March 27, 1956 G. G. GREULICH 2,739,677

METAL WALL PANEL ASSEMBLY

Filed Aug. 26, 1954 2 Sheets-Sheet 1

Fig. 1.

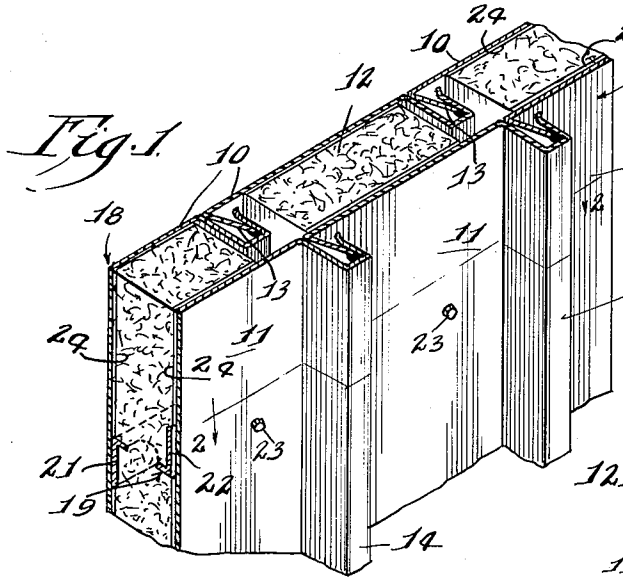


Fig. 1a.

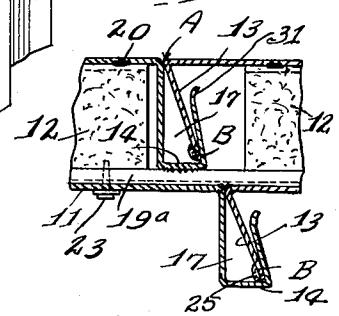
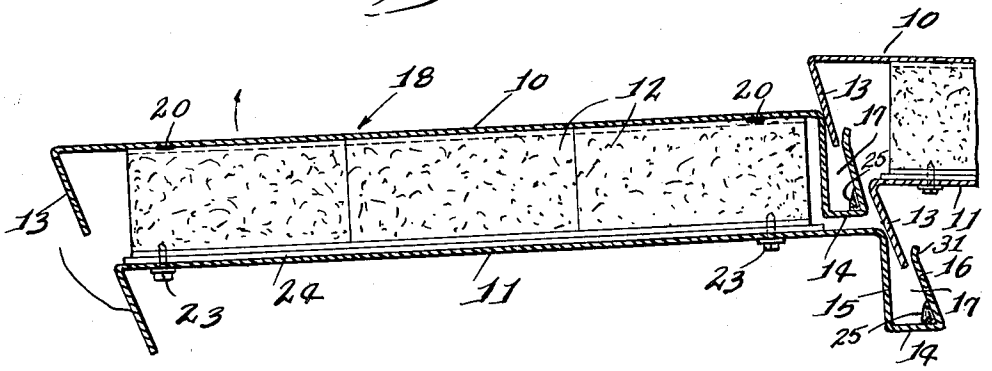


Fig. 2.

Fig. 3.



Inventor:
Gerald G. Greulich.

By Wilson & Geppert
Attorneys.

March 27, 1956 G. G. GREULICH 2,739,677

METAL WALL PANEL ASSEMBLY

Filed Aug. 26, 1954 2 Sheets-Sheet 2

Fig. 4.

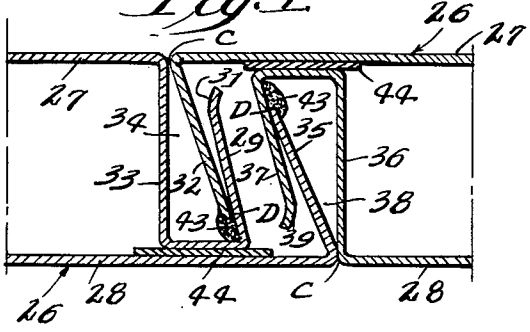


Fig. 5.

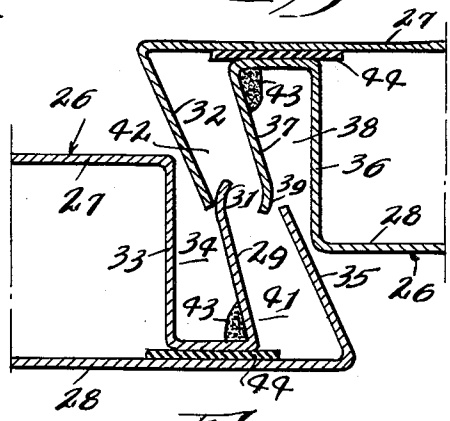


Fig. 6.

