Nov. 10, 1931. B. E. CROWELL 1,831,163

PARTITION WALL AND STRUCTURAL MEMBERS THEREFOR

Filed Aug. 21, 1929 2 Sheets-Sheet 1

Fig. 1.

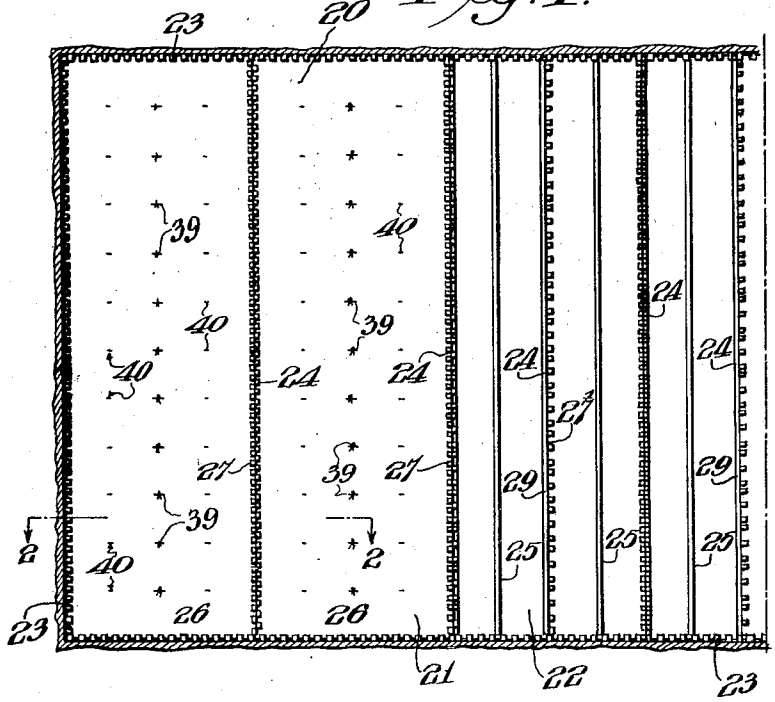


Fig. 2.

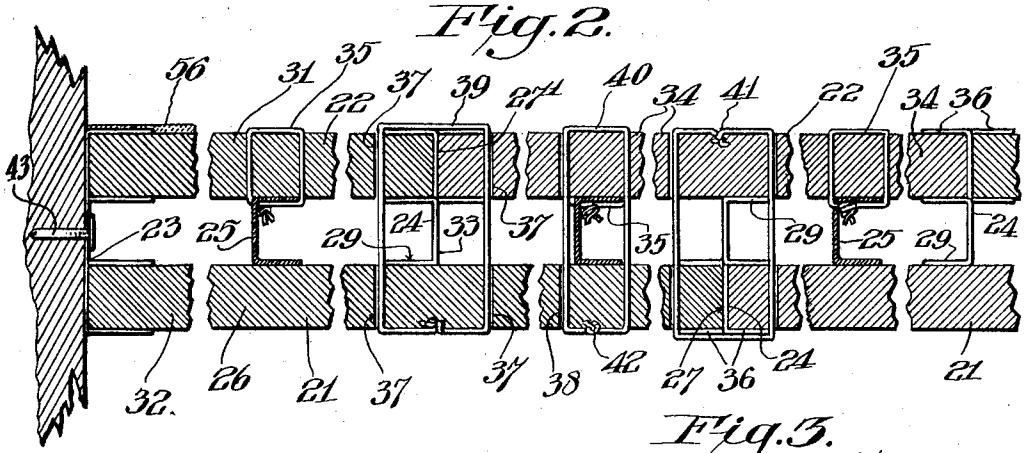
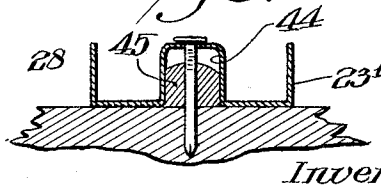


Fig. 3.



