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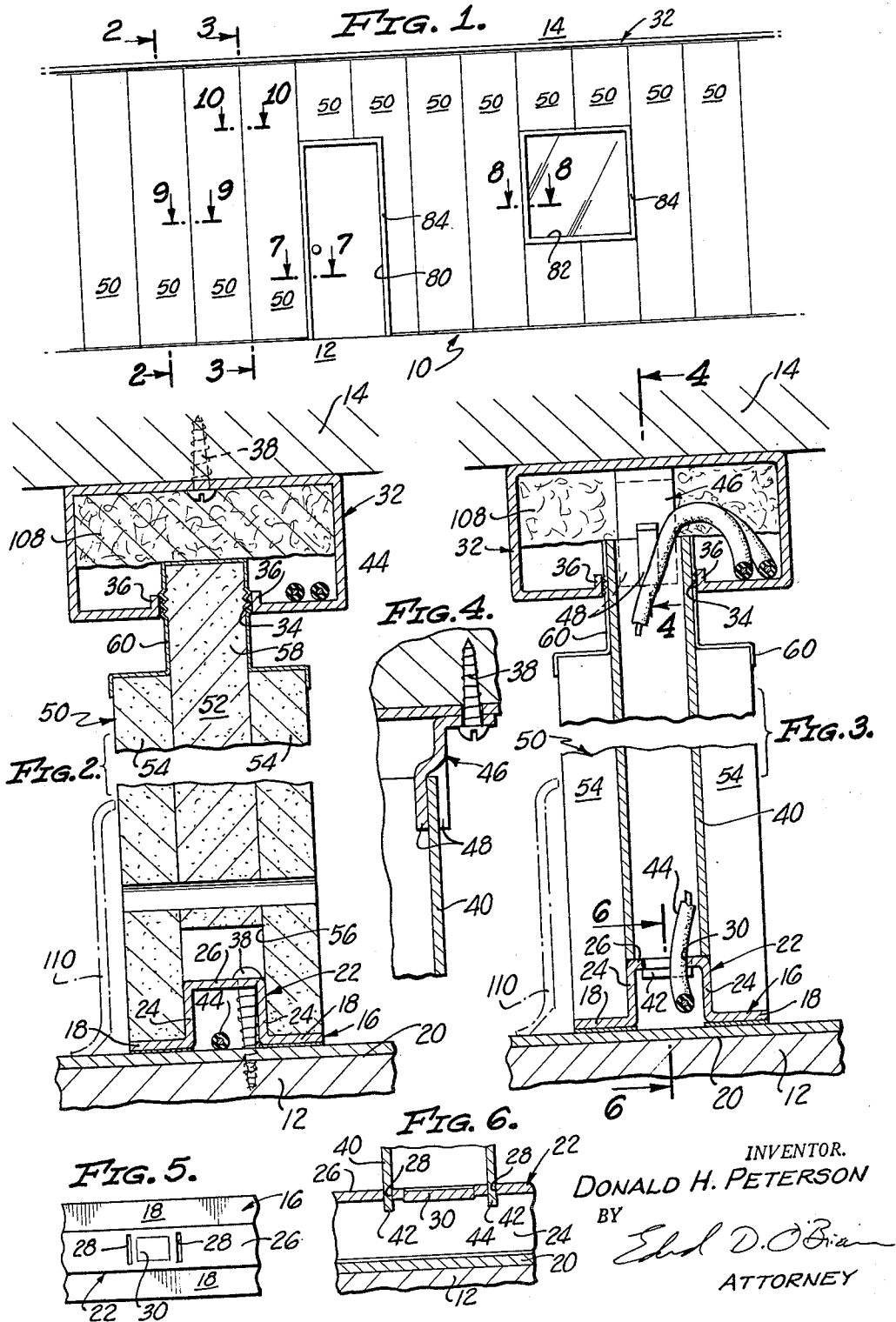
D. H. PETERSON

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INTERNAL BUILDING PARTITION STRUCTURES