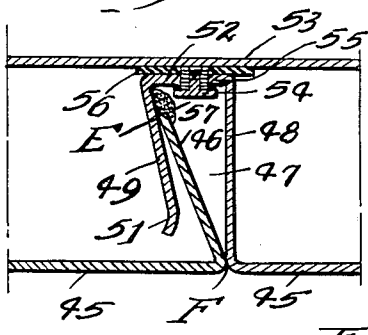


Fig. 7.

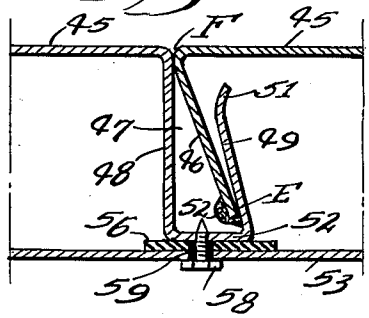


Fig. 8.

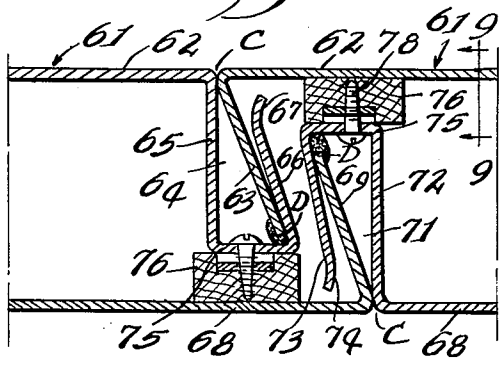


Fig. 11.

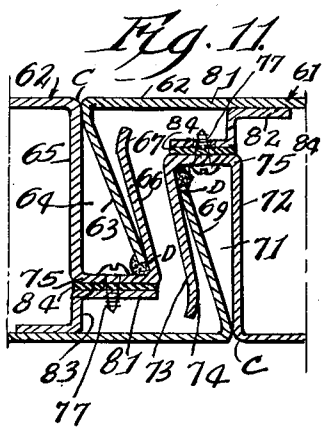
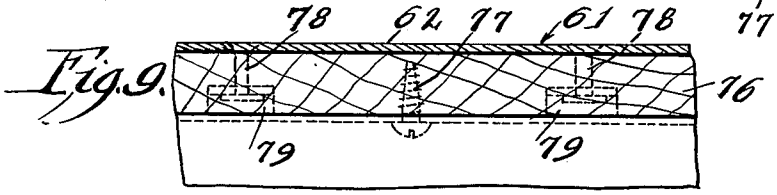


Fig. 9.



Inventor.
Gerald G. Greulich
By. Wilson & Leppert
Attorneys.

United States Patent Office

2,739,677

Patented Mar. 27, 1956

2,739,677

METAL WALL PANEL ASSEMBLY

Gerald G. Greulich, Mount Lebanon, Pa., assignor to Ceco Steel Products Corporation, Chicago, Ill., a corporation of Nebraska

Application August 26, 1954, Serial No. 452,370

13 Claims. (Cl. 189—86)

The present invention relates to a metal wall construction and more particularly to a novel means and manner of mounting and joining metal wall panels or units in interlocking engagement to provide a permanent cellular wall assembly. Metal wall panelling of the present construction permits rapid and simple installation whereby to effect substantial savings in cost, time and labor required in erection.

Among the important objects of the present invention is to provide a novel insulated wall surfacing comprising metal panels or units that may be quickly and conveniently assembled, and more particularly to a novel means and manner of joining the abutting edges or ends of such panels or units in interlocking engagement.

Another object of the present invention is the provision of a novel wall assembly formed of cellular metal panels or units having their edges or ends so constructed and arranged as to interengage when assembled to provide an interlocking joint for connecting and retaining these wall panels or units in assembled relation. In the novel embodiment, the interlocking flanged edges of the panels or units are so contoured as to tensionally grip and securely retain the panels or units in assembled relation under thermal changes and resulting contraction and expansion.

A further object of the present invention is the provision of a novel interlocking wall assembly in which each succeeding wall panel or unit is securely interlocked with a preceding or previously mounted wall panel or unit. Such wall panels or units may be fluted or ribbed on their exterior or made flush with the space between the inner and outer wall units or plates substantially filled with insulation to form an insulated wall structure in which through metal to metal contact between the inner and outer wall units is reduced to a minimum.

Another object of the present invention is the provision of novel prefabricated cellular wall panels or units adapted to be adjustably mounted upon the exterior of a structural steel frame or other supporting structure of a building or enclosure to provide an insulated siding structure in which the adjoining panels or units have interengaging lips or flanges that permit successive panels or units to be readily and easily installed or assembled and tensionally retained in interlocking engagement.

