Aug. 15, 1933. C. T. HANSEN 1,922,694

PARTITION CONSTRUCTION

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FIG. II.

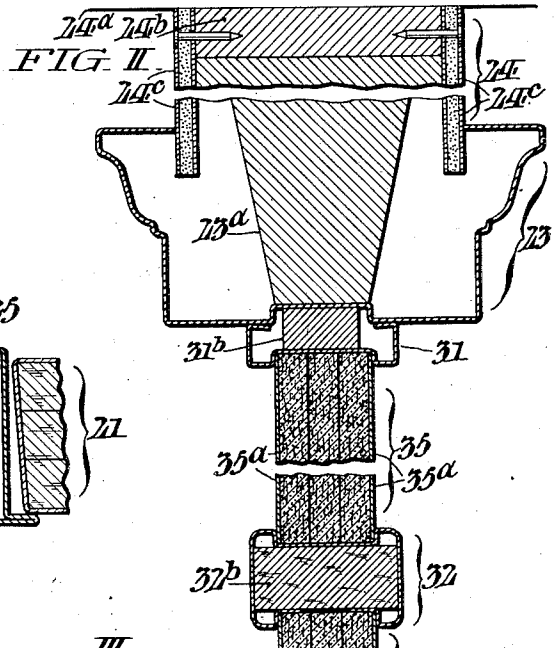
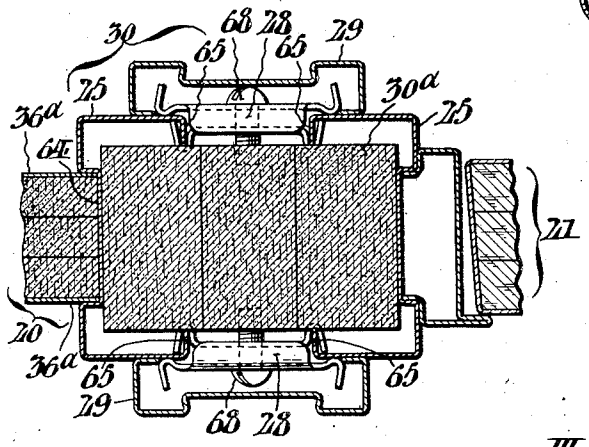
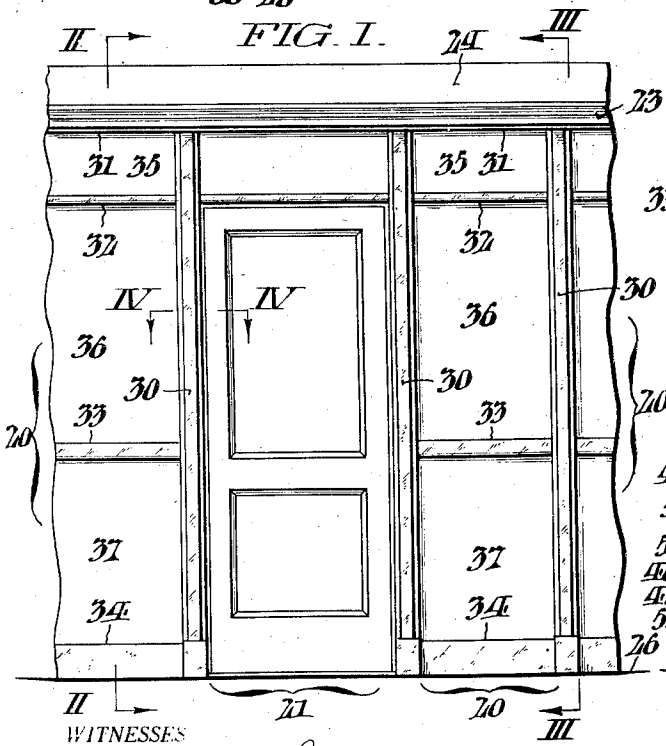


FIG. IV.



II FIG. I. III



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PARTITION CONSTRUCTION

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FIG. III.