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2 Sheets-Sheet 1



INVENTOR.  
DONALD H. PETERSON  
BY  
*Eldred D. O'Brien*  
ATTORNEY

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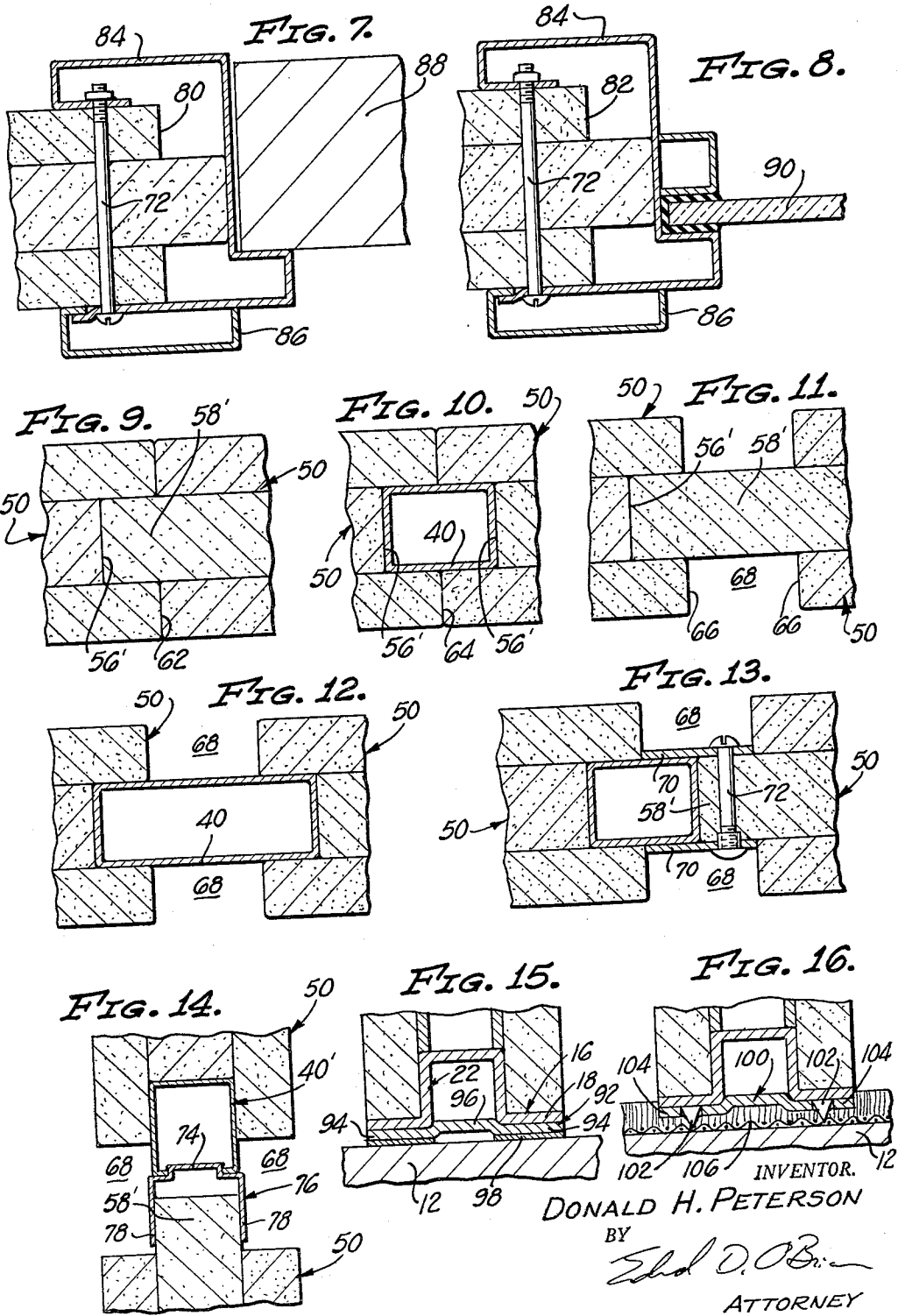
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**INTERNAL BUILDING PARTITION STRUCTURES**  
 Donald H. Peterson, 14861 Copper St.,  
 San Fernando, Calif.  
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This invention pertains to a new and improved internal building partition structures.

