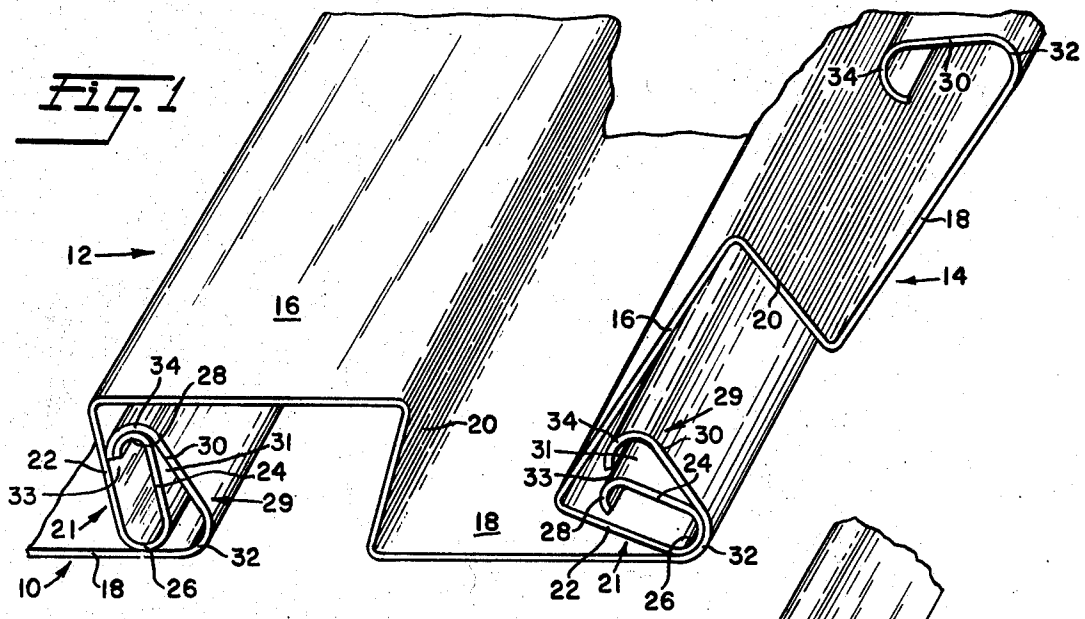
Feb. 2, 1971 W. L. TALBERT 3,559,359

BUILDING PANEL SYSTEM

Filed Jan. 10, 1969

Fig. 1



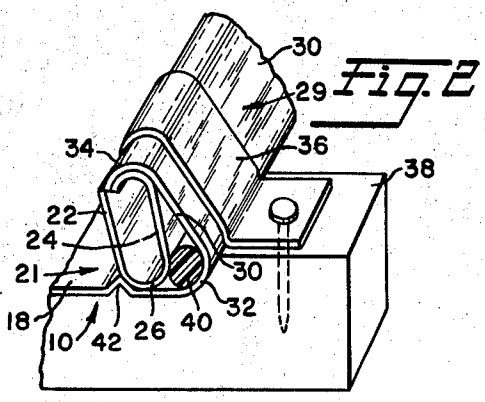


Fig. 2

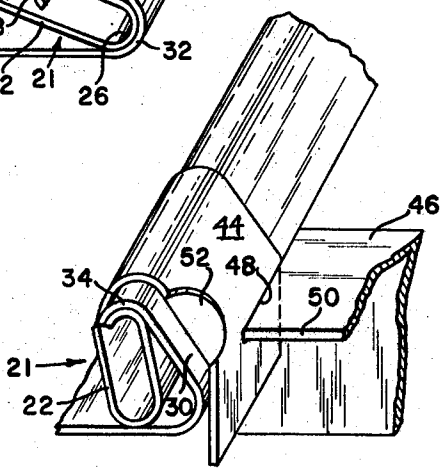


Fig. 3

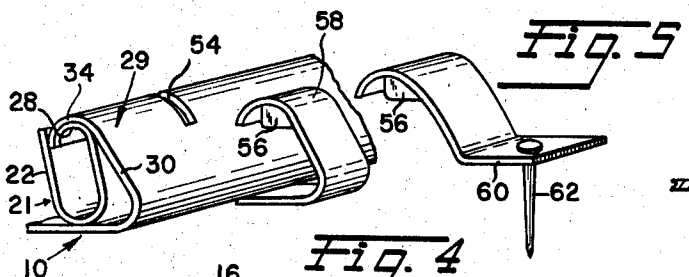


Fig. 4

Fig. 5

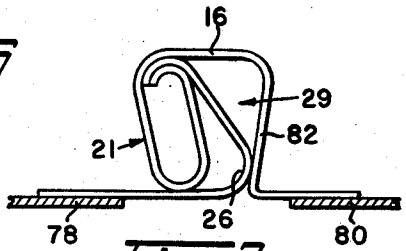


Fig. 7

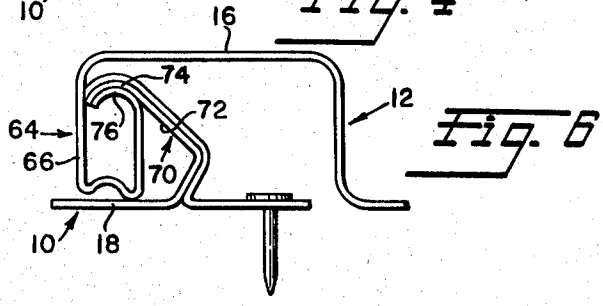


Fig. 6

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BUILDING PANEL SYSTEM

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U.S. Cl. 52—394 11 Claims

ABSTRACT OF THE DISCLOSURE

A building panel system wherein adjacent panels are provided with longitudinally extending interfitting lips which are contoured in such a manner that a camming or wedging action is secured when the lips are fitted together in order to provide a highly efficient interlocked joint between the assembled panels.

This invention relates to a building panel system of the type having a plurality of similarly formed sheet metal panels which are provided with interlocking lips or edge joints to enable the panels to be quickly assembled together to constitute a rigid wall, partition or other type of structural building unit.

A principal object of the present invention is to provide a novel joint construction for building panels for enabling ready assembly of the panels in such a manner that they will be securely locked together throughout their length in order to provide a strong structural unit where tendencies toward relative sliding movement may be eliminated.

A further object is to provide a novel panel joint construction which enables the panels to be readily assembled and disassembled without the necessity of special tools and avoiding the use of fasteners which penetrate the exterior sheet and are thus visible from the exterior when the assembly of the panels is completed.

Another object is to provide a panel joint constructed in such a manner that the panel edges or lips forming the parts of the joint are formed with turned or rounded portions which not only cooperate to secure a joint of great strength but also avoids the use of sharp edges which might be bent or otherwise damaged in shipping and handling the panels.

