Aug. 26, 1958 J. B. COMPTON 2,848,887

INSULATED FACED WALL

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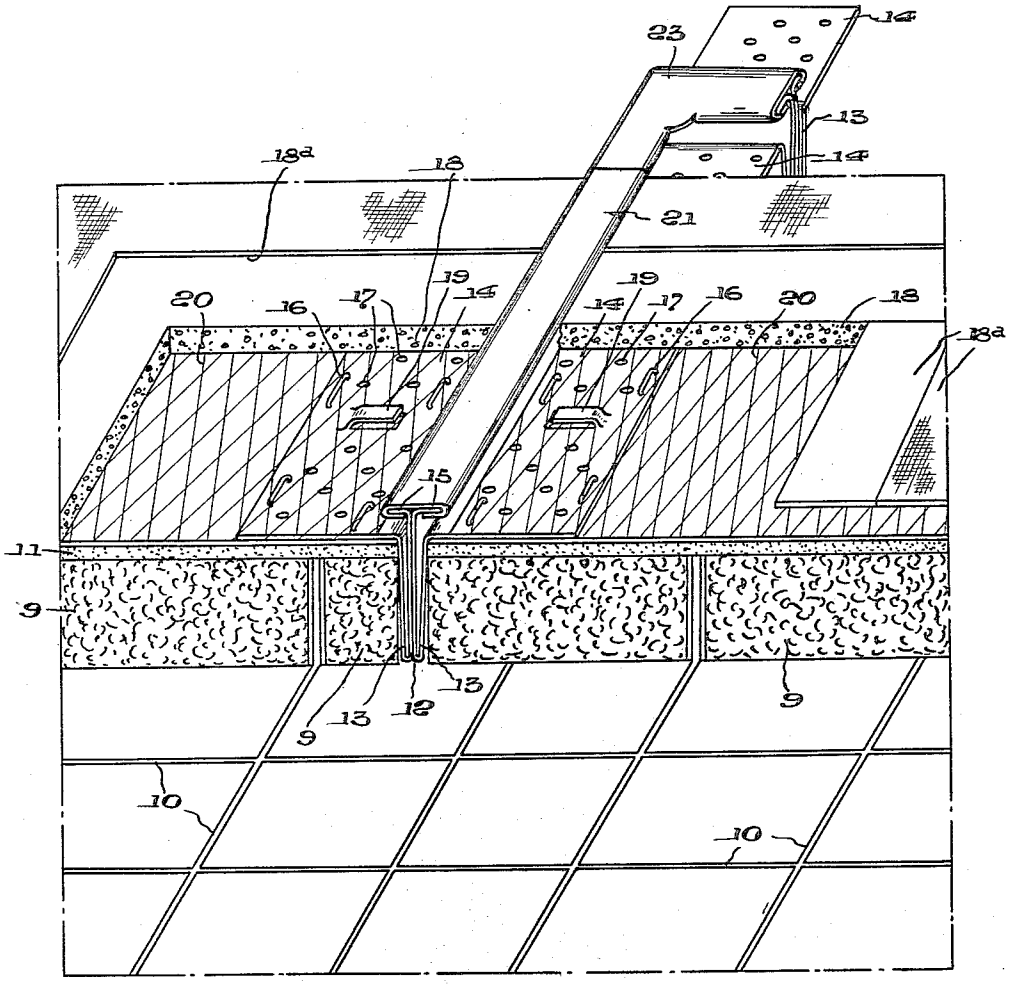


Fig. 1.

