Aug. 10, 1926. 1,595,673

G. R. MAGNEY ET AL

METHOD OF AND MEANS FOR CONSTRUCTING WALLS AND PARTITIONS

Filed March 25, 1926 5 Sheets-Sheet 1

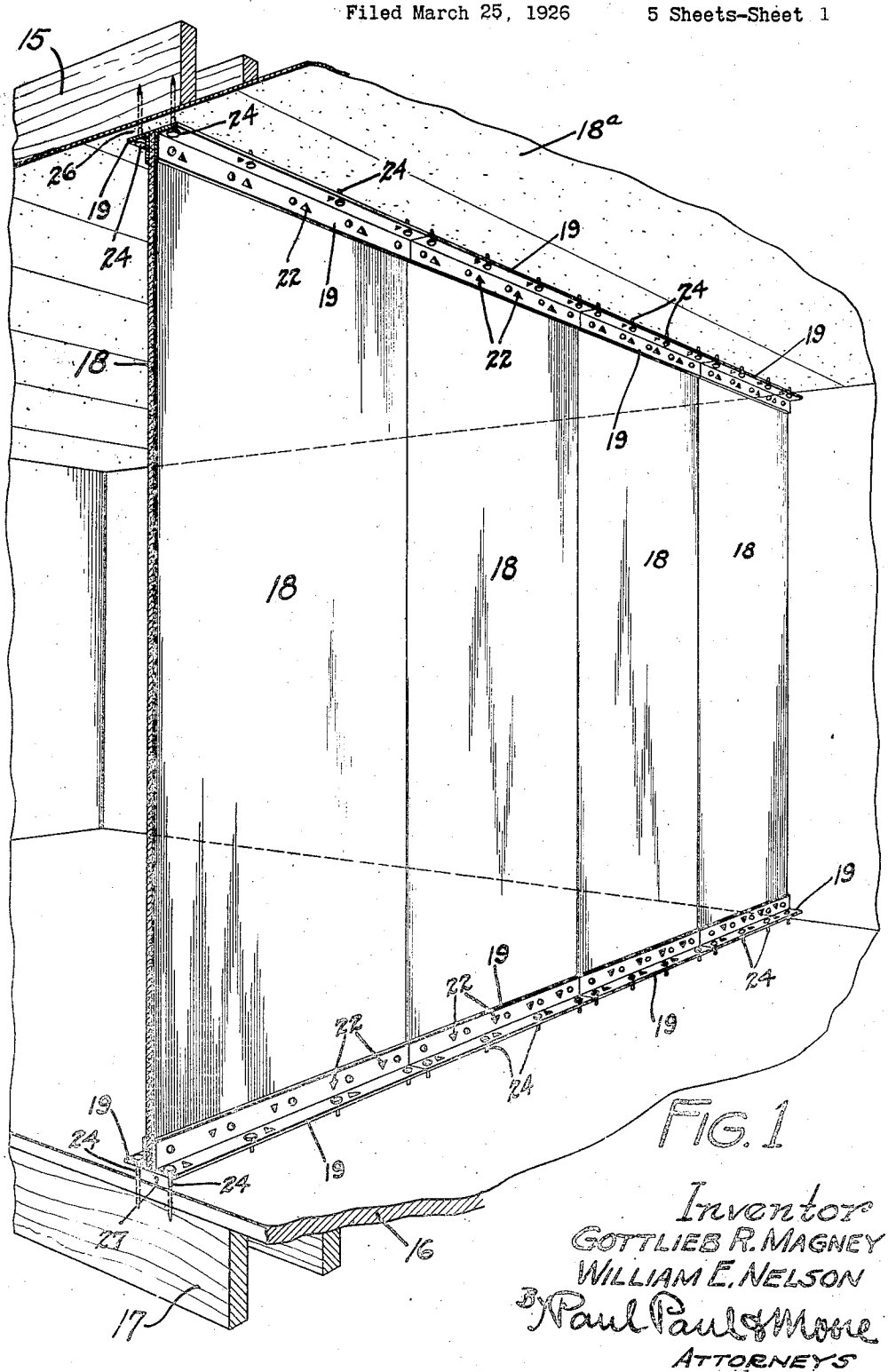


FIG. 1

