July 30, 1935. H. E. EIBER 2,009,880

BUILDING CONSTRUCTION

Filed Feb. 10, 1934 2 Sheets-Sheet 1

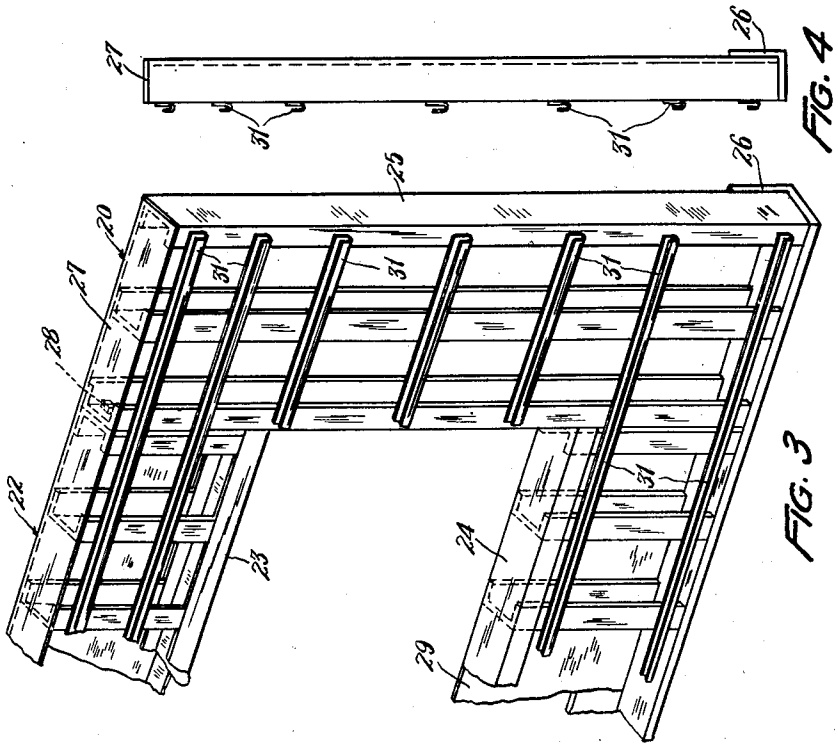


FIG. 3

FIG. 4

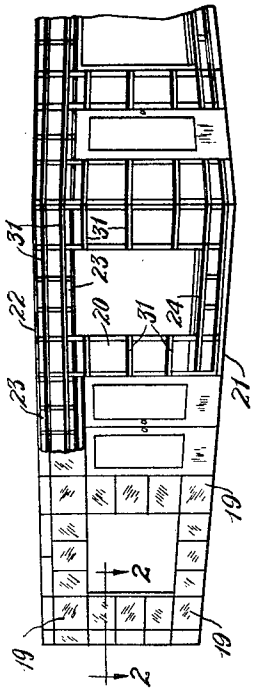


FIG. 1

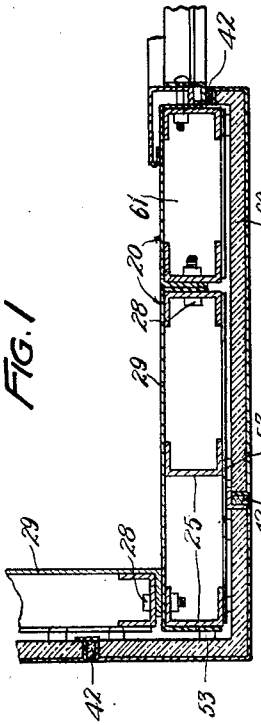


FIG. 2

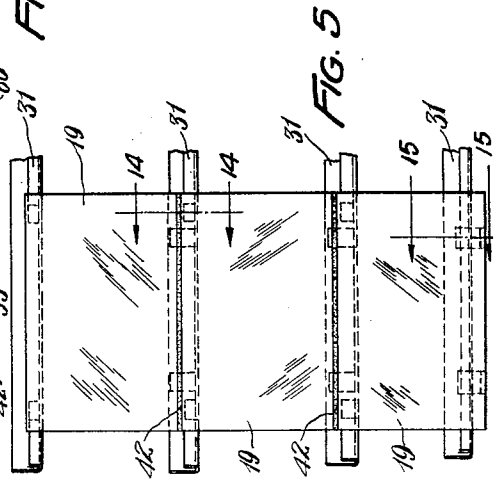


FIG. 5

INVENTOR:
HARRY E. EIBER
Kwis Hudson & Kent
ATTORNEYS

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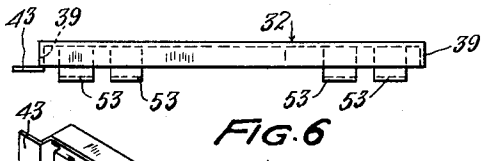


