

April 5, 1932.

A. G. W. WEDBERG

1,852,546

PARTITION AND THE LIKE

Filed May 8, 1929

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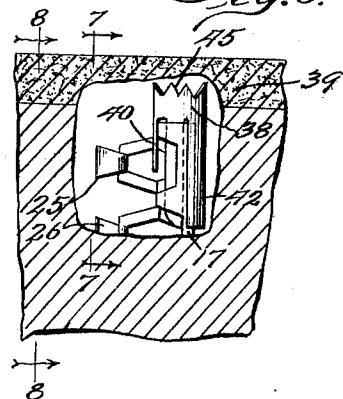
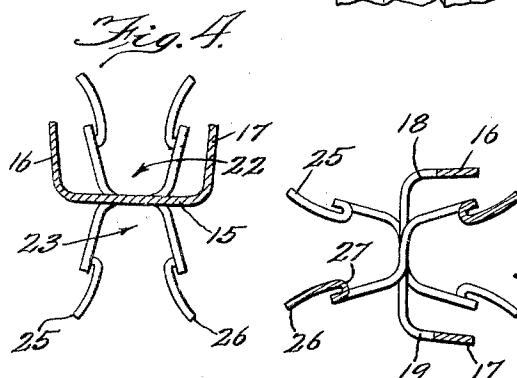
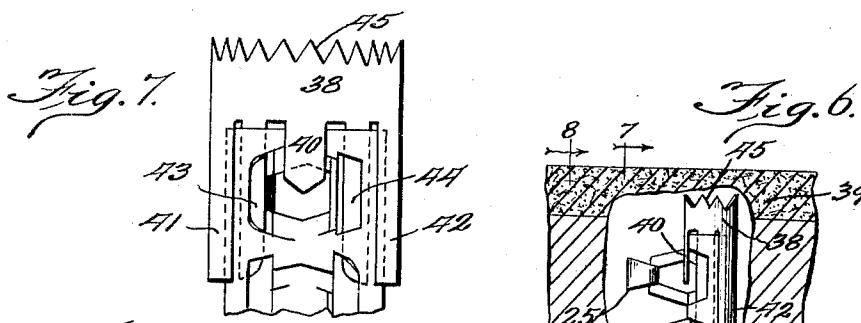
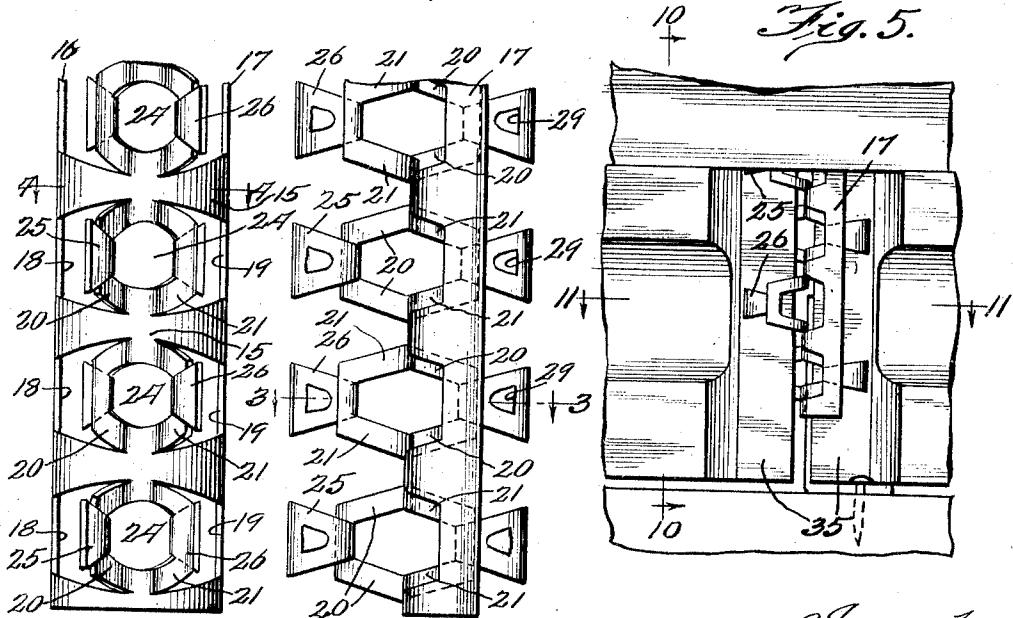


Fig. 3.



