

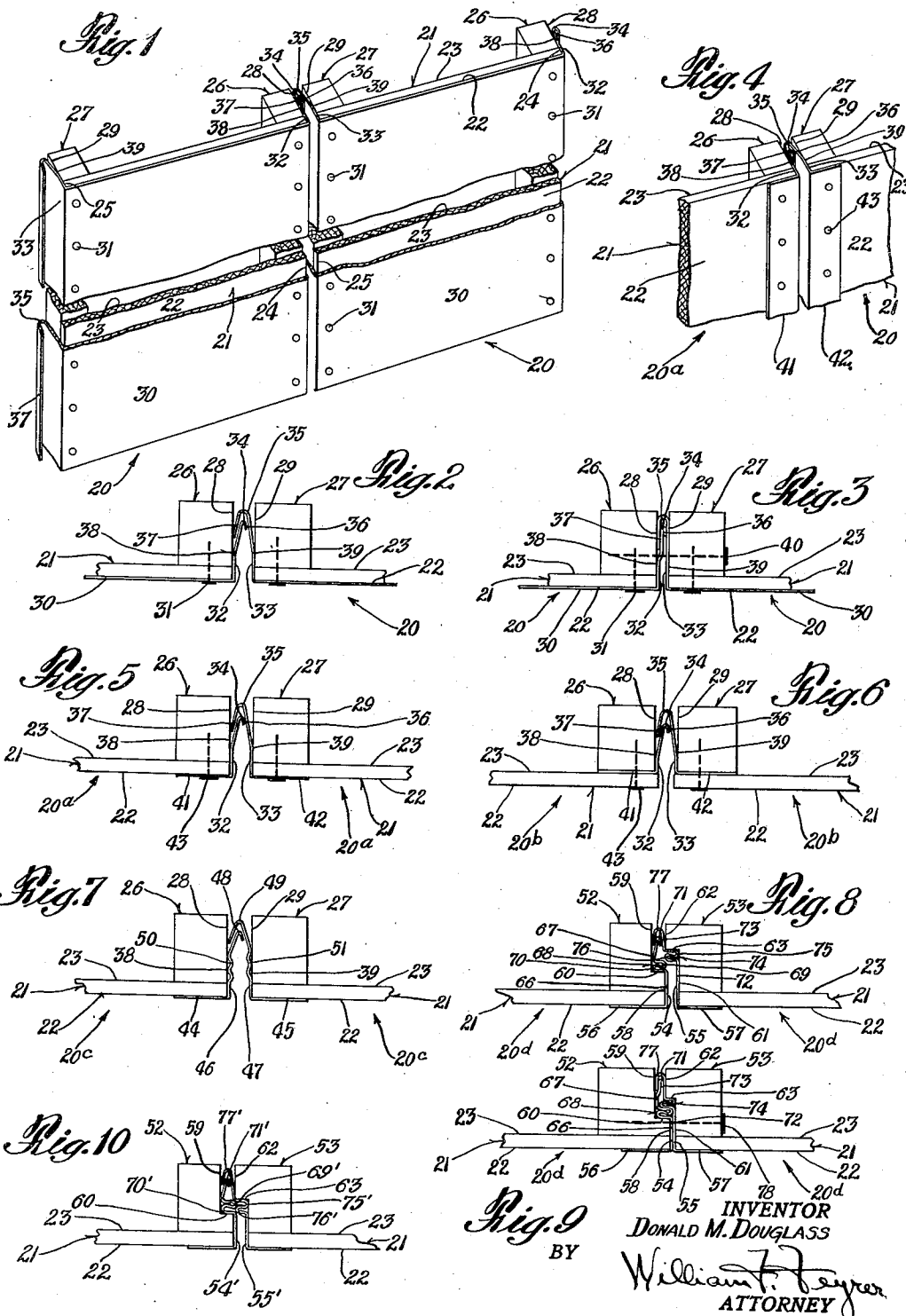
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BUILDING STRUCTURE

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BUILDING STRUCTURE

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My invention relates to an improved structural member whereby a substantially weather tight joint is made possible between it and an adjacent structural member.

5 It is an object of the invention to provide a structural member particularly adapted for use in the construction of prefabricated buildings.

