April 9, 1968 R. S. GREGOIRE 3,376,679

SHEET PANEL WALL ASSEMBLY

Filed July 12, 1965

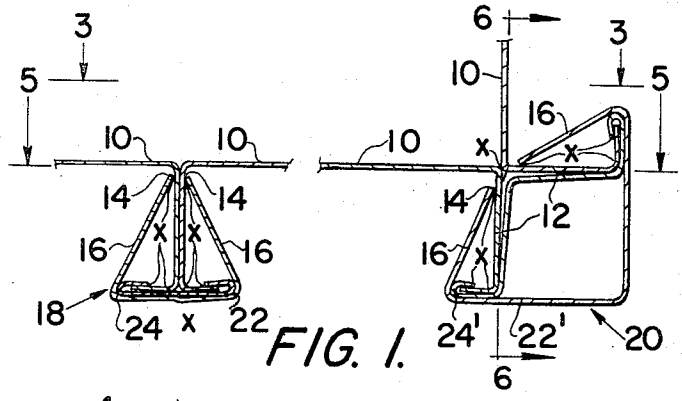


FIG. 1.

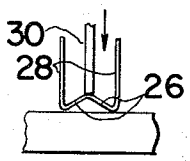


FIG. 7.

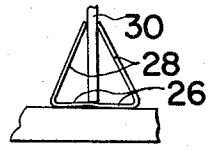


FIG. 8.

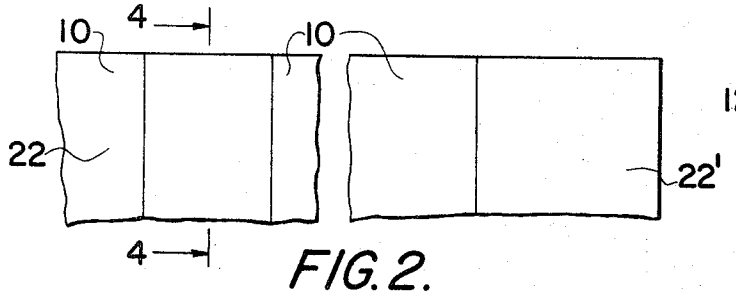


FIG. 2.

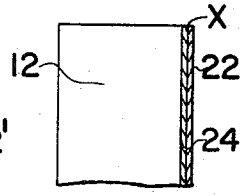


FIG. 4.

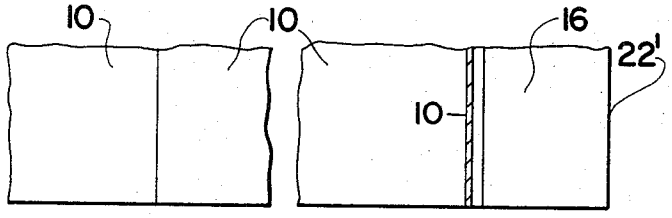


FIG. 3.

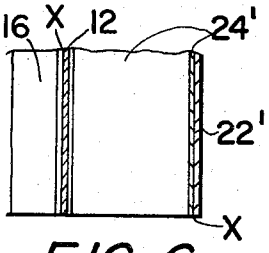


FIG. 6.

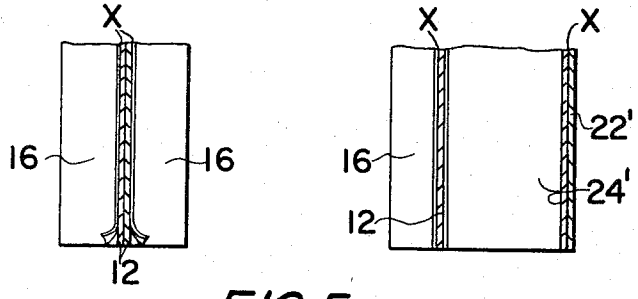


FIG. 5.

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SHEET PANEL WALL ASSEMBLY

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This invention relates to walls of sheet panels and joints of the type which can be manually assembled on the job to provide a rigid support frame for the wall being constructed, axially of said joints, without requiring any tools, bolts, nuts, screws or any other attaching means, and without puncturing any parts of the panel joint.

The present invention comprises the assembly of walls made of sheet panels, having identical rectangular channel flanges formed along their side edge portions, and lock strip members for sealingly interlocking with the rectangular channel flanges of adjacent sheet panels to join said panels firmly together in said wall assembly in coextensive or angular relation to each other.