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Fig. 1.

Fig. 2.

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2 Sheets-Sheet 2

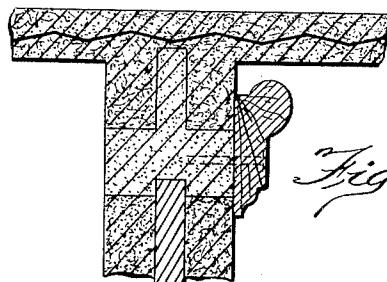


Fig. 8.

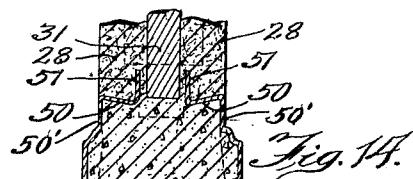


Fig. 14.

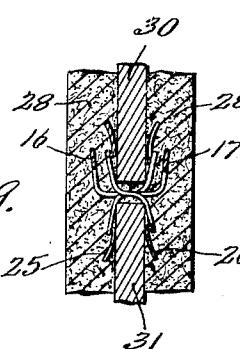


Fig. 9.

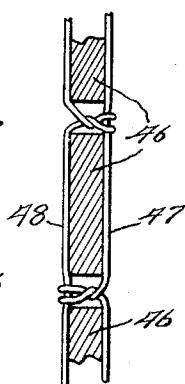


Fig. 12.



Fig. 13.

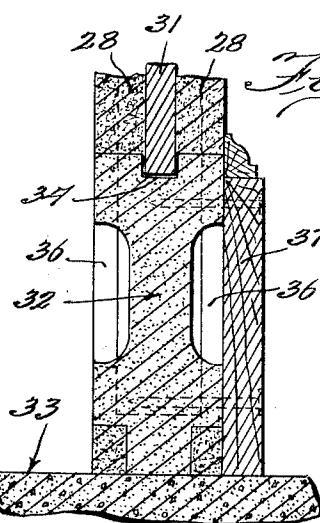


Fig. 10.

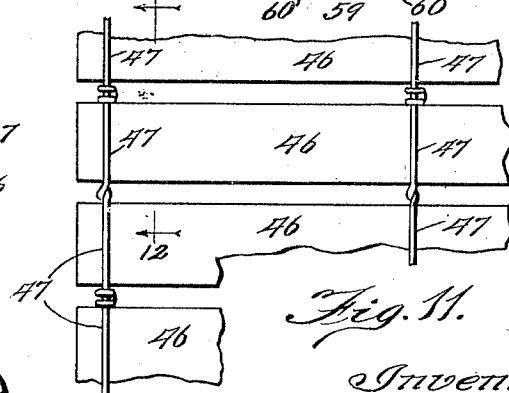


Fig. 11.

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## UNITED STATES PATENT OFFICE

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## PARTITION AND THE LIKE

Application filed May 8, 1929. Serial No. 361,288.

This invention has to do with certain improvements in partitions and the like for building construction. The invention relates to improvements in the means of bonding or joining together the contiguous edges of partition sections, as well as improvements in means for insuring proper bond of the plaster or finished surface to the body of the partition itself.

10 The features of the invention may also be used in connection with other portions of building construction, as, for example, the construction of the ceilings, and the construction of the furring for the inside finish of 15 the outside walls. Therefore, I do not intend to limit myself to the use of the features of invention to partitions strictly speaking, but the features of the invention may also be used in connection with building construction 20 generally.

The main object of the invention is to provide an improved trussed metal stud for joining together the adjacent edge portions of the partition sheets, furring, or other building constructions to be joined. This improved metal stud is of such construction that the adjacent edges of the partition or the like may be easily set into the stud whereupon they will be brought to proper alignment 25 with each other and firmly and accurately supported in such position. In this connection it is a further object to provide a construction whereby the foregoing results may be secured without the necessity of using any special attaching means and without the use 30 of any special tools for joining the parts together.