A further object of the invention is the provision of an improved building construction providing a substantially weather proof seal between adjacent structural members.

10 In the past it has been proposed to provide plain and hooked flanges along adjacent edges of adjoining structural members, adapted to be interlocked or engaged to form a seal between the members. In these constructions, however, special tools are necessary to interlock the sealing flanges or strips. Moreover there is no simple means provided for maintaining the sealing strips or flanges in engaged relation.

15 An important object of the present invention is to provide a structural member so constructed that it is adapted to be associated with an adjoining member in such a way that a substantially weather tight joint is formed therebetween without the need of utilizing any special tools.

For the accomplishment of this important object there is provided as a feature of the invention a structural member including a pair of supporting members underlying a panel portion of the structural member, positioned along opposite side edges thereof, the structural member being provided with complementary sealing strips extending rearwardly from the panel to overlie the outer faces of the supporting members, these sealing strips being adapted to cooperate with complementary sealing strips on adjacent structural members to form substantially weather tight joints therewith when laterally compressed together between the supporting members of adjacent structural members.

20 A further feature of the invention resides in providing a structural member comprised of a panel having a pair of underlying supporting members positioned along opposite side edges thereof and having a metal sheet overlying the panel and having complementary metal sealing strips formed integral therewith, extending rearwardly from opposite side edges of the panel to overlie outer faces of the structural members, adapted to cooperate with complementary metal sealing strips of adjacent structural members to form substantially weather tight joints therebetween.

25 Yet another feature of the invention resides

in the provision of a building construction including a pair of adjoining structural members having complementary metal sealing strips secured thereto and adapted to be compressed between the abutting members to form a substantially weather tight joint.

Still another feature of the invention resides in the provision of a hook shaped free end on each of the sealing strips of a structural member adapted to link a free end of a sealing strip of an adjacent structural member and form a substantially weather tight joint therewith when the strips are laterally compressed together between supporting members of adjacent structural members.

Another feature of the invention consists in providing a structural member having rearwardly extending portions at opposite side edges with complementary metal sealing strips which overlie the rearwardly extending portions and are formed with corrugations therein.

Another feature of the invention resides in providing a panel with complementary supporting members underlying the same and positioned along opposite side edges thereof, these supporting members having laterally offset rearwardly extending outer faces joined by forwardly and rearwardly facing shoulders respectfully, metal sealing strips being provided to extend rearwardly from each of the panels, overlying the laterally offset faces of the complementary supporting members and having reverse bends therein providing loops overlying the shoulders, enabling the formation of a substantially weather tight joint when the complementary supporting members of adjacent panels are moved laterally toward each other to compress the sealing strips therebetween.

Other and more specific objects and features residing in advantageous forms, combinations and relations of parts will hereinafter appear.

In the drawing, illustrating the preferred embodiments of the invention:

Figure 1 is a perspective view showing a pair of associated structural members embodying the present invention, portions of the members being broken away for the purpose of a more clear illustration.

Fig. 2 is a detail view of adjoining portions of two adjacent structural members immediately after the members have been placed in association with each other.

Fig. 3 is a detail view similar to Fig. 2, showing the joint formed between adjacent structural members after the latter have been moved later-

ally toward each other to compress the sealing strips therebetween.

Fig. 4 is a fragmentary perspective view similar to Fig. 1 but showing a slightly modified construction in which the metal sheets overlying the panel are formed merely as marginal strips rather than as sheets completely overlying the front faces of the panels.

Fig. 5 is a detail view similar to Fig. 2, but showing the slightly modified construction shown in Fig. 4.

Fig. 6 is a detail view similar to Fig. 5 but disclosing the marginal sheets interposed between the structural members of the panels rather than overlying the front faces thereof.

Fig. 7 is a detail view similar to Fig. 2 showing adjoining corner portions of adjacent structural members provided with sealing strips of slightly modified construction.

Fig. 8 is a detail view similar to Fig. 2 but showing a further modification of the invention.

Fig. 9 is a detail view of the modified construction in Fig. 8 showing the relationship of elements after the structural members have been moved laterally toward each other.

Fig. 10 is a detail view of a slight modification of the construction shown in Fig. 8.