FIG. 6

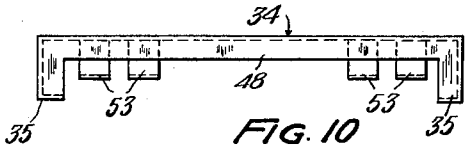


FIG. 10

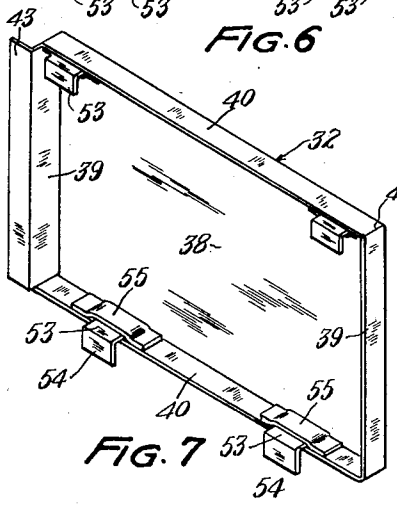


FIG. 7

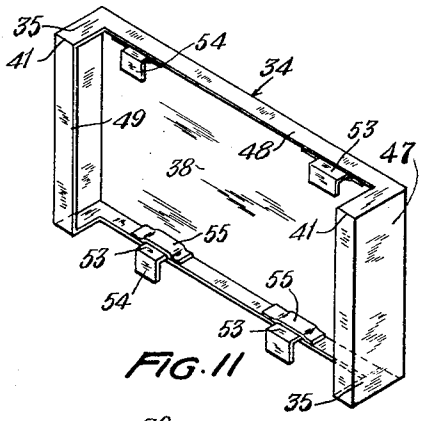


FIG. 11

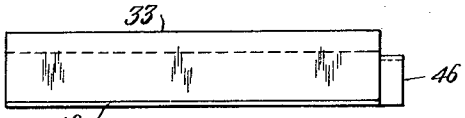


FIG. 8

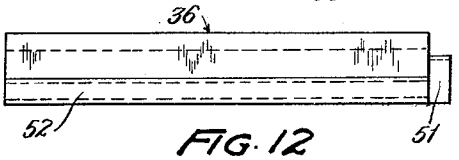


FIG. 12

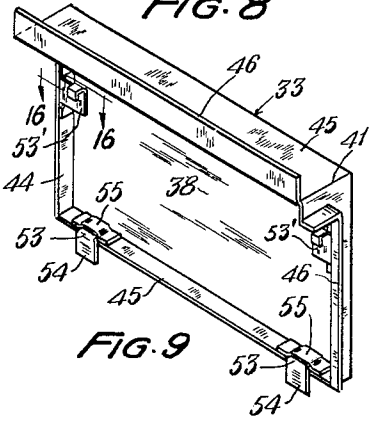


FIG. 9

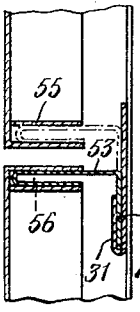


FIG. 14

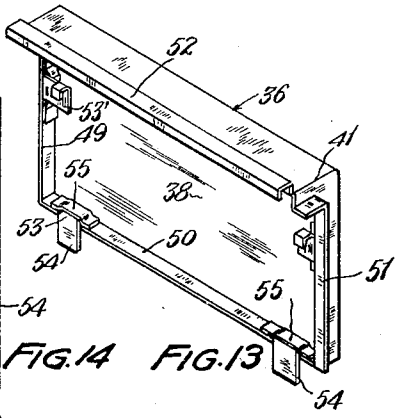


FIG. 13

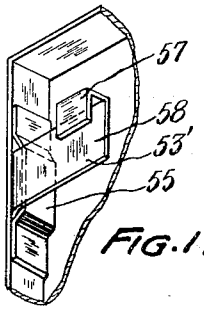


FIG. 17

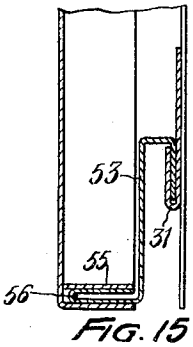


FIG. 15

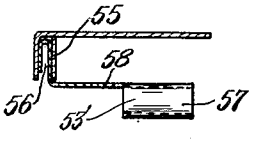


FIG. 16

INVENTOR:
HARRY E. EIBER
Kwis Hudson & Kent
ATTORNEYS

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UNITED STATES PATENT OFFICE

2,009,880

BUILDING CONSTRUCTION

Harry E. Eiber, Cleveland, Ohio, assignor to The Austin Company, East Cleveland, Ohio, a corporation of Ohio

Application February 10, 1934, Serial No. 710,675

10 Claims. (Cl. 189—85)

This invention relates to an improvement in building construction and, as one of its objects, aims to provide an improved wall or partition construction wherein panel-like wall units having a desired surface characteristic are arranged to form a substantially continuous facing for the wall or partition.

Another object of this invention is to provide an improved construction for the walls, partitions, or the like, of metal buildings wherein a plurality of sheet metal panels or units, having a porcelain surface or other desired surface characteristic, are arranged in contiguous, substantially coplanar relation to form a desired facing or surface for the wall or partition.

Another object of this invention is to provide an improved construction, of the type referred to, wherein novel means is provided for attaching the sheet metal panels to the wall structure so that the panels may be adjusted relative to each other and to the plane of the wall structure.

Still another object of this invention is to provide an improved construction for buildings wherein a wall structure or partition is provided with a plurality of spaced attaching strips, and wherein a plurality of sheet metal panels, arranged in contiguous relation to form a facing for the wall structure or partition, are connected to said attaching strips at a plurality of points by connecting members.