In the disclosed embodiment, the novel panels or units may be factory or shop assembled, or they may be assembled in the field with each inner wall unit or plate when assembled being anchored as by welding or otherwise rigidly secured to the supporting framework of the building, after which the insulation is added and held in place by means of thin metal strips or formed members which are secured crosswise to the faces of the outermost surfaces of the inner wall units or plates, and then the exterior plate or wall unit is assembled and interlocked and attached with screws or bolts to crosswise members, previously secured to the inner wall units, to complete the panel.

The edges of the panels or wall units to be joined are so contoured that in assembling successive panels or units, the leading edge, flange or male end of the outer and inner walls or plates of a preceding panel or unit that has been anchored to the framework projects outwardly and is adapted to be received in the female or channelled, adjoining end of a succeeding panel or unit to be attached. With this leading edge, flange or male end of the preceding or anchored panel or unit received in the female end of the succeeding panel or unit and the latter cocked at an angle or held parallel to the preceding panel or unit and then rotated and moved or forced and wedged into registry or vertical alignment with the preceding panel or unit to provide a continuous wall surface, the interengaging surfaces on the leading edges or male and female ends of the adjoining panels or units are cammed or wedged into interlocking engagement whereby they are tensionally gripped and securely retained in assembled relation but with sufficient flexibility to allow for thermal expansion and contraction of the parts. In this assembled relation, the leading edge or flange of the preceding panel or unit that has been anchored or secured in position interlocks with and tensionally retains the adjoining edge or flange of the succeeding or following panel or unit assembled and anchored thereto.

Another important object of this invention is to provide a joint between adjacent wall units that is water and air tight without having parallel surfaces of the interlocking edge members in contact to provide a path for capillary movement of water. The hooked or angular members form point or line contacts only and the tension between adjacent members forms a tight joint to prevent the free passage of water or air. The arrangement of the interlocking edge members is such that the edges of the male members are shoved into the caulking compound previously applied in the inside corners of the female members. This provides a further tight resilient seal against the passage of water or air.

Further objects are to provide a construction of maximum simplicity, efficiency, economy and ease of assembly and operation, and such further objects, advantages and capabilities as will later more fully appear and are inherently possessed thereby.

In the drawings:

Figure 1 is a fragmentary view in perspective of a portion of an insulated wall in which the adjacent metal panels or wall units are joined in interlocking engagement in accordance with the present invention and in which the outer or exposed face of the exterior panels are of ribbed contour.

Fig. 2 is a fragmentary view in horizontal cross section through the assembled wall construction of Fig. 1, the view being taken on the line 2—2 of Fig. 1.

Fig. 3 is a view similar to Fig. 2 but showing the manner of assembling the wall panels with the flanged edges of adjacent panels being moved into interlocking engagement for tensionally retaining the panels.

Fig. 4 is a fragmentary view in horizontal cross section through a double wall panel or unit in which the exterior wall surfaces are flush when assembled, and showing the novel means and manner of joining these wall panels or units by an interlocking arrangement in which the outer and inner wall panels or units are of similar construction.

Fig. 5 is a view in horizontal cross section of the assembly of Fig. 4 showing the entry position of the next succeeding panel or unit when adjoining panels or units are being assembled, after which this entering panel or units is forced and wedged into the aligned position shown in Fig. 4 with the adjoining panels or units tensionally held in interlocking engagement.

Fig. 6 is a fragmentary view in horizontal cross section of another embodiment of the present invention of joint interlock.

Fig. 7 is a view similar to Fig. 6 but of a modified embodiment of joint interlock.

Fig. 8 is a fragmentary view in horizontal cross section of another embodiment of joint interlock for retaining double wall panels or units.

Fig. 9 is a fragmentary view in vertical cross section taken in a plane represented by the line 9—9 of Fig. 8.

Fig. 10 is a fragmentary view in horizontal cross-section through the assembly of Figs. 1, 2 and 3, but showing the addition of metal strips or crosswise members when the panels are assembled and erected in the field.

Fig. 11 is a fragmentary view in horizontal cross section through the embodiment of joint interlock shown in Figs. 8 and 10, but with Z separators substituted for the wood strips.

Referring more particularly to the disclosure to the disclosure in the drawings and to the novel illustrative embodiments of the present invention, Figs. 1, 2 and 3 disclose a wall assembly comprising inner wall units or plates **10** and outer wall units or plates **11** adapted to form a cellular wall surfacing adapted to receive suitable insulation **12**, and in which the male end or leading edge of each unit or plate **10** and **11** comprises an outwardly and laterally formed or bent and longitudinally extending flange or lip **13** and the female or trailing end of each unit comprises an outwardly projecting and longitudinally extending rib or flute **14** having spaced sides **15** and **16** with the latter having its extremity flared outwardly by bending at **31** and also with this trailing edge or side **16** bent or formed rearwardly and inwardly to provide a longitudinally extending and inwardly opening tapering channel **17** adapted to receive the flange or lip **13** of the preceding or adjoining panel or unit **10**.