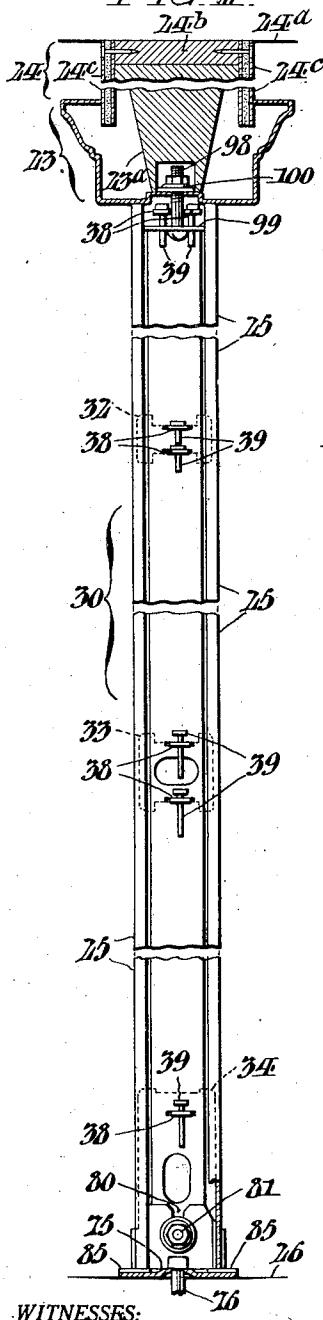


FIG. V.

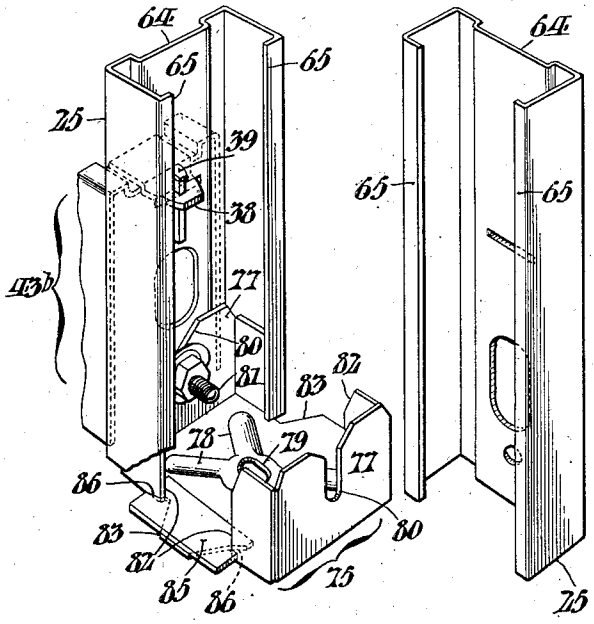
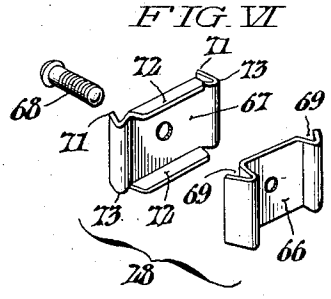


FIG. VI.



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PARTITION CONSTRUCTION

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FIG. VII.

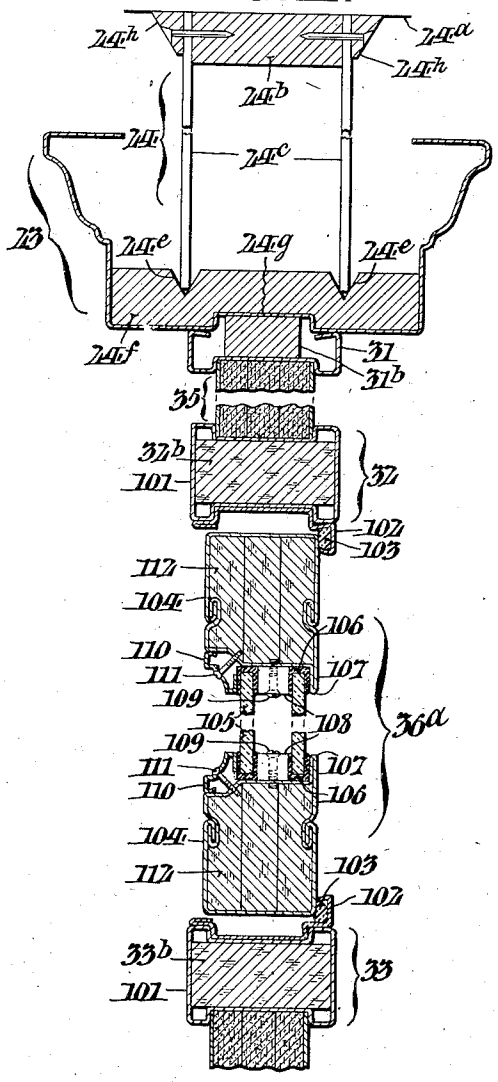
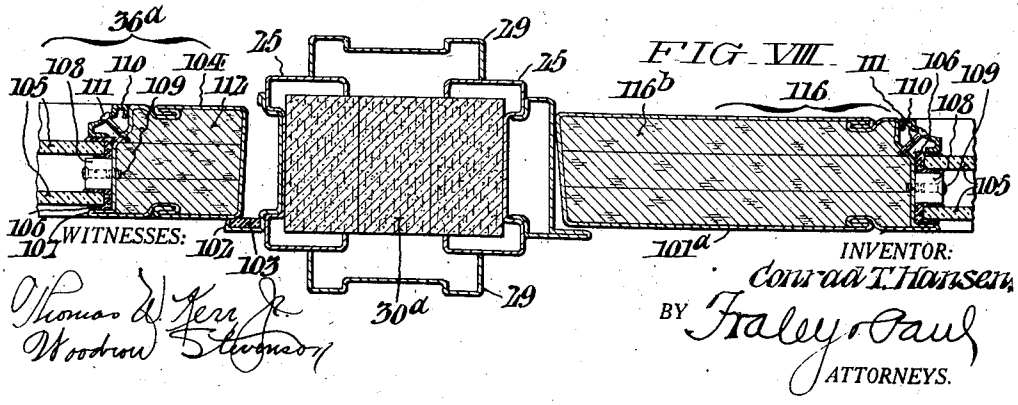


