Jan. 13, 1942. A. C. FISCHER 2,269,449

EXPANSION JOINT ACCESSORY

Filed April 8, 1938

Fig. 1.

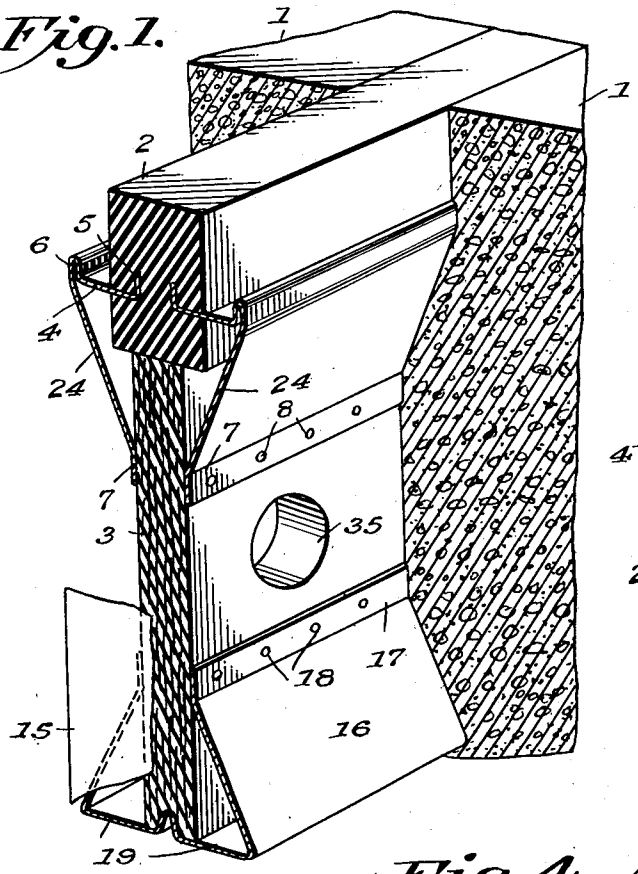


Fig. 2.

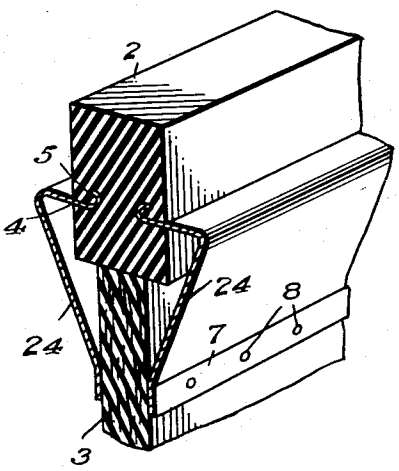


Fig. 4.

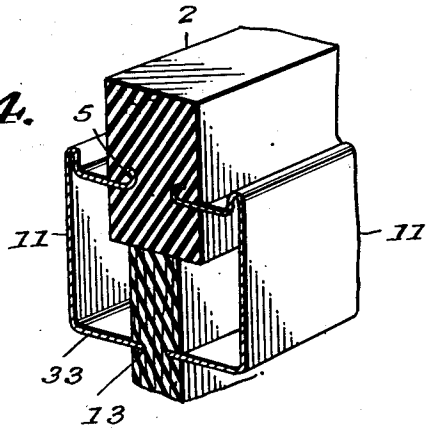
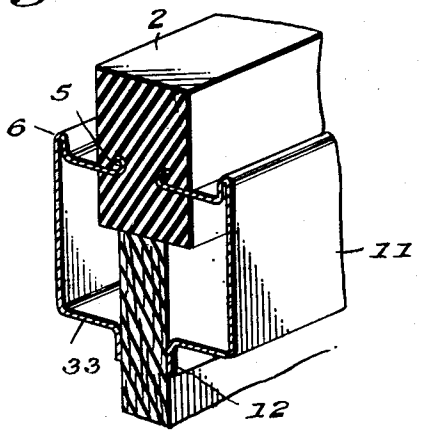


Fig. 3.



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EXPANSION JOINT ACCESSORY

Albert C. Fischer, Chicago, Ill.

Application April 8, 1938, Serial No. 200,998

8 Claims. (Cl. 94—18)

This invention relates to expansion joint accessories and more particularly to arrangements of expansion joints for structural assemblies such as paving sections which are designed to maintain their integrity and tightness over a long period of time.

It is the object of the present invention to provide an expansion joint assembly fitted with one or more extrusion chambers for the joint material which is subjected to deformation and cold flow in response to the expansive and contractile movements of the structural sections.