When the units are shop or factory assembled to form the complete panels designated by the reference numeral **18** (see Fig. 3), the inner and outer plates or wall units **10** and **11** are joined by Z separators **19** which are shown as transversely arranged and longitudinally spaced apart, the cellular wall structure so constructed receiving the insulation **12** which may be in the form of blocks or the like of fibre glass, rock wool, mineral wool, etc. These separators may be provided with longitudinally spaced openings through the connecting web. The inner flange or leg **21** of each Z separator is preferably spot welded at **20** to the inner wall unit or plate **10** and the outer wall unit or plate **11** is preferably rigidly secured to the outer flange or leg **22** of the Z separators **19** by bolts, screws or other attaching means **23** where exposed fastening means is permissible. An insulating strip **24** is preferably anchored between the leg **22** and the outer wall unit or plate **11** to insulate these Z separators from the interior wall unit or plate **10** to thereby prevent frost spots from forming at the interior of the wall panels **18**.

These assembled or prefabricated wall panels or units are successively affixed or secured to the main girts or horizontal or vertical supports on the framework of the building to be surfaced as by suitably attaching or anchoring each inner wall unit or plate **10** of a panel **18** to the supporting structure or main girts of the building. Although the panels or units are shown placed horizontally on vertical supports, they may be placed vertically on horizontal supports. As shown in Fig. 3, the first or right-hand panel of the wall surfacing **18** is anchored to the girts or supporting structure, after which each succeeding panel **18** is joined to the preceding panel by directing the longitudinally extending leading edge or male flange **13** of the inner and outer wall units or plates **10** and **11** into the open end of each channel **17** of the inner and outer wall units or plates **10** and **11** of the next or succeeding panel **18**.

In this novel manner of assembling the prefabricated panels **18**, after the leading edges **13** of a preceding panel have been entered in the channels **17** of the next or succeeding panel to be joined, the latter is so cocked or angled as to cause the leading edges or flanges **13** to be completely inserted into the open end of the channel **17**. With this succeeding panel **18** cocked or disposed at a substantial angle with respect to the preceding panel and rotating this succeeding panel to align it with the preceding panel, causes the trailing end of the succeeding panel to be rotated along an axis substantially parallel to the leading edges or flanges **13** of the preceding panel. As the interengaging ends or edges of the adjoining panels are so joined, the leading edges or flanges **13** of the preceding panel **18** are flexed or pivoted sufficiently to cause them to jam or wedge tight the engagement between the contacting surfaces at A and B of these leading edges or flanges **13** of the preceding panel with the spaced sides or legs **15** and **16** of the succeeding panel, whereby these adjoining panels are tensionally joined and held in interlocking engagement. This succeeding panel is then anchored to the girts or framework of the building after which additional panels are applied in a similar manner.

When field assembled, an inner wall unit or plate **10** is first anchored in position upon the main girts or supporting structure, and after its leading edge or male end has been received in the channel **17** of the female end of a succeeding inner wall unit or plate **10**, the latter is cocked or disposed at an angle to such preceding unit so that when the succeeding unit is moved or rotated about the leading edge or flange **13** of the preceding unit to its assembled position, the interengaging male and female ends of these adjoining units are cammed into interlocking engagement and tensionally gripped and locked together. In this position, slight rotation of the leading edge or lip **13** jams or wedges tight the engagement between the contacting surfaces of the leading edge or lip **13** and the inwardly opening, tapered channel **17** at the end of the adjoining inner wall unit or plate **10**, at the points A and B, with the end of the leading edge or lip **13** of each inner wall unit or plate **10** being embedded in a caulking composition **25** in the channel **17** to effectively seal the interlocking parts. In addition to forming a tight sealing engagement in which the parts are tensionally gripped and retained under tension, the contacting surfaces are so arranged as to reduce flat metal to metal contact and eliminate capillary action.

The inner flange or leg **21** of each of the transversely arranged but longitudinally spaced Z separators **19** is welded at **20** to each inner wall unit or plate **10** prior to or during erection or assembly of these wall units or plates, the insulation **12** is installed and the outer wall units or plates **11** are assembled in a manner similar to the inner wall units or plates **10**. These outer wall units or plates **11** are then anchored to the outer flange or leg **22** of the Z separators by bolts, screws or other attaching means **23**.

In a preferred method where assembly is concurrent with erection in the field the inner plates **10** are erected as previously described. Then transverse metal strips or crosswise members **19a**, as shown in Fig. 10, are attached as by welding or other suitable securing means to the outer faces of the channels **17**. These serve as retainers for the insulation until the outer members **11** are installed as previously described and are fastened to the crosswise members **19a** by bolts, screws or other attaching means **23** at points between the tapered channels **17**.