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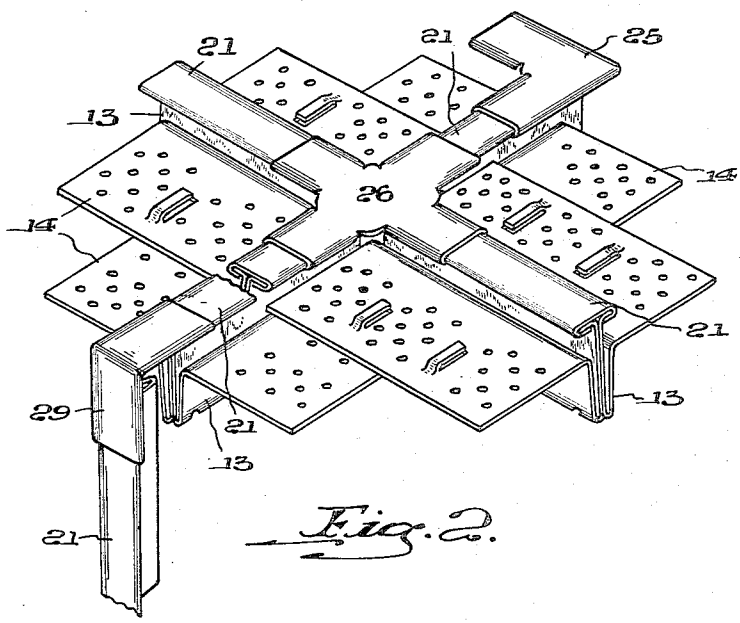


Fig. 2.

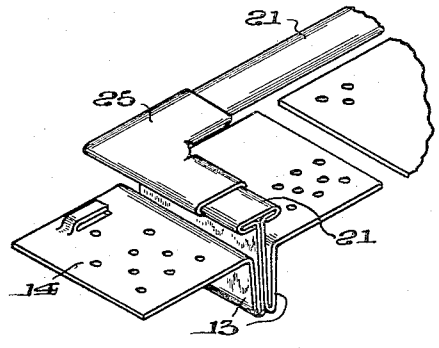


Fig. 3.

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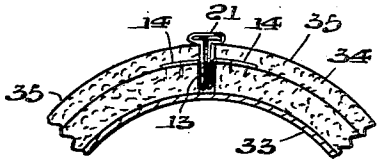


Fig. 4.

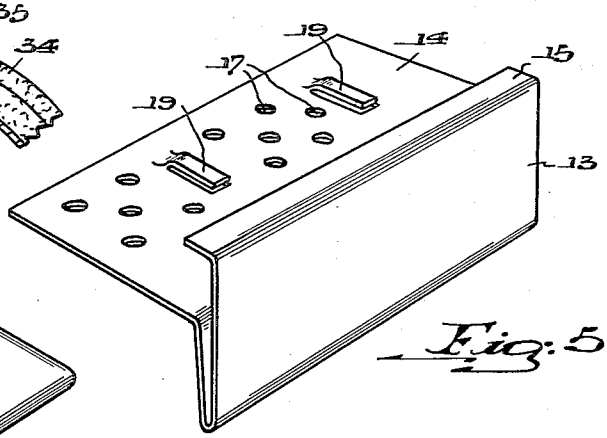


Fig. 5.

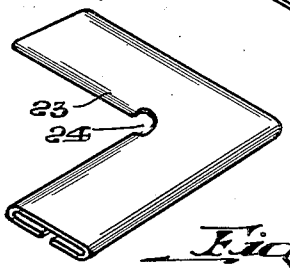
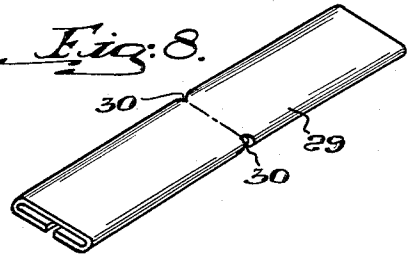


Fig. 6.

Fig. 8.



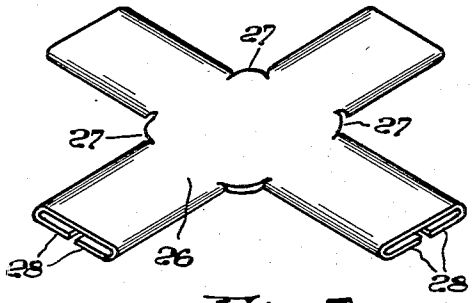


Fig. 7.

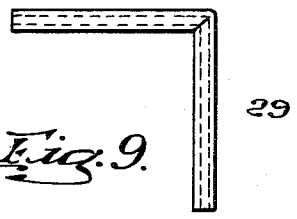


Fig. 9.

