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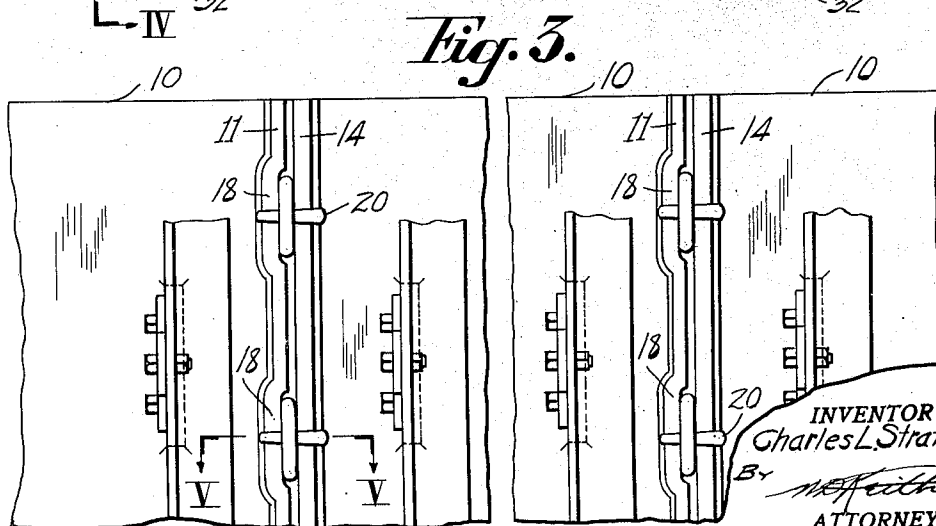
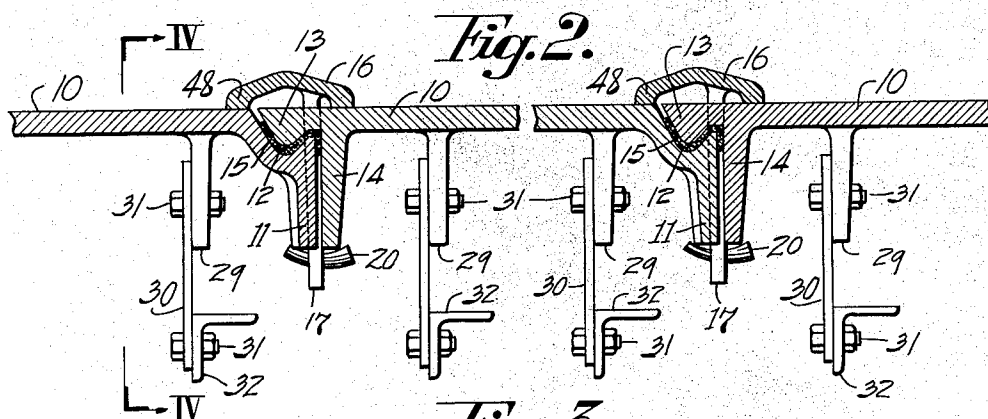
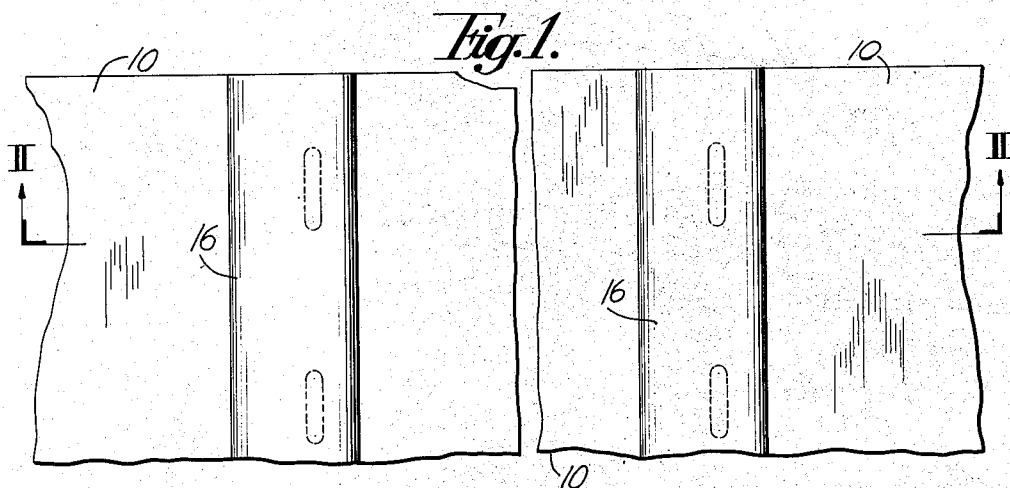
C. L. STRATTARD