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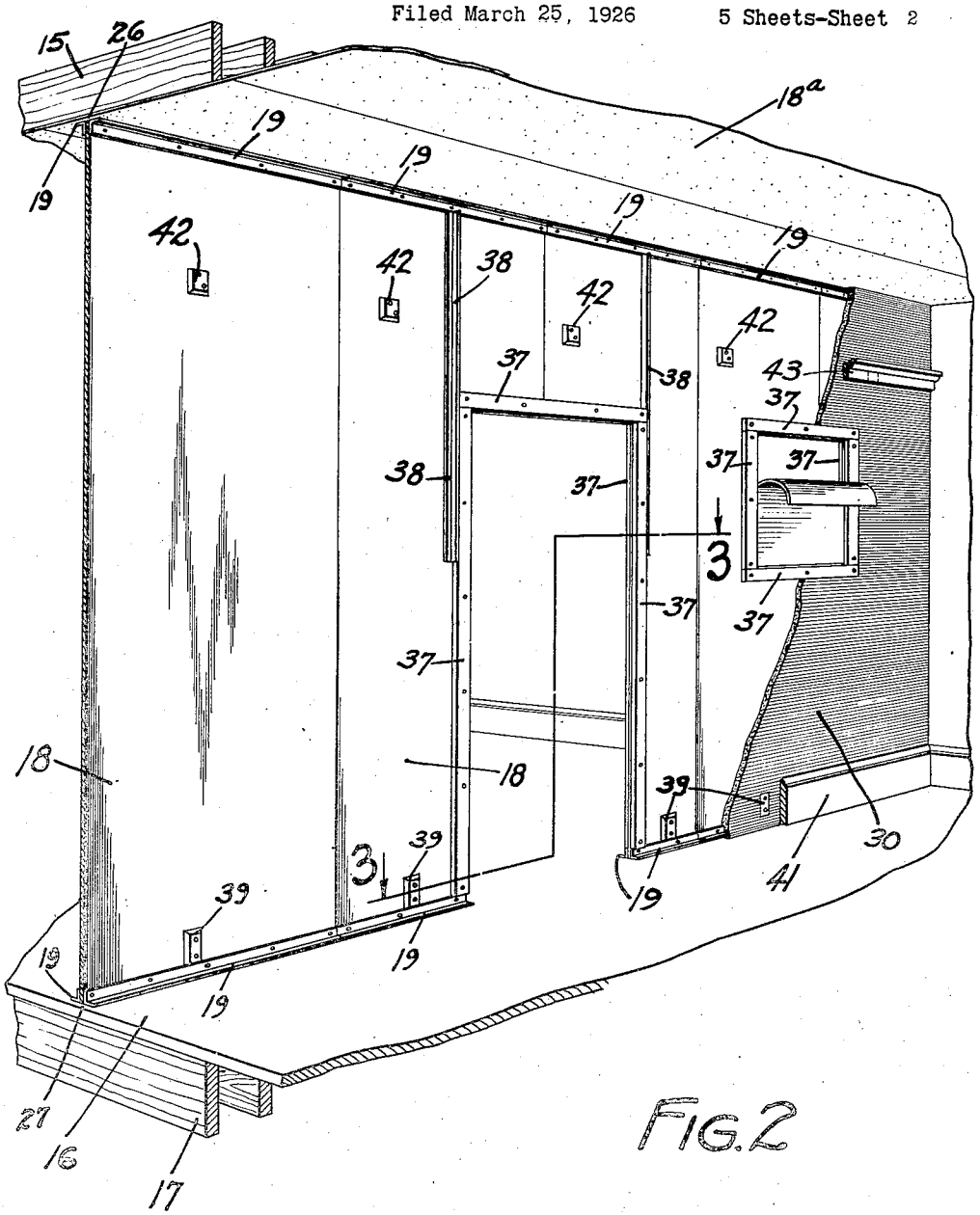


FIG. 2

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Filed March 25, 1926 5 Sheets-Sheet 3