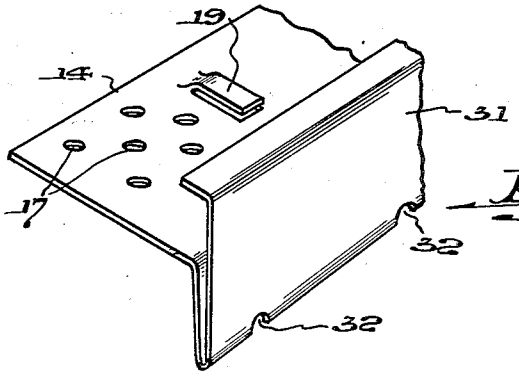


Fig. 10.

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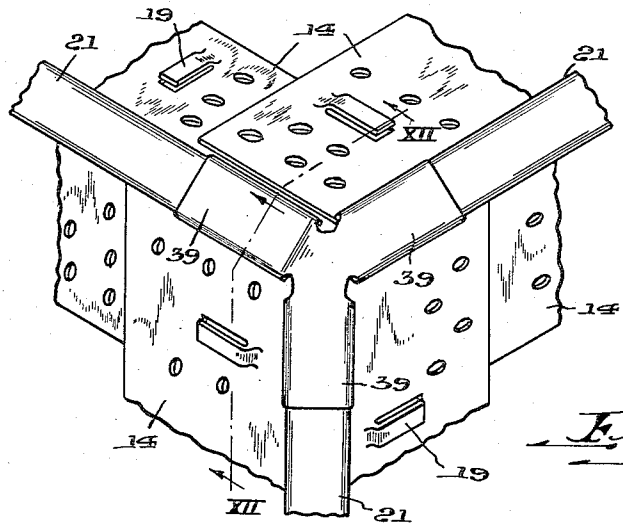


Fig. 11.

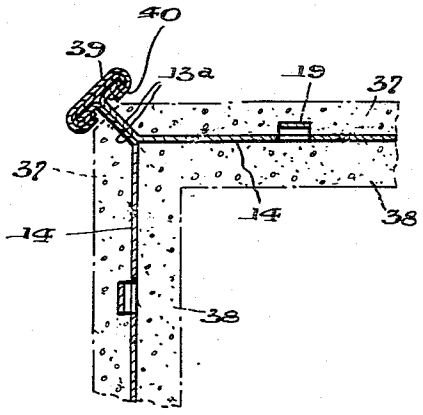


Fig. 12.

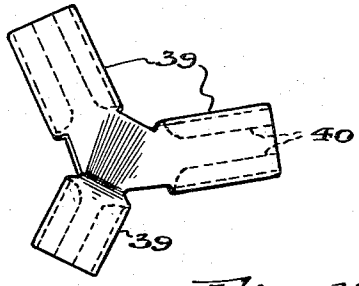


Fig. 13.

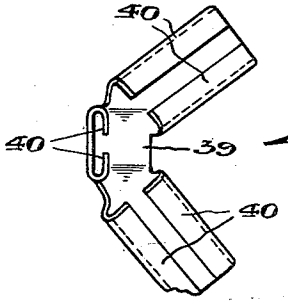


Fig. 14.

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United States Patent Office 2,848,887 Patented Aug. 26, 1958

2,848,887

INSULATED FACED WALL

Jerry B. Compton, Pittsburgh, Pa.

Application February 24, 1955, Serial No. 490,358

4 Claims. (Cl. 72—28)

My invention relates to expansion joints for use with heat-insulating covers on hot-water tanks, boilers, steam pipes, ducts, flues, smokestack lining, breeching for stacks and ovens, and concrete and brick work generally, where wide ranges of temperature may be encountered. The invention embodies an improvement upon and certain modifications of that described and claimed in my application Serial No. 455,950, filed September 14, 1954.

An object of my invention is to provide an expansion joint structure of such form that it will readily expand and contract with materials of the character mentioned, as such material is expanded and contracted through temperature changes.

Another object of my invention is to provide, in connection with heat-insulating blocks or slabs, means for maintaining uniformity of spacing between the slabs, and resisting shifting of such slabs relative to one another to such extent as will result in excessively wide spaces between their opposed edges and consequent loss of heat.

