a modular plane.

5. In a partition module construction, in combination: a longitudinally extending trackway having a central longitudinal axis and comprising a horizontal central panel positionable on a horizontal structural surface and integrally formed side panels flanking the central panel and extending vertically therefrom, the trackway side panels being disposed between vertical modular planes normal to said axis and defining the nominal trackway length,

and a vertically extending stud having its lower portion received between the trackway side panels, the stud having a central panel lying in a vertical plane normal to the trackway axis and integrally formed side panels lying in spaced vertical planes parallel to the trackway axis,

the end edge of one of the trackway side panels being spaced inwardly from the adjacent modular plane to provide a vertically extending recess between said edge and plane,

and the stud being provided with integral vertically extending fin means projecting normal to the trackway axis through the recess and beyond the plane of the trackway side panel to provide an alignment flange for the edge of a wallboard panel.

6. The invention as defined in claim 5 wherein said stud is formed of thin sheet material, and said fin constitutes a folded portion of the stud sheet material at the intersection of the stud central panel and a stud side panel.

7. In a partition module construction, a longitudinally extending trackway having a central longitudinal axis and comprising a horizontal central panel positionable on a horizontal structural surface and integrally formed side panels flanking the central panel and extending vertically therefrom,

the trackway side panels being disposed between vertical modular planes normal to said axis and defining the nominal trackway length,

each of the end portions of the trackway being provided with alignment means for accurate lateral positioning of the trackway relative to the structural surface including tongue means coplanar with the central panel and projecting beyond the adjacent modular plane, each tongue means being bifurcated by an outwardly open longitudinal slot formed therein centered on the trackway longitudinal axis.

8. The invention as defined in claim 7 wherein end portions of the trackway are provided with integrally formed abutment tabs folded from a trackway panel and lying in said modular planes.

9. The invention as defined in claim 7 wherein said slots extend inwardly of the modular planes.

10. The invention as defined in claim 7 including a double-headed fastening element driven through each of said slots into the structural surface and spaced from the adjacent modular plane for retaining the trackway in position.

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U.S. Cl. X.R.

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