It is a further object of the invention to provide an expansion joint assembly incorporating a yieldable filler or crown which is moved or flexed in response to the movements of the structural units which it bridges in order to maintain the joint tight for all positions of the structural units.

It is a further object of the invention to provide an expansion joint which may be preformed at low cost and which may be put into place at the time of the installation by simply pouring the monolithic structural elements therearound.

Other objects and purposes will appear from the more detailed description following hereinafter taken in conjunction with the accompanying drawing, wherein:

Figure 1 is a perspective view with certain parts in section showing the structural arrangement of my improved expansion joint;

Figure 2 is a perspective view of a modified form of the invention; and,

Figures 3 and 4 are perspective views of different embodiments of the invention showing different modes of affixing the extrusion chamber walls to the core of the expansion joint.

In Figure 1 are shown tow spaced structural elements 1 which have been illustrated as paving sections. An expansion joint bridges the gap between the two paving sections 1, the integrity or tightness of which is desired to be maintained under all conditions of expansion and contraction of the paving sections in response to temperature variations.

The body of the expansion joint is composed of a main portion consisting of a plastic core 3 of a self-sustaining material which is subject to deformation and cold flow in response to pressure forces exerted thereupon, of the type well known in the art. A crown 2 is superposed upon the core 3 and is formed of a yieldable material such as cork or rubber. A metallic sheet 4 is embedded on the opposite sides of the crown as by a flange 5 and extends therefrom outwardly along a shelf or plateau 4 and then downwardly along the portion 24 to each of the sides of the plastic core. The protruding and reentrant configuration of the sheet material 4 forms a chamber adjacent to the plastic core which operates as an extrusion chamber for receiving the core material upon the expansion of the paving sections. The free end 7 of the sheet material may be attached to the core by pins, rivets, and the like, or the same may engage the core by the natural resiliency of the sheet material. On the other hand, as shown in Figure 4, the lower extremity of the sheet material may be embedded within the plastic core.

A support for the expansion joint as well as the auxiliary extrusion chambers may be formed at the lower end of the plastic core by the provision of sheet material 16, preferably of metal, formed of a base support section 19 and an upwardly extending portion which terminates at the extremity 17 which may be attached to the core by pins or rivets 18.

The extrusion chambers may be closed at the end portions by walls 15 formed of any suitable material, such as metallic plates, sponge rubber, or mastic material.

One of the features of the present invention is the provision of a projection 6 formed in the metallic channel extending from the plateau 4 which engages the monolithic structural elements which the latter are cast around the expansion joint. By virtue of this engagement, the movements of the structural elements are positively transmitted to the crown portion 2 in which are embedded the extremities of the metallic sheets 4. In view of the fact that the crown portion is made of yieldable material, a flexing of the crown takes place in order to maintain the joint tight to prevent the seepage thereinto of water and other destructible elements such as sand. In addition, the reservoirs for the plastic core material formed by the confines of the channel surfaces 4 and 24 prevent an extrusion of the material from the joint upon the expansion of the slabs but serve to store the material for return to the joint when the need therefor arises. The provision of the extrusion chambers also prevents the entry of the moisture and sand to the base of the concrete slabs.

Whereas the upstanding projections 6 at about the level of the engagement or the anchoring of the metallic sheets 4 with the yieldable crown 2 is a preferred embodiment of the invention, definite advantages result from the arrangement of the parts generally shown in Figure 1 without

the provision of this feature. For example, in Figure 2 is shown an assembly without any deformation in the extrusion chamber walls for obtaining a locking engagement with the monolithic slabs.

The extrusion chambers may assume different configurations, and while the same are shown as triangular in Figures 1 and 2, they may be rectangular as shown in Figures 3 and 4, or they may be curved or bowed. Furthermore, the free ends of the expansion chamber adjacent the core may be attached thereto at the faces thereof as shown at Figure 3, or they may be embedded therein as shown at 13 in Figure 4.

The expansion joint assembly may be fitted with any expedients known in the art such as translode devices or dowel bars extending therethrough to realize the advantages of such constructions. For example, aperture 35 as shown in Figure 1 for the mounting and disposition of such expedients. Furthermore, any devices known in the art may be utilized by positioning the expansion joint in place while pouring the concrete therearound. For example, the teachings in my Patent No. 2,106,944, February 1, 1938, for Paving, may be availed of in the practicing of the present invention.