Referring more particularly to the drawing and first to Fig. 1 there is shown a pair of structural units or members 20 constructed in accordance with the teachings of the present invention. In the form of invention there illustrated each of the structural units or members includes a panel 21, which may be of wall board or of any suitable material, having a front face 22 and a rear face 23. Underlying the rear face 23 of each of the panels 21 and positioned along opposite side edges 24 and 25 thereof are a pair of panel supporting members 26 and 27 having outer faces 28 and 29 respectively. The positioning of the supporting members is such that the outer faces 28 and 29 extend rearwardly from the side edges 24 and 25 of the panels.

Overlying the front face 22 of each of the panels is a relatively thin metal sheet 30, preferably of copper, but it is to be understood that any other suitable metal might be used. A plurality of nails 31, spaced from the side edges of each panel, passing through the metal sheet, the panel and the supporting members serve as an advantageous means of maintaining the parts in proper association. If desired the various parts may be cemented together or held together by nails placed in positions other than the ones disclosed.

Formed integral with the metal sheet 30 and extending rearwardly therefrom to overlie the outer faces 28 and 29 of the supporting members 26 and 27 respectively are the complementary metal sealing strips 32 and 33. These strips 32 and 33 are preferably and as shown each formed with hook shaped free ends 34 and 35 providing forwardly extending portions 36 and 37. The advantages of forming each of the sealing strips with hook shaped free ends will hereinafter appear.

As shown clearly in Fig. 1, the hook shaped free end 35 of the sealing strip 33 of one adjoining structural member is adapted to link the hook shaped free end 34 of the complementary sealing strip 32 of the other adjoining structural member. Movement of the adjacent supporting members 26 and 27 of the adjoining structural members 20 laterally toward each other compresses the complementary sealing strips therebetween to

thereby form a substantially weather tight joint construction.

While the supporting members are illustrated as formed of wood, it is within the purview of the present invention to provide metal supporting members having conventional U and L shaped cross sections. The important requirement is that they provide outer faces which constitute portions 38 and 39 extending rearwardly from adjacent the side edges of the panel.

Structural members constructed in accordance with the present invention are particularly applicable for use in the construction of prefabricated buildings in that their use makes possible an especially satisfactory joint construction.

Preferably the individual structural members are completely formed prior to being brought to the place at which they are to be used, but if desired the structural members may be assembled in the field.

When it is desired to construct a building one structural member is placed in position as by nailing to a base board or in any other suitable manner. Another structural member is then placed along side of the first one and the free ends 34 and 35 of complementary sealing strips 32 and 33 of the adjoining structural members are linked or interlocked in the manner shown clearly in Figs. 1 and 2.

The newly placed structural member is then moved laterally toward the first placed structural member to compress together the complementary sealing strips 32 and 33 between the adjacent supporting members 26 and 27 of the adjoining panels. In this manner the hook shaped free end 35 of the sealing strip 33 is seen to closely envelop the free end 34 of the sealing strip 32 thus forming a substantially weather tight seal as shown in Fig. 3.

Should, for any reason, the supporting members not be initially fully compressed together or should they become slightly separated after they have been compressed together, because of shrinkage in the panels or the like, the hook shaped free ends of either or both of the sealing strips expand to form an effective seal against water entering the building. In addition to the seal achieved by the linking of the free end 34 by the hook shaped free end 35 there is an additional seal achieved because of the natural yield or expansion of the forwardly extending portion 36 of the linked free end 34 of the sealing strip 32 which has a normal tendency to move outwardly to engage the linking sealing strip 33. This, in effect, creates a double seal and thus makes for a more highly efficient joint. A further seal is achieved by the forwardly extending portion 37 of the linking sealing strip 33 which has a normal tendency to expand outwardly and engage the outer face 28 of the adjacent supporting member 26 of the adjoining structural member. The provision of hook shaped free ends on each of the complementary sealing strips is seen, therefore, to constitute an important feature of the invention.

The means for moving the supporting members 26 and 27 of adjoining structural members laterally relatively to each other may be a set of screw clamps. A very simple manner of accomplishing this result, however, and the one illustrated is merely to force a plurality of fastening elements, such as nails 40, through the adjacent supporting members 26 and 27 and thus in effect squeeze the members together to compress the sealing strips.