Still another object is to provide in a panel joint of the above type, a novel construction whereby the panel system, when assembled, forms a weathertight, airtight and watertight structural unit especially adapted for us as an exterior wall.

A still further object enables the use of concealed fasteners for securing the panel system to structural framing members to provide an interlocked wall structure possessing symmetry in the joined exterior profiles with a minimum of exposure of the line of the joints between the panels.

Still another object relates to the construction of the interlocking joint which provides a camming action when the panels are assembled, thus materially increasing the strength of the joint.

Other objects and novel features of the invention will appear more fully hereinafter from a consideration of the following detailed description when taken in connection with the accompanying drawing. It will be expressly understood however, that the drawing is utilized for purposes of illustration only and is not to be taken as a definition of the limits of the invention, reference being had for this purpose to the appended claims.

Referring to the drawings wherein several embodiments of the invention are illustrated:

FIG. 1 is a partial perspective view of a panel system embodying the principles of the present invention and particularly illustrating the novel edge joint construction and the manner of assembling the panels;

FIG. 2 is a partial perspective view illustrating a modified form of joint including a sealing member and a clip for securing the panel to a frame member;

FIG. 3 is a partial perspective view of the joint of FIG. 1 with a modified form of securing clip;

FIG. 4 is a partial perspective view of the joint of FIG. 1 with still another form of securing clip;

FIG. 5 is a perspective view of a modified form of the clip of FIG. 4;

FIG. 6 is an end view of a modified form of joint and securing clip, and

FIG. 7 is an end view of the joint of FIG. 1 when used to connect flat panel members.

