April 25, 1933. A. C. FISCHER 1,905,375

CONSTRUCTIONAL UNIT

Filed July 29, 1926

Fig. 1.

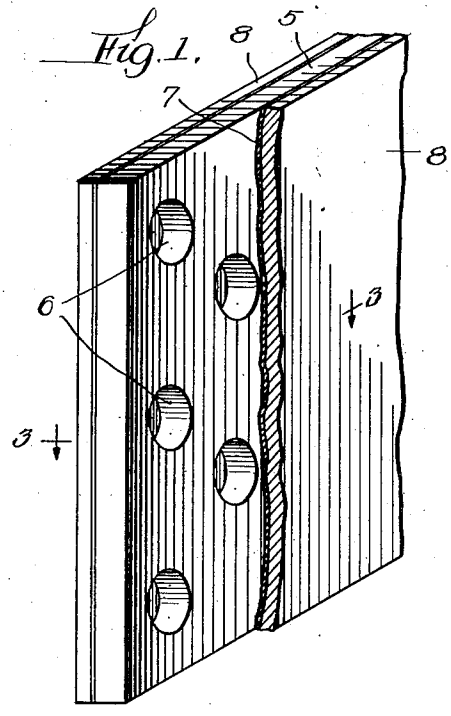


Fig. 2.

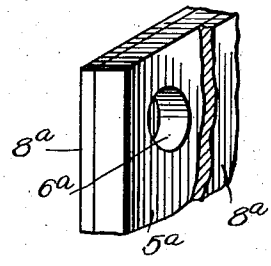


Fig. 3.

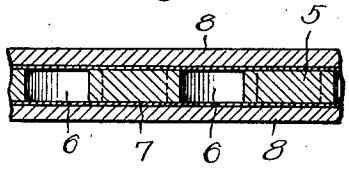
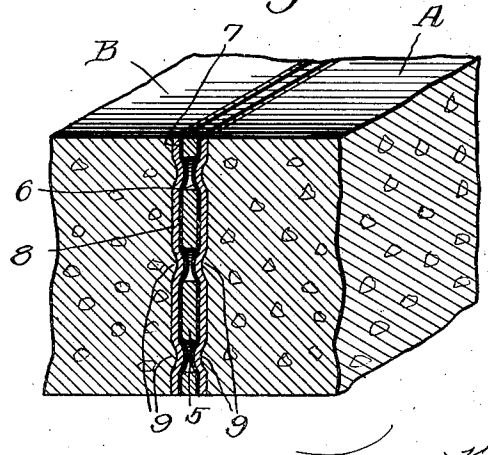


Fig. 4.



Inventor

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Patented Apr. 25, 1933 1,905,375

UNITED STATES PATENT OFFICE

ALBERT C. FISCHER, OF CHICAGO, ILLINOIS, ASSIGNOR TO THE PHILIP CAREY MANUFACTURING COMPANY, A CORPORATION OF OHIO

CONSTRUCTIONAL UNIT

Application filed July 29, 1926. Serial No. 125,738.

This application is a continuation in part of my application Serial No. 336,713, filed November 8, 1919, for Air, moisture, and soundproof structures, and method of and material for producing same.

The present invention relates to expansible and compressible constructional sheets or slabs, more particularly expansion joints, which are preformed and adapted to be inserted between rigid and unyieldable units to provide for contraction and expansion.

The subject matter of the present invention is typified by a multiple layer expansion joint employed in a paving structure in which a perforated layer or layers are presented next to the surfacing sheets, with the surfacing sheets preferably adhered thereto and adapted to develop surface depressions upon the application of external pressure to the joint when the same is installed and the concrete sections poured around the same. The surfacing sheets in this connection also act in the capacity of sealing sheets, sealing the perforations and thus providing dead air pockets in the joint structure.

Proceeding on the principle as above described I am enabled to produce expansion joints which will offer the advantages above noted and at the same time one in which surface depressions may be readily developed so as to anchor, so to speak, the joint with the concrete sections between which it is installed. This latter result is produced by the concrete pressing against the sides of the joint and sinking restricted areas of the surface layers into the perforations so that knobs or buttons are made in the concrete which interlock with the joint and prevent the joint from creeping or otherwise becoming changed in its intended installed position.

The salient features of the present invention are illustrated in the accompanied drawing in which;

Figure 1 is a perspective view of a portion of an expansion joint constructed in accordance with one form of my invention and showing a portion of the surfacing or sealing sheet broken away;

Figure 2 is a perspective view of a portion of an expansion joint showing a modified form of my invention;

Figure 3 is a cross section taken on line 3—3 Figure 1, looking in the direction of the arrows, and;

Figure 4 is a perspective view of concrete sections illustrating the application of my invention.