40 A further feature in connection with the invention relates to the provision of a stud of such construction that it will be extremely rigid and firm and will be able to sustain and resist the forces to which it will be subjected; and at the same time to make said stud very light and therefore easily handled and transported and at the same time correspondingly 45 reduce the costs of manufacturing, and erection.

50 Another feature in connection with the foregoing is to form the stud of sheet metal which can be stamped out into the desired

shape to receive the adjoining edges of the building panels.

A feature of the invention relates to the provision of a stud having projecting portions together with openings in the body of the stud itself, so that the plaster or other surfacing material will penetrate into the openings and take hold of the projections and thus be very firmly and permanently held in place. The result will be that the entire structure will be reinforced and held together largely after the fashion of a trussed bridge structure, embedded in mortar.

Other objects and uses of the invention will appear from a detailed description of the same which consists in the features of construction and combinations of parts herein-after described and claimed.

## In the drawings:

Figure 1 shows an edge view of a section of studding embodying the features of the present invention;

Figure 2 shows a view at right-angles to Figure 1;

Figure 3 shows a cross section on the line 3—3 of Figure 2, looking in the direction of the arrows;

Figure 4 shows a cross section on the line 4—4 of Figure 1, looking in the direction of the arrows;

Figure 5 shows a fragmentary face view of the lower portion of a completed partition embodying the features of the present invention, the base-board not being in place, and this figure shows how the portions of the base sections may be joined together by the studding;

Figure 6 shows a fragmentary section of the upper portion of a wall and the adjacent portion of the ceiling, the face of the wall being cut away, and the figure shows the manner in which the upper end of the stud may be connected into the ceiling by means of a special clip;

Figure 7 shows a detail enlarged view taken on the line 7—7 of Figure 6, looking in the direction of the arrows, to better illustrate the form of clip;

Figure 8 shows a cross section on the line 16

8-8 of Figure 6, looking in the direction of the arrows;

Figure 9 shows a horizontal section through a partition having the panels joined together by the stud of the present invention, the partition having been finished by plastering both faces;

Figure 10 shows a cross section on the line 10-10 of Figure 5, looking in the direction of the arrows;

Figure 11 shows a fragmentary face view of a section of lath partition having the laths woven together by tie-wires;

Figure 12 shows a fragmentary section on the line 12-12 of Figure 11, looking in the direction of the arrows;

Figure 13 shows a face view of a spreader for the base-board construction; and

Figure 14 shows a cross section through the lower portion of a partition provided with a metal base-board, the companion sheets or plates of which are spaced apart by spreaders such as that shown in Figure 13.

Referring to the drawings, the studding of the present invention comprises a sheet of metal which is folded or bent into a channel shape as particularly shown in Figure 4. This channel includes the base or web portion 15, together with the flanges 16 and 17. The base portion itself is regularly stamped out on both sides of the center or medial line so as to establish the relatively large openings 18 on one said and 19 on the other side. These openings reach around part way into the flanges 16 and 17 as best shown in Figures 2 and 3, but the edge portions of the flanges are left unsevered and continuous.

The ears 20 and 21 which are stamped out from the openings 18 and 19, are folded alternately in one direction and the other. Thus, for example, comparison of Figures 1, 2, and 3 will show that the ear 21 at the position of the cross section of Figure 3 is turned towards the left or convex side of the channel, the ear 20 at the position of said section being turned towards the right or concave portion of the channel. At the next lower section the ears are folded in reverse direction, the ear 20 being folded towards the left or convex side and the ear 21 towards the right or concave side.

By reason of the above system of alternating, a cross sectional view such as that of Figure 4 will reveal the presence of companion pairs of ears both at the concave and convex sides of the stud, the ears 20 and 21 complementing each other alternately throughout the length of the stud.

The result is that there are established the U-shaped openings 22 and 23 which accommodate the adjacent edges of the partition sections so as to maintain the same in alignment and afford the ample edge support.