A further object of this invention is to provide an improved construction, for walls, partitions and the like, wherein a plurality of channel-like attaching strips are arranged in vertically spaced relation on the wall structure, and a plurality of sheet metal panels are arranged in contiguous relation to form a facing for the wall structure and have attaching means engaging in the channel-like strips for retaining the panels in the desired contiguous relation.

It is also an object of this invention to provide an improved form of sheet metal wall unit or panel comprising a sheet metal body having rearwardly extending flanges coextensive with the edges thereof.

Yet another object of this invention is to provide an improved facing for wall structures comprising sheet metal panels having rearwardly extending flanges at their edges and arranged in spaced contiguous relation with cementitious material in the spaces between the flanges of adjacent panels.

Other objects and advantages of this invention will be apparent from the following description when taken in conjunction with the accompanying sheets of drawings, wherein

Fig. 1 is a perspective view, somewhat diagrammatic in form, showing my improved wall construction as applied to a small store building.

Fig. 2 is a partial sectional view taken through one of the corners of the building of Fig. 1, as indicated by section line 2—2.

Fig. 3 is a perspective view, on a larger scale than Fig. 1, illustrating the construction and arrangement of the wall sections before the facing panels have been applied thereto.

Fig. 4 is an end elevational view of the wall section arrangement shown in Fig. 3.

Fig. 5 is an elevational view showing a part of a wall facing formed by the panels.

Fig. 6 is a top plan view of a typical sheet metal wall panel.

Fig. 7 is a perspective view thereof taken so as to show the attaching clips.

Fig. 8 is a top plan view of a typical sheet metal sill panel.

Fig. 9 is a perspective view thereof.

Fig. 10 is a top plan view of a typical wall panel with return portions thereon.

Fig. 11 is a perspective view thereof.

Fig. 12 is a top plan view of a typical coping panel.

Fig. 13 is a perspective view thereof.

Fig. 14 is a partial sectional view taken through one of the panel attaching clips as indicated by line 14—14 of Fig. 5.

Fig. 15 is a similar partial sectional view taken as indicated by line 15—15 of Fig. 5.

Fig. 16 is a sectional view illustrating one of the attaching clips and taken as indicated by line 16—16 of Fig. 9, and

Fig. 17 is a perspective view of the clip shown in Fig. 16.