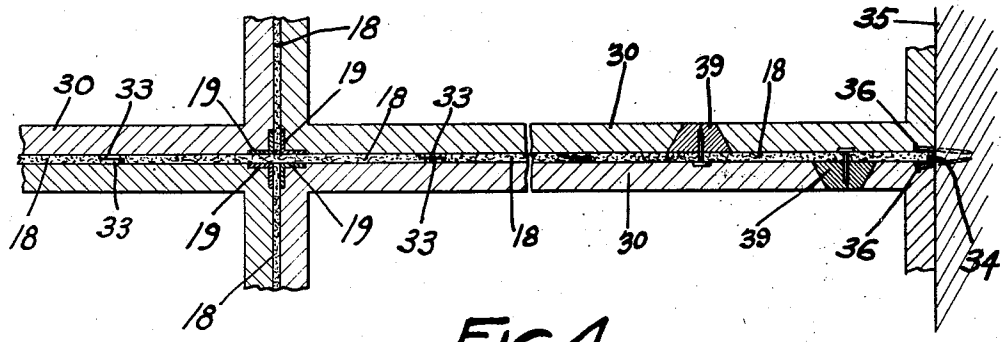


FIG. 4

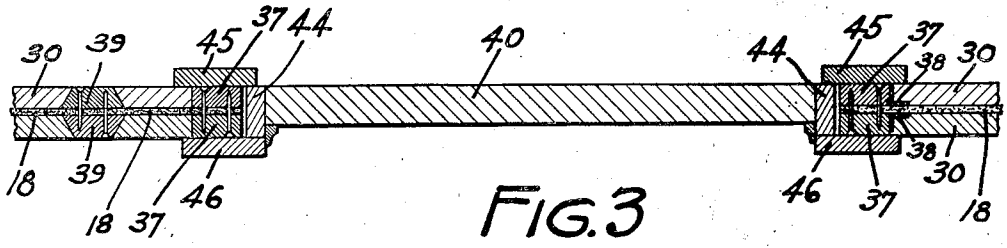


FIG. 3

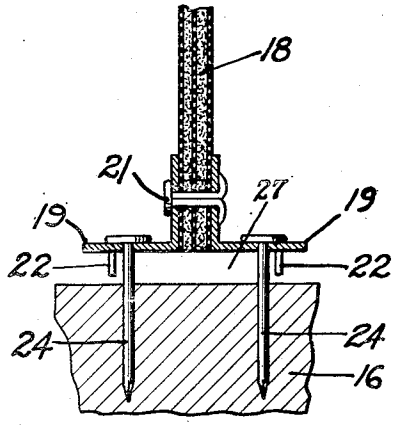


FIG. 8

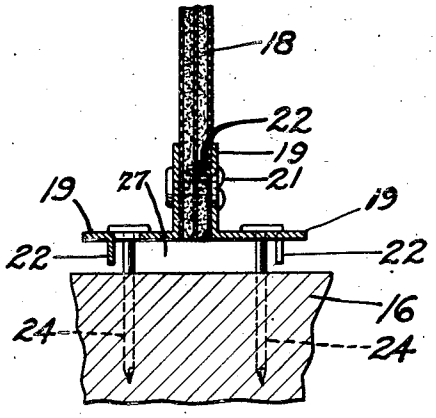


FIG. 9

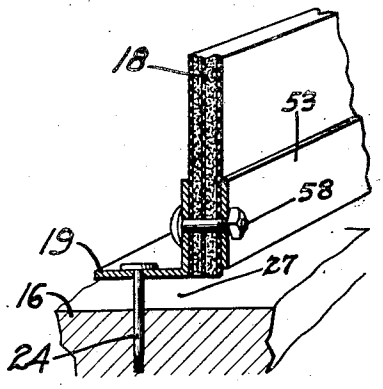


FIG. 10

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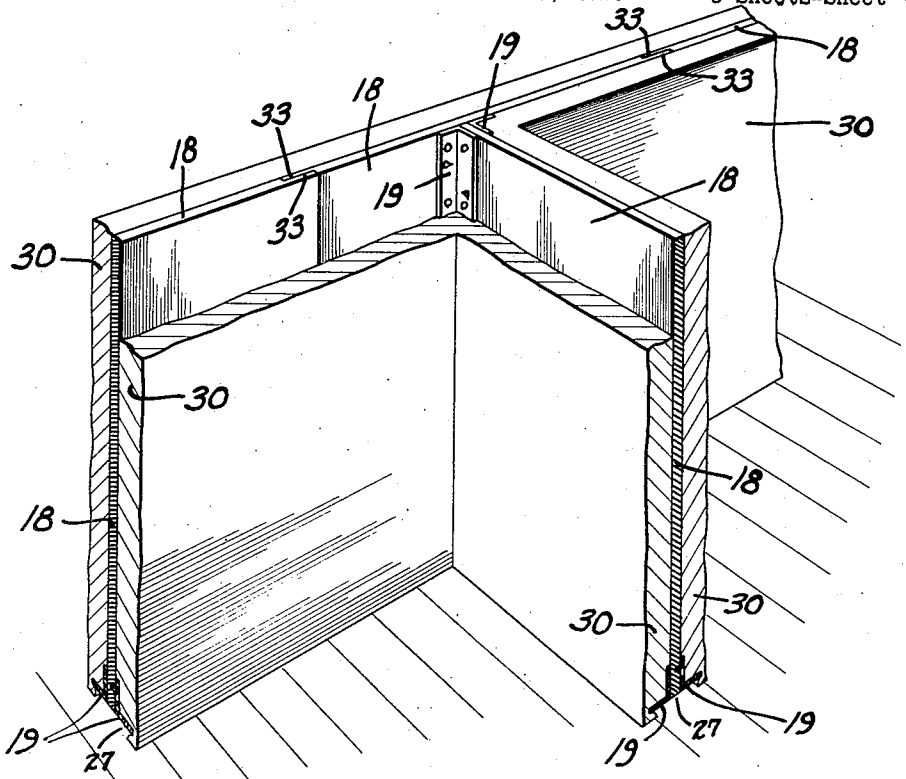