Figs. 4 and 5 show an alternate embodiment in which the successive prefabricated wall panels **26** are so formed as to provide flush or flat inner and outer wall surfaces. The inner and outer wall units or plates **27** and **28** are of similar or identical construction with the inner wall unit or plate **27** being contoured similar to the inner wall unit or plate **10** shown in Figs. 1, 2 and 3, with the end or lip of the leg **29** of the trailing end or female member also being bent or flared at **31**. Thus it includes a leading

edge having an outwardly and laterally formed or bent flange 32 providing a male end and the trailing edge or female end having a side 33 and the laterally spaced leg 29 formed or bent rearwardly and slanted inwardly toward the side 33 to provide a channel 34 opening inwardly and adapted to receive the male end or leading edge of a preceding inner wall unit or plate.

The outer wall unit or plate 28, unlike the outer wall unit or plate 11 shown in Figs. 1, 2 and 3, has its trailing edge formed to provide a flange or male end 35 turned inwardly and slanted rearwardly and its leading or female end also turned inwardly to provide a side 36 and a spaced leg or flange 37, the leg or flange 37 being slanted with respect to the side 36 to provide an outwardly opening channel 38, and the end 39 of the leg or flange 37 being bent to facilitate entry of the trailing edge or male end 35 of the outer wall unit or plate 28 of a succeeding or adjoining panel 26.

By this construction and arrangement of the inner and outer wall units or plates 27 and 28, there is provided a double wall panel assembly 26 with an inner wall unit or plate 27 having an inwardly opening channel 34 in its trailing edge and adjacent thereto its leg 29 and the adjacent trailing edge or flange 35 of the outer wall surface or plate 28 providing an adjoining inwardly opening channel 41. Likewise, there is provided an outwardly opening channel 42 formed by the trailing edge or male end 32 of an inner wall unit or plate 27 and the adjacent leg 37 of the leading or female end of an outer wall unit or plate 28 adjoining its channel 38. Thus each assembled panel 26 is provided at its leading edge with spaced legs or flanges 32 and 37 adapted to interlock with spaced legs or flanges 29 and 35 on the trailing edge of an adjoining or succeeding panel.

Fig. 4 shows the trailing and leading edges or ends of the adjoining panels 26 joined in interlocking engagement, while Fig. 5 shows the trailing edge or end of the succeeding panel 26 about to enter the leading edge or end of the preceding panel 26 that has been anchored to the girts or framework of the building. After the adjoining ends of the panels 26 have been entered as shown in Fig. 5, it is obvious that the legs 32 and 35 will interface with the inner edges of the openings of channels 34 and 38, when the succeeding panel is forced into final position. During the forcing, the legs 32 and 35 are bent slightly and interengage the corners of channels 34 and 38 and the opposite flanges 29 and 37, respectively, of the channels, and the interengaging legs or flanges 32 and 37 on the preceding and anchored panel 26 completely enter the channels 34 and 41, respectively. After seating the succeeding panel to the position shown in Fig. 4 in which the adjoining panels are flush, the flanges or legs 29, 32, 35 and 37 are wedged into tight interlocking engagement with the end of the legs 32 and 35 embedded in the mass of caulking composition 43 in the base of the channels 34 and 38. When so assembled, the interlocking ends of the adjoining panels are tensionally held in rigid assembly and jammed or wedged tight between the contacting surfaces at C and D, but permitting necessary contraction and expansion.

A sheet or strip 44 of insulation material which may be of cork, felt, asphalt or the like, is preferably inserted between the adjoining surfaces of the inner and outer wall units or plates 27 and 28 of each assembled panel 26.

Figs. 6 and 7 show further embodiments of the novel means and manner of joining and tensionally retaining in interlocking engagement adjoining panels for providing a wall surfacing. In Fig. 6, the adjoining panels comprise similar outer wall units or plates 45 each provided with a trailing edge having a male end in the form of an inwardly projecting leg or flange 46 that is bent or formed at an inclination or slant and adapted to be received in a channel 47 formed in the female end or leading edge of an adjacent or preceding panel 45, the channel 47 opening outwardly and formed or defined by an inturned

end or side 48 and a spaced outwardly projecting leg 49 that is inclined or slanted inwardly to narrow the opening of the channel 47. The end or lip 51 of this leg 49 is bent or flated to direct and facilitate entry of the male end, leg or flange 46.