FIG. VIII.



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UNITED STATES PATENT OFFICE

1,922,694

PARTITION CONSTRUCTION

Conrad T. Hansen, Bywood, Pa., assignor to Hale & Kilburn Co., Philadelphia, Pa., a Corporation of Delaware

Application November 21, 1931
Serial No. 576,493

8 Claims. (Cl. 189—34)

This invention relates to partition construction and the like, and especially sectional and sound-proof partitioning. The aim of the invention is to provide a simple construction, and to minimize noise transmission between rooms or spaces separated by the partitioning. In suitable forms of embodiment, such as hereinafter described, it affords an aesthetically pleasing construction consisting of sections and parts that can be manufactured and stocked in quantity at comparatively low cost, and can be easily, rapidly, and economically installed.

In the drawings, Fig. I is a side elevation of a portion of a partition construction embodying the invention.

Figs. II and III show vertical sections through various parts of the structure, taken as indicated by the lines and arrows II—II and III—III in Fig. I.

Fig. IV shows a horizontal section, taken as indicated by the line and arrows IV—IV in Fig. I, through one of the posts.

Fig. V is a perspective view of the construction at the foot of one of the posts, one of the parts of the post being shown as removed from the rest and turned to a different position.

Fig. VI is a perspective view of the parts forming a clamp for uniting the post sections as shown in Figs. I and IV.

Fig. VII is a fragmentary vertical sectional view, taken like Fig. II, but showing certain differences in construction.

Fig. VIII is a fragmentary horizontal sectional view, taken like Fig. IV, but showing constructions like Fig. VII.

Fig. I shows a partition installation, including an ordinary unit section 20, and portions of two other such sections 20, 20; also a door section 21; a cornice 23, common to the unit sections 20, 21, 20, 20; and a horizontal filler 24 (Figs. I and II) between the cornice 23 and the ceiling 24*a*.

Structurally, the various parts of the partition are held erect and in position by vertical uprights 25 at the junctions of adjacent unit sections, extending from the floor 26 to the cornice 23. As shown in Figs. I, III and V, these uprights are provided in pairs 25, 25 in each instance; are of channel section, arranged (in each pair) to face with their flanges toward one another; and are interconnected (and at the same time spaced apart) by clips or clamps 28 at suitable vertical intervals. To close the spaces between the uprights 25, 25 of each pair and conceal the clamps 28, there are channel-like cover plates 29, 29, removably mounted and secured in place, as hereinafter described.