Classically buildings have been formed with the internal partitions in them being an integral, fixed part of these buildings. Thus, for example, the usual internal building partition has been formed of about the same material used in the construction of a building at the same time the building is erected. In present day office and similar buildings this type of structure is considered quite disadvantageous for a variety of reasons of primarily a commercial character.

As a result of these reasons within roughly the last twenty-five years a large number of efforts have been made to develop internal partition structures or systems which are of such a nature that they are capable of being erected or disassembled within a building at any time without any necessity for going through the steps which have to be employed in erecting or tearing down a conventional or classical building wall or partition of the type briefly described in the preceding paragraph. As a general rule, such attempts have been concentrated primarily on so-called demountable partition structures employing a plurality of interlocking parts.

Although such prior "demountable" structures have been often used, it is considered by many competent authorities that they are, as a class, comparatively undesirable or disadvantageous in character. Frequently the cost of such prior structures or systems is uneconomically high. This is usually a consequence of the relative complexity of such a prior structure or system and the cost of erecting such a structure. Another factor affecting the utilization of such prior "demountable" structures is the fact that frequently they have been incapable of being effectively utilized in conveying electrical lines or conduits because of either code or other requirements. Various code requirements per se have frequently either limited or prevented the installation of these prior systems or structures for structural reasons and because of a failure of these prior structures or systems to be adequately resistant to the effects of fire.

An object of the present invention is to provide new and improved internal building partition structures or systems which are more advantageous than prior related "demountable" structures as discussed briefly in preceding paragraphs. Another object of this invention is to provide structures or systems of this type which are relatively inexpensive both to manufacture and install, which are capable of being used so as to convey electrical lines or other conduits to virtually any desired location within a partition wall in accordance with various code requirements, and which are capable of being built so as to meet frequent building code requirements such as fire resistance and the like.

These and various other objects of this invention, as well as many specific advantages of it, will be more fully apparent from a detailed consideration of the remainder of this description including the appended claims and the accompanying drawings in which:

FIG. 1 is a side elevational view of an internal building partition of the present invention;

FIG. 2 is a cross-sectional view taken at line 2-2 of FIG. 1;

FIG. 3 is a cross-sectional view taken at lines 3-3 of FIG. 1;

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FIG. 4 is a cross-sectional view taken at lines 4-4 of FIG. 3;

FIG. 5 is a top plan view of a floor track section employed with this invention;

FIG. 6 is a cross-sectional view taken at line 6-6 of FIG. 3;

FIG. 7 is a cross-sectional view taken at line 7-7 of FIG. 1;

FIG. 8 is a cross-sectional view taken at line 8-8 of FIG. 1;

FIG. 9 is a cross-sectional view taken at line 9-9 of FIG. 1;

FIG. 10 is a cross-sectional view taken at line 10-10 of FIG. 1;

FIGS. 11 to 14 are cross-sectional views similar to FIG. 10 of modified joint structures usable with this invention;

FIGS. 15 and 16 are cross-sectional views similar to FIG. 6 of modified floor track structures which may be employed with this invention.

The accompanying drawings are intended to show clearly the character and construction of a presently preferred type of internal building partition system of this invention. Because of this, the accompanying drawings are not to be considered "scale" drawings illustrating the true sizes and shapes of various parts as they would be manufactured for actual use. Instead, in many locations in the drawings, the relative sizes of various parts have been changed slightly so as to facilitate an understanding of the present invention.

From a thorough consideration of these drawings and of this specification, it will be realized that building partition systems using the essential or inventive features set forth herein can be constructed in a number of different ways from different materials, etc., and that such variation or modification may be readily accomplished through the use of routine engineering skill or ability. For these reasons, the accompanying drawings are not to be taken as limiting the invention in any respect.

Whenever convenient in describing the structures shown in the drawings, like numerals have been used to designate like parts so as to avoid the necessity for repeating various descriptive matters.