FIG. 5

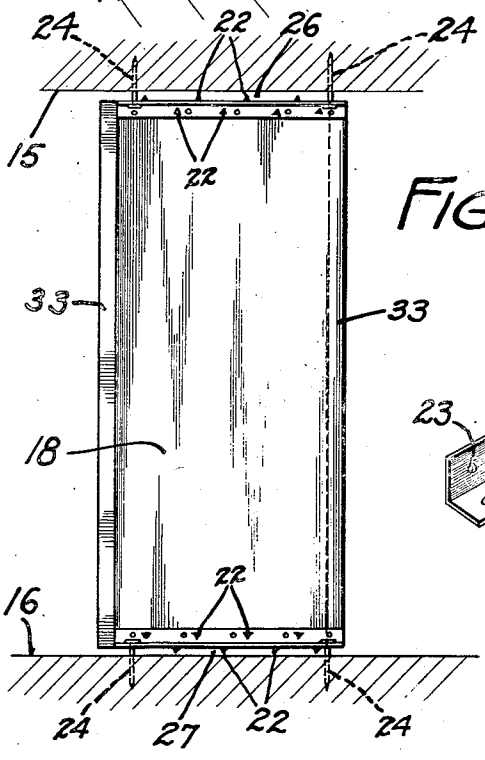


FIG. 6

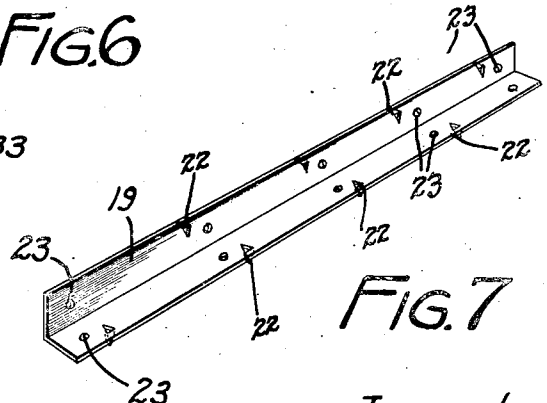


FIG. 7

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METHOD OF AND MEANS FOR CONSTRUCTING WALLS AND PARTITIONS

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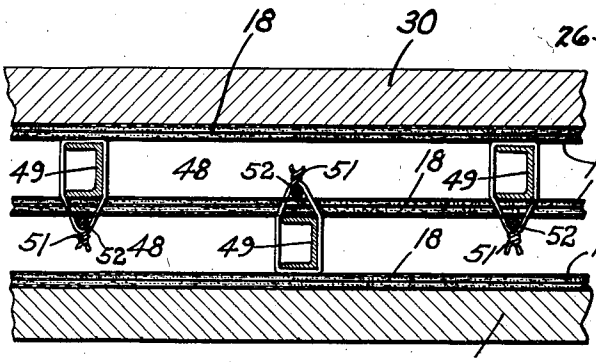


