March 19, 1929. A. C. FISCHER 1,706,110

EXPANSION JOINT

Filed Aug. 21, 1926

Fig. 1

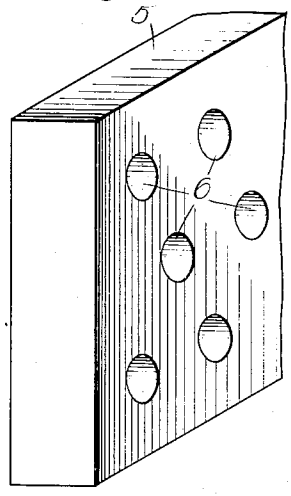


Fig. 2

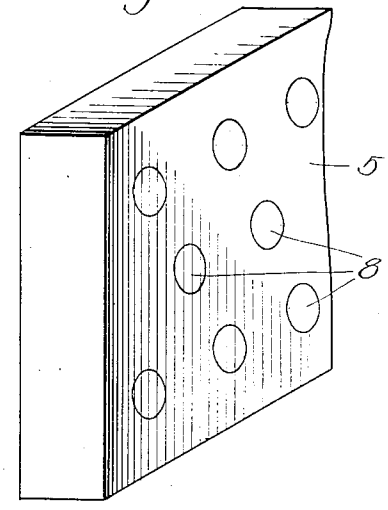


Fig. 3

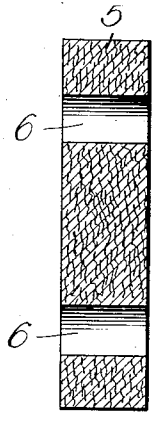


Fig. 4

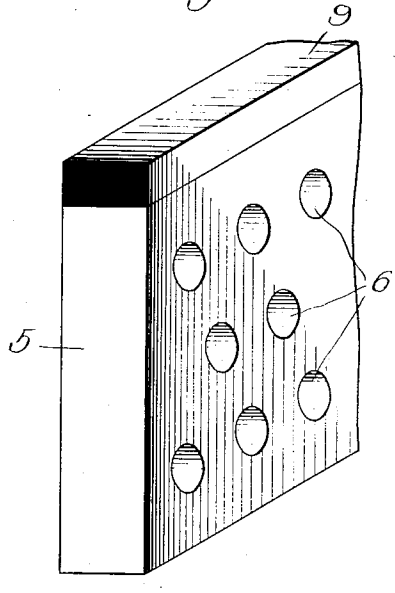
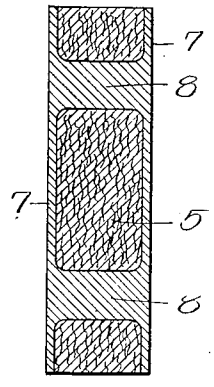


Fig. 5



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UNITED STATES PATENT OFFICE.

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

EXPANSION JOINT.

Application filed August 21, 1926. Serial No. 130,685.

This invention relates to preformed expansion joint material and has particular reference to a preformed strip suitable for this purpose, which, owing to its peculiar construction and functioning effect acts in the capacity of a self-healing joint, so to speak.

Very often in expansion joint installation difficulties are experienced in affecting a bond between the sides of the expansion joint and the confronting ends of the concrete sections between which the joint is installed, with the result that contraction of the sections leaves spaces which become filled with refuse from the surface of the roadway, rain-water seeps in, and the joint then becomes more or less inefficient.

The purpose of my present invention is to provide means for not only affecting a bond between the joint and the sections, but to also provide means for supplying a goodly quantity of mastic adhesive to the sides of the joint at all times, so that the same may act in the capacity of a filling medium, so that in the event spaces should occur between the joint and the sections, due to extreme contraction, there will always be sufficient mastic present to fill the spaces and thus keep the joint properly filled and waterproofed at all times.

The preferred means for realizing the above results is illustrated in the accompanying drawing, in which Figure 1 is a perspective view of a portion of a preformed strip of expansion joint material, showing perforations which accommodate the mastic adhesive. The perforations in this figure being unfilled.

Figure 2 is a similar view showing perforations filled with the mastic adhesive.

Figure 3 is a cross section of the unfilled joint, as shown in Figure 1.

Figure 4 is a perspective view of a joint constructed in accordance with the form shown in Figure 1, but having a crown applied thereto.