As an aid to understanding this invention it can be stated in essentially summary form that it concerns internal partition or wall structures or systems, each of which is designed to be installed in a building between preexisting floor and ceiling so as to span the distance between these parts of building. Each of these systems or structures includes floor and ceiling track means between which there are held a plurality of stud means in such a way that these stud means are at least in part held by both of the track means. Further, within each of these systems or structures a plurality of partition panels are used so as to be supported by both of the track means and the stud means utilized.

The actual nature of this invention is more fully described by referring directly to the accompanying drawings. In FIG. 1 there is shown a wall 10 formed using an internal partition or wall structure or system of this invention so as to span the distance between a floor 12 and a ceiling 14. This wall 10 utilizes an elongated floor track 16 having flat parallel sides 18 which are adapted to rest directly upon a floor covering 20. These sides 18 are connected by means of a hollow flange 22 which is defined by upwardly projecting parallel side walls 24 extending from the adjacent ends or edges of the sides 18 and by a top wall 26 connecting the extremities of the side walls 24 remote from the sides 18. The flange 22 extends the length of the track 16. It is noted that the sides 18 are parallel to the top wall 26 in the embodiment of the invention shown in the initial figures of the drawings. Preferably this top wall 26 is stamped or otherwise formed

during a manufacturing operation so as to contain a plurality of regularly spaced knock-out type connecting openings 28 and conduit openings 30. These openings 28 and 30 are illustrated in FIG. 5 of the drawings.

In the wall 10 an elongated ceiling track 32 is mounted upon the ceiling 14 directly above the floor track 16 so as to be parallel to this floor track. As indicated in FIGS. 2 and 3 of the drawings this ceiling track 32 is of a hollow, box-like cross-sectioned configuration and includes a bottom slot extending along its length located immediately above and parallel to the hollow flange 22. If desired, small internally projecting end flanges 36 may be formed internally of the ceiling track 32 so as to extend along the sides of the slot 34. Screws or similar fasteners 38 are preferably utilized so as to secure the ceiling track 32 in location upon the ceiling 14. If desired, such screws or fasteners 38 may be also utilized to hold the floor track 16 in position as shown in FIG. 2 although this is not necessary with this invention.

Periodically between the tracks 16 and 32 there extend hollow vertical studs or mullions 40. Each of these studs 40 is preferably of a uniform rectangular cross-sectional configuration and rests upon the top wall 26 and extends only a short distance into the ceiling track 32 through the bottom slot 34. Connecting means are preferably used on the lower extremities of the studs 40 so as to secure these ends of the studs to the connecting openings 28. In the embodiment of the invention shown, these connecting means comprise small projections 42 formed on the ends of the studs 40 by sawing or other equivalent operations. These projections 42 are adapted to slide through openings 28 so as to place the interiors of the studs 40 into communication with the interior of the flange 22 through the conduit openings 30 when, of course, these openings 30 are "knocked out" so as to be open so as to provide paths for electrical and other conventional conduits 44. If desired, various prestamped connector brackets or the like designed to accomplish the same purpose as the projections 42 may be used instead of these projections. Normally the weight of the studs 40 is sufficient to establish a "ground" connection between it and the floor track 16 with this construction.

In the wall 10 it is not normally necessary to rigidly secure the upper ends of the studs 40 in place. However, if these studs are to carry certain types of electrical conduits 44 in order to meet the requirements of various codes it is considered necessary to ground these studs 40 to the ceiling track 32. For this purpose small brackets such as the bracket 46 indicated in FIGS. 3 and 4 of the drawings may be employed. This bracket 46 is of an L-shape, and is adapted to be mounted in contact with the interior of the track 32 and the ceiling 14 by means of a screw 38; it includes resilient fingers 48 which are adapted to slide over and firmly engage a wall of a studs 40 so as to establish electrical contact with this studs. Other equivalent brackets can be used for this purpose.