2,064,276

BUILDING CONSTRUCTION

Filed July 14, 1933

2 Sheets-Sheet 1



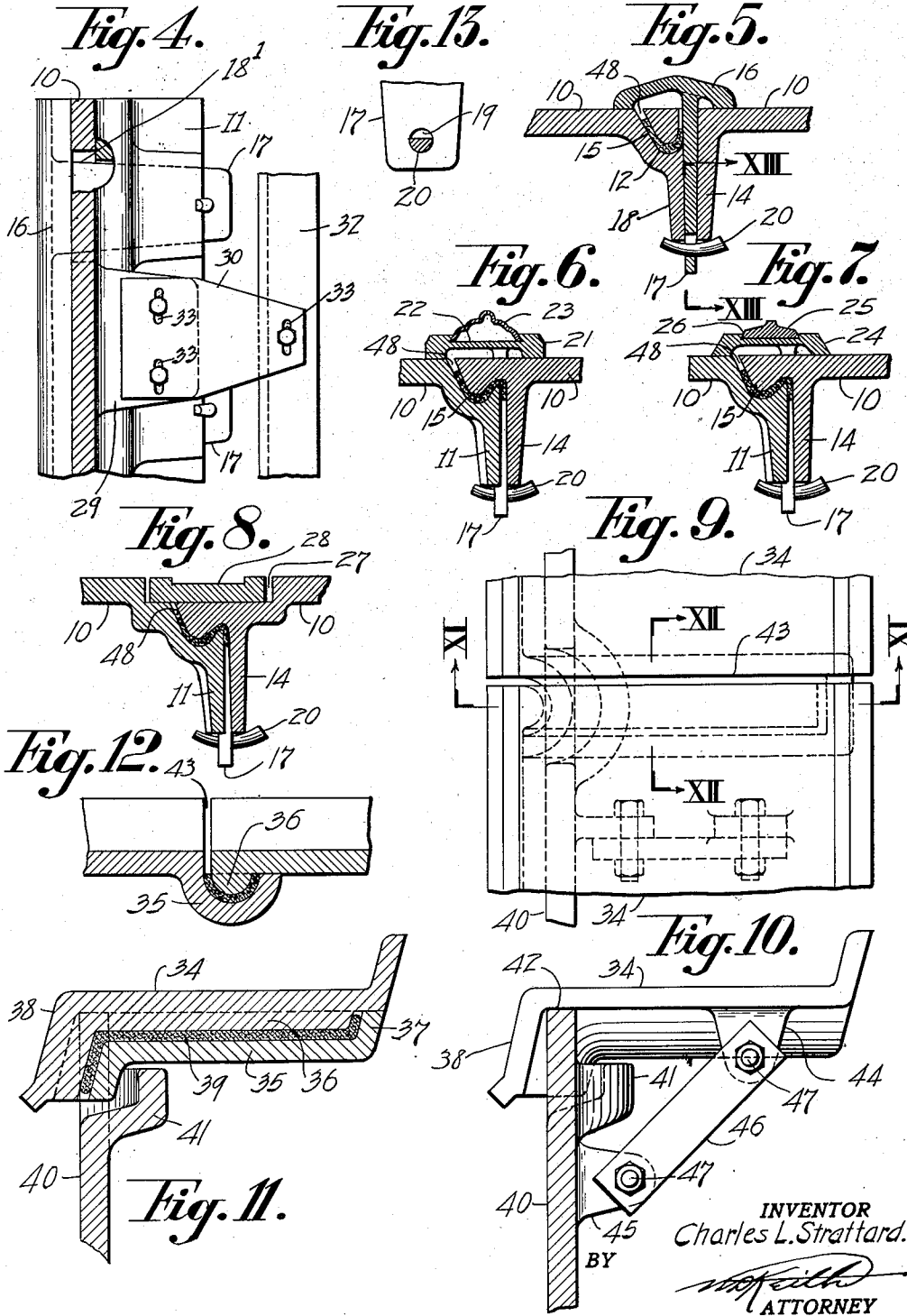
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UNITED STATES PATENT OFFICE

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BUILDING CONSTRUCTION

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15 Claims. (Cl. 189—36)

This invention relates generally to building construction and particularly to improvements in joints between adjacent elements entering into such constructions.