It is to be noted that in the form of the invention disclosed in Figs. 1 through 3, the front or forward faces 22 of the panels are completely covered by the metal sheets 30. This gives the finished structure a protective metallic covering and is particularly applicable to a construction in which it is desired to use panels of a material not especially satisfactory for resisting weather of various kinds. With this construction it is possible to use a relatively inexpensive material for the panels and still achieve a weather proof and permanent construction.

In the case of the construction shown in Figs. 4 and 5 where there are disclosed only the adjoining portions of like constructed structural units or members 20a, the metal sheets lapping the front face of the panels are shown formed merely as marginal strips 41 and 42 rather than as metal sheets completely overlying the front faces of the panels.

Each of the structural members, as in case of the construction shown in Figs. 1, 2 and 3, includes a panel 21 having a front face 22 and a rear face 23 and having a pair of supporting members 26 and 27 underlying the rear face and positioned along opposite side edges thereof. Also, as in the case of the construction first described, complementary sealing strips 32 and 33 having hook shaped free ends 34 and 35 extend rearwardly from opposite sides of the panel to overlie rearwardly extending outer faces 28 and 29 of the supporting members 26 and 27. Inasmuch as the sealing strips 32 and 33 are formed integral with the marginal strips 41 and 42 respectively, nails 43 passing through the marginal strips, panel and supporting members maintain all of the various parts of each structural member in proper association.

It is clear, therefore, that the joint construction achieved by associating the modified structural members shown in Figs. 4 and 5 will be exactly the same as that achieved by the use of the structural members illustrated in Figs. 1, 2 and 3. In each case the hook shaped free end 35 of one sealing strip is linked around the free end 34 of the sealing strip of an adjoining structural member and the complementary sealing strips then compressed together between the adjacent supporting members of adjoining structural members to form a substantially weather tight seal therebetween.

It is to be noted that no special tools are needed for interlocking or linking the sealing strips of adjoining members, it being necessary merely to link the strips and then squeeze them together between the supporting members which may be more permanently maintained in squeezed or compressed relation by nails, bolts or any other conventional fastening elements.

The construction illustrated in Fig. 6, in which adjoining portions only of two like structural units or members 20b are disclosed, is precisely the same as that illustrated in Figs. 4 and 5 with the exception that the marginal strips 41 and 42 lapping the panels 21 are interposed between the supporting members 26 and 27 and the rear faces 23 of the panels rather than positioned to overlie the front faces 22 of the panels. The complementary sealing strips 32 and 33 are formed integral with the marginal lapping strips 41 and 42 and are linked and compressed between supporting members 26 and 27 of adjacent structural members in the same manner as in the case of the construction shown in Figs. 4 and 5.

If desired, in order that the seal between ad-

joining structural members may be more efficient, the sealing strips described and shown in Figs. 1 through 6 may be formed with corrugations therein. Such a construction is seen in Fig. 7 where there is illustrated the adjoining portions only of two like constructed structural units or members 20c.

As shown, the metal sheets lapping the panels 21 are formed as marginal strips 44 and 45, but if desired the sheets may be formed to completely overlie the front faces of the panels as illustrated in Fig. 1. Extending rearwardly from the marginal strips and formed integral therewith are complementary sealing strips 46 and 47, overlying the outer faces 28 and 29 of the supporting members 26 and 27 respectively which extend rearwardly from the side edges of the adjoining panels.

Sealing strips at opposite sides of each structural member are formed with complementary corrugations therein and are provided with hook shaped free ends adapted respectively to link and be linked with complementary sealing strips on adjacent or adjoining structural members.

As clearly illustrated in Fig. 7, when two structural members are placed along side of each other the hook shaped free end 49 of a sealing strip 47 of one structural member links the free end 48 of a sealing strip 46 of the adjoining structural member. When the adjacent supporting members 26 and 27 of the adjoining structural members are moved laterally toward each other in the manner described in connection with the constructions heretofore considered, complementary corrugations 50 and 51 formed in the sealing strips 46 and 47 are fitted one with the other and the linked strips are compressed between the supporting members to achieve a joint construction which constitutes an especially weather tight seal. Nails, bolts or any other conventional fastening elements may be utilized to maintain the structural members in closely adjacent relation.