FIG. 13

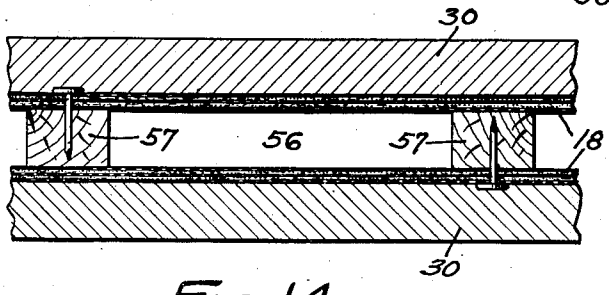


FIG. 14

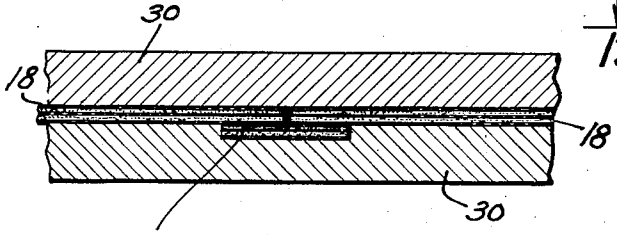


FIG. 11

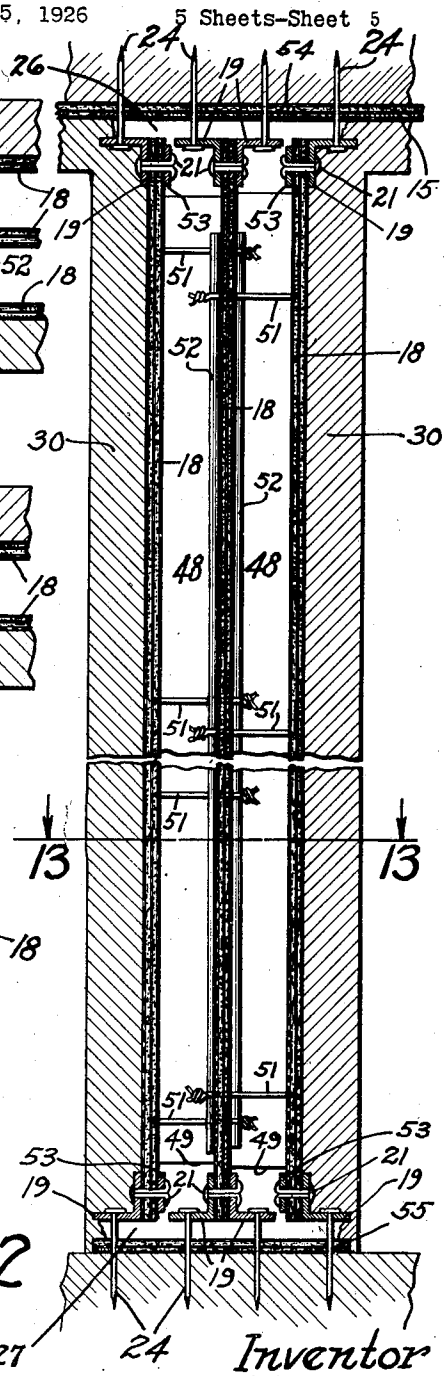


FIG. 12

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UNITED STATES PATENT OFFICE.

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METHOD OF AND MEANS FOR CONSTRUCTING WALLS AND PARTITIONS.

Application filed March 25, 1926. Serial No. 97,288.

This invention relates to an improved method of and means for constructing building walls and partitions, whereby the usual wall studding and also the usual wooden or expanded metal lath, commonly employed to support the plaster, may be dispensed with, thereby greatly simplifying the construction of the walls and partitions with a resultant decrease in the cost thereof.

An object of the invention is to provide a method of and means for erecting building walls and partitions of flexible or semi-flexible sheet insulating material, and plaster, the sheet insulating material preferably being composed of layers of dry felt united by means of a viscous water-proof coating such as tar or asphalt, and the outer surfaces of the felt layers being treated with a similar coating to render the fabricated sheet water-proof, in a manner whereby said outer surfaces will receive and hold the plaster, when applied thereto.

A further object of the invention is to provide sheets having an overall length relatively shorter than the distance between the fixed supporting members to which they are to be secured, whereby the sheets may be suitably stretched and tensioned to prevent them from bulging or swaying when plaster is applied to the surfaces thereof.

A further object is to provide means for reinforcing the edges of the sheets whereby they may be secured to the supporting members and suitably tensioned without danger of injuring or tearing the edges thereof.

Other objects of the invention are: (1) to produce a wall structure of comparatively small cross-section without sacrificing strength or rigidity, thereby increasing the effective floor space of a given size building as compared with the present method of wall construction; (2) to produce a wall structure which will be non-conductive to heat and cold; (3) will be substantially sound-proof and fire resisting, and (4) will also be moisture and vermin-proof. In this manner I will provide a wall structure well adapted for general use in the building art.

Other objects of the invention will appear from the following description and the accompanying drawings and will be pointed out in the annexed claims.

In the accompanying drawings forming a part of this specification,

Figure 1 is a perspective view illustrating the flexible insulating sheets arranged and stretched between, and secured to, fixed supporting members such as joists or other supports.

Figure 2 is a similar view illustrating door and window openings provided in the wall, and also showing nailing strips and blocks secured to the surfaces of the sheets, prior to plastering, to provide means for nailing thereto base boards, picture mouldings, etc.

Figure 3 is an enlarged sectional plan view on the line 3—3 of Figure 2 showing a plastered wall and a finished door opening.

Figure 4 is a similar view showing a cross-wall construction.

Figure 5 is a perspective view illustrating two walls joined together.

Figure 6 is a detail view illustrating sheets cut shorter than the distance between supporting members to which they are secured, whereby the sheets may be stretched and tensioned to prevent bulging.

Figure 7 is an enlarged detail view showing one of the sheet-reinforcing angles removed from the sheet.

Figure 8 is an enlarged detail section showing the preferred manner of securing reinforcing angles to the ends of the sheets, and also angles nailed to the fixed supporting members.

Figure 9 is a similar view illustrating the reinforcing angles provided with integral holding lugs adapted to pierce the sheet to prevent slipping.