5 Metals, and particularly aluminum and aluminum alloys, have definitely proved their many varied artistic and practical uses in structural and decorative effects for both exterior and interior uses in building construction. The architectural use of metals in spandrels or panels and various other structural and decorative appointments is increasing, but certain disadvantages are inherent to providing suitable means for securing these spandrels or panels in place
10 and in satisfactorily joining adjacent members.

It is a primary object of my invention to provide a joint for building construction which is flexible, self-caulking and which will permit ready alignment of the elements comprising the
20 joint.

It is a further object of my invention to provide a joint between adjacent metal sections which will permit relative movement between the sections but which will not detract from the
25 appearance of a construction in which it is embodied.

Another object of my invention is to provide a joint between adjacent metal parts or sections which is self-caulking and which will automatically adjust itself to variations in atmospheric conditions.

Another object of my invention is to provide a construction in which it is possible to attach a member such as a window sill or building
35 cornice to a spandrel facing in such a manner that the various members are free to expand or contract relative to one another without in any way imparting undue stresses in the supporting substructure of the building to which they have
40 been attached.

A further object of my invention is to provide a metal building construction incorporating self-caulking and self-aligning joints between adjacent members, together with efficient
45 means for eliminating the seepage of moisture through the joints into the interior of the building to which such members have been attached.

Other objects as well as various novel features and advantages of my invention will present themselves and be more apparent when the following detailed description is considered in conjunction with the accompanying drawings in which:

55 Fig. 1 represents, in front elevation, a plurality of cooperating spandrels joined together

in accordance with the principles of my invention;

Fig. 2 represents a cross sectional view taken along the line II—II of Fig. 1;

Fig. 3 represents a rear elevation of the construction shown in Fig. 2;

Fig. 4 represents a partial sectional elevation taken along the line IV—IV of Fig. 2;

Fig. 5 represents a fragmentary cross sectional view taken along the line V—V of Fig. 3;

Figs. 6, 7 and 8 are fragmentary cross sectional views similar to Fig. 2 with the exception that modifications of the joint sealing strip are shown;

Fig. 9 represents, in plan view, a window sill or cornice in cooperative relationship with a facing spandrel;

Fig. 10 represents an end view of the arrangement shown in Fig. 9;

Fig. 11 represents a cross sectional view taken along the line XI—XI in Fig. 9;

Fig. 12 represents a fragmentary cross sectional view taken along the line XII—XII in Fig. 9;

Fig. 13 represents a fragmentary cross sectional view taken along the line XIII—XIII of Fig. 5.

Referring to the drawings, my invention is illustrated with reference to a unique joint construction for building construction. It is to be understood, however, that the invention is not limited in scope to the specific illustrations herein shown but may be employed in various other modifications within the spirit and scope of this description and the appended claims.

In Figs. 1 to 5 inclusive and in Fig. 13 the improved joint construction is shown as employed between adjacent spandrels or panels. Each of the spandrels 10 is provided along one of its vertical edges with a rearwardly-depending flange 11, which in the case of a cast spandrel is usually formed integral therewith, and a vertical longitudinal groove 12 is provided in the front face of the spandrel adjacent the flange 11. The opposite vertical edge of each spandrel is provided with a rearwardly-extending protuberance or tongue 13 which is of such a cross section that it does not completely fill the groove 12 when interengaged with an adjacent spandrel and the front faces of two such spandrels lie in substantially the same plane. The vertical edge of the spandrel, which is provided with the tongue 13, has also formed adjacent this tongue a depending flange 14, the purpose of which will be more clearly understood hereinafter.