The bottom or base 52 of the channel is affixed to a metal sheet or base plate 53 by means of suitably spaced oval-headed steel or metal studs 54 with the end of the shank of each stud being welded or otherwise affixed or anchored to the sheet or base plate 53. An insulating collar or bushing 55 of hard fibre or the like encompasses the stud which is provided with an oval or rectangular shaped top portion or head at least 50% larger than the lower shank. This collar lies between the head of the stud and the opening in the bottom or base 52 of the channel and into an aligned opening in a strip of insulation 56 whereby to effectively insulate the wall panel from the supporting structure upon which the base plate or sheet 53 is supported.

This provides an external flush assembly with the adjoining ends of adjacent panels assembled in the same manner as outlined above with each succeeding panel 45 having its leg or flange 46 inserted into the channel 47 of a preceding panel that has been anchored to the sheet or base plate 53. Then upon disposing the succeeding panel parallel with respect to the preceding, fixed panel with the male end, leg or flange 46 partially inserted into the channel 47, forcing and seating the succeeding panel into alignment or flush with the adjoining, fixed panel 45, causes a jamming and wedging action between the contacting surfaces at E and F with the end of the leg or flange 46 embedded in the caulking composition 57.

Where projecting fastenings are permissible, the wall units or plates 45 of Fig. 6 may be reversed and mounted at the interior of the cellular wall assembly with the metal sheet 53 providing the outer wall or exterior wall surface (Fig. 7). In this embodiment the sheet 53 is joined to the bottom or base 52 of the channel 47 by suitably spaced attaching means, such as screws, bolts or the like 58. A flanged collar or bushing 59 of hard fibre or other suitable insulating material passing through the separating and insulating strip 56, effectively insulates the outer wall or metal sheet 53 from the panels 45. In this form, the male end, flange or leg 46 is disposed at the leading edge and the channel 47 formed on the trailing edge of successive panels 45.

Figs. 8 and 9 disclose a double wall panel assembly similar in many respects to the embodiment shown in Figs. 4 and 5. In this embodiment, each wall panel 61 comprises an inner wall unit or plate 62 having a leading edge provided with an outwardly projecting male end, leg or flange 63 and at its trailing edge is provided with an inwardly opening channel 64 defined by an outwardly projecting side 65 and a spaced rearwardly projecting leg or flange 66 slanted inwardly or inclined and at its free end 67 bent or curved outwardly to facilitate entry of and direct the outwardly projecting male end, flange or leg 63 on the preceding wall unit or plate 62 mounted in fixed position.

Each outer wall unit or plate 68 is provided with a trailing edge comprising a rearwardly projecting and slanted or inclined male end, flange or leg 69 and at its other or leading edge is formed or provided with an outwardly opening channel 71 defined by a side or wall 72 and an outwardly and laterally projecting, inclined or slanted flange or leg 73 spaced from the side or wall 72 and having its free end 74 bent or curved to direct and facilitate entry of the male end, flange or leg 69 on the trailing end of the adjacent or succeeding wall unit or plate 68.

Unlike the structure shown in Figs. 4 and 5, the male and female ends of the inner and outer wall units or plates 62 and 68 of the embodiment shown in Figs. 8 and 9, are of substantially less depth than the depth of the panels 61. The base 75 of each channel 64 and 71

is spaced from the wall units or plates 62 and 68 by relatively thick insulators 76 preferably formed of wood strips, such as ash, birch, beech, white oak or moisture-proof plywood treated with ammonium-chloride or the like, with the base 75 of each channel affixed thereto at suitably spaced distances alternately by means of screws 77 and the wall units or plates 62 and 68 affixed thereto by means of welded studs or rivets 78, arranged in offset or staggered relation. As disclosed, the heads of the rivets 78 are preferably mounted in counterbores 79. When assembled, the male ends, legs or flanges 63 and 69 have interlocking engagement and substantially line contact with the leg 66 and side 65 of the channel 64, and the leg 73 and side 72 of the channel 71, respectively, in the manner disclosed above with respect to the embodiment of Figs. 4 and 5.

Fig. 11 discloses the use of Z separators 81 in place of the wood strips 76 of Figs. 8 and 9. These Z separators are of the same height as the wood strips with one leg 82 extending toward the center of the panel and spot welded rather than riveted to the plates 62 and 68. The other leg 83 is located directly beneath the bottoms of the channels 64 and 71 with an insulation strip 84 between the leg 83 and the superimposed channel base 75. Each channel base 75 is fastened to the leg 83 by means of screws 77.