A further object of my invention is to provide an improved form and arrangements of splice members for uniting the expansion joints that extend angularly relative to one another, whether in a common plane or in planes at right angles to each other.

As shown in the accompanying drawings,

Figure 1 is a perspective view showing one form of the invention, in a partially completed structure;

Fig. 2 is a perspective view showing expansion joint elements disposed at right angles to each other, together with splicing members that serve to interlock the expansion strips and their cap elements where they meet with one another at various angles;

Fig. 3 is a view showing the manner in which two expansion strips are connected and firmly held together in a common plane and at right angular relationship to each other;

Fig. 4 is a view showing the manner in which the joint is employed in connection with insulating wall members that are disposed in circular or semi-circular arrangement about a pipe;

Fig. 5 is a perspective view, on an enlarged scale, of one element of the joint expansion strip of Fig. 1;

Fig. 6 is a view, on an enlarged scale, showing the corner splice of Fig. 3 more in detail;

Fig. 7 is a perspective view, on an enlarged scale, of the centrally-positioned splice member of Fig. 2;

Fig. 8 shows, in detail, one of the splice members of Fig. 2 before it is bent to engage cap strips which are respectively disposed in vertical and horizontal planes;

Fig. 9 shows the strip of Fig. 8 after bending;

Fig. 10 shows a modification of the strip member of Fig. 5;

Fig. 11 shows expansion elements for three relatively angular joints at a corner;

Fig. 12 is a view on the line XII—XII of Fig. 11, and

Figs. 13 and 14 are perspective views of the splice elements of Fig. 11.

My joint structure is adapted for use in connection

with insulating bricks or slabs **9** of conventional form that are applied to the exterior surfaces of containers or other bodies that are to be heat-insulated. Owing to the wire ranges of expansion and contraction, calking or filling material interposed between opposed edges of blocks of this character will not maintain a close fit with the edges or side walls of the blocks, under repeated temperature changes. Also, the blocks will sometimes shift relative to one another, so that there will be non-uniform spacing between the blocks with consequent excessive spaces and ruptured or weakened joints at some locations.

Instead of simply placing calking material within and overlying the joint, I provide a metal joint structure that will not only maintain the blocks in approximately their original relative positions, but will more effectively seal the joints and prevent forming of cracks or fissures that would allow escape of heat.

When the blocks **9** are placed in position upon a container or the like that is to be insulated, certain of their opposed edges are spaced apart slightly to permit of expansion without buckling.

In Fig. 1, I show the manner in which the expansion joint is employed in connection with the bricks or slabs **9** interlocked with a wire mesh **10** and covered by plaster **11**. Spaces of considerable width are present at various points between the bricks **9**, as indicated at **12**, to allow for expansion under temperature changes. In order to seal this space against the escape of heat and to prevent accumulation of dirt therein, I provide two sheet metal strips **13**, one of which is shown more clearly in Fig. 5. They are bent or loosely folded to provide for contraction under mechanical forces that are exerted through expansion of the bricks **9**. The members **13** comprise the main body portion of the expansion joint and will be made of steel or other sheet material that will withstand the high temperatures and whose bends or folds will assume their normal positions shown in Fig. 1, when pressure is removed therefrom, upon contraction of the bricks **9**, as they become cooled.

Each member **13** has a wing **14** and a flange **15**. The wings are fastened to the adjacent bricks **9** by staples **16** or the like, and are provided with holes **17** into which a covering layer **18** of plastic material such as an asbestos magnesium mixture or kaolin will protrude somewhat to interlock the layer **18** with the wings. Canvas **18a** or other thin coating covers the layer **18**. Also, tongues **19** are provided on the wings, for hooked engagement with wire mesh **20** that will become partially embedded in the layer **18**.

A cap strip **21** serves to hold the two expansion members **13** in close fitting relation to each other and to prevent the escape of heat and the entry of dirt between these members **13**. The strip can be made of steel or other suitable material.