Detailed reference will now be made to the accompanying drawings, wherein I have illustrated an improved form of wall construction embodying sheet metal panels having a desired surface characteristic and arranged in contiguous relation to provide the wall or partition with a substantially continuous facing or surface conforming to such desired characteristic. For purposes of illustration, the drawings show my improved wall construction as applied to a small store building, but it will be understood, of course, that the invention can be applied to various types of buildings and to various forms of wall structures.

In the store building illustrated in Fig. 1, the walls are constructed by assembling fabricated metal wall sections in the desired relation to form a wall structure, and the sheet metal wall panels 19 are then applied to such wall structure according to my invention. The fabricated wall sections may be of varying size and shape, according to the positions they are to assume in the building structure. For example, in Fig. 1, I show relatively high wall sections 20 which may be used on opposite sides of door or window openings, and which sections extend for a desired height,

such as from the foundation line 21 to the coping line 22 when the building is a one-story structure, as shown in Fig. 1. Smaller fabricated wall sections, such as the sections 23 and 24, may be used at other points. For example, the sections 23 may be used above window and door openings, and the sections 24 may be used below the window openings.

As shown in Figs. 3 and 4 of the drawings, the wall sections are fabricated from metal and, while any appropriate construction may be used, they preferably are constructed with laterally spaced vertical members 25, such as suitable steel channels, which are connected together and held in a desired relation as by means of an angle iron 26 extending across the lower ends of the channels and a plate 27 extending across the upper ends of the channels. The plate 27 and the angle iron 26 may be welded or otherwise secured to the channels to form a substantially rigid wall section. Adjacent wall sections such as the sections 20 and 22 may be secured together by means of suitable bolts 28, or the like, extending through the channels at the edges of such sections, as shown in Figs. 2 and 3.

If desired, the wall sections may be provided on one side thereof with a sheet metal facing 29 which is formed by attaching a panel of sheet metal to the wall section. This facing sheet metal is preferably attached to the wall sections during the fabrication thereof, as by welding, or may be attached at the time that the wall sections are being assembled in the desired relation during the erection of the building structure. The wall sections may be constructed with the sheet metal facing on both sides thereof, as when the sections are to be used in partition walls, but it is usually desirable to provide the facing on only one side and to assemble the wall sections so that the sheet metal facing will be on the interior of the building. This sheet metal facing may be painted or otherwise treated to provide a desired wall surface interiorly of the building.

The wall facing formed by the contiguous sheet metal panels 19 is usually applied to the exterior side of the wall sections, as shown in Fig. 1, but it can, if desired, also be used as a facing for the interior of the building.

For applying the sheet metal panels 19 to the wall sections, I provide the latter with vertically spaced transversely extending attaching strips 31. For a purpose presently to be explained, these attaching strips are preferably of substantially hook-like or channel-like cross section, as shown in Figs. 3 and 4, and may be secured to the wall sections by screws or by welding, or by any other suitable form of connection. When the wall panels 19 are to be applied to the exterior of the building to provide the same with a facing, as illustrated in Fig. 1, these attaching strips are applied to the outer face of the wall sections but, if desired, the attaching strips and wall panels may be applied to the inner faces of the wall sections or, if desired, may be applied to both faces of the wall sections.

While wall panels of various sizes and shapes may be employed in the wall construction of my invention, obviously it is desirable to design the wall sections so that only a minimum number of different wall panels 19 will be required. In Figs. 6 to 13 inclusive of the drawings, I have shown several typical panels which may be used. The panel 32 illustrated in Figs. 6 and 7 is a typical wall panel. The panel 33 illustrated in Figs. 8 and 9 is a typical sill panel which is used in the side wall facing along the sill portion of the building. The panel 34 illustrated in Figs. 10 and 11 is a typical wall panel having return portions 35 at one or both ends thereof, and the panel 36 illustrated in Figs. 12 and 13 is a typical coping panel intended to be used at the upper edge of the wall sections.