It will be quite evident that numerous other systems of placement of the ears might be adopted besides the particular one illustrated and accomplish similar purposes. For example, both of the ears 20 and 21 at one cross section might be folded towards the convex side, and both of the ears 20 and 21 at the next cross section might be folded towards the concave side, and alternating in the fashion throughout the length of the stud.

Examination of Figures 3 and 4 in particular shows that the ears are so formed as to establish slightly tapered openings wider at their outer edges than close to the web 15 of the channel. The result is that the partition boards are more easily set into place and they are brought to an exact alignment with great facility.

In addition to the foregoing, a certain amount of springiness or flexibility is present in these ears so that by proper design and form they may be caused to engage the edges of the partition sections with a gripping action. In any case the ears can be bent or forced over against the panel so as to increase the gripping action. For example in a structure using metal lath panels the ears can be readily bent in to engage the openings thereof in a definite manner.

I prefer to stamp out the companion ears 20 and 21 so as to establish openings 24 in them, the metal from these openings not being completely severed, but being divided and folded out again in the form of extensions 25 and 26 as shown in Figures 1, 2, 3, and 4. By folding these extensions inwardly and then outwardly as best shown in Figure 3, there are established the dove-tail portions 27 which will give an additional contact and support to the surface of the panel. In the case of the use of metal lath, these parts will also engage the openings thereof more effectively.

These extensions 25 and 26 also facilitate the sliding of the panels into place and serve to more effectively guide and support the panels with respect to the stud.

The edge portions 16 and 17 of the stud project somewhat beyond the surfaces of the panels when assembled as shown in Fig. 9. These edge portions therefore serve to establish projections to which the plaster 28 may adhere. They also perform other functions which will be presently explained.

The ears 20 and 21 as well as the projections 25 and 26 also reach outwardly and into the body of the plaster so as to establish other and numerous projections to which the plaster will adhere.

Reference to Figures 1 and 2 in particular shows the fact that the openings 18 and 19 are of an oval or elliptical form. The openings 24 are of similar form. The result is that the extensions 25 and 26 are wider at

their extreme edges than at the points where they connect to the ears 20 and 21. Consequently, said extensions will much more effectively adhere to the plaster because of 5 their dove-tailing form. This fact is readily apparent from a study of Figures 1 and 6.

If desired, the projections 25 and 26 may also be perforated as shown at 29.

The presence of the studding between the 10 panel sections 30 and 31 in Figure 9, for example, will produce a certain amount of spacing between the edges of the panels. Through this spacing extends the studding; but on account of the open form of the studding, which is in a sense an expanded metal structure, the plaster will extend clear 15 through the body of the studding and between the adjacent edges of the panels so that the plaster finishes on both sides of the 20 partition will be directly joined together practically throughout the length of their joining edges. This feature is readily apparent from Figure 9.

Referring to Figures 5 and 10 in particular, in some cases I provide a base strip 32 of suitable composition material, the lower edge of which rests upon the floor 33. The upper edge of this base strip 32 is preferably grooved as shown at 34 to receive the lower 30 edge of the panel such as 31.

It will be noted that the strip 32 has its upper portion of full width of the partition including the plastering 28. As a consequence the plaster may be brought down flush 35 with the surfaces thereof.

The base strips 32 are of reduced or tapered thickness in alignment with the positions of the studding strips. These reduced thicknesses are shown at 35 in Figure 5. These 40 portions 35 are thus brought down to the same thickness as the panels 30 and 31. By this means the studding can be carried down low enough to join together the end portions of the base strips 32 as shown in Figure 5.

Preferably also the faces of the base strips are recessed or grooved as shown at 36. This will establish longitudinal extending channels for the accommodation of electric wires or other utilities to be placed therein. The 50 base-boards 37 when set in place will cover over these channels and any wires or utilities contained therein.

The upper ends of the studdings may be supported in any convenient manner. For 55 example, a clip such as 38 may be provided, the lower portion of which engages the upper end of the stud, the upper portion of said clip being embedded within the ceiling 39, as shown in Figure 6 for example.