It will be seen, therefore, (Figs. I and IV) that each pair of the interconnected uprights 25, 25 coact (with one another, and also with the covers 29, 29) to form what is in appearance and effect a single post 30, so that the uprights 25 may aptly be described as half-posts. As shown in Figs. I and IV, each of the unit sections 20 consists of two channel uprights 25, 25 facing away from one another, and interconnected by the intermediate structure of the section unit, comprising one or more horizontal members 31, 32, 33, 34, with one or more panels 35, 36, 37. The edges of the panels 35, 36, 37 fit in grooves in the uprights 25, 25 and in the horizontals 31, 32, 33, 34: i. e., the web of each channel upright 25 is itself reversely channelled or grooved, and the upper and lower edges of the horizontals are likewise channelled or grooved. The horizontals 31, 32, 33, 34 are of tubular character: i. e., the uppermost horizontal 31 is an upward-facing channel, similar in section to the uprights 25 and covers 29; the intermediate horizontals 32, 33 are round-cornered rectangular sheet metal tubes or channels, open downward; and the lowermost horizontal 34 is a hollow round-cornered rectangular sheet metal structure,—further described hereinafter. Each of the horizontals 31, 32, 33, 34 has at each end one or more apertured tongues or lugs 38 projecting through an opening in the web of the corresponding upright 25, and fastenings such as wedge keys 39 are inserted through the holes in the lugs 38, to secure the uprights 25, 25 to the ends of the horizontals. The end lugs 38 are formed by sheet metal strips welded to the upper sides of these members.

As shown in Fig. II, the base 34 comprises an upper part 43 of (inverted) U-bent or channel-bent sheet metal, with rounded corners, having a reverse channel or groove in its web to receive a panel edge as above described, and a lower part 45 adapted to rest on the floor and receive the legs 46 of the part 43 rather loosely. Only the upper part 43 is secured to the uprights 25 by the lugs 38 and fastenings 39 as above described. Thus the base 34 for each unit section is "self-adjusting" in vertical width (so to term it), so as to compensate for inequalities in the floor 26.

As shown in Fig. II, the lower part 45 has narrow vertical openings or chambers 50 to accommodate the legs 46 of the part 43. To reduce friction and permit freer relative adjustment of the parts 43 and 45, the outer sides

of the openings 50 are recessed or undercut, so that practically the only frictional contact of the legs 46 with them is at their inner sides. It is this friction that holds the part 45 in place and prevents it from dropping off the part 43 before the unit section is installed. Preferably, the part 45 is itself made up of two parts: an outer sheet metal channel 51, with inturned flanges 52 at the tops of its sides or legs, and an inverted inner sheet metal channel 53, with bevelled corners 54, and out-turned lower flanges 55. These flanges 55 are turned downward at 56 and engaged in the lower folds of the sheet metal of the outer channel 51, and thus determine the positions of the inner walls of the chambers 50, 50 and their pressure on the legs 46 of the part 43.

The partition is effectively and completely sound-proofed by insulative construction or filling of its structural components. As shown in Figs. II and IV, the panels 35, 36, 37 are of sound-proof construction, each consisting of several layers or sheets of sound-insulative or absorbent fiber board between finish sheets 35*a*, 36*a*, 37*a*, which may be of thin sheet metal. The otherwise hollow horizontals 31, 32, 33, 34 have rectangular fillings 31*b*, 32*b*, 33*b*, 34*b*, of sound-insulative or absorbent material such as cork or wood. The otherwise hollow posts 30 have rectangular fillings 30*a*, each consisting of several strips of sound-insulative or absorbent material like cork, interposed between the adjacent channel half-posts 25, 25 and engaged therein. The cornice 23 has a sound-proof filling 23*a*, as more fully described hereinafter.

As already explained, each post 30 comprises two uprights 25, 25 interconnected and spaced apart by clips or clamps 28, but belonging to different sections or units of the partitioning, and also a couple of covers 29, 29. As shown in Figs. IV and V, each upright 25 is of channel section, with its web reversely channeled or grooved at 64 to take the edge of a panel, and with lateral projections in the form of inturned marginal flanges 65. These flanges 65 afford a secure grasp for the clips 28. Each cover 29 is of similar section, with web groove and inturned marginal flanges on the channel flanges,—which latter, however, are of less width than those of the uprights 25. The cover flanges serve as a means of securing the cover to the clips 28, as hereinafter described. As shown in Figs. IV and VI, each clip 28 comprises cooperating parts 66, 67 with a clamping bolt 68 through their mid-portions for drawing them tightly together on the flanges of the uprights 25. The part 66 has its ends transversely recessed, at 69, to afford seats for the flanges 65, while the part 67 has slight lateral projections 71 to engage against the outer sides of the channel flanges. The parts 66, 67 also have means of inter-engagement to prevent them from turning relative to one another, comprising lateral flanges 72 on the part 67 extending past the edges of the part 66. The part 67 has its ends slightly rounded at 73 so that the cover 29 may readily be sprung over them and secured by engagement of its flanges behind the inclined shoulders afforded by the rounding. The elasticity of the sheet metal of the cover 29 allows this quite readily. The parts 66, 67 may be formed of sheet metal bent or die stamped to shape,—the part 66 with its ends bent to hook form to afford the seats 69, and the part 67 with its ends similarly bent (but less hooked), to afford the projections 71 and the rounded ends 73. The mid-portion of the part 67 is bent to a channel form, to afford the flanges 72.