All of the panels illustrated in Figs. 6 to 13 inclusive, are of sheet metal construction, and it will be noted that each panel comprises a sheet metal body 38 having rearwardly extending flanges coextensive with the edges thereof. In the panel of Figs. 6 and 7 these flanges consist of end flanges 39 and top and bottom flanges 40. These rearwardly extending flanges impart to the panel a pan-like shape, as shown in the drawings, and in addition to serving to strengthen and reenforce the panels, these flanges form edge faces for the panels for engagement with the cement or other filler material 42 which is inserted in the spaces between the adjacent panels when they are in the assembled relation shown in Figs. 1 and 2. If desired, the adjacent edges of the flanges 39 and 40 may be welded together, as indicated at 41, and I find that such welding materially increases the strength and rigidity of the panels.

If desired, the typical side wall panel shown in Figs. 6 and 7 may be constructed with a flange extension 43 at one end thereof, which extends in back of the adjacent wall panel when the panels are assembled in contiguous relation, as illustrated in Fig. 2. This flange extension thus forms the rear wall of the cement groove between adjacent panels and also assists in aligning the panels and retaining the same in the desired co-planar relation.

The sill panel shown in Figs. 8 and 9 is generally similar to the side wall panel of Figs. 6 and 7 in that it has rearwardly extending end and sill flanges 44 and 45. This panel also may be provided at one end thereof with a flange extension 46 similar to the flange extension 43 of the panel 32. Since the sill panel 33 is used to form an offset or ledge in the wall facing formed by the panels, the rearwardly extending flange at the upper edge of the panel is made longer than the flange at the lower edge of the panel as shown in Fig. 9 and, if desired, the flange extension 46 may be carried across the elongated upper edge flange as shown in the drawings.

As mentioned above, the panel 34 shown in Figs. 10 and 11 is provided with a return portion 35 at one or both ends thereof. This panel is also provided with rearwardly extending flanges 47 and 48 at the end and side edges thereof, the flanges preferably being carried across the return portions as shown in Fig. 11. The panel 34 is intended to be used to extend the wall facing for a short distance around one or more projecting corners, such as the corners formed by a projecting column or pilaster or the projecting corner adjacent a door or window opening.

The panel 36 shown in Figs. 12 and 13 is a coping panel which, as mentioned above, is intended to be used at the top of the wall sections and this panel is also provided with rearwardly extending end and edge flanges 49 and 50. The flange at the upper edge of the panel is elongated similar to the elongated flange of the sill panel 33 and this elongated edge flange extends rearwardly transversely across the upper end of the wall section. If desired, one of the end flanges 49

may be provided with a flange extension 51 similar to the flange extension of the sill panel 33. The elongated upper edge flange of the coping panel may, if desired, be provided with a hook-like extension 52. This extension may be desirable for the attachment of metal decking, or may be desired for other purposes.

The panels may be constructed of any suitable sheet metal, such as sheet steel, and may be coated on the outer side thereof with porcelain enamel, or any other suitable material which will impart to the panels a desired surface characteristic. If a bright metal surface characteristic is desired, the panels may be constructed of sheet aluminum, stainless steel, or other suitable material. In the construction of those panels having rearwardly extending portions which form a part of the exposed wall facing, such as the return portions of the panel 34 or the rearwardly extending elongated upper flanges of the sill panel 33 and the coping panel 36, the coating or surface characteristic applied to the outer face of the panels is also applied to such rearwardly extending flange or return portions. When the panels are applied to the wall sections in the desired contiguous relation they form a substantially continuous wall facing having the desired surface characteristic.

For attaching the panels to the wall sections I provide the panels with attaching clips 53 which cooperate with the attaching strips 31, and although various forms of clips may be used, I prefer to use a simple form of clip which will permit of adjustment of the panels but which does not require the use of nails, screws, or like attaching means. As shown in Figs. 6 to 15 inclusive, the attaching clip 53 may comprise a sheet metal member which extends rearwardly with respect to the panel and which is provided with a hook-like portion 54 for engagement in the channel-shaped recess of the attaching strip.