A convenient form of such clip 38 is that 60 illustrated. It is of U shape to conform generally to the channel portion of the stud. The lower portion of the clip is provided with a central downwardly depending prong 40 which enters into the space such as 23 at the

convex side of the stud, and the extreme edges of the clip are provided with ears 41 and 42 which reach down at the sides of the stud. The clip is also provided with other ears 43 and 44 which extend down within the concave 70 portion of the stud and adjacent to the flanges 16 and 17 thereof.

The upper end of the clip 38 is preferably corrugated or pointed as shown at 45 in Figures 6 and 7.

The Figures 11 and 12 show another form of panel which can be conveniently used in conjunction with studs of the present invention. This panel comprises the laths 45 and 46 which are woven together by the wires 47 on one side and 48 on the other side. These wires are periodically interlooped together as shown in Figure 12 at points between the laths. In this way the panel is of open work construction so that the plaster can extend 80 clear through between the laths.

In Figure 14 I have shown a modified construction of the base. In this construction the base comprises a pair of companion sheet metal strips 49. The upper portions of these strips are folded inwardly towards each other and downwardly on a slight slant as shown at 50, and the extreme inner edges of these portions are then turned up to parallel flanges 51. When the strips 49 and 50 are set into place 90 they are so spaced that the flanges 50 and 51 may accommodate the lower edge of the panel such as 31 between them.

The portions 50 establish grounds for the lower edges of the plastering 28 which can 100 be finished off flush therewith.

The lower edges of the strips 49 are also turned inwardly towards each other and upwardly on a slight slant as shown at 52, and the extreme edges of these portions are then 105 carried straight up and folded backwards slightly as shown at 53 to establish hook portions.

Spacing plates such as 54 are periodically located throughout the length of this base structure. The upper corners 55 and 56 of these plates 54 are formed to correspond with the portions 50 of the strips 49 so as to engage and support said portions. The plates 54 are provided with central outward projections 57 and 58 which serve to contact and properly space the strips 49.

The lower portions of the plates 54 are provided with upwardly extending notches 59, the extreme upper ends of which are enlarged as shown in Figure 13 so as to receive the hooked edges 53 already referred to. The result is that by proper manipulation the strips 49 may be first engaged with and hooked into the lower portions of the plates 120 54, after which the upper portions of the strips 49 may be forced over and engaged with the upper corner portions 55 and 56 of plates 54. When the plates 54 are thus set into place their lower portions 60 will co- 125 130

operate with their upper corner portions 55 and 56 to maintain the spacer plates 54 firmly in place.

The lower corners 61 of the plates 54 may be cut away if desired so as to accommodate wooden strips 62 set along the lower corner portions of the plates 49 as shown in Figure 14.

This wooden strip 62 when used will receive the inner ends of nails driven through the quarter rounds 63 and through the relatively thin metal of the strip 49.

It will be noted that the upper central portion 64 of the plate 54 is notched so as to receive if desired the lower edge of the panel 31.

While I have herein shown and described only certain embodiments of the features of my present invention, still I do not intend to limit myself thereto except as I may do so in the claims.

I claim:

1. As a new article of manufacture, a stud for the purpose specified comprising a strip 25 of sheet metal of channel shaped cross section, said strip being periodically and regularly semi-perforated to establish companion pairs of ears located at regular spacing throughout its length, said ears being unsevered from the strip at their inner ends, and the ears of each pair being formed in opposite directions with respect to said channel, one ear of each pair being formed into the concave side and one ear of each pair being formed into the convex side of the channel, and the ears of consecutive pairs being formed in reversed positions, each ear being semi-perforated, with the unperforated portion located at the outer end of the ear to thereby establish an extension projection on the ear, said projections being folded outwardly to establish elongations of the ears, and said projections being of greater width at their extreme ends than at their folded ends, whereby there is provided a trussed stud, and whereby the ears at the two sides thereof establish longitudinally extending channels for the accommodation of the edge portions of successive panels, substantially as described.