The object of the present invention is to provide a simple means of joining adjacent sheet panels of a multi-panel wall together by clipping their flanged edges together with a triangular channel formed sheeet strip which may be slipped over one end of said flanged edges and slid to the other end to clip said edges together, and at the same time provide a rigid support frame for the panel assembly.

A further object is to provide a method of making said triangular channel strip with a gap between the outer edges of the sides of the channel which is less than the spring-back of said strip material in the process of break-forming the base angles of the channel.

Other and mare specific objects will become apparent in the following detailed description of a preferred form of the invention, as illustrated in the accompanying drawing, wherein:

FIG. 1 is a top plan view of a wall portion made of panels showing an in-line joint and a corner joint between adjacent panels, in accordance with the present invention,

FIG. 2 is a front elevational view of said wall portion,

FIG. 3 is a rear view of said wall portion taken on the line 3—3 of FIG. 1,

FIG. 4 is a vertical sectional view of said wall portion taken on the line 4—4 of FIG. 2,

FIG. 5 is a vertical sectional view taken on the line 5—5 in FIG. 1,

FIG. 6 is a vertical sectional view taken on the line 6—6 in FIG. 3,

FIG. 7 illustrates the break-forming method of making a triangular-formed clip strip with a channel opening, which is less than the spring-back of the sides obtained in their break-forming process, and

FIG. 8 shows the shape said triangle-formed channel takes after the bottom of the triangle has been flattened by the edge of a pressure plate passed through the gap between the sides of the triangle.

The panels used in the present invention may have any confignuration between their side edges **10**, but these edges have identically formed channel flanges **12** which are clipped together by means of the closely spaced outer edges **14** of the opposite sides **16** of a channel strip to form a sealed joint between adjacent panels.

The drawing illustrates an assembly of a joint **18** between aligned panels in the same plane and a joint **20** between corner panels joined perpendicularly to each other. However, it is to be understood that similarly formed channel strips may be made for corner panels joined at other angles to each other.

The triangle-formed channel strip **22** is adapted for sliding endwise during assembly over the channel flanges **12** of the adjacent aligned panels to firmly clip the flanges together along their entire length, by a pressure line contact *x* of the outer edge of each side of the channel strip against the inside of the corresponding flange **12**. The outer edges of the channel flanges **12** extend into the inner bottom corners of the channel strip **22** to keep the channel flanges **12** of the adjacent panels aligned and to keep the clip at the outer edges of the channel strip sides **16** from sliding outwardly of the flanges **12**.

A second channel strip **24** may be fixed in the bottom of the channel of the channel strip **22** and have its sides extend around the outer edges of flanges **12** to provide a sliding fit thereover during assembly, maintaining only substantially six points of pressure line contacts *x* between channel strip assembly and the channel flanges **12** in the joint, thus reducing the sliding friction to a minimum in said sliding fit, while maintaining substantially continuous sealing line contacts at these points. The corners at the ends of the channel strips **22** and **24** at these contact points may be flared out to facilitate starting the sliding operaion of the channel strip assembly over the ends of the channel flanges **12** at each joint, as shown e.g. at the bottom of the sides **16** of the lock strip portion shown in FIG. 5. Obviously, the channel strip assembly provides a strong reenforcement to the wall assembly so that no additional framework is normally required in a wall assembly of these panels, even if the sheet material used for forming the panels and the channel strips is of very small gage. The wall is easily assembled without the use of any screws, bolts, nuts or other attachments and without puncturing or deforming any parts of the assembly, so that the wall may be just as easily and quickly disassembled and moved to new locations whenever desired, without detriment to its good sealing characteristics at the joints.

Similar channel strip assemblies are used for assembling corner joints as for the in-line panel joints described above. A right angle joint **20** is shown in the drawing for illustration. The sides **16** and the corners at the bottom of the channel strip **22'** and the sides of the inner channel strip **24'** are identically formed to those in the channel strip assembly for the in-line joint **18**. The bottoms of channel strips **22'** and **24'**, however, are separated by extending the bottom of strip **24'** into angular space between the channel flanges on the outside of the corner joint, and the bottom of strip **22'** is extended around the outside of this space to form a hollow post of comparatively greater strength, so as to form a corner post assembly, which is slid over the ends of the flanges **12** of the adjacent corner panels similarly to the assembly of the in-line joint, and has similar six points of pressure line contacts to keep the edges of corner panels in proper angular alignment and to provide as good a sealing joint.