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PARTITION WALL AND STRUCTURAL MEMBERS THEREFOR

Filed Aug. 21, 1929 2 Sheets-Sheet 2

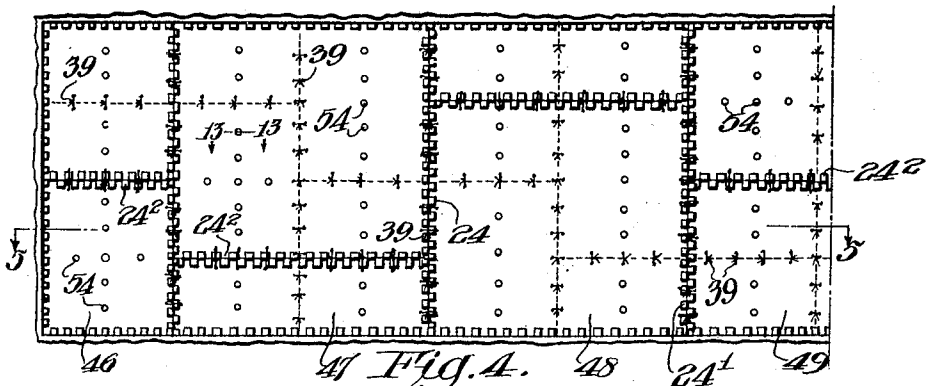

Fig. 4.

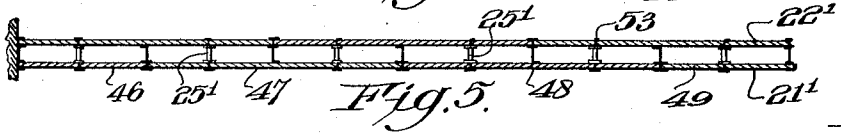

Fig. 5.

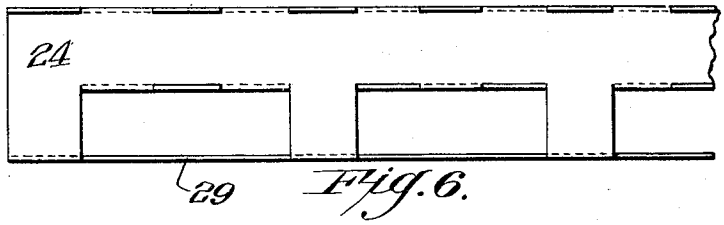

Fig. 6.

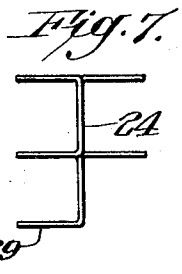

Fig. 7.

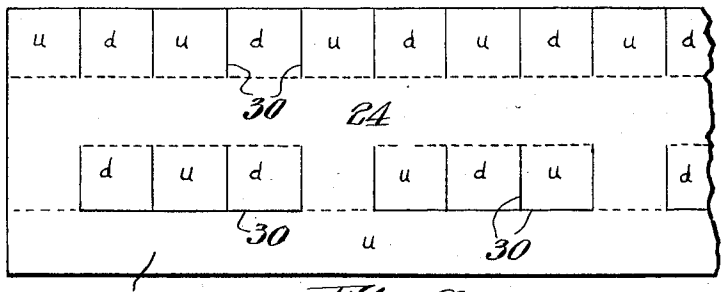

Fig. 8.

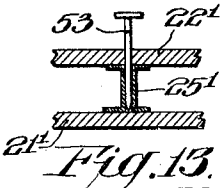

Fig. 13.

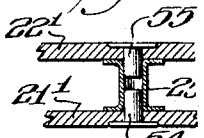

Fig. 14.

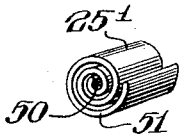

Fig. 9.



Fig. 10.

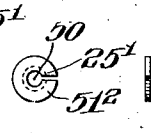

Fig. 11.

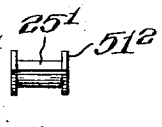

Fig. 12.

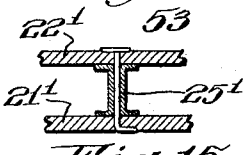

Fig. 15.

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UNITED STATES PATENT OFFICE

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PARTITION WALL AND STRUCTURAL MEMBERS THEREFOR

Application filed August 21, 1929. Serial No. 387,328.

My invention relates to a plaster board partition comprising spaced plaster board walls and intermediate members stiffening and tying the plaster walls to each other in spaced relation to form the partition.

A purpose of my invention is to provide a plaster board partition of the character indicated that is easy and inexpensive to erect and that well meets the needs of the service.

A further purpose is to connect the spaced board portions upon opposite sides of a partition of the character indicated with structural clip members each of which seats the adjacent edges of adjacent boards on one side of the partition and extends inwardly to engage the inner face at an intermediate portion thereof of a board on the other side of the partition without penetrating said other board thus adapting the boards upon opposite sides of the partition to be easily set up, one after the other in their ultimate positions and to be firmly fastened to place, as by wiring, after the boards have been all erected.