When an even more effective joint construction is desired the modified construction illustrated in Figs. 8 and 9 may be utilized. In those figures there are shown the adjoining portions of two like constructed structural units or members 20d.

As in the case of each of the other constructions described each of the structural members 20d includes a panel 21, supporting members 52 and 53 underlying each of the panels and positioned along opposite side edges thereof, and complementary sealing strips 54 and 55, extending rearwardly from the side edges of the panels and formed integral with metal sheets 56 and 57 lapping the panels. These sheets may be in the form of marginal strips as shown or they may completely overlie the panels as illustrated in Fig. 1.

As shown, the supporting member 52 underlying the rear face 23 of one of the panels 21 and positioned along a side edge thereof is formed with laterally offset rearwardly extending outer faces 58 and 59 respectively. The face 58 extends from a side edge of the panel and is joined to the other face 59 by an inwardly extending rearwardly facing shoulder 60.

The supporting member 53 underlying the rear face 23 of the panel 21 of the adjoining structural member and positioned along the adjacent side edge thereof is formed with laterally offset rearwardly extending outer faces 61 and 62 respectively. The face 61 extends from a side edge of the panel and is joined to the other face 62 by

an outwardly extending forwardly facing shoulder 63. These supporting members 52 and 53 are thus seen to be complementary to each other.

Lapping the front face of each of the panels of the adjoining structural members are the metal sheets 56 and 57, having formed integral therewith complementary sealing strips 54 and 55 respectively.

One of the sealing strips 54 has portions 66 and 67 overlying the laterally offset faces 58 and 59 respectively of the supporting member 52, and an intermediate portion 68 formed with reverse bends to provide loops 69 and 70 overlying the joining shoulder 60. A hook shaped free end 71 is provided on the sealing strip as in the case of the sealing strips described hereinbefore.

The other sealing strip 55 has portions 72 and 73 overlying the laterally offset faces 61 and 62 respectively of the adjacent supporting member 53 of the adjoining structural member, and an intermediate portion 74 with reverse bends providing loops 75 and 76 overlying the joining shoulder 63. A hook shaped free end 77 formed on the sealing strip 55 is adapted to link the free end 71 of the complementary sealing strip 65 of the adjoining structural member as shown in Fig. 8.

When the adjoining structural members are moved toward each other the loops 75 and 76 of the sealing strip 55 are forced over the loops 69 and 70 of the complementary sealing strip 54 and the loops of the respective sealing strips are compressed or partially squeezed together between the oppositely facing shoulders 60 and 63 of the adjacent supporting members. At the same time the linked free ends 71 and 77 are compressed between the offset faces 59 and 62 of the adjacent supporting members. The weather tight joint construction thus achieved is shown clearly in Fig. 9.

With this construction, as in the case of the construction shown in Figs. 1 through 7, no special tools are needed in the field for setting up and joining the structural members in the setting up of a prefabricated building or other structure. Suitable fastening elements such as the nails 78 shown may be used for maintaining adjacent supporting members of adjoining structural members in compressed relation.

If desired, the construction disclosed in Figs. 8 and 9 may be modified as shown in Fig. 10 by slightly spreading the loops 69' and 70' and the loops 75' and 76' formed in the complementary sealing strips 54' and 55' respectively. With this modification, the loop 69' of the strip 54' may fit into loop 75' of the strip 55' while the loop 76' of the strip 55' may fit into the loop 70' of the strip 54'. In all other particulars the slightly modified form of the invention shown in Fig. 10 is the same as the form illustrated in Figs. 8 and 9. The intimate relation between the complementary sealing strips is accomplished by moving adjoining structural members toward each other to compress the linked free ends 71' and 77' between the offset faces 59 and 62 of adjacent supporting members. At the same time, the outwardly extending loops 69' and 76' of the sealing strips 54' and 55' respectively, are forced into the inwardly extending loops 75' and 70' and are compressed between the oppositely facing shoulders 60 and 63.

With this construction, as in the case of the constructions heretofore described the adjacent supporting members of adjoining structural units or members may be held in compressed relation by any conventional fastening elements such as

nails, bolts or clamps. Because of the intimate relationship between the loops of cooperating sealing strips, however, it is possible, by using a slightly heavier sealing strip to dispense with the use of any other means, such as nails or bolts, for maintaining adjoining structural members in compressed relation. This locking feature constitutes an additional advantage of the modification shown in Fig. 10.