Figure 5 is a cross section of a joint constructed in accordance with the form shown in Figure 1, showing the perforations filled and with mastic applied to the sides.

Referring now to the drawing in detail. 5 represents a preformed strip made from any material suitable for the purpose, such, for instance, as a composition of bituminous material with fibrous material incorporated therein, or else it may be simply a matted mass of fibrous material. In other words, the fibrous mat-like structure may be waterproofed or unwaterproofed, according to requirements.

Regardless of the material entering into the construction of the strip it will comprise a preformed structure with a multiplicity of perforations in the thickness thereof. These perforations serve as separate cartridges, so to speak, so that when the same are filled with a mastic adhesive, and the joint is installed between sections of paving, upon the application of pressure to the sides of the joint, due to expansion of the sections, the mastic adhesive carried in these perforations as cartridges will ooze over the sides of the joint and fill up any crevices or spaces which may occur between the joint and the concrete.

This same result is realized upon contraction of the paving sections, in that as the sections tend to pull away from the joint the suction thus created will pull the mastic out of the perforations, and if the same is of the right fluidity it will flow into any crevices that may be present, as will hereinafter follow.

When the mastic has been pulled out of the perforations, due to contraction of the sections, and the resultant suction therefrom, and upon expansion of the sections the mastic on the sides of the joint will be forced into any crevice that might be present.

A joint constructed as above explained is practically a self-healing joint, in that it contains a sufficient quantity of mastic adhesive in the interior structure of the joint which is only used when the same is pulled out or pressed out of the perforations. With this condition present there need not be an objectionable amount of free mastic on the sides of the joint which will ooze out of the top of the joint on expansion of the sections. Even if it is present on the outside of the joint when the sections expand, instead of being forced out of the top of the joint the excess of the mastic will be forced back into the perforations.

These results are more or less dependent on the pressure produced by expansion of the sections, as well as the pull produced by contraction of the sections, and it, of course, will be appreciated that the mastic

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may be extruded from the perforations upon expansion of the sections, providing the expansion is severe enough to produce the pressure required to squeeze it out. If the pressure thus produced is not severe it will simply force the mastic back into the perforations without extruding the same. The same principle applies to the result upon contraction of the joint. If the pull is severe the mastic will be pulled out of the perforations, but if it is simply a nominal degree of contraction the pull as a result will not go any further than affecting the mastic on the sides of the joint.

As a modification I might even coat the sides of the joint with the same kind of mastic adhesive as indicated at 7 in Figure 5, the perforations thus being filled as at 8, the same as shown in Figure 2.

As a modified form I may decide to use a crown for the joint, as at 9 (see Figure 4). This crown being a more or less mastic composition, such, for instance, as oxidized asphalt with fibrous filling material. The crown in this respect would be very soft so that it would mushroom readily and seal the crown of the joint in combination with the mastic on the sides of the joint as a result of filling the perforations. The mastic adhesive may be a composition comprising bituminous material with a flow retarder incorporated therein, such as, finely divided fibrous material, or else a composition suitable for the purpose may be developed by the further addition of rubber latex or dissolved rubber. A good material suitable for the purpose would be a grade of asphalt flux of the desired fluidity, the idea being that it should not be thin enough to run but at the same time it should respond to pressure so as to sluggishly flow in response to pressure.

I claim:

1. An expansion joint, comprising a preformed perforated strip, of a thickness to provide a complete joint, the perforations in said strip being filled with a mastic of sufficient fluidity to flow in response to changes in dimension of the space in which the joint is installed.

2. An expansion joint, comprising a preformed strip of a thickness to provide a complete joint and having sockets formed therein, the sockets in said strip being filled with adhesive mastic of sufficient fluidity to flow in response to changes in dimension of the space in which the joint is installed.

3. An expansion joint, comprising a preformed perforated strip of matted fibrous material, and of a thickness to provide a complete joint, the perforations in said strip being filled with mastic adhesive material of sufficient fluidity to flow in response to changes in dimension of the space in which the joint is installed.

4. An expansion joint constructed of a single strip of compressible material of a thickness to provide a complete joint, said strip having perforations therein, and said perforations being filled with a mastic.

5. An expansion joint constructed of a single strip of compressible material of a thickness to provide a complete joint, said strip having perforations therein, and said perforations being filled with a mastic, and a soft plastic crown along the edge of said strip.

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