In each form of the present invention, the panels may be prefabricated or shop assembled, or they may be assembled in the field or in situ, with the interengaging or interlocking parts on the adjacent leading and trailing edges inserted in the manner disclosed, after which the succeeding panel or wall unit or plate is cocked and moved or rotated, or forced and seated, into assembled, aligned relation with the preceding panel, wall unit or plate after the latter has been anchored to the framework of the building. Such rotation or forcing and seating jams or wedges the parts together to provide a tight interlocking engagement between the flange at one end of a panel, wall unit or plate and the sides of the channel at the adjacent end of an adjoining panel, wall unit or plate and the sides of the channel at the adjacent end of plate whereby the adjoining panels, wall units or plates are firmly yet tensionally retained under all conditions of thermal contraction and expansion by narrow line or point contacts between the flange and the sides of the channel, the flange in such locking position being in each instance disposed diagonally across the channel to assure contact and interlocking engagement at the points specified, and thus avoiding contact between broad flat surfaces and the attendant paths for capillary moisture or thin crevices for its retention.

Although insulation has not been shown in some of the views, it is to be understood that such insulation is generally included or provided in the panels. Also it is contemplated to employ the Z separators wherever required or desired, such separators being disposed in suitable spaced relation.

The preformed or prefabricated metal wall panels, as well as the field assembled wall units or plates, which when assembled form a cellular wall, may be of any desired length and width suitable for convenient handling and assembly. As one example but not as limiting the present invention, the panels may be formed in narrow widths of approximately twelve inches or in wider widths of approximately twenty-four inches.

Having thus disclosed the invention, I claim:

1. In a metal wall panel assembly, adjoining wall panels comprising multiple wall units of similar, hollow construction adapted to receive therein insulation material, one edge of each unit having a projection and the other edge having a channel part including a leg forming one side of said channel with said channel of one unit receiving therein the projection on an adjacent unit, said projection and said leg of said channel being inclined in such manner that when the projection of one unit is received in the channel of an adjacent unit with one unit fixed and the other unit joined thereto is rotated relative to the fixed unit into alignment therewith, said projection extends diagonally across the channel and at spaced points along its length engages the opposite sides of the channel and jams thereagainst whereby the projection is locked and tensionally held between the leg and spaced side of the channel.

2. A wall surfacing of interlocking wall units for surfacing the exterior or partitioning the interior of a building and means for joining the edges of said units, including similar metal plates each having a laterally projecting and inclined flange at one edge and a channelled projection at the other edge with the flange of one plate received in the channel of an adjacent plate and interlocked with the spaced sides of the channel, one side of said channel providing a leg having one end free and said leg being inclined toward the other side to provide a channel narrowing in width toward its open end, the sides of said channel being spaced apart sufficient to freely receive the inclined flange on the adjacent end of an adjoining plate, one of said plates being anchored to the building and the other plate being free but moved into interlocking engagement with the fixed plate and anchored to the building, whereby when said flange is received in the channel and the free plate is inclined relative to the fixed plate and rotated into alignment with the fixed plate, said flange is jammed into the channel and interlocks with the sides of the channel of the other plate.

3. In a metal wall panel assembly providing a surfacing for the exterior or partitioning the interior of a building, metal wall panels including interlocking wall units of similar construction each having an inturned flange at one edge and an inwardly opening channel at the other edge receiving the flange of an adjacent unit, said channel being defined by spaced walls the end of one of which is free and with this free end inturned toward the other of said walls to provide a tapered channel therebetween, said inturned flange when wholly received within the channel of a unit joined thereto and this latter unit is disposed at an angle to the other unit which is mounted in fixed position, rotating the latter unit to its ultimate position in alignment with the fixed unit, locks the flange in the channel.

4. In a metal wall panel assembly providing an insulated siding for the exterior or partitions for the interior of a building, similar metal wall panels having their adjoining edges interlocked, and means for interlocking the adjoining edges comprising an inclined leg on one edge and a channel on the other edge of each panel, one wall of said channel and the leg of an adjoining panel being free and inclined toward the other wall whereby the leg of one panel received in said channel of an adjoining panel is positioned diagonally across the channel with one end tightly abutting and interlocked with the free wall adjacent the base of the channel and with its other end tightly abutting and interlocked with the other wall of the channel adjacent the open end of the channel.

5. In a metal wall panel assembly, adjoining wall panels comprising multiple wall units of similar construction with one edge of each unit having a projection inclined inwardly at an acute angle with the plane of said unit and the other edge having a channel receiving therein the projection on an adjacent unit, said projection being inwardly inclined in such manner that when the projection of one unit is received in the channel of an adjacent unit with one panel fixed and the other panel loose, and moved into alignment with the fixed unit, the projection is jammed into wedging engagement with the sides of the channel at spaced points and the adjoining units so joined are locked and tensionally retained in interlocking engagement.

6. A metal wall panel assembly and means for join-

ing the longitudinal edges of adjoining wall units, comprising multiple wall units of similar construction and each having a wall surface and a longitudinally extending flange at one edge projecting inwardly and inclined at an acute angle from the wall surface and at the other edge provided with a channel projecting from the wall surface, the flange at one edge of the unit being received between the spaced sides in the channel of an adjoining unit, said flange when received in the channel and the units are joined together having interlocking engagement at spaced points with the opposite sides of the channel.