The sheet material used for the panels as well as the channel strips may be steel or any other material having suitable resilience to provide sufficiently strong clipping means for the joints as well as frame supports for the wall.

In forming the triangle-formed channel strip, where a sufficiently small gap between the outer edges of the sides **16** cannot be formed by a break-forming machine because the spring back of the sides is more than said gap, the strip may be break-formed into a W cross-section as shown in FIG. 7, with the angles between the inner and outer legs **26** and **28** of the W substantially equal to the required base angles (about 70° in the present case) of the triangle form that will produce the desired gap, when the inner legs are straightened out to form the base of

said triangle form. Then, by pressing down on the ridge formed by the inner legs **26** until it is substantially flat, by means of the edge of a flat plate **30**, of a thickness not greater than the required gap, the proper gap may be obtained. This method may also be used for controlling the size of gaps in triangular grooves formed in sheet panels such as disclosed in my prior patent application S.N. 194,339, filed May 14, 1962, now Patent Number 3,241,284, for Panel and Joint, where a minimum gap is desired merely to provide enough clearance to allow for heat expansion of the adjacent faces of the panel without buckling.

Many obvious modifications in the form and relations of parts may be made without departing from the spirit and scope of the present invention as defined in the appended claims.

What is claimed is:

1. A sheet panel wall comprising

a plurality of panels joined edge-to-edge and having flanges along their adjacent edges.

said flanges extending to the same side of the wall, each flange forming an angle with the corresponding panel at each joint not greater than half the angle between adjacent panels, a triangular-formed channel clip strip of resilient sheet material mounted over said flanges and having the edges of its sides resiliently pressed against said flanges to hold the panels together at the base of the flanges,

said flanges being formed to extend substantially axially of the corresponding channel strip to its base, said flanges having outer portions extending outwardly from the edge remote from the panel in opposite directions along said triangular clip strip base into the adjacent corners thereof and

a second clip strip of resilient sheet material mounted within said triangular-formed channel strip, having its opposite edges extending from the outer side of said outer edges into the corners at the base of said triangular-formed channel strip and freely around said outer edges and having their extreme edges resiliently pressed against the inside of said outer edges to keep the flanges from slipping out of alignment and to maintain good sealing line contacts at these extreme edges.

2. In a wall composed of a plurality of sheet panels joined edge-to-edge, the panels having flanges along their adjacent edges, extending to the same side of the wall at each joint, an in-line joint comprising

the flanges of the adjacent panels extending at right angles from their respective panels and having their edges turned inwardly to form a substantially rectangular channel inside each flange,

a triangular-formed channel strip of resilient sheet material with a gap in its open apex clipped over said flanges, and having the edges of its sides resiliently pressed against said flanges to hold them firmly together,

said inwardly turned edges extending into the corners at the base of said triangle-formed channel strip to keep said adjacent panels transversely aligned,

a flat channel strip fixedly mounted in the bottom of said triangle-formed channel strip and having its side edges extending from the outside of said inwardly turned edges, freely around said inwardly turned edges and slidable thereover with only line contacts with said inwardly turned edges to facilitate assembly and dissembly of said joint,

the gap in the apex of said triangle-formed channel strip being less than the combined thickness of the two flanges of the adjacent panels,

said gap being flared out at the ends to facilitate assembly of the joint by making it easy to spread the gap over the ends of said flanges and to slide the strips over the flanges.

3. In a wall composed of a plurality of sheet panels joined edge-to-edge, the panels having rectangular channel flanges along their adjacent edges extending to the same side of the wall,

a right angular corner joint comprising

the flanges of the adjacent panels extending outwardly of the corner of the joint,

a substantially right-angled channel strip of resilient sheet material having clip sides extending from its outer edges around the outer edges of said rectangular channel flanges to the inside of each flange, and having right-angled spacing means for said flanges,

said clip sides being biased against said flanges to hold the adjacent panels firmly together, and

a sheet channel strip of resilient material inside said right-angled channel strip providing said spacing means and having its outer edges extending freely around said outer edges of said rectangular channel flanges the extreme edges of said inside channel strip being resiliently pressed against the outer edges of said rectangular channel flanges to maintain good pressure line seals therebetween and to keep said flanges in proper corner alignment.

4. A right-angular corner joint as defined in claim **3**, said inside sheet channel strip having its central portion channeled inwardly of the corner between the outer surfaces of said flanges to facilitate said alignment.

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