A further purpose is to stiffen and strengthen a partition of the character indicated and in which the boards of one side are staggered with respect to those of the other, by spacing members that on both sides of the partition are intermediate successive board joints, the opposing boards at intermediate portions thereof fastening together upon the spacing members.

Optionally these spacing members may be of considerable length, comprising for example channels edgewise between the opposing boards with the boards wired together upon the channels or may be small members without extension beyond that needed for adequate spacing support at individual points, each being adapted for example to hold one or more nails, the opposing boards nailing to the spacing members.

A further purpose is to lessen the requisite thickness for a final coat of applied plaster on the erected plaster boards of a partition of the character indicated by using thicker boards and providing a form of intermediate stiffening and tying structural clip members that will so firmly support the board edges along both horizontal and vertical joints that the boards will not yield inwardly at the edges during the application of even a very thin coat of applied plaster.

I stagger the board joints on one side of the partition with respect to the board joints on the other side of the partition and so firmly support the board edges along all of the joints both vertical and horizontal that the boards on each side of the partition lie uniformly in one plane and are so firmly supported that wet plaster can be applied uniformly and evenly in even a very thin coat.

Building regulations frequently specify that each of the spaced walls that form a finished partition of the character indicated shall include a thickness of plaster of not less than three-quarters of an inch.

It has been usual practice in the past to make up this required three-quarter inch total thickness include a three-eighth inch plaster board and a surface coat applied wet to the room side of the plaster board of about another three-eighth inch.

I use thicker plaster board and a thinner coat of applied plaster, desirably making the plaster board five-eighths inch thick and the finish coat about one-eighth inch, and thereby greatly lessen delay incident to the time that must be allowed for the applied plaster to dry out, secure a considerably lighter wall in that the plaster board may be made much lighter than the same thickness of applied plaster, and by greatly lessening the quantity of the applied plaster make it commercially possible to use a much better grade of plaster in the applied coat, the higher price for the better grade of plaster being offset by the smallness of quantity now required for the finishing coat.

The novel form of structural clip connection between the boards on opposite sides of the partition makes it possible to obtain a satisfactorily uniform outside finish with even the very thin coat of applied plaster.

A further purpose is to provide a new and desirable form of structural clip members for supporting the contiguous edges of boards on one side of a partition against an intermediate portion of boards on the other side of the partition.

A further purpose is to provide the boards upon opposite sides of a partition of the character indicated with relatively staggered vertical division lines from floor to ceiling and optionally horizontal division lines between the vertical division lines staggered with respect to the other horizontal division lines on the same side and on the other side of the partition providing vertical clip members from floor to ceiling to seat the vertical division edges and horizontal clip members between the vertical members to seat the horizontal division edges, each clip member engaging the interior of one or more boards upon the opposite side of the partition from the seated edges.

Further purposes will appear in the specification and in the claims.

I have elected to show one main form only of my invention, showing however minor modifications and selecting a main form and modifications that are practical and efficient in operation and which well illustrate the principles involved.

Figure 1 is a fragmentary side elevation of structure embodying one form of my invention, some of the parts being removed for clearness of illustration.

Figure 2 is a broken enlarged horizontal section taken upon the line 2—2 of Figure 1.

Figure 3 is a detail modification of the structure shown in Figure 2.

Figure 4 is a fragmentary side elevation of partition structure embodying a somewhat different form of my invention from that shown in Figure 1.

Figure 5 is a horizontal section of Figure 4 taken upon the line 5—5 thereof.

Figure 6 is an enlarged fragmentary side elevation of a structural clip member used in Figures 1 and 2.

Figure 7 is an end elevation of Figure 6.

Figure 8 is a broken plan view showing a one-piece metal strip ready to be bent into the structural clip member of Figures 6 and 7.

Figures 9 and 10 are perspective views of somewhat different forms of spacing members for use between boards on opposite sides of the partition.

Figures 11 and 12 are respectively end and side views of another form of the detail shown in Figures 9 and 10, the scale being smaller in Figures 11 and 12 than in Figures 9 and 10.

Figure 13 is a section corresponding to the line 13—13 of Figure 4 to enlarged scale and intended to illustrate the placement between the spaced boards of any one of the members of Figures 9 to 11 showing however the structure of Figure 11.

Figures 14 and 15 are views showing different forms of final connection between the spaced boards and the spacing and supporting member of Figure 13.