2. As a new article of manufacture, a trussed metal stud comprising a strip of sheet metal of channel shaped cross section, the web portion thereof being provided with successive pairs of semi-perforations establishing ears which are integral with the unperforated web portion at their inner ends, one ear of each pair being folded inwardly into the concave side of the channel and the companion ear of each pair being folded outwardly to the convex side of the channel, the ears of successive pairs alternating in such folding, to thereby establish longitudinally extending sockets for the accommoda-

tion of the adjacent edge portions of successive panels, substantially as described.

3. As a new article of manufacture, a trussed metal stud comprising a sheet metal strip of channel shaped cross section having its web portion provided with semi-perforations located in pairs throughout its length, the inner ends of said semi-perforations being integral with the central portion of the web, and the semi-perforations being bent alternately towards the concave side of the channel and towards the convex side of the channel when passing lengthwise of the stud, to thereby establish channel shaped pockets for the reception of the adjacent edge portions of consecutive panels, substantially as described.

4. As a new article of manufacture, a trussed metal stud comprising a strip of sheet metal of angle shaped cross section and including a central web together with a pair of edge flanges, the central web being provided with semi-perforations in pairs, the inner ends of said semi-perforations being integral with the web, and the semi-perforations being bent alternately to the opposite faces of the strip to thereby establish ears outwardly projecting from the strip at opposite sides, and to establish a longitudinally extending channel at each face of the strip, said channels being for the accommodation of the adjacent edge portions of successive panels, substantially as described.

5. As a new article of manufacture, a trussed metal stud comprising a strip of sheet metal of angular cross section including a central web together with edge flanges, the central web being provided with pairs of semi-perforations, the web being unsevered at the inner ends of said perforations to thereby establish pairs of ears, the inner ears of which are integral with the central portion of the web, selected ears being turned away from one face of the web and selected ears being turned away from the other face of the web whereby there are established channels at the two faces of the stud for the accommodation of the adjacent edge portions of successive panels, substantially as described.

6. As a new article of manufacture, a trussed metal stud comprising a sheet metal strip having a series of pairs of semi-perforations throughout its length, the metal of the strip being integral at the inner ends of said semi-perforations, and the semi-perforations being folded away from the body of the strip alternately to the two sides thereof to thereby establish a pair of longitudinally extending channels in alignment with each other for the accommodation of the adjacent portions of successive panels, substantially as described.

7. As a new article of manufacture, a trussed metal stud comprising a strip of sheet

metal having a series of pairs of semi-perforations, with the edge portions of the strip unsevered and continuous to establish a truss of continuous mechanical tensile strength, the 5 semi-perforations being folded alternately to opposite sides of the strip to thereby establish a longitudinally extending channel at each face of the strip for the accommodation of the edge portion of a panel, substantially as described.

8. In a wall construction, the combination of a trussed metal stud comprising a longitudinally extending sheet metal body member having a central web portion together with 15 a series of ears projecting from each face of said metal body member, each said series establishing a longitudinally extending channel, the two channels being in alignment with each other, together with a panel at each side 20 of the stud having its edge portion entered into one of said channels, substantially as described.

9. In a building construction, the combination of a trussed stud comprising a longitudinally extending strip having a continuous flange portion at each edge thereof, and a series of ears projecting from each face of said strip in groups to thereby establish a longitudinally extending channel along each face 30 of the stud, the extreme end portions of said ears being flared outwardly and of dove-tail form, and a panel having its edge portion seated into the channel at each face of the stud, together with a facing of plaster or the 35 like on each face of the structure and between the adjacent edge portions of the panels and around the dove-tailed ear portions aforesaid, substantially as described.

10. In a building construction, the combination of a trussed metal stud comprising a body strip of sheet metal, provided with a series of ears projecting from each face of said metal body member in alignment with each other, said ears at the two faces establishing longitudinally extending panel edge supporting channels, together with a panel at each side of the stud with its edge portion engaged with the channel at that side, a series of projections on the ears aforesaid, and 45 a surfacing of plaster or the like on each face of the structure overlying the panels and the studding and surrounding the projections and ears for firm attachment thereto, substantially as described.