Having thus described the invention, what is claimed as new is:

1. A structural member including a panel having a front face and a rear face; a pair of panel supporting members underlying the rear face of said panel, positioned along opposite side edges thereof; outer faces on said supporting members, extending rearwardly from said panel; and complementary metal sealing strips extending rearwardly from said panel to overlie said outer faces, adapted to cooperate with complementary metal strips on adjacent structural members to form substantially weather tight joints therebetween.

2. A building construction comprising a pair of adjoining panels having front and rear faces; panel supporting members underlying the rear faces of and positioned along adjacent side edges of said adjoining panels; outer faces on said supporting members, extending rearwardly from said panels; complementary metal sealing strips extending rearwardly from each of said panels to overlie said outer faces, cooperable to form a substantially weather tight joint between said panels when the supporting members of adjoining panels are laterally compressed together; and means for maintaining said supporting members in a laterally compressed relation.

3. A structural member including a panel having a front face and a rear face; a pair of panel supporting members underlying the rear face of said panel, positioned along opposite side edges thereof; outer faces on said supporting members extending rearwardly from said panel; a relatively thin metal sheet overlying the front face of said panel; and complementary metal sealing strips formed integral with the metal sheet, extending rearwardly therefrom to overlie said outer faces, adapted to cooperate with complementary metal strips on adjacent structural members to form substantially weather tight joints therebetween.

4. A building construction comprising a pair of adjoining panels having front and rear faces; panel supporting members underlying the rear faces of and positioned along adjacent side edges of said adjoining panels; outer faces on said supporting members, extending rearwardly from said panels; relatively thin metal sheets overlying front faces of each of said panels; complementary metal sealing strips formed integral with the metal sheets, extending rearwardly therefrom to overlie said outer faces, cooperable to form a substantially weather tight joint between said panels when the supporting members of the adjoining panels are laterally compressed together; and means for maintaining said supporting members in a laterally compressed relation.

5. A structural member including a panel having a front face and a rear face; a panel supporting member underlying the rear face of said panel, positioned along a side edge thereof; and a metal sheet having a portion lapping said panel and having a portion extending rearwardly from the side edge thereof, said rearwardly extending portion constituting a sealing strip adapted to

cooperate with a complementary sealing strip on an adjacent structural member to form therewith a weather tight joint when the strips are laterally compressed together between supporting members of adjacent panels.

6. A building construction including a pair of adjacent panels having front and rear faces; portions extending rearwardly from adjacent side edges of said adjacent panels; a sealing strip overlying one of said rearwardly extending portions, having a hook shaped free end; a second sealing strip overlying the other of said rearwardly extending portions, having a free end linked by the hooked free end of said first named strip, whereby a substantially weather tight joint is formed between adjacent panels when the rearwardly extending portions are laterally compressed together.

7. A structural member including a panel having a front and a rear face; portions extending rearwardly from opposite side edges of said panel; a metal sealing strip overlying one of said rearwardly extending portions, having a hook shaped free end; and a second metal sealing strip overlying the other of said rearwardly extending portions, having a hooked free end adapted to link a hooked free end of a sealing strip of an adjacent structural member, whereby a substantially weather tight joint is formed when the rearwardly extending portions of adjacent structural members are laterally compressed together.

8. A building construction including a pair of adjacent panels having front and rear faces; panel supporting members underlying the rear faces of and positioned along adjacent side edges of said adjacent panels; outer faces on said adjacent supporting members extending rearwardly from said panels; metal sheets lapping each of said panels; a sealing strip integral with one of said sheets, overlying the outer face of one of said supporting members, having a hook shaped free end; and a second sealing strip formed integral with the other of said metal sheets overlying the outer face of the other supporting member, having a free end linked by the hooked free end of said first named strip, whereby a substantially weather tight joint is formed between adjacent panels when the supporting members of adjacent panels are moved laterally toward each other.