Like numerals refer to like parts in all figures.

Describing in illustration and not in limitation and referring to the drawings:—

In the embodiment of my invention shown in Figures 1 and 2, a partition 20 comprises spaced walls 21 and 22 of wall board, and cooperating fastening and supporting members that include double channels 23 at the partition edges on the floor, walls and ceiling, structural clip members 24 along the wall board joints and stiffening members 25 between the clip members.

The spaced walls 21 and 22 are desirably alike except that the boards of each are staggered with respect to the boards of the other, each wall comprising a succession of boards 26 with vertical joints 27 from floor to ceiling of one wall staggered with respect to the corresponding vertical joints 27^1 of the other and both walls seat along the partition edges in the double channel members 23 fastened to place on the floor, walls and ceiling of the building containing the partition.

The double channel members 23 may be all alike and are desirably one piece members, made by suitably bending a strip of metal in a way to provide outer flanges or flaps 28 that are adapted to be bent to place by hand after a board 26 has been inserted.

Preferably the double channel members are put up in their final form along one wall and ceiling while the flaps along the floor and other wall are left horizontal until the wall boards have been erected.

In Figure 1 the boards 26 extend in one piece from floor to ceiling, the middles of boards on either side of the partition being always opposite the vertical joints 27^1 upon the other side of the partition.

The structural clip members 24 extend from floor to ceiling at each joint, each structural clip member seating the vertical edges of adjacent boards on one side of the partition and extending inwardly to the inwardly directed face of the board on the other side of the partition, the member preferably being flanged at 29 to provide a relatively wide area of engagement with the said inner face.

The structural clip members may desirably be bent to form from a suitable strip of sheet metal, Figure 8 showing a strip having portions u and d cut apart along the full lines 30 and bent upwardly and downwardly respectively along the dotted lines.

Figures 6 and 7 indicate the member after it has been bent to shape from the sheet shown in Figure 8.

It is of course obvious that the specific arrangement of the flaps and flanges of the structural member 24 may be very considerably varied from the specific form selected for illustration.

In order to relatively stagger the vertical

division lines of the boards of one side of the partition with respect to the vertical division lines between successive boards on the other side of the partition I make the first board 31 on one side half width with the first board 32 on the other side full width, after which I prefer to use full width boards for the length of the partition except the last boards on both sides of the partition which usually have to be cut to fit.

It will be seen all of the vertical joints on one side of the partition will thus stagger with respect to those on the other side.

I prefer to use wider boards—for example forty-eight inch boards, and in this event the vertical clip members 24 which are alternately seating joints upon opposite sides of the partition will be spaced one half board width apart, or two feet with the normal width four foot boards.

Halfway between the successive vertical clip members 24 I provide a stiffening connection between the opposing boards on opposite sides of the partition and show different types of stiffening connection in Figures 1 and 2 from that shown in Figures 4 and 5, intending to indicate however that any one of the different stiffening connections may be used according to circumstance and individual preference in either type of wall.

In Figures 1 and 2 these intermediate stiffening members include light channels 25 which extend from floor to ceiling half way between each pair of successive clip members 24.

In erecting a partition corresponding to that of Figures 1 and 2 I first install the double channel members 23 along the floor, walls and ceiling, preferably leaving the outside flap portions 28 of the floor channel and of the double channel along one wall bent outwardly flat with the floor or wall respectively, these flaps to be bent up against the boards after the boards have been inserted.

I preferably erect one wall 22 before starting the other 21, the first board 31 being made half width in order that the joints on one side of the partition may stagger with respect to those on the other side thereof.

I put up the first board by fitting it into its seat at the ceiling, then into its seat at the floor and then pushing it edgewise into its seat in the wall channel.

I then erect the first structural clip member 33 pushing it to place so that it seats the outer edge of the board first erected.

I now erect the second board 34, first into its seat at the ceiling, then with its seat at the floor and then push it edgewise with its seat presented by the first structural clip member, and proceed in the same way for the length of the partition.

The last board usually can not be seated by pushing in edgewise because of lack of room and I may therefore leave the outer flap portions of the last clip member bent outwardly perpendicular to the partition, that is in the plane of the body of the original strip (Figure 8) from which the member is formed, until the last board has been properly seated, after which I bend the flaps at both sides of the sheet to place and hold it in its final position.

After setting up all the boards on one side of the partition I fasten the channel members 25 to the erected boards preferably one quarter way in from the board edges, holding them by two or more wires 35 after which I erect the boards of the wall 21 exactly as already described for those of wall 22.