In assembling two such tongued and grooved spandrels, the spandrels are positioned as shown to best advantage in Figs. 2 and 5, a suitable material, such as asphaltum, pitch, tar, or other mastic material 15 being placed within the groove 12. A sealing strip 16 is thereafter employed to complete the joint, which strip is preferably provided with a plurality of rearwardly-extending shanks or tongues 17 adapted to enter apertures 18' provided adjacent the flanges 14. The shanks or tongues 17 project rearwardly and are embraced between the flanges 11 and 14, pockets or depressions 18 being formed in the flanges 11 to provide suitable housings for the tongues. Apertures 19 in the form of circular holes are provided in the shanks 17 and half round tapered pins 20 inserted in said apertures secure the sealing strips 16 in place. In this connection the pins 20 maintain constant contact with the most rearward edges of the flanges 11 and 14 and the protruding ends of these pins are preferably bent into substantially arcuate form, thereby constituting a pivot center about which the spandrels may pivot during the expansion and contraction of the joint at its front face, the mastic material 15 permitting relative movement between adjacent spandrels and at the same time insuring a sealing medium. This construction is of paramount importance as it permits the relative movement between adjacent spandrels necessary for the erection of members which are slightly warped, or otherwise permits the automatic or self-alignment of the spandrels. At the same time relative movement between adjacent spandrels or panels automatically displaces the mastic material 15 in accordance to the direction of movement and insures a self-caulking joint.

Figs. 6, 7 and 8 represent fragmentary sectional views similar to Fig. 2 which illustrate three modified forms of the sealing strip employed in a construction of this nature. In Fig. 6 a sealing strip 21 is formed with a suitable dovetail groove 22 disposed in its exterior face. Within this groove a decorative strip, in the form of an extruded shape 23, is preferably inserted. In this connection it may be desirable to employ a colored material within the face of the sealing strip 21 which will contrast with the metal of the spandrels and sealing strip.

In Fig. 7 a sealing strip 24 is disclosed which is similar to those already described with the exception that the insert 25 within the dovetail groove 26 completely fills this groove, and in the preferred form is usually ornamented or decorated in such a manner as to contrast with the spandrels and sealing strip proper.

In Fig. 8 a further modification of my invention is shown in which the front faces of the spandrels 10 adjacent the depending flanges 11 and 14 are provided with a cavity 27 in which the head of the sealing strip 28 is received. In this construction the cavity 27 is made sufficiently oversize with respect to the sealing strip 28 to provide for relative movement between the spandrels and the sealing strip as the joint expands or contracts under atmospheric and similar conditions.

In all of the examples of the joint construction above described it is an important feature of my invention that the shanks or tongues 17 be positioned with respect to that portion of the sealing strips which bears upon the front faces of the spandrels so that the openings 48 between the tongued and grooved joints of ad-

jacent spandrels are at all times covered or sealed by the sealing strips. This will be appreciated since this construction insures against the penetration of moisture into the joint.

Referring more particularly to Figs. 2, 3 and 4, a construction is shown which exemplifies a means whereby spandrels joined together in accordance with my invention are secured to the substructure of a building or the like. For this purpose the spandrels 10 are provided with lugs or ribs 29 cast integral with the rear faces of the spandrels. These lugs have been shown as local projections but it is quite obvious that a continuous rib may be employed if such a construction is required or considered necessary. By means of suitable gusset plates or the like 30 and fastening devices such as rivets or bolts 31 the spandrels or panels are secured to the substructure of the building which has been represented by the angles 32. As shown in Fig. 4, elongated apertures or holes 33 are preferably provided for receiving the fastening devices 31 and in this manner any irregularities in the positioning of these apertures will be automatically taken care of and the spandrels will be permitted to adjust themselves under various conditions, such as warping or contraction and expansion experienced under atmospheric changes.

In Figs. 9 to 12 inclusive a construction is illustrated in which a window sill has been combined with front facing spandrels. In this construction the window sill comprises two or more sections 34 which are joined together by means of a suitable expansion joint to permit longitudinal expansion and contraction therebetween. The expansion joint is formed by means of providing a grooved pocket portion 35 integral with the end of one window sill section and a protuberance or tongue portion 36 integral with the cooperating end of another section of window sill. As shown to best advantage in Figs. 11 and 12, the rear end of the groove 35 is closed as at 37 and both the groove 35 and the tongue 36 are constructed to extend horizontally and thereafter substantially vertically beneath the front face or flange 38 of the sill sections. As in the case of the spandrel joint construction, a suitable mastic material 39 is employed within the groove 35, which insures a seal against the seepage of moisture through the joint.

In Figs. 10 and 11 the construction, whereby a window sill incorporating the expansion joint above described is coordinated with a front facing spandrel 40, is shown. In this particular instance the spandrel is preferably provided with a pocket 41 of semi-circular configuration on its rear side adjacent the window sill expansion joint and the sections 34 are supported upon the top edge 42 of the facing spandrel. In this manner it will be seen that moisture, or the like, collecting between the ends of the sections 34 within the opening 43 will be permitted to flow towards the depending face 38 of the sill sections and be discharged within the pocket or cavity 41, from whence it will be discharged down the front face of the spandrel 40. This condition is preferred when it is considered that moisture discharged into the interior of a building construction of this nature, and particularly when such moisture is permitted to freeze, would have a deleterious effect on such an organized construction.