Figure 10 is a view illustrating the use of a flat bar or strap in connection with an angle bar to grip the sheet, bolts also being shown in place of the split rivets shown in Figures 8 and 9.

Figure 11 is a view illustrating the contiguous edges of the sheets secured together by means of a suitable strip of material, such means being employed when the sheets are not flanged for lap joints.

Figure 12 is a sectional elevation illustrating a plurality of sheets arranged in spaced relation to provide dead air spaces in the wall.

Figure 13 is a horizontal section on the line 13—13 of Figure 12 showing sheets spaced apart by the use of small channel bars.

Figure 14 is a view illustrating a wall con-

struction comprising two insulating sheets spaced apart by means of blocks.

In the selected embodiment of the invention here shown, there is illustrated in Figure 1 a portion of a building comprising the usual joists 15 and floor boards 16 secured to the main floor joists 17. The upper and lower joists above mentioned provide the supporting members or means for supporting the sheets which are interposed therebetween, as will subsequently be described.

The flexible, or semi-flexible insulating sheets 18 used in the construction of this novel wall, are preferably constructed of layers of dry felt or paper united by means of a viscous water-proof material, such as tar or asphalt, after which the outer surfaces of the sheets are coated with a similar water-proofing material. The preferable construction of these sheets is shown in the prior pending application of William E. Nelson and Thomas B. Hennessey, Serial Number 92,541, filed March 5, 1926.

In the construction of building walls, and particularly inside partitions, it is desirable that the thickness or cross section of the walls and partitions be mantained as small as possible in order to provide more floor space in the building. The novel method of constructing walls and partitions as set forth in the present invention, is particularly well adapted to meet the above requirements.

In constructing this novel wall, the opposite ends of each sheet 18 are preferably provided with a suitable reinforcing means such as the angles 19, secured thereto by suitable means such as split rivets 21, shown in Figures 8 and 9. Triangular pointed lugs 22 are preferably struck out of the metal, as shown in Figure 9, adapted to pierce the sheet 18, as shown, thereby preventing the angles from moving or slipping upon the sheet when the sheets are stretched and put under tension. Both webs of the reinforcing angles 19 are preferably symmetrical, and are provided with the lugs 22 and apertures 23 whereby they may be furnished in long lengths and cut to suit the widths of the sheets with which they are to be used. The apertures 23 are preferably spaced to coincide with the usual spacing of the joists so that the nails 24, used in securing the angles to the upper and lower supporting members, may be driven into the joists as shown.

An important feature of this invention resides in the cutting or sizing of the sheets 18 before being secured to the upper and lower supporting members or joists. As shown in Figures 1 and 6, the sheets are cut to a length that is shorter than the distance or spacing between the supporting members 15 and 16. Thus when the sheet is interposed between two supporting members, gaps 26 and 27 will be provided at the ends thereof, thereby permitting the sheet to be stretched and tensioned to prevent bulging and swaying when plaster is applied to the surfaces thereof. If preferred the gap may be arranged at one end of the sheet only. In mounting a sheet, the upper end is preferably first secured to the joists 15 by means of ordinary nails or spikes 24. The sheet is then raised to a height sufficient to provide the gap 27 between the lower end of the sheet and the supporting membr 16, after which the sheet is vertically aligned by means of the nails.

Referring to Figure 6 it will be seen that if the upper right hand nail 24 is driven deeper into the member 15, the lower end of the sheet 18 will be swung to the right, while if the nail at the upper left hand corner is driven farther into the member 15, the lower end of the sheet will be swung or adjusted to the left. Thus the upper nails 24 provide means for vertically aligning the sheet with reference to adjoining walls or door openings. The lower end of the sheet 18 is similarly secured to the supporting member or floor 16 by means of nails 24 after which the sheet may be stretched and tensioned to the desired degree by driving the nails into the supporting members 15 and 16 as may be required.

All of the sheets are preferably mounted in the same manner, and each sheet is preferably provided with projecting flanges 33 adapted to overlap the similar flanges of adjoining contiguous sheets, as particularly shown in Figures 4 and 5.

The flanges 33 of adjacent sheets are preferably united by means of a coat of asphalt or tar similar to that used in the construction of the sheet. Thus when all of the sheets in the construction of a wall have been mounted and their adjacent edges united as above described, the plurality of sheets will form in effect, a single sheet having its upper and lower edges secured to the supporting members or joists 15 and 17. By mounting the sheets as above described they may be stretched and sufficiently tensioned to prevent them from bulging or swaying when plaster is applied to the exposed surfaces thereof.