In the wall 10 a plurality of partition panels 50 are employed so as to extend between the tracks 16 and 32 and so as to be supported against lateral bending by means of the studs 40. Preferably each of these panels includes a center, fire-resistant wall 52 of asbestos, gypsum or the like and attached side walls 54 of the same or other material. The wall 52 in any panel 50 is of about the same thickness as the distance between the side walls 24, and the width of the slot 34. The walls 52 and 54 in any panel are preferably assembled together as shown in FIG. 2 of the drawings so that the center wall 52 is offset with respect to side walls 54 in order to define a bottom groove 56 which fits over and receives the flange 22 and so as to define a top extension 58 which fits through the slot 34. If desired, a thin protective cap 60 of metal, plastic, or of a coating material may be located along the top extremity of each of the panels 50 so as to protect against the effect of abrasion, handling, and the like. Each of the panels 50 is preferably constructed of such dimensions

that the side walls 54 are shorter than the distance between the tracks 16 and 32 so as to permit a method of assembly in which the top extension 58 of any panel is inserted upwardly into the track 32 and in which a particular panel 50 is then dropped down so as to straddle the flange 22.

In the wall 10 side edges 62 of some of the panels 50 are formed as indicated in FIG. 9 of the drawings so as to define grooves 56' and extensions 58' similar to the grooves 56 and extensions 58 previously described so that these side edges 62 may be moved together so as to establish a tongue and groove type of connection as shown. Other side edges 64 of the panels 50 in the wall 10 are both formed so as to include side grooves 56' as indicated in FIG. 10 of the drawings. This type of structure as indicated in this figure is designed so as to enable the two panels 50 illustrated in FIG. 10 to be moved together so as to completely encase the stud 40 shown in this FIGURE so that the panels 50 adjacent to this stud 40 are supported by this stud against lateral bending or the like.

If desired, the wall 10 may be modified so as to include panels 50 as indicated in FIGS. 11 through 14 of the drawings which are designed for decorative or other effects. In FIG. 11 two such panels are shown including side edges 66 employing a groove 56' and an extension 58', both as previously described, which are dimensioned so as to space the principal portions of these panels 50 from one another in order to provide vertical side grooves 68 in a wall. Such grooves 68 may also be provided by utilizing panels 50 of the type illustrated in FIG. 10 of the drawings with a stud 40 of elongated rectangular cross-sectional configuration as indicated in FIG. 12 of the drawings. Such grooves 68 can also be formed in a wall 10 of the present invention using panels 50 as indicated in FIG. 9 of the drawings with the type of studs 40 shown in FIG. 10 by utilizing side plates 70 of a spacer variety as illustrated in FIG. 13. In this case bolt-like fasteners 72 preferably are employed so as to engage these plates 70 and to secure them to the extension 58' illustrated.

When it is desired to utilize a stud so that convenient access is available to the interior of the stud at all times, it is possible to utilize together panels 50 of the type illustrated in FIG. 9 of the drawings together with a stud 40' as indicated in FIG. 14 of the drawings. In this stud 40' one side wall of the complete stud is removed and this side wall is covered in use by the base 74 of a generally U-shaped clip 76, the ends 78 of which resiliently engage the extension 58' as illustrated. Preferably the base 74 with a clip of this type is bent as illustrated so as to "latch" or snap into the open side of stud 40' substantially as shown.

One advantage of the present invention lies in the ease with which door and window openings 80 and 92 respectively may be created within the wall 10. In creating such openings it is only necessary to space the studs 40 so that they do not interfere with these openings, and to form and/or cut the panels 50 surrounding these openings to a desired size and configuration. After this is done resilient jams 84 may be inserted surrounding these types of openings, and may be secured to the panels 50 defining these openings by means of fasteners 72. Small cover plates 86 may be used in conjunction with the jams 84 for finishing purposes. Either a door 88 or a window 90 may be mounted upon the jams 84 in such openings, as indicated in FIGS. 7 and 8 of the drawings, in a conventional manner.

With certain types of floors it is preferred to utilize with a floor track 16 any of a number of several bearing plate constructions as indicated in FIGS. 15 and 16 of the drawings. In FIG. 15 there is shown a bearing plate 92 having sides 94 which are positioned against the sides 18 of the floor track 16 and having an upwardly bent center portion 96 which fits up into the flange 22 so as to completely enclose the interior of this flange. If desired,

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this type of construction may be secured to the floor 12 by means of adhesive layers 98 located between the sides 94 and this floor. When this invention is to be utilized on a floor which is already carpeted, a slightly modified bearing plate 100 which is substantially identical to the bearing plate 92 except for downwardly extending bent, pointed tabs 102 which extend from sides 104 (corresponding to the sides 94) may be employed. These tabs 102 are capable of engaging a carpet 106 so as to securely position the floor track 16 as shown.