Referring to FIG. 1, the novel panel system and joint construction of the present invention is illustrated therein as comprising end portions of three similarly formed sheet metal panels **10**, **12** and **14**, each of which is shaped to provide a pair of flat faces **16** and **18** arranged in spaced-apart parallel planes and interconnected by a longitudinal extending web **20**. The side edges of each panel are formed with interengaging lips to provide a novel interlocking joint which constitutes an important feature of the invention.

As shown, the left edge of panel **12** is formed throughout its length with a lip **21** which is constituted by a pair of spaced-apart substantially parallel wall portions **22** and **24** which are connected by a lower curved part **26**, the upper part of the wall portion **24** being reversely curved to form a rounded edge **28** which is spaced from the wall portion **22**. Preferably, the wall portion **22** is bent at an acute angle with respect to the face **16** so that the web **20** and the wall portion **22** bear substantially the same angular relationship with respect to the face **16** as illustrated. The opposite edge of panel **12** is formed with a cooperating lip **29** by bending the edge upwardly and over the face **18** at an acute angle to form a wall portion **30** which is connected to said face **18** by a lower curved part **32**, the upper end of the wall portion **30** being reversely curved to provide a rounded edge **34** having substantially the same curvature as the rounded edge **28**. It will thus be seen that the formation of the lip **29** as just described, forms a hollow recess **31** having an open mouth **33** defined by the spacing of the marginal part of the rounded edge **34** above the face **18** of the panel **12**. Opposite edges of the panel **14** are formed with lips in a manner similar to the edges of the panel **12** and the right edge of the panel **10** is shaped in the same manner as the right edge of the panel **12**.

Referring to the right portion of FIG. 1, the panels **12** and **14** are angularly related with respect to each other and properly positioned for interconnection of the lips **21** and **29**. Therefrom it will be observed that the lip **21** is placed within the recess **31** with the curved part **26** of the lip **21** of panel **14** engaging the curved part **32** of the lip **29** of panel **12** throughout the longitudinal extent of the panels. Thereafter, it is only necessary to pivot the panel **14** downwardly with respect to the panel **12** to move the lips of the joint into the position shown in the left portion of FIG. 1 whereupon the panels are securely interlocked together with the faces **18** and **16** of the respective panels in parallel relationship. In such interlocked condition, it is pointed out that the parts **24**, **26** and **28** of the lip **21** are positioned within the hollow recess **31** while the wall portion **22** of the lip substantially closes the open mouth **33** of the recess.

One of the important features of the interlocking joint above described resides in shaping the parts to provide a camming or wedging action between the right edge of one panel and the left edge of an adjacent panel as they as-

sume the interlocked position at the left portion of FIG. 1. This is achieved by arranging the angularity between the wall portion **30** and the face **18** of the panel **10**, for example, less than that between the wall portion **22** and the face **16** of the panel **12**, and by making the height of the wall portion **30** greater than the height of the wall portion **24**. Stated differently, the distance between the curved parts **32** and **34** measured along a line substantially parallel to the wall portion **30** is greater than the distance between the curved part **26** and the rounded edge **28**. It will thus be seen from the assembled interlocked position shown in the left portion of FIG. 1 that by reason of this arangement the distance between the face **18** and the rounded edge **34** measured normally to the face **18** is less than the distance between the rounded edge **28** and the curved part **26** measured parallel to the wall portion **22**. Due to this construction and referring to the right portion of FIG. 1, as the panel **14** is pivoted downwardly with respect to the panel **12** and with the curved parts **26** and **32** in engagement, the wall portion **24** of the lip **21** will first engage the wall portion **30** of the lip **29**. Continued pivotal movement of the panel **14** will slide the curved part **26** to the left on face **18** and cam the rounded edge **28** into firm wedging engagement with the rounded edge **34**, thus providing a tight interlocking joint between the panels after they assume the position shown in the left portion of FIG. 1. Therefrom, it will be appreciated that the line of contact between the curved part **26** and the face **18** forms a line of restraint which in effect, prevents or restrains any further movement of the curved part **26** toward the left, and the lips **21** and **29** of the panels are wedged into a firm and interlocked position. It will be appreciated that the springiness of the material of the panels will greatly assist the firmness of the joint during the aforesaid camming action.