7. An insulated metal wall for the exterior or interior of a building, comprising multiple wall units each having a wall surface and longitudinally extending interlocking edges including a laterally and inwardly projecting inclined flange at one edge extending at an acute angle inwardly from the wall surface and a channelled part at the other edge receiving the flange of an adjoining unit, said flange when received in the channelled part of an adjoining unit with one of said units anchored and the other rotated into alignment with the anchored unit extending diagonally in the channel and wedging between the opposite sides of the channel.

8. A wall surfacing comprising multiple wall units of similar construction and means for joining and tensionally retaining adjoining edges of said units in interlocking engagement, each unit having a laterally projecting leg at one edge projecting at an acute angle from the body of the unit and a laterally projecting channelled part at the other edge, said channelled part having spaced sides with one side inclined toward the other and the channel receiving the leg of an adjoining unit, said leg when disposed in the channel and the units moved into aligned position projecting diagonally across the channel with its ends wedged against the opposite sides of the channeled part to thereby interlock and join adjacent units.

9. In a metal wall panel assembly providing a surfacing for the exterior or forming the interior partitions of a building, metal wall panels including interlocking wall units of similar construction each having a wall surface, an inturned flange at one edge disposed at an acute angle with the wall surface and an inwardly opening channel at the other edge receiving the flange of an adjacent unit, said channel being defined by spaced walls the end of one of which is free and with this free end inturned toward the other of said walls and disposed at an acute angle to provide a tapered channel therebetween, said inturned flange when received within the channel of an adjacent unit and this latter unit is disposed at an angle to the other unit which is mounted in fixed position, rotating the adjacent unit to its ultimate position in alignment with the fixed unit, locks the flange in the channel.

10. In a metal wall panel assembly providing a surfacing for the exterior or forming the interior partitions of a building, metal wall panels including interlocking wall units of similar construction each having a wall surface, an inturned flange at one edge disposed at an acute angle with the wall surface and an inwardly opening channel at the other edge receiving the flange of an adjacent unit, said channel being defined by spaced walls the end of one of which is free and with this free end inturned toward the other of said walls and disposed at an acute angle to provide a tapered channel therebetween, said inturned flange when received within the adjacent unit projecting diagonally across said channel whereby its ends engage and are tensionally locked to the spaced walls of the channel for retaining adjoining units in interlocked relation.

11. In a metal wall panel assembly, adjoining wall panels comprising multiple wall units of similar, hollow construction adapted to receive therein insulation material, one edge of each unit having a projection and the other edge having a channel part including a leg forming one side of said channel with said channel of one unit receiving therein the projection on an adjacent unit, said projection and said leg of said channel being inclined inwardly at an acute angle so that when the projection of one unit is partially inserted and received in the channel of an adjacent unit with one unit fixed and the adjacent unit is forced and slid relative to the fixed unit into alignment therewith, said projection extends diagonally across the channel and at spaced points along its length engages the opposite sides of the channel and jams thereagainst whereby the projection is locked and tensionally held between the leg and spaced side of the channel.

12. A wall surfacing of interlocking wall units for surfacing the exterior or partitioning the interior of a building and means for joining the edges of said units, including similar metal plates each having a laterally projecting and inclined flange at one edge and a channelled projection at the other edge with the flange of one plate received in the channel of an adjacent plate and interlocked with the spaced sides of the channel, one side of said channel providing a leg having one end free and said leg being inclined toward the other side to provide a channel narrowing in width toward its open end, the sides of said channel being spaced apart sufficient to partially receive the inclined flange on the adjacent end of an adjoining plate, one of said plates being anchored to the building and the other plate being free but moved into interlocking engagement with the fixed plate and anchored to the building, whereby when said flange is partially received in the channel and the free plate is parallel to the fixed plate and forced and slid into alignment with the fixed plate, said flange is jammed into the channel and interlocks with the sides of the channel of the other plate.

13. In a metal wall panel assembly providing a surfacing for the exterior or partitioning the interior of a building, metal wall panels including interlocking wall units of similar construction each having an inturned flange at one edge and an inwardly opening channel at the other edge receiving the flange of an adjacent unit, said channel being defined by spaced walls the end of one of which is free and with this free end inturned toward the other of said walls to provide a tapered channel therebetween, said inturned flange when partially received within the channel of an adjacent unit and this latter unit is disposed parallel to the other unit which is mounted in fixed position, forcing and sliding the adjacent unit to its ultimate position in alignment with the fixed unit, locks the flange in the channel.

References Cited in the file of this patent

UNITED STATES PATENTS

2,284,229	Palmer	May 26, 1942
2,447,272	Parkes	Aug. 17, 1948