The next operation is directed to fastening the walls firmly together upon the intermediate spacing members 25 and the structural clip members 24, each of which is now seating adjoining board edges on one side and on its other side is loosely presenting its flange portion 29 against the inner face of the other wall.

The flaps 36 along the vertical board joints show the position for horizontal perforations 37 bored through both walls of the partition at intervals along each side of the structural clip member. While the wires 35 used to temporarily fasten the channel members 25 to place give indication of the place for a series of holes 38 spaced along opposite sides of the channel members.

I bore these holes of ample size, preferably one after the other and then insert wires 39 and 40 which respectively tie the walls firmly upon the intermediate clip members 24 and upon the channel members 25.

These wires are poked through the holes on opposite sides of the members and then are drawn tight by twisting the free ends, as indicated respectively at 41 and 42, each twist being preferably set into the plaster board by a light blow from a hammer.

The double channel members that seat the wall board edges along the floor, walls and ceiling may have any suitable form.

In Figure 2 I show the double channel member 23 held to the wall by nails 43, the upwardly directed flange portions of the channel being desirably bent up from a suitable strip of metal while in Figure 5 I show an optional form of double channel that avoids the need for nailing the channel to place the channel having an intermediate downwardly directed trough portion 44 that permissibly seats over a suitable cleat or ridge 45 that may be either fastened to or form part of the wall, floor or ceiling at the middle of the partition.

In the partition structure of Figures 4 and 5 I extend the structural clip members 24^1 as before from floor to ceiling but making each vertical board section between the floor and ceiling in two lengths instead of one, providing relatively short lengths of horizontal

clip members 24^2 between the successive vertical members at the horizontal joints.

I stagger the boards upon one side with respect to those upon the other side of the partition, both vertically and horizontally so that a joint between adjacent boards on one side of the partition is always opposed by the interior portion of one or more boards on the other side.

Desirably the vertical board sections from floor to ceiling may include boards having lengths approximately half the distance between the floor and ceiling, one-quarter and three-quarters of this distance, the first section 46 on one side of the partition, for example including two half length boards, the next section 47 a quarter length piece and a three-quarter length piece and the third section 48 a three-quarter and a one-quarter length piece, and the fourth section 49 like the first, being made up of two half length pieces.

The boards on the other side of the partition are desirably of correspondingly variant lengths staggered with respect to one another and with respect to the boards of the first side, as indicated in Figure 4.

In Figures 1 and 2 I have shown the stiffening members intermediate the structural clip members 24 as channels 25 extending from floor to ceiling optionally instead of vertical channels I may rigidly fasten the intermediate portions of the opposing boards together by suitably spaced post members 25^1.

These members are of resilient sheet metal and right sections of length equal to the desired spacing between the wall boards.

They present their opposite ends to the opposing boards and are each adapted to receive and hold one or more nails, the boards nailing to the post members.

The members are placed at spaced intervals wherever it may be desired to stiffen the partition by firmly fastening the opposing boards together and in Figures 9 and 12 I show three of many different inexpensive and desirable forms for these post spacing members 25^1.

In Figure 9 the spacer member includes a flat metal spiral of resilient material having a central open tubular portion 50 adapted to yield resiliently to the entry of a suitable nail. The outer portions 51 of the spiral serve to distribute the points of engagement with opposing boards.

The form shown in Figure 10 includes a piece of flat metal folded and provided with opposing concave parts at 50^1 some little distance from the fold, the ends of the strip flaring at 51^2 in order to provide radial and angular distribution of the points of engagement with the wall board.

The form shown in Figures 11 and 12 comprises a spool like member, preferably of metal and slotted on one side so as to adapt it to resiliently yield when a nail is inserted into its interior portion 50^2.

Two different ways of fastening the boards to the spacing members 25^1 are shown in Figures 13 to 15.

After the wall boards 22^1 on one side of a partition have been erected, points are selected for the post connections 25^1 between the opposing walls of the partition and nails 53 are driven through the boards 22^1 at each of these points.

The post spacer members 25^1 are then put to place upon the projecting nail ends, as in the position shown in Figure 13.

The wall boards 21^1 on the other side of the partition are then erected and the nails carrying the spacer members between the opposing wall boards are driven through the partition so as to project from the boards 21^1.

The nails 53 are then either clinched as illustrated in Figure 15 or replaced by short nail members 54 and 55. In the latter event the insertion of the nails 54 may be used to drive the nails 53 part way back, after which the nails 53 are pulled all the way and the nails 55 inserted.