Referring to FIG. 2, a nailable clip **36** is adapted to cooperate with the wall portion **30** and rounded edge **34** in order to fasten the lip of one panel to a structural support **38** prior to interlocking of the adjacent panel, it being understood that the clips **36** are concealed from view from the exterior after the adjacent panel has been assembled. A longitudinally extending elastic seal **40** may be positioned at the curved part **32** which is compressed during assembly of the joint to secure a weather-tight seal and if desired, a ridge **42** may be formed in the face **18** to function as a stop for limiting the camming action between the parts during assembly.

A modified form of clip **44** is shown in FIG. 3 for use where the panel system is to be secured to an angle type of support **46**. In this form, the clip is provided with a slot **48**, which may be formed with serrated sides, for receiving a ledge **50** of the support **46**, a striking tab **52** enabling ready assembly of the clip with respect to the panel and support.

In the form of the invention illustrated in FIG. 4, the panel system similar to that shown in FIG. 1 is provided with a plurality of spaced notches **54** for receiving a locking web **56** formed on a snap-on clip **58**. It will be clear that with this construction, any tendency for the panels to move longitudinally with respect to each other is eliminated. In FIG. 5, base **60** of clip **58** is bent in such a manner that the clip and panel system may be secured to a suitable structural support by means of nail **62**. It will be understood that in both FIGS. 4 and 5, the clips 58 are positioned in place prior to assembly of the adjacent panel so that they are concealed by the adjacent panel.

FIG. 6 illustrates a modified lip formation for panels **10** and **12** wherein lip **64** of panel **12** is constituted by spaced parallel wall potrions **66**, **68** and lip **70** of panel **10** has a wall potrion **72** which is bent over the face **18** of panel **10** and arranged at an acute angle with respect thereto. Wall portion **72** has a curved edge **74** against which the curved edge **76** of wall portion **68** is forced during the camming action incident to assembly of the panels as in the case of FIG. 1. If desired, the lower end of the lip **64** may be formed to accommodate an elastic sealing strip like that shown at **40** in FIG. 2 in order to provide a weather-tight seal when the joint is completed. A securing clip **78**, conforming to the shape of the wall portion **72** and the curved edge **74** may be utilized for fastening the panel **10** to a structural support prior to interconnection of the lips **64** and **70** of the interlocking joint.

FIG. 7 illustrates the joint of FIG. 1 when used to interconnect a pair of panels **78** and **80** which lie in a common plane. In this case, the face **16** may be bent downwardly at **82** to engage the curved part **26** thus providing a stop means for limiting relative pivotal movement of the panels during assembly.

From the foregoing, it will be readily seen that the present invention provides a novel interlocking joint for quick and ready assembly of structural building panels, the longitudinally extending edge lips of adjacent panels being contoured in such a manner as to attain a camming action in order to provide a joint possessing great strength. The novel construction also enables the use of concealed sealing strips in order to assure a weather-tight structure which is especially desirable in connection with exterior walls. The various forms of clips disclosed herein also provides an arrangement whereby the panels may be readily secured to structural framing members without being visible from the exterior when the panel system is assembled.

While the invention has been shown and described herein with considerable particularity it will be understood by those skilled in the art that the same is capable of a variety of expressions. For example, while the panels have been referred to herein as being formed of sheet metal it will be understood that they be of plastic or other suitable material capable of being shaped and contoured as disclosed.