9. A structural member including a panel having a front and a rear face; portions extending rearwardly from opposite side edges of said panel; a metal sealing strip overlying one of said rearwardly extending portions, having corrugations therein and a hook shaped free end; and a complementary metal sealing strip overlying the other of said rearwardly extending portions, having corrugations therein complementary to the corrugations of said first named strip and a free end adapted to be linked by a complementary sealing strip of an adjacent structural member, whereby a substantially weather tight joint is formed when the rearwardly extending portions of adjacent structural members are laterally compressed together.

10. A building construction including a pair of adjacent panels having front and rear faces; portions extending rearwardly from adjacent side edges of said adjacent panels; metal sheets lapping each of said panels; a sealing strip integral with one of said sheets, overlying one of said rearwardly extending portions, having corrugations therein and a hook shaped free end; and a

complementary metal sealing strip overlying the other of said rearwardly extending portions, having corrugations therein complementary to the corrugations of said first named strip and a hook shaped free end linking the free end of said first named strip, whereby a substantially weather tight joint is formed between adjacent panels when the rearwardly extending portions are laterally compressed together.

11. A building construction including a pair of adjacent panels having front and rear faces; a panel supporting member underlying the rear face of one of said panels, positioned along a side edge thereof; said supporting member having laterally offset rearwardly extending outer faces joined by an inwardly extending rearwardly facing shoulder; a second panel supporting member underlying the rear face of the other of said panels, positioned along a side edge thereof adjacent said first named panel; said second supporting member having laterally offset rearwardly extending outer faces joined by an outwardly extending forwardly facing shoulder, constituting a supporting member complementary to said first named supporting member; metal sheets lapping each of said panels; a metal sealing strip formed integral with one of said sheets, overlying the laterally offset faces of one of said supporting members, having reverse bends therein providing loops overlying the joining shoulder and having a free end; and a second metal sealing strip formed integral with the other of said sheets, overlying the laterally offset faces of the other of said supporting members, having reverse bends therein providing loops overlying the joining shoulder and having a hook shaped free end linking the free end of the other sealing strip, whereby a substantially weather tight joint is formed when the complementary supporting members of the adjacent panels are moved laterally toward each other to compress said hook shaped end between said offset faces and to compress said loops between said shoulders.

12. A structural member including a panel having a front and a rear face; a pair of panel supporting members underlying the rear face of said panel, positioned along opposite side edges thereof, one of said supporting members having laterally offset rearwardly extending outer faces joined by an inwardly extending rearwardly facing shoulder, the other of said supporting members having laterally offset rearwardly extending outer faces joined by an outwardly extending forwardly facing shoulder, constituting a supporting member complementary to said first named supporting member; a metal sheet overlying said panel; metal sealing strips formed integral with said sheet and extending rearwardly therefrom, overlying the laterally offset faces of said complementary supporting members and having intermediate portions overlying said shoulders; and one of said strips having a hook shaped free end adapted to link a free end of a sealing strip of an adjacent complementary structural member, whereby a substantially weather tight joint is formed when complementary supporting members of adjacent structural members are moved laterally toward each other to compress said hook shaped end between said offset faces and to compress said intermediate portions between said shoulders.

13. A building construction including a pair of adjacent panels having front and rear faces; a panel supporting member underlying the rear face of one of said panels, positioned along a side

edge thereof; said supporting member having laterally offset rearwardly extending outer faces joined by an inwardly extending rearwardly facing shoulder; a second panel supporting member
5 underlying the rear face of the other of said panels, positioned along a side edge thereof adjacent said first named panel; said second supporting member having laterally offset rearwardly extending outer faces joined by an outwardly extending forwardly facing shoulder, constituting a
10 supporting member complementary to said first named supporting member; metal sheets lapping each of said panels; a metal sealing strip formed integral with one of said sheets, overlying the
15 laterally offset face of one of said supporting members, having an intermediate portion

overlying the joining shoulder and having a free end; and a second metal sealing strip formed integral with the other of said sheets, overlying the laterally offset faces of the other of said supporting members, having an intermediate
5 portion overlying the joining shoulder and having a hook shaped free end linking the free end of the other sealing strip, whereby a substantially weather tight joint is formed when the complementary supporting members of the adjacent
10 panels are moved laterally toward each other to compress said hook shaped end between said offset faces and to compress said intermediate portions between said shoulders.

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15