One major advantage of a construction of the present invention lies in the fact that the various parts of such a structure or system as described may be easily assembled together in virtually any desired arrangement or pattern as desired for architectural, decorative or utilitarian reasons. Of course, such a structure or system may be disassembled, if necessary, with similar ease. Obviously the exteriors of the panels used may be finished in any manner consistent with desirable interior appearance. If desired a ceiling track 32 as described may be suspended for a pre-existing ceiling instead of being directly attached to it; the floor track 16 may be referred to as a channel if desired.

Another more important feature of the present invention lies in the fact that conduits 44 may be carried in virtually any desired path through the tracks 16 and 32 and the studs 40, within a complete wall such as the wall 10 of this invention. As a result of this, appropriate conventional terminal boxes and analagous outlets for other conduits (not shown) can be mounted in virtually any location upon such a wall. When the track 16 and 32 and the studs 40 are formed of metal, as they are in the presently preferred embodiment illustrated, these various members are considered to meet various code requirements for totally enclosed wiring of electrical circuits. Hence, with a system or structure of the present invention, the use of conventional electrical conduits, armored cable, or the like, as required in many locations, is eliminated.

In order to increase fire resistance of walls constructed in accordance with this invention, and to help control noise to some limited extent, it is possible to "pack" ceiling tracks, such as the track 32, with a Fiberglas or similar inert, resilient bat, such as the bat 108 illustrated in FIG. 2 of the drawings. The use of such a bat does not prevent the use of conventional electrical or other conventional conduits or cables 44. If desired, various molding panels or the like such as the panel 110 illustrated in phantom in FIGS. 2 and 3 may of course be used with walls such as the walls 10.

Because of the nature of this invention, and the fact that it is susceptible to routine engineering modification and variation, it is to be considered as being limited only by the appended claims forming a part of this disclosure.

I claim:

1. In a building having a floor and a ceiling, an internal building partition structure which includes: a metal floor track located upon said floor, said floor track including a hollow flange extending upwardly therefrom away from said floor along the entire length of said track, said flange having parallel side walls and top wall positioned at the uppermost extremities of said sidewalls of said floor track, and having a plurality of openings formed in said top wall so as to lead into the interior of said hollow flange; a hollow metal ceiling track, having a bottom slot formed therein, mounted on said ceiling so as to be located parallel to said bottom track directly above said flange; a plurality of hollow metal stud members, each of said members extending vertically into said slot and having a lower end engaging and fitting closely against said flange so as to be in communication with the interior of said flange through said opening in said top wall of said flange and with the interior of said ceiling track; means for connecting each of said stud members to said top wall of said flange; and a plurality of partition panels, each of said partition panels being located on said floor track so as to extend upwardly therefrom and including a groove receiving said floor track and a continuous extension extending through said slot, in said ceiling track, each of said panels being of such a length so as to be capable of being assembled with respect to said floor and ceiling tracks by the extension thereon being inserted into locking side edges, other of said panels including side edges engaging and enclosing said stud members so as to be secured by said stud members against movement; clip means grounding at least some of said stud members to said ceiling track; and electrical conduit means extending within the interior of said ceiling track and into the interiors of said stud members grounded by said clip means.

2. An internal building partition structure as defined in claim 1 including bearing plate means located between said floor track and said floor, said bearing plate means enclosing the interior of said hollow flange so as to form an enclosed conduit path.

#### References Cited in the file of this patent

#### UNITED STATES PATENTS

Re. 19,634	Bohnsack	July 9, 1935
2,038,115	Keller	Apr. 21, 1936
2,058,372	Venzie	Oct. 20, 1936
2,699,669	Nelsson	Jan. 18, 1955
2,884,779	Buergin et al.	May 4, 1959
2,958,403	Robertson	Nov. 1, 1960
2,966,967	Levy et al.	Jan. 3, 1961