Although various means may be employed for securing the sill sections to the spandrel, I have

shown a simple form of construction which comprises providing suitable lugs 44 on the under surface of the sill sections 34 and similar lugs 45 on the rear face of the spandrel 40. Links 46 and suitable fastening devices 47 tie the sill sections and spandrels together and insure a sturdy construction.

Although the construction incorporating the sills and facing spandrels has been described in terms of a specific installation, it will be readily understood that a similar expansion joint and provision for drainage could be incorporated in an organized construction wherein the sill sections were replaced with cornice sections without departing in any way from the construction described.

Having thus described and explained my invention and its mode of operation, it is to be understood that the construction described was selected merely for purposes of illustration and that numerous variations in the form and arrangement of parts shown and described herein may be made without departing from the scope of my invention except as defined in the appended claims.

What I claim is:

1. In a metal building construction, the combination of a spandrel having a groove in its front face adjacent one edge thereof, a second spandrel spaced from the first and having a tongue on its rear face adjacent one edge thereof, said spandrel having the tongue thereon being positioned in interengaged relationship with its tongue within the groove of the first-mentioned spandrel, said tongue being of such cross section area as to provide a clearance between the spandrels, and a sealing strip disposed on the front faces of the spandrels and overlapping the clearance therebetween, said sealing strip being secured in a manner to maintain the spaced relationship between adjacent spandrel edges and to permit movement of the interengaged spandrels relative to themselves and the sealing strip.

2. In a metal building construction, the combination of a spandrel having a groove in its front face adjacent one edge thereof, a second spandrel having a tongue on its rear face adjacent one edge thereof, said spandrel having the tongue thereon being positioned in interengaged relationship with its tongue within the groove of the first-mentioned spandrel, said tongue being of such cross sectional area as to provide a clearance between the spandrels and the tongue and groove, a mastic material within said groove and in contact with the tongue to form a sealing medium, a detachable sealing strip having a portion disposed on the front faces of the spandrels and overlapping the clearance therebetween, said sealing strip being secured in a manner to maintain the clearance between adjacent spandrel edges and to permit movement of the interengaged spandrels relative to themselves and the sealing strip, the mastic material insuring a permanent seal.

3. In a building construction, the combination of a spandrel having a groove in its front face along one edge thereof and a flange adjacent said groove and extending rearwardly therefrom, a second spandrel having a tongue on its rear face along one edge thereof, said second-mentioned spandrel having a rearwardly-extending flange adjacent its tongue, said spandrels being adapted to be interengaged to constitute a tongued and grooved joint, the tongue being of

such cross sectional area as to provide a clearance between the spandrels and the tongue and groove, and a mastic sealing material within said groove and in contact with the tongue to form a sealing medium, and detachable securing means having a portion disposed upon the front faces of the spandrels and overlapping the interengaged portions, said means being secured against said rearwardly extending spandrel flanges in a manner to maintain the clearance between adjacent spandrel edges and to permit relative movement between members.

4. A joint construction comprising a member having a groove in its front face adjacent one edge thereof and a rearwardly-depending flange adjacent said groove, a second member having a tongue on its rear face adjacent one edge thereof and a rearwardly-depending flange adjacent said tongue, said members being loosely interengaged with the tongue within the groove and the rearwardly-depending flanges disposed adjacent each other, a sealing strip disposed upon the front faces of said members in overlapping relationship with respect to the interengaged portions of said members, said sealing strip having depending shanks adapted to enter apertures in the second-mentioned member and extend rearwardly between and beyond the depending flanges, means associated with said shanks and depending flanges to secure the members in interengaged relationship, said last-mentioned means constituting a pivot center about which the interengaged members may move relative to each other.

5. A joint construction according to claim 4 in which a mastic sealing medium is incorporated within the interengaged portions of the members.