It is understood that different forms of projections for locking the extrusion chamber walls within the structural slabs may be availed of in lieu of the continuous ridge 6 shown in Figures 1, 3 and 4. Slightly displaced distortions of the sheet material may be adequate to obtain the desired anchoring. Apertures in the sheet material also may be utilized for this purpose.

Various other changes may be made other than those suggested above in order to realize the advantages of the present invention and the specific forms of the invention illustrated and described herein merely serve for the purpose of illustration.

What I claim is:

1. A structural assembly comprising spaced structural elements adapted to have disposed therebetween an expansion joint composed of a resilient filler at the top thereof and a separate plastic mass subject to deformation and cold flow below said filler, a metallic sheet anchored within each of the opposite sides of said filler and bent to form a chamber adjacent to said plastic mass operating as an extrusion chamber for receiving said mass upon the expansion of said structural elements, said sheets being formed with projecting ridges integrally therewith for engagement within said structural elements and movement therewith, whereby said resilient filler is moved correspondingly to provide an effective seal for all positions of said structural elements.

2. A structural assembly comprising spaced structural elements adapted to have disposed therebetween an expansion joint composed of a resilient filler at the top thereof and a separate plastic mass subject to deformation and cold flow below said filler, a metallic sheet anchored within each of the opposite sides of said filler and bent to form a chamber adjacent to said plastic mass operating as an extrusion chamber for receiving said mass upon the expansion of said structural elements, with the free end of each of said metallic sheets attached to said plastic mass, each of said sheets having a projection bent therein along the complete length thereof for engagement within said structural elements whereby said resilient filler is moved correspondingly with said structural elements, and end closure members for said chambers.

3. A paving construction comprising spaced paving sections having a deformable expansion joint disposed therebetween, said expansion joint being composed of a main body of a plastic material and a resilient filler above said main body, a sheet metal member anchored at the upper end of each of the opposite sides of said joint on the inside of said filler extending outwardly and downwardly to form a chamber adjacent to the main body of said joint, and means forming part of said sheet metal member for anchoring the same on the opposite sides of said joint to said paving sections to cause a movement of said joint including said resilient filler according to the movement of said paving sections.

4. A paving construction comprising spaced paving sections having inserted therebetween a resilient filler at the upper end thereof adjacent to the top surface of the paving sections, a separate plastic mass subject to deformation and cold flow below said filler, and sheet material anchored on the inside of said filler and extending therefrom in protruding and reentrant formation to define a chamber adjacent to said filler and plastic mass for receiving the latter upon the expansion of said paving sections.

5. A paving construction comprising spaced paving sections having inserted therebetween a resilient filler at the upper end thereof, a separate plastic mass subject to deformation and cold flow below said filler, sheet material anchored within said filler and extending therefrom in protruding and reentrant formation to define a chamber adjacent to said filler and plastic mass for receiving the latter upon the expansion of said paving sections, and projecting edges formed in said sheet material substantially along the level of the anchoring of the sheet material in said filler to flex said resilient filler according to the movements of said paving sections.

6. A paving construction comprising spaced paving sections having inserted therebetween a resilient filler at the upper end thereof adjacent to the top surface of the paving sections, a separate plastic mass subject to deformation and cold flow below said filler between said paving sections, metallic sheet material anchored within said filler and extending therefrom in protruding and reentrant formation to define a chamber adjacent to said filler and plastic mass for receiving the latter upon the expansion of said paving sections, and means for attaching the free ends of said metallic sheet material to said plastic mass.

7. A paving construction comprising spaced paving sections having inserted therebetween a resilient filler at the upper end thereof adjacent to the top surface of the paving sections, a separate plastic core subject to deformation and cold flow below said filler and between said paving sections, metallic sheeting anchored within said filler and extending from opposite sides thereof in protruding and reentrant formation to define a chamber adjacent the opposite sides of said filler and plastic mass for receiving the latter upon the expansion of said paving sections, and additional metallic sheeting attached to the lower end of said plastic core for defining chambers adjacent the opposite sides thereof.

8. A paving construction comprising spaced paving sections having a deformable expansion joint disposed therebetween formed by a resilient filler at the upper end thereof adjacent to the top surface of the paving sections and a separate

plastic core subject to deformation and cold flow therebelow, a metallic sheet anchored within said filler and extending from each of the opposite sides thereof in protruding and reentrant formation to define a chamber adjacent to each of the opposite sides of said expansion joint, each of said chambers adapted to receive the plastic mass upon the expansion of said paving sections, means for attaching each of the free ends of said sheets to said plastic core, and end walls for the chambers for confining the material extruded therein.

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