What is claimed is:

1. A building panel construction comprising at least two panels each of which is provided with a face and a longitudinally extending edge, the edge of one panel being formed to provide a first lip extending upwardly from the face of said one panel and connected thereto by a curved part, said lip being arranged at an acute angle with respect to said face, the upper end of said first lip having an inwardly and downwardly curved part terminating in a free edge spaced above said face of said one panel to form an open mouth, said free edge being positioned more closely adjacent to said latter face than all portions of said inwardly curved part and the first lip forming with said latter face a hollow recess, the boundaries of said recess comprising a plane extending from said free edge normal to said latter face, said inwardly curved part, said curved part and the portion of said latter face between said curved part and the juncture of said plane and said latter face, the edge of the other panel being formed to provide a second lip extending downwardly from the face of the other panel and arranged at an angle with respect to said latter face which is greater than said acute angle, said second lip having a lower curved section and an upper section curved to form a rounded edge, the curvature of said rounded edge being substantially the same as that of said inwardly curved part, the other panel being angularly positioned with respect to said one panel with the lower curved section and the rounded edge of the second lip being positioned entirely within said hollow recess and with said lower curved section engaging the portion of the face of said one panel within said recess, the distance between the inwardly curved part of the first lip and the face of said one panel being less than the distance between the curved section and the rounded edge of the second lip, substantially pivotal movement of the other panel with respect to said one panel to bring them into interlocked assembled relation moving the lower curved section of said second lip along the face of said one panel toward said open mounth to effect a wedging action between the upper and lower curved sections of the second lip and the inwardly curved part of the first lip and the

face of said one panel and moving the first wall portion of the second lip to a position substantially closing the open mouth of said recess.

2. A building panel construction as set forth in claim 1 which includes a clip engaging the curved part of the first lip for securing the one panel to a structural member prior to assembly of the other panel.

3. A building panel construction as set forth in claim 2 wherein the clip is provided with a slotted edge portion for receiving a structural member.

4. A building panel construction as set forth in claim 3 wherein the clip is provided with a striker tab on the edge opposite the slotted edge.

5. A building panel construction as set forth in claim 1 wherein said second lip is arranged at an acute angle with respect to the face of the other panel.

6. A building panel construction as set forth in claim 1 wherein said second lip comprises a pair of substantially parallel spaced apart wall portions interconnecting said curved ends.

7. A building panel construction as set forth in claim 6 wherein a deformable sealing strip is positioned between said lips and is compressed during the wedging action when said panels are pivoted with repect to each other.

8. A building panel construction as set forth in claim 7 wherein said sealing strip is compressed between said lower section of the second lip and the face of said one panel.

9. A building panel construction as set forth in claim 7 wherein said one panel is formed with longitudinally extending stop means for limiting the pivotal movement of the panels with respect to each other.

10. A building panel construction as set forth in claim 1 wherein the first and second lips are provided with aligned slots for receiving a locking member to prevent relative sliding movement of the assembled panels.

11. A building panel construction comprising at least two panels each of which is provided with a face and a longitudinally extending edge, the edge of one panel being formed to provide a first lip extending upwardly from the face of said one panel and connected thereto by a curved part, said lip being arranged at an acute angle with respect to said face, the upper end of said first lip having an inwardly curved part terminating in a free edge spaced above said face of said one panel to form an open mouth and the first lip forming with said latter face a hollow recess, the edge of the other panel being formed to provide a second lip extending downwardly from the face of the other panel and then upwardly toward the latter face, said second lip being arranged at an angle with respect to said later face which is greater than said acute angle, said second lip having a lower curved section and an upper section curved to form a rounded edge having an outer end, said outer end and said free edge extending substantially in the same direction, the curvature of said rounded edge being substantially the same as that of said inwardly curved part, the lower curved section and the rounded edge of the second lip being positioned entirely within said hollow recess when said other panel is angularly positioned with repect to said one panel, the distance between the inwardly curved part of the first lip and the face of said one panel being less than the distance between the curved section and the rounded edge of the second lip, substantially pivotal movement of the other panel with respect to said one panel to bring them into interlocked assembled relation moving the lower curved section of said second lip along the face of said one panel toward said open mouth to effect a wedging action between the upper and lower curved sections of the second lip and the inwardly curved part of the first lip and the face of said one panel and moving the first wall portion of the second lip to a position substantially closing the open mouth of said recess.

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