To provide an adjustable connection between the clips and the panel itself, I provide the panel with slot-like recesses in which the clips frictionally engage, one such recess being provided for each clip. These slot-like recesses may be conveniently formed by attaching a strap or plate member 55 to one of the rearwardly extending flanges of the panel. The plate member 55 is formed with an offset central portion, and when the plate member is spot welded or otherwise secured to the rearwardly extending flange of the panel, the offset portion is spaced away from the flange of the panel to provide the desired slot-like recess. Each panel is provided with a suitable number of such slot-like recesses and with a corresponding number of attaching clips. In most cases four such recesses and a corresponding number of clips are sufficient for the attachment of the panel to the strips 31. For adjustably retaining the clips in the slot-like recesses of the panel, I prefer to construct the clips with a doubled portion 56, as illustrated in Figs. 14, 15 and 16 of the drawings, and this doubled portion of the clip is disposed in the slot-like recess and frictionally retained therein.

Before the panels are applied to the wall sections the clips 53 are inserted into the recesses of the panels so that the clips extend rearwardly from the panels as shown in Figs. 6 to 13 inclusive. The panels are then applied to the wall sections by inserting the hook-like portions 54 of the clips into the channel-shaped strips 31, whereby the panel is supported from the strips. The panels may be adjusted relative to each other by sliding the hook portions of the clips along within the recesses of the attaching strips 31, and by this means the spaces between adjacent panels may be adjusted to a desired width. The panels may also be adjusted relative to the face or plane of the wall sections by causing the clips 53 to be pushed into or withdrawn partly from the recesses in which they engage. By the latter adjustment all of the panels may be brought into a desired substantially co-planar relation. As the panels are applied to the wall and adjusted to correct position, cementitious or other packing material may be inserted into the grooves between adjacent panels, and this material and the clips serve to retain the panels in the desired relation.

It will be noted from Figs. 6 to 13 inclusive, that the upper pair of clips of each panel is differently spaced from the lower pair of clips of the same panel. This different spacing of the upper and power pairs of clips permits the lower pair of clips of one panel to engage in the recess of an attaching strip between the upper pair of clips of the next lower panel. By this means interference between clips of adjacent panels is avoided.

In the case of the sill panel 33 shown in Figs. 8 and 9, and the coping panel 36 shown in Figs. 12 and 13, the elongated flange at the upper edge thereof makes it desirable that a slightly different form of clip be used for the upper pair of clips of these panels. This modified form of clip 53' is shown in Figs. 16 and 17 of the drawings as having a hook portion 57 carried by the laterally extending arm portion 58 of the clip. In other respects the clip is similar to the clip 53 of the other panels.

To increase the heat and sound insulating qualities of a wall constructed according to my invention, I prefer to provide each of the wall panels with an insulating filler 60, as shown in Fig. 2 of the drawings. This insulating filler may be a sheet of commercially available fibrous insulating material or any other suitable insulation. Because of the pan-like construction of the sheet metal panels, the sheets of insulating material can be readily incorporated in the panels by cutting the insulating material to the desired sheet sizes and inserting the same into the pan-like recesses of the panels. If desired, additional insulation may be obtained by packing insulating material into the spaces 61 existing between the upright channels of the wall sections.

In the foregoing description, I have explained that the clips 53 and 53' may have an adjustable connection with the panels with which they are used and, while such an adjustable connection is usually desirable for the purpose of aligning or relatively positioning the panels, it will be understood, however, that these clips may, if desired, be rigidly connected with the panels by welding or by any other suitable means.

The improved wall construction of my invention may be used for various types of building structures, but is especially suitable for small store buildings, gasoline dispensing stations, restaurants and the like, because the wall sections may be readily fabricated in a shop and can be quickly and easily erected on the building site. Moreover, it is often desirable in buildings of the type mentioned that the interior, exterior, or partition walls have a surface characteristic such that the wall surfaces will not require painting or other protection against deterioration, but which can be readily cleaned by washing or scrubbing. The wall construction which I have de-

vised satisfactorily fills these requirements because the sheet metal panels, when constructed of aluminum or stainless steel, or when provided with a porcelain enamel, or other desired coating, form a wall surface or facing which can be readily cleaned by washing and which does not require painting or other protection against corrosion or deterioration.

Moreover, it will be seen that the attaching means which I have provided for the wall panels permits the panels to be readily and quickly applied to the wall structure. This attaching means also permits the panels to be relatively adjusted to bring the same into position to form a uniform and regular wall facing. On the whole, my invention provides an economical, durable and serviceable wall facing by means of which fabricated metal building structures are rendered practical and satisfactory for use as small store buildings and for various other purposes.