I fasten horizontal and vertical structural members to place in the same way—as by wires 39 inserted and fastened as already described.

The character of the support and tie connections between the spaced walls 21 and 22 or 21′ and 22′ results in easy rapid erection and great evenness and rigidity along the board joints, such evenness and solidity over the entire outer surfaces of the walls as permits me to obtain a very fine even finish with only a single and very thin coat 56 of finishing plaster applied wet directly to the wall boards.

In partitions of this type it has hitherto been deemed necessary to have two thin coats or one much thicker coat of applied plaster outside the wall boards in order to secure the requisite uniformity at the outer finish surface.

Where building specifications require a total plaster thickness of at least three quarters of an inch for each of the spaced wall portions, I used thicker boards with perhaps a mere film of the finishing plaster 56 applied directly to the outside of the boards, for example use boards five eighths inch thick and a one eighth inch finishing coat.

In view of my invention and disclosure variations or modifications to meet individual whim or particular need will doubtless become evident to others skilled in the art and I claim all such in so far as they fall within the reasonable spirit and scope of my invention.

Having thus described my invention, what I claim as new and desire to secure by Letters Patent is:—

1. In a partition of the character indicated, two laterally spaced wall-board walls one on each side of the partition and each having vertical board division lines from floor to ceiling between contiguous edges of successive boards horizontally staggered with respect to similar division lines of the other, a structural clip member at each division line seating the adjacent edges and engaging along and fastening to an interior portion of a board of the opposing wall, and spacer members between and fastened to both walls intermediate the division lines, the wall boards of one wall having a thickness as great as five eighths of an inch and an outside finish coat about one eighth inch thick applied wet directly to the boards.

2. In a partition of the character indicated, two laterally spaced wall-board walls one on each side of the partition and each having vertical board division lines from floor to ceiling between the adjoining edges of successive boards horizontally staggered with respect to similar division lines of the other and a horizontal board division line intermediate the floor and ceiling in each vertical wall portion between successive vertical lines, a structural clip member at each division line seating the adjacent edges and engaging along and fastening to an interior portion of a board of the opposing wall, the vertical members extending from floor to ceiling and the horizontal members extending between the vertical members, and spacer members between and fastened to the walls intermediate the division lines.

3. In a partition of the character indicated, structure according to claim 2 characterized by the wall boards of one wall having a thickness as great as five eighths of an inch and an outside finish coat about one eighth inch thick applied wet directly to the boards.

4. In a partition of the character indicated, two laterally spaced wall-board walls one on each side of the partition and each having vertical board division lines from floor to ceiling between the adjoining edges of successive boards horizontally staggered with respect to similar division lines of the other, a structural clip member at each division line seating the adjacent edges substantially from floor to ceiling on one side and along its other side engaging and fastened to an interior portion of one or more boards of the opposing wall, and spacer members intermediate the clip members relatively spacing and fastened to both walls.

5. In a partition of the character indicated, two laterally spaced wall-board walls one on each side of the partition, each wall having board division lines straight across one of its full linear dimensions staggered with respect to corresponding parallel board division lines of the other, in combination with a structural clip member along each division line seating the board edges along the division line at one side and along its other side engaging without penetrating the inner face of the opposing wall.

6. In a partition of the character indicated, two laterally spaced wall-board walls one on each side of the partition, each wall having board division lines from floor to ceiling staggered with respect to division lines from floor to ceiling of the other, in combination with a structural clip member along each division line at one side and along its other side engaging without penetrating the inner face of the opposing wall.

7. In a partition of the character indicated, two laterally spaced wall-board walls one on each side of the partition and having relatively staggered board joints and connections between the walls along the joints, in combination with a connecting member between the walls intermediate the said joint connections and comprising a spacing post presenting its ends against the opposing inner faces of the walls and having a longitudinal laterally resilient hollow core adapted to receive and grip a nail, and a nail connection between one of the walls and the post, the nail being clamped by the hollow core.

8. In a partition of the character indicated, two laterally spaced wall-board walls having relatively staggered board joints and connections between the walls along the joints, in combination with a spacing post between the walls intermediate the said connections and a nail connection between the walls and the post characterized that the spacing post comprises a spring strip of metal having a transverse fold, relatively flaring ends and a transverse nail seat between the ends and the fold adapted to receive and hold a nail.

BENJAMIN E. CROWELL.