6. A joint construction comprising a member having a groove in its front face adjacent one edge thereof and a rearwardly-depending flange adjacent said groove, a second member having a tongue on its rear face adjacent one edge thereof and a rearwardly-depending flange adjacent said tongue, said members being interengaged with the tongue within the groove and the rearwardly-depending flanges disposed adjacent each other, the tongue being of such cross section that it does not completely fill said groove and provides a clearance between said interengaged members, a mastic sealing material within said groove in contact with said tongue, a sealing strip disposed upon the front faces of said members overlapping the clearance between said members, said sealing strip having a plurality of depending shanks extending through apertures in said second-mentioned member and extending rearwardly between said flanges and beyond the same, taper pins through said shanks, said taper pins being bent into arcuate contact with the most rearward edges of said flanges, said taper pins constituting pivot centers about which the interengaged members may move relative to each other.

7. A joint construction according to claim 6 in which the sealing strip is provided with a decorative insert within its exterior face.

8. In a building construction, a window sill associated with a facing spandrel, said window sill incorporating an expansion joint which comprises loosely interengaged tongued and grooved members, said members being in spaced relationship in interengaged assembly, means for securing said sill members to the facing span-

drel, and means for preventing moisture seepage through the expansion joint.

9. In a building construction, a window sill associated with a facing spandrel, said window sill comprising adjacent members, one of said sill members having a groove in its top surface adjacent an end thereof, the other sill member having a tongue depending from its rear surface adjacent an end thereof, said members being interengaged with the tongue within the groove in a manner to provide a definite clearance between said members, a mastic sealing material within said groove in contact with said tongue, and securing means for attaching the sill members to the facing spandrel, said securing means being adapted to maintain the said clearance between spandrels.

10. In a building construction, a window sill associated with a facing spandrel, said window sill comprising adjacent members having substantially horizontal portions and depending flanges along the front edges thereof, one of said sill members having a groove disposed in its substantially horizontal portion and depending flange, the other sill member having a tongue depending from the under side of the substantially horizontal portion and depending flange, said members being interengaged with the tongue within the groove in a manner to provide a definite clearance between said members, and a mastic sealing medium within the groove in contact with the tongue, said interengaged sill members being supported upon the top edge of the facing spandrel, a portion of said facing spandrel being cut away adjacent the interengaged portions of the sill members, and a pocket formed integral with the rear face of the facing spandrel adjacent said cut-away portion, whereby moisture collecting within the clearance space between the sill members is directed into the pocket in the facing spandrel and is discharged down the front face thereof.

11. A joint construction comprising a member having a groove in its front face adjacent one edge thereof and a rearwardly-depending flange adjacent said groove, a second member having a tongue on its rear face adjacent one edge thereof and a rearwardly-depending flange adjacent said tongue, said members being loosely interengaged in spaced relationship with the tongue within the groove and the rearwardly-depending flanges adjacent each other, and detachable securing means having a face portion disposed upon said interengaged portions, the said means being secured with respect to the

rearwardly-extending flanges in a manner to maintain the spaced relationship in interengaged assembly and to permit movement relative to the interengaged members and the strip.

12. In a building construction, the combination of a plurality of spaced spandrels the adjacent edges of which are provided with tongued and grooved portions, said tongued and grooved portions being interengaged in spaced relationship to form a flexible joint, and securing means having a portion bearing upon said interengaged edge portions of said spandrels, said means being adapted to maintain the spaced relationship between adjacent spandrel surfaces and to permit relative movement between the said spandrels, and further securing means for attaching the jointed spandrels to a building substructure whereby the spandrels are permitted to move relative to one another and adjust themselves to said substructure.

13. A flexible joint construction between adjacent members having a common face plane, comprising overlapping edge portions interengaged by groove and tongue, both normal to the common face plane, said members having a spaced relationship throughout said interengaged assembly, and securing means associated with said overlapped portions adapted to maintain the members in spaced interengaged assembly.

14. A flexible joint construction between adjacent members having a common face plane, comprising overlapping edge portions interengaged by a tongue and groove, both normal to the common face plane, said members having a spaced relationship throughout said interengaged assembly, a mastic sealing medium within said groove and in contact with said tongue, and a demountable securing means associated with said overlapping portions and being rearwardly secured against said members to maintain the members in spaced interengaged assembly.

15. A flexible joint construction between adjacent members having a common face plane, comprising overlapping edge portions interengaged by a tongue and groove, both normal to the common face plane, said members having a spaced relationship throughout said interengaged assembly, a mastic sealing medium within said groove and in contact with said tongue, and a demountable securing means providing a facing strip for the joint and being rearwardly secured against said members to maintain the members in spaced interengaged assembly.

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