In order to effect a close seal at the meeting ends of joint strips that are disposed at right angles to each other, and to firmly lock them together, I provide a cap member **23** of angular form in the manner shown in Fig. 1, the strip being similar to the cap strip **21** but having a notch **24** formed therein as shown in Fig. 6, to facilitate bending of the same to right angular shape.

An alternative arrangement is shown in Fig. 3, wherein two cap strips **21** which are at right angles to one another are connected by a splice member **25** of angular form which may be shaped from a strip of steel or the like in the same manner as the angle of Fig. 6. The splice angle **25**, of course, gives a joint having greater strength than the joint at **23** of Fig. 1.

Where expansion joints at right angles to one another intersect in generally crossed relation, I provide a splice member **26** of sheet metal or the like having four arms each of which has telescopic fit with a cap strip **21** of

the adjacent expansion members **13**. These arms not only cover breaks in longitudinal joints where they intersect, but firmly hold the various expansion joint members in alignment with one another. In forming the member **26** from a flat sheet of steel or the like, notches are provided therein at **27** (Fig. 7) to facilitate bending the edges of each arm to form the flanges **28** that interlock with the cap strips **21**.

When connection is to be made at a corner where two joint strips **13** and their respective cap members **21** are in walls that are at right angles, a splice strip **29** is provided, as shown in Fig. 2, the member **29** being formed from a blank that is notched as at **30** in Fig. 8, to facilitate bending of the same into angular form as shown in Figs. 2 and 9. This splice member has telescopic engagement with the horizontal and vertical cap strips **21**.

In Fig. 10, is shown a joint strip **31** that corresponds to the joint strip member **13** of Fig. 5, but in this case, notches **32** are provided in the fold of the strip for the venting of gaseous pressures.

The joint can be incorporated also in insulating coverings of circular form that cover a pipe or conduit **33**, as indicated in Fig. 4. In most cases, the bent slabs or curved blocks **34** will be of semi-circular form and two joints will be provided. In each case, the joint strip **13** will be of approximately the form shown in Fig. 1, but with the wings **14** bent to arcuate form to lie on the faces of the bent slabs **34** and being overlaid by the outer plastic layers **35**.

Referring now to Figs. 11 to 14, I show an arrangement for sealing three joints where two vertical walls and a horizontal wall meet at a corner of the structure to be insulated. In this case, cap strips **21** correspond to the cap strips of the other figures and connect the members **13***a* in the same manner. The wings **14** extend between slabs or bricks **37** and **38** as do the wings **14** in Fig. 1, which lie between the layers **9** and **18**.

A splice member **39** of generally Y-form and having its arms inturned to form flanges **40** has telescopic fit with the cap strips **21**, to thereby maintain a tight joint at the corner where the two vertical walls and the top wall meet.

I claim as my invention:

1. An insulated structure comprising a base wall and a plurality of slab-like insulating members disposed thereover, expansion joints between the adjacent edges of said members, said joints comprising a pair of resilient strips, each bent along a longitudinal median line and forming a fold therein, the folds being positioned side-by-side between the adjacent edges of the two slab-like members, oppositely extended wings integral with the remote sides of the folds and each wing lying upon and secured to the slab-members, the outer side of each fold diverging outwardly relative to its inner side and the inner side of each of the folds extending vertically and disposed in flat-wise engagement with each other, oppositely projecting flange-like members integral with said vertical sides at the outer edges thereof, said flanges occupying a common horizontal plane substantially parallel to but spaced outwardly from the plane of the wings, a cap strip overlying the flange-like members and having its edges inturned into snug fitting relation with the flange members, thereby holding them tightly together, and means connecting the wings to the slab faces, there being clearance normally existing between the slab members and the strips at their fold lines and close engagement between the abutting edges of the slab members and the flared sides of the strips at areas adjacent the wings.

2. An insulated structure as recited in claim 1, with layers of cementitious material interposed between the wings and the cap strip.

3. An insulated structure as recited in claim 2, with wire mesh embedded in and reinforcing said cementitious material, said mesh being connected to said wings.

4. An insulated structure as recited in claim 2, and which includes fibrous protective sheets disposed against the outer faces of the cementitious layers and extending beneath the cap strip.

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