Figures 4 and 5 illustrate plaster 30 applied to the opposite surfaces of the insulating sheets to finish the wall. Figure 5 also illustrates one wall joined to another preferably by securing together the sheets 18 of the two walls by means of the same angle bars 19, that secure the upper and lower ends of sheets to the supporting members, as hereinbefore described. Figure 4 illustrates a main wall or partition having two branch walls secured thereto by means of the angles 19, as shown and described with reference to Figure 5. The edge 34 of the

sheet 18, adjacent the solid or main wall 35, may be secured thereto by means of nails 36 driven into the wall at opposite sides of the sheet 18 as shown. Small angles (not shown) may also be used for securing the edge 34 to the wall 35 in place of the nails 36.

Figure 2 illustrates a partially completed wall structure with door and window openings provided in the wall after the insulating sheets 18 have been secured to the supporting members. Before the door and window openings are cut in the insulating sheets, the wall is preferably constructed as shown in Figure 1, after which furring strips or grounds 37 may be nailed to opposite sides of the sheets to define the door and window openings. These furring strips or grounds are preferably of a thickness substantially equal to the thickness of the plaster 30 when the wall is finished, so that their outer surfaces will be substantially flush with the surfaces of the plaster, as particularly shown in Figure 3. Angle bars 38, similar to those provided for securing the upper and lower ends of the sheets to the supporting members 15 and 16, may also be secured to the upper portions of the vertical furring strips or grounds 37 to reinforce the wall adjacent to the door openings, such angles preferably extending upwardly to the angles 19 securing the upper ends of the sheets to the supporting member or joists 15. The angles 38 are also preferably secured to the sheets by passing nails or rivets through aligned apertures 23 provided in the angles. This figure also illustrates nailing strips or blocks 39 secured to the lower portions of the sheets to provide means for nailing the usual base boards 41 to the wall, shown at the right hand side of Figure 2. These nailing strips may be arranged as shown at the left hand side of Figure 3, or if desired, they may be staggered as shown in Figure 4. Nailing blocks 42 may be similarly secured to the upper portions of the sheets 18 to provide means for nailing the usual picture moulding 43 to the wall. After the furring strips and nailing blocks have thus been secured to the sheets 18, plaster is applied to the surfaces thereof to complete the wall to the thickness shown in Figures 3 and 4. The nailing strips and blocks 39 and 42 are preferably beveled as shown, so that when the plaster is thoroughly set, the blocks will be keyed to the wall by the plaster, thereby relieving the nails of any strains as the plaster will securely hold the blocks and strips in the wall.

Figure 3 illustrates a door opening finished in the usual manner, the jambs 44 being mounted in the opening after which the casings 45 and 46 are oppositely secured to the wall as shown. The use of the furring strips or grounds 37 provide means whereby the casings and jambs may be secured to the wall in the usual manner. A door 40 is shown mounted in the opening.

Figure 11 illustrates how the contiguous edges of two adjoining sheets may be joined together by means of a strip 47, preferably of similar material, extending the full length of the sheets. This strip may be secured to the sheets by means of asphalt to securely unite the two sheets.

Figure 12 illustrates a wall structure comprising a plurality of insulating sheets 18, preferably three, arranged in spaced relation to provide dead air spaces 48 within the wall. The sheets 18 are preferably spaced apart by means of channel bars 49 as particularly shown in Figure 13. The sheets are preferably secured to the channels by means of wires 51 passing through the intermediate sheet and around the channels as shown. A small rod 52 is preferably provided upon the opposite side of the sheet around which the wire 51 is passed, thereby preventing the wire from tearing through the sheet when securing the channel 49 thereto. The channels 49 are preferably arranged in staggered relation as shown in Figure 13.

The type of wall above described is particularly well adapted for use in music halls and studios, as it is practically impossible for sound to pass through the wall, thereby providing a wall which will be substantially soundproof. The sheets 18 are secured to the upper and lower supporting members 15 and 16 in a manner similar to that shown and described with reference to Figures 2 and 6. When three sheets are arranged in spaced relation as shown in Figure 12, the two outer sheets are preferably provided with one angle 19 at each end only, straps 53 being provided upon the inside surfaces of the two outer sheets as shown in Figure 12 and particularly in Figure 10. Sheets of insulating material 54 and 55, which may be similar to that from which the sheets are made, are preferably interposed between the angles 19 and the supporting members 15 and 16 as shown in Figure 12, in order to insulate the upper and lower portions of the wall from the supporting members.

Figure 14 illustrates another form of wall structure wherein but two sheets are employed to provide a single dead air space 56 within the wall. Spacing blocks 57 may be provided to space apart the two sheets 18 in place of the channels shown in Figure 13. Referring to Figure 10 it will also be noted that, if desired, bolts 58 may be employed to secure the reinforcing angles 19 and the strips 53 to the sheets 18 in place of the split rivets 21 shown in the other figures.