At the floor 26, the lower ends of the uprights 25, 25 of each post 30 are secured to a floor plate or foot 75 itself fastened to the floor by any suitable means, such as a lag screw or bolt 76. As shown in Fig. V, the foot 75 is of a box-like form, comprising a bottom resting on the floor and anchorages 77, 77 of channel form upstanding from its ends, facing toward one another. The bottom has a cruciform reinforcement 78, with an elongated hole 79 through its center for the securing means 76. The foot 75 may consist of a sheet metal plate embossed upward to provide it with the reinforcement 78, and having its margins suitably cut and bent upward to form the channels 77, 77,—the bent-up portions being preferably welded at the "box" corners. As here shown, each channel web or box side (or end) is apertured at 80 to take a stud bolt 81 fast to the end of the base 34 and extending through the lower end of the upright 25, so as to fasten all of these parts securely to the foot 75. The apertures 80 have the form of notches extending down from the upper edge of the channel web. The other box sides are shown widely notched at 82 right down to the box bottom. At these notches 82, the box bottom is extended outward in the form of oblique-edged tongues 83 projecting beyond the box sides. Besides being secured to the foot 75 by the bolts 81, the uprights 25, 25 are interlocked with it by engagement of their inward projecting flanges 65 behind the edges of the side notches 82,—in other words, behind the flanges of the upstanding anchorage channels 77, 77.

In order that the uprights 25 of all the unit sections 20, etc., may be supported at a uniform level notwithstanding inequalities of the floor 26, equalizers may be provided beneath these uprights,—each here shown as consisting of one or more sheet metal shims 85, according to the amount of uplift required in each case. As shown in Fig. V, each of these shims 85 is of rectangular outline, longer than the width of a notch 82 and having its ends notched at 86 to engage the edges of said notch 82. Thus the shim 85 is definitely and securely held in place, and extends under the edges of the inturned flanges 65 of the uprights 25, as well as under the main channel flanges of these uprights. Preferably, the shims 85 and the tongues 83 fall within the limits of the cover channels 29, so as to be completely concealed by them.

As shown in Figs. II and III, the cornice 23 is in cross-section a one-piece sheet metal trough, with its bottom reversely channelled or grooved to stiffen it. This cornice 23 is secured to the upper ends of the post uprights 25 by screw bolts 98 extending through holes in the cornice bottom and in angle clips or ears 99 welded to the webs of the channel uprights. As shown in Fig. III, dished washers 100 are provided for the bolts 98. In Figs. II and III the horizontal ceiling filler 24 is of inverted trough or channel section, consisting of a ceiling plank or bottom 24*b* with depending side sheets 24*c*, 24*c* of sound absorbent or insulative material (such as gypsum board) nailed to its edges and extending down between inturned margins of the sides of the cornice-trough 23. A trapezoidal filling 23*a* of wood or other sound-insulative or absorbent material is arranged in the cornice 23, between its bottom

and the ceiling plank 24*b* of the filler 24,—which latter it may support.

Figs. VII and VIII shows a construction wherein the panel 36 of Fig. I is replaced by a glazed transom 36*a* swinging about a vertical axis, and wherein one of the panel sections includes a glazed door. The sound-proofing in and above the cornice 23 is also somewhat different.