11. In a building construction, the combination of a trussed metal stud provided with a series of openings in longitudinal alignment, together with a series of ears projecting from the two faces of the strip at the opposite sides of said openings, said ears establishing longitudinally extending panel edge supporting channels, together with a panel at each side of the stud, a series of projections on the ears aforesaid overlying the 50 faces of the panels, and a surfacing of plaster

or the like on each face of the structure overlying the panels and the studding and surrounding the projections and ears for firm attachment thereto, substantially as described.

12. In a building construction, the combination of a series of longitudinally extending base strips having their body portions of the full width of the partitions and their adjacent end portions of reduced width, a 70 trussed metal stud provided with a series of openings throughout its length, together with projections at both sides of the said openings, said projections facing in opposite directions to establish a longitudinally extending panel edge supporting channel at each side of the stud, the end portions of the base strips entering into and engaging the lower ends of said channels, panels located above the base strips and of less thickness 75 that the base strips, the edge portions of said panels entering into and engaging the channels at the two faces of the stud together with a facing of material on the faces of the panels, said facing of material overlying the stud and 80 entering through the openings of the stud and between adjacent ends of the panels, and said facing being substantially flush with the base members beneath the panels, substantially as described.

13. In a building construction, the combination of longitudinally extending base strips with their end portions in proximity to each other, a trussed metal stud comprising a body portion lying transversely of the structure 90 and provided with a series of through openings, ears at the sides of said openings projecting from opposite faces of the stud to establish a longitudinally extending panel edge 95 channel at each face of the stud, the lower portions of said channels receiving the end portions of the base strips, panels above the base strips and having their edge portions in engagement with the stud channels aforesaid, and a facing of material overlying the faces 100 of the panels entering into the openings of the stud and between the adjacent edges of the panels, substantially as described.

14. In a building construction, the combination of a trussed metal stud having a series of through openings together with ears at both sides of said openings reaching outwardly from the faces of the stud to establish a longitudinally extending panel edge 110 supporting channel at each face of the stud, panels having their edge portions in said channels, and means for supporting the upper end of the stud against displacement comprising a clip member having a series of 115 downwardly extending ears on its lower end for engagement with the opposite faces of the upper end portion of the stud, and having the upper end of said clip suitably serrated for embedment in the ceiling structure or the like, substantially as described.

15. In a building construction, the combination of a trussed metal stud provided with a series of ears projecting from each face thereof in alignment with each other, said 5 ears at the two faces establishing longitudinally extending panel edge supporting channels, together with a panel of metal lath at each face of the stud, the edge portions of the said panels being entered into the panel 10 edge supporting channels aforesaid, the ears of the stud being entered into engagement with openings or corrugations of the panels, and a facing of material on the panels and overlying the metal stud and in engagement 15 with the ears, substantially as described.

16. In a building construction, the combination of a trussed metal stud provided with a series of ears projecting from each face thereof in alignment with each other, said 20 ears at the two faces establishing longitudinally extending panel edge supporting channels at the opposite faces of the stud, together with a lath panel at each face of the stud, the edge portions of said panels being engaged 25 with the channels of the stud, said panels comprising horizontally extending laths together with pairs of transverse strand wires being suitably joined together at positions between the laths, substantially as described.

30 17. In a building construction, a metal stud having a series of loop shaped ears projecting at each side thereof in pairs, the loops of each pair being curved outwardly from the medial plane of the stud and being opposite 35 to each other to receive the edge of the panel between them, and each loop lying in a direction substantially parallel to the length of the stud, substantially as described.

18. In a building construction, a metal stud 40 having two groups of loop shaped ears projecting from one face thereof, the loops of each group being in substantial alignment with each other lengthwise of the stud and the two groups being separated from each 45 other a distance to receive and support the edge portion of the panel between them, substantially as described.

19. In a building construction, a metal stud having a series of loop shaped ears which are 50 curved outwardly from the medial plane of the stud and are adapted to receive the plaster and permit the plaster to surround said loops to thereby improve the imbedment of the ears in the plaster with consequent improvement 55 of adherence thereto, substantially as described.

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