While I have illustrated and described the improved construction of my invention, it will be understood, of course, that I do not wish to be limited to the precise details of construction and arrangements of parts illustrated and described, but regard my invention as including such changes and modifications as do not involve a departure from the spirit of the invention and the scope of the appended claims.

Having thus described my invention, I claim:

1. In combination, a wall structure having a plurality of spaced elongated attaching members thereon, a plurality of panel-like units in contiguous relation to each other and forming a wall facing for said structure, and a plurality of spaced connectors for attaching the units to said attaching members in said contiguous relation, one end of said connectors having engagement with said attaching members and being adjustable therealong whereby the spaces between adjacent units may be varied and the other end of said connectors having adjustable connection with the units whereby the latter may be moved inwardly or outwardly with respect to the wall structure.

2. In combination, a wall structure, a plurality of spaced substantially channel-like members extending transversely of said structure, a plurality of panels, and means for attaching said panels to said members in contiguous relation to each other, said means comprising clips extending from said panels at spaced points and engaging in the channel-like members, and means providing an adjustable connection between said clips and the panels.

3. In combination, a wall structure, a plurality of vertically spaced elongated supporting members extending transversely of said structure, a plurality of panels each having spaced slot-like recesses therein, and attaching members engaging said supporting members and having portions engaging in said slot-like recesses.

4. In combination, a wall structure, a plurality of vertically spaced elongated supporting members extending transversely of said structure, a plurality of panels provided with rearwardly extending flanges, a plurality of spaced attaching members engaging said supporting members, and means adjustably connecting said attaching members with said flanges.

5. In combination, a wall structure, a plurality of vertically spaced elongated supporting members extending transversely of said structure, a plurality of contiguous facing panels each having rearwardly extending flanges, means providing said flanges with spaced slot-like recesses, and a plurality of attaching members engaging said supporting members and having doubled portions frictionally adjustable in said slot-like recesses.

6. A wall construction comprising upright members held in laterally spaced relation to each other, means secured to said members and providing a wall surface at one side thereof, a plurality of contiguous sheet metal panels in substantially co-planar relation and providing a wall facing on the other side of said uprights, vertically spaced attaching strips on said upright members, and a plurality of clips connecting said panels with said attaching strips at spaced points.

7. A wall construction comprising upright members held in laterally spaced relation to each other, means secured to said members and providing a wall surface at one side thereof, a plurality of contiguous hollow sheet metal panels in substantially co-planar relation and providing a wall facing on the other side of said uprights, insulating material in the hollow panels, vertically spaced attaching strips on said upright members, and a plurality of clips connecting said panels with said attaching strips at spaced points.

8. In a wall construction the combination of a wall structure, spaced substantially coextensive attaching strips on said structure, said strips being of substantially channel-like cross section, a plurality of sheet metal panels in contiguous substantially co-planar relation and forming a facing for said structure, said panels having rearwardly extending flanges thereon, plate members secured to said flanges to provide slot-like recesses therein, and a plurality of clips having doubled portions frictionally engaging in said recesses and having hook portions engaging in said channel-like attaching strips.

9. In combination, a wall structure having a plurality of spaced channel-like attaching strips thereon, a plurality of panel-like units in contiguous relation to each other and forming a wall facing for said structure, and a plurality of spaced connectors for attaching the units to said strips in said contiguous relation, said connectors being provided with a hook-like part engageable in the channel recess of said strips and shiftable therealong whereby the spaces between adjacent units may be varied and being also provided with means having an adjustable frictional connection with the units whereby the latter may be moved inwardly or outwardly with respect to the plane of the wall structure and into substantial co-planar relation with each other.

10. In a wall structure the combination of a plurality of wall sections in edge to edge relation each comprising structural members retained in spaced relation and having a wall facing on one side thereof, a plurality of contiguous sheet metal panels in substantially co-planar relation and providing a wall facing on the other side of said sections, spaced attaching strips on said sections, and clips connecting said panels with said strips, said clips having a hook portion engageable with said strips and shiftable therealong whereby the spaces between adjacent panels may be varied and also having means providing an adjustable connection between the clips and panels whereby the latter may be moved inwardly or outwardly with respect to the wall sections and into said substantial co-planar relation.

HARRY E. EIBER.