As shown in Figs. VII and VIII, the fillings 32*b*, 33*b* consist of several superposed layers. The horizontals 32, 33 and the uprights 30, 30 associated with the transom 36*a* are provided with sheet metal facings 101 which include stops 102 equipped with rubber sealing and cushion pads 103. The transom 36*a* has a hollow sheet frame 104 glazed with a plurality (two) of glass panes 105, 105 slightly spaced apart to afford a sound-deadening dead air space between them. The edges of each pane 105 are set in a rubber cushion strip 106. As shown, each member of the frame 104 has an integral shoulder 107 against which one pane 105 (in its cushion 106) is held by a hollow sheet metal parting-strip or bead 108, detachably secured to the frame 104 by screws 109. The parting strip 108 affords a shoulder for the next pane 105 (with its cushion 106), which is held by a sheet metal retainer molding 110, detachably secured to the frame 104 by screws 111. The hollow members of the frame 104 may be individually sound proofed (if desired) by fillings 112 of sound-insulative or absorbent material such as cork or wood.

The construction of the transom and its sound-proofing as just described may be duplicated for the door 116, as indicated in Fig. VIII. As here shown, however, its associated facing 101*a* is hollow, and it is sound-proofed with a filling 116*b* like that of the horizontal 31, and its stop 102*a* has no rubber sealing or cushion.

Above the cornice 23, the horizontal ceiling filler 24 is similar to that of Figs. II and III, but extends further down into the cornice. The lower edges of its sides 24*c*, 24*c* engage in V-grooves 24*e* in a plank (of sound-insulative or absorbent material) 24*f* at the bottom of the cornice trough 23; this plank is longitudinally grooved at 24*g* to accommodate the upward projecting portion of the trough bottom, etc. Accordingly, the filling 23*a* is dispensed with. As shown, there are triangular (wood) mouldings 24*h* at either side of the filler 24, against the ceiling, secured by nailing into the plank 24*b*.

Having thus described my invention, I claim:

1. A partition construction of the character described comprising, as independent structural units, a plurality of sound-insulated partition sections with metal uprights at their opposite edges, means for securing said uprights in position to maintain the sections erect, sound-insulative fillings interposed between adjacent uprights of adjacent sections, and substantially coexistent with their internal width, and sheet metal covers secured over the intervals between said uprights.

2. A partition construction of the character described comprising, as independent structural units, a plurality of sound-insulated partition sections with outward facing hollowed metal half-posts at their opposite edges, means for securing said half-posts in position to maintain the sections erect, and sound insulative fillings interposed between adjacent sections and engaged in their adjacent half-posts, and substantially filling their internal width.

3. A partition construction of the character described comprising, as independent structural units, a plurality of sound-insulated partition sections with outward facing channel uprights at their opposite edges, means interconnecting the channel flanges of adjacent uprights of adjacent sections, and sound-insulative fillings interposed between adjacent sections, in their adjacent channels, and substantially filling their internal width.

4. A partition construction of the character described comprising hollow sheet metal posts, hollow sheet metal horizontals interconnecting said posts, sound-insulative fillings in said horizontals, substantially filling them, sound-insulative panels in the frame openings formed by said uprights and horizontals, and sound-insulative fillings in said posts substantially filling their interiors.

5. A partition construction of the character described comprising a plurality of sound-insulated partition sections with metal uprights at their opposite edges, means for securing said uprights in position to maintain the sections erect, sound-insulative fillings interposed between adjacent uprights of adjacent sections, and substantially coextensive with their internal width, sheet metal covers over the intervals between said uprights, a metal trough cornice over the tops of said partition sections and uprights, and sound-insulative filling in said cornice between the bottom of the trough and the ceiling.

6. A partition construction of the character described comprising a plurality of sound-insulated partition sections with metal uprights at their opposite edges, means for securing said uprights in position to maintain the sections erect, sound-insulative fillings interposed between adjacent uprights of adjacent sections, and substantially coextensive with their internal width, sheet metal covers over the intervals between said uprights, a metal trough cornice over the tops of said partition sections and uprights, sound-insulative filling in said cornice extending upward from the trough bottom, and an inverted trough over said filling with sides depending between those of the cornice-trough.

7. A partition construction of the character described comprising a series of hollow sheet metal posts with sound-insulative fillings therein substantially filling their interiors, sound-insulated partition sections alternating with said posts, a metal trough cornice over the tops of said partition sections and uprights, and sound-insulative filling in said cornice between the bottom of the trough and the ceiling.

8. A partition construction of the character described comprising a series of hollow sheet metal posts with sound-insulative fillings therein, sound-insulated partition sections alternating with said posts, a metal trough cornice over the tops of said partition sections and uprights, sound-insulative filling in said cornice between the bottom of the trough and the ceiling, and an inverted trough over said filling, with sides depending between those of the cornice-trough.

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