Referring now to the drawing in detail, I preferably construct the joint from multiple layers of materials suitable for the purpose, for instance as illustrated in Figure 1, I would employ a relatively thick sheet 5 of felt paper or any other desired material or a composition of material, such as a combination of various materials preferably those materials which are capable of absorbing a saturant of a waterproofing nature. This sheet 5 is constructed with perforations 6, a multiplicity of these perforations being made in a sheet, but care should be taken that the sheet is not perforated to such an extent that its structure is materially weakened. Using this sheet 5 as an intermediate sheet or layer, I can apply a coating or a thickness, or even a substantial layer of mastic 7 and surface both sides of the mastic 7 and likewise the perforated sheet with sheets 8. These sheets may be produced from the same material as sheet 5 and also waterproofed as explained with reference to sheet 5, but they would not necessarily need to be as thick as sheet 5. The thickness of the sheets 8 as well as the thickness of the mastic 7 will of course depend on the thickness of the composite structure, in other words if an expansion joint was to be made with a thickness of three-fourths of an inch and the intermediate sheet was to be the thickest, the sealing sheets and mastic would make up the difference in the thickness.

The mastic coating on layer 7 may be developed in various ways, for instance, considering the same as an adhesive mastic with more or less lasting fluidity it may be developed from any one of many known sources and simply applied by a brush or else by dipping the intermediate sheet 5 in

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the same or dipping sheets 8 or applying it to the sheets 8 by a brush or otherwise.

As another means of developing this adhesive mastic coating I may over-saturate either the sheet 5 or else sheets 8 to leave a surplus on the surface of the sheets or else as shown in Figure 2, I may use an intermediate layer 5^a which is produced from bituminous material treated in such a way as to present an adhesive surface to which the sheets 8^a will adhere. Perforations 6^a may be used in this connection as in the case of sheet 5. Should the intermediate sheet or layer be made as a preformed bituminous strip 5^a, it may be desirable to employ some filling material as a flow retarder as well as to add more or less rigidity to the structure. Such a filling material may be derived from subdivided fibrous material as an example.

When a joint such as described is installed between concrete sections A and B, as shown in Figure 4, the pressure of the concrete will sink the restricted areas of the sealing sheets into the perforations and thus develop surface depressions which produces knobs or buttons 9 in the concrete, with the result that the joint is more or less interlocked with the concrete and firmly held in place. Aside from this result, the perforations being covered by the sealing sheets 8, will provide dead air pockets which will aid the joint to properly function.

One of the outstanding features of a joint made in accordance with the form shown in Figure 2 is the possibility of using a layer 5^a made up of an elastic composition such as a rubber oil or a mixture of rubber oil and bituminous material, made up in proportions so as to develop an elastic strip, so to speak. A strip in this capacity is adapted to expand upon the application of external pressure to the joint and contract to its original size and shape upon release of the pressure. Upon expanding, the perforations 6^a will provide spaces which may be occupied by the material of the strip thus releaving the possibility of the strip being forced up out of the joint. In other words, upon application of pressure the expanded material must go some place and perforations prevent the material from expanding out of the joint.

I claim:

1. Constructional material embodying in its construction an intermediate perforated sheet, surfaced with sealing sheets closing said perforations.

2. An expansion joint comprising a perforated sheet having upon its surface an adhesive mastic, and sealing sheets overlying said perforated sheet and closing the perforations therein.

3. A multiple layer expansion joint embodying in its construction an intermediate perforated layer having upon its surface an adhesive mastic, and sealing sheets overlaying said perforated sheet and closing the perforations therein, said overlying sheets adapted to sink into said perforations upon the application of external pressure; whereby the joint will develop a multiplicity of surface depressions when concrete is poured around the same.

4. An expansion joint comprising a plurality of superimposed sheets, the sheet next to the surface sheet being perforated and the outside sheet adapted to develop surface depressions when the joint is installed due to the application of external pressure over the cut out areas of the perforated sheet.

5. An expansion joint embodying in its construction super-imposed layers, one of said layers comprising a perforated elastic body, surfaced with sealing layers closing said perforations.

6. An expansion joint comprising a plurality of alternating perforated and non-perforated superimposed sheets adhered together by an adhesive mastic material.

7. Constructional material embodying in its construction an intermediate perforated sheet surfaced with sealing sheets, there being a normally tacky adhesive material between said intermediate sheets and said surface sheets.

8. A paving structure comprising sections of rigid paving units separated by a laminated expansion joint strip which embodies in its structure a perforated core and imperforated facing layers.

9. A paving structure comprising sections of rigid paving units separated by a laminated expansion joint strip which embodies in its structure a perforated elastic core and imperforated waterproof facing layers.

10. A paving structure comprising sections of concrete separated by a laminated expansion joint strip which embodies in its structure a perforated core and imperforated facing layers, said concrete section interlocking with the facing layers in the areas over the perforation in the core.

11. As an article of manufacture, an expansion joint board comprising a body of asphalt or suitable bituminous material, perforated with a series of holes covered and reenforced by strips of suitable side-surfacing material.

12. A constructional strip comprising a body of elastic material provided with a series of recesses and reenforced by strips of suitable side surfacing material.

13. An expansion joint strip comprising a body of elastic material provided with a series of recesses and reenforced by strips of suitable side surfacing material.

Signed at Chicago, Illinois, this 27th day of July, 1926.

ALBERT C. FISCHER.