Figures 1 and 2 illustrate similar plaster

holding boards or sheets 18ª secured to the ceiling joists 15 to support the plaster, instead of wood or expanded metal lath. When the sheets 18ª are thus used in the construction of ceilings, or horizontal walls, they are preferably nailed to the joists before the walls and partitions are erected. In the drawings we have also shown the use of nails or spikes for securing the sheets to the upper and lower supporting members. It is to be understood, however, that other devices may be used for this purpose such, for instance, as screws. Also if the lower support to which the sheets are to be secured is constructed of masonry, expansion sleeves or anchors may be embedded therein adapted to secure bolts or screws passing through the apertures 23 provided in the webs of the reinforcing angles 19. We use the term wall to include inside or outside vertical partitions or walls, horizontal walls or ceilings, or walls placed at any desired angles.

We claim as our invention:

1. The method of constructing walls and partitions of flexible sheet material and plaster which consists in securing between spaced supporting members flexible insulating sheets, then tensioning said sheets between said members to prevent bulging and swaying and applying plaster to the sheet surface.

2. The method of constructing walls and partitions of flexible sheet material and plaster which consists in attaching the sheets at their edges to supports arranged between spaced supporting members, securing said supports to the supporting members and then tensioning the sheets to prevent them from bulging or swaying, and applying plaster to the surface of the sheets.

3. The method of constructing walls and partitions of flexible sheet material and plaster which consists in coating the sheets with asphalt, arranging the coated sheets between spaced supporting members, securing said sheets to the supporting members under tension to prevent the sheets from bulging or swaying and applying plaster to the asphalt coated sheet surface.

4. The method of constructing walls and partitions of flexible sheet material and plaster which consists in arranging between spaced supporting members flexible sheets of heat and sound insulating material, securing said sheets between said members under tension, then adjusting the tension to prevent bulging and swaying of the sheets and applying plaster to the sheet surface.

5. The method of constructing walls and partitions of flexible sheet material and plaster which consists in coating both sides of the sheets with heat and sound insulating material, arranging the coated sheets between spaced supporting members, securing said sheets between said members under tension, adjusting the tension on the sheets to prevent bulging and swaying and applying plaster to both surfaces of the sheet.

6. The method of constructing walls and partitions of flexible sheet material and plaster which consists in arranging between spaced supporting members flexible sheets of heat and sound insulating material that are shorter than the space between said supporting members, then securing said sheets between said members under tension to prevent bulging or swaying and applying plaster to the sheet surface.

7. The method of constructing walls and partitions of flexible sheet material and plaster, which consists in arranging between spaced supporting members, flexible sheets of insulating material that are cut relatively shorter than the spacing between said supporting members, tensioning said sheets between said members to prevent bulging and swaying, attaching together the edges of contiguous sheets, and applying plaster to the sheet surface.

8. The method of constructing walls and partitions of flexible sheet material and plaster which consists in arranging between spaced supporting members a plurality of flexible sheets of heat and sound insulating material arranged with air spaces between them, then tensioning said sheets between said members to prevent bulging and swaying, and applying plaster to the outer surfaces of the outer sheets.

9. The combination, in a wall structure, with spaced supporting members, of a sheet of flexible heat and sound insulating material mounted between said members and having surface coatings of asphalt, means for securing and adjustably tensioning said sheets between said supports, and plaster applied to the asphalt coatings of said sheet.

10. The combination, in a wall structure, with spaced supporting members, of a sheet of flexible heat and sound insulating material mounted between said members and having surface coatings of asphalt, means for securing said sheets under tension between said supports, and plaster applied to both surfaces of said sheet against said asphalt coating.

11. The combination with fixed supporting members, of a sheet of flexible insulating material mounted between said members, the length of said sheet being less than the space between said members, means adjustably supporting said sheet under tension between said members and plaster applied to the opposite surfaces of said sheet.

12. The combination with spaced supporting members, of a sheet of flexible insulating material mounted between said members, reinforcing means marginally secured to the end portions of said sheet,

means adjustably securing said sheet under tension, and through said reinforcing means, to said supports, and plaster applied to the opposite surfaces of said sheet.

13. The combination, in a wall structure, of plaster supporting means comprising in combination spaced supporting members, a sheet of flexible insulating material mounted between said members under tension and an asphalt coating applied upon the surface of said sheet, for the purpose set forth.

14. The combination in a wall structure with spaced supporting members, of a plurality of sheets of flexible insulating material secured under tension between said members, and arranged with air spaces between said sheets, and asphalt coatings applied to the outer surfaces of the outer sheets to provide means for bonding plaster to said sheets.

In witness whereof, we have hereunto set our hands this 19th day of March, 1926.

GOTTLIEB R. MAGNEY.
WILLIAM E. NELSON.