Dec. 10, 1935. H. C. JUSSEN 2,023,529

EXPANSION JOINT FILLER

Filed July 5, 1929

Fig. 1.

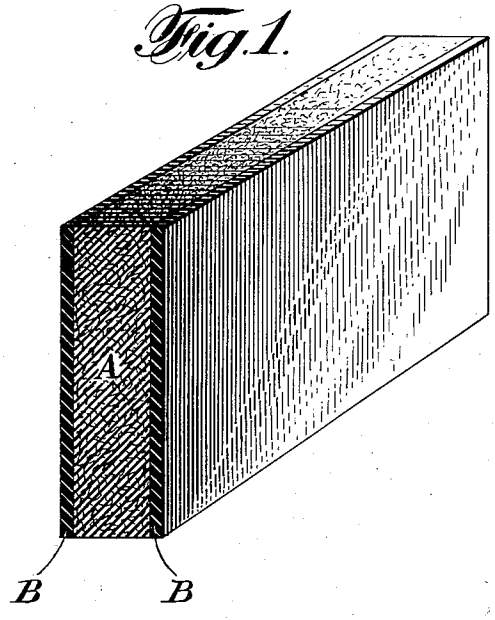


Fig. 2.

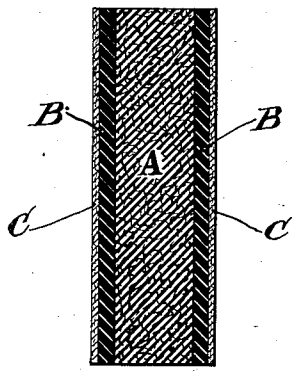
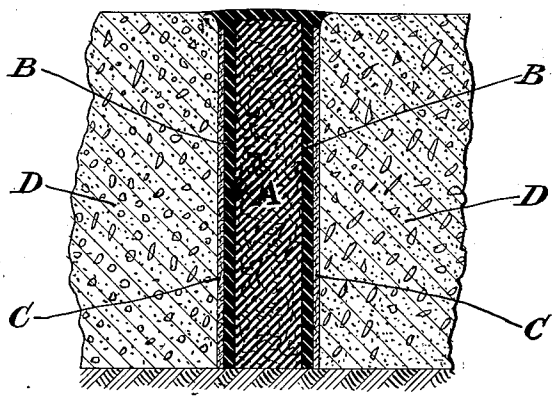


Fig. 3.



INVENTOR
Herbert C. Jussen
BY
Joe W. Mills Jr.
ATTORNEY

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EXPANSION JOINT FILLER

Herbert C. Jussen, Cincinnati, Ohio, assignor to The Philip Carey Manufacturing Company, a corporation of Ohio

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9 Claims. (Cl. 94—18)

My invention relates to an expansion and contraction joint filler and is particularly addressed to an elastic expansion and contraction joint filler adapted when placed between adjacent portions of highway construction to fill the space between such adjacent portions during either expansion or contraction of such portions, and to provide means adapted to insure the filling of the joint at all times thereby preventing entrance of any foreign substance.

In the drawing accompanying this specification, Fig. 1 is a perspective view of my invention; Fig. 2 is an end view of a modification and Fig. 3 is a cross sectional view showing my improved expansion and contraction joint filler installed between adjacent slabs of concrete in a highway.

In the drawing in which like letters designate like parts, A is a body of rubber, or a composition of rubber and other materials, which is sufficiently elastic to return, after compression, substantially to its normal position when the pressure is removed. A very satisfactory material I have found to be a rubber material or composition containing innumerable minute independent air cells which create an elastic nonporous body, or a composition of rubber and fibrous material could be used. B is a body of asphalt or asphalt composition containing a suitable fibrous or other filler, which composition is preferably of a character that it will flow or be displaced slightly under compression and yet will not become too soft at summer temperatures or become brittle at winter temperatures. Any rubber or composition of rubber and other materials that is sufficiently elastic to return to approximately its normal form or size after having been compressed, and the pressure having been removed, would be satisfactory to form the body A of my expansion joint. The layer B which may be placed on one side or both sides of the body A may be of any suitable bituminous composition or other suitable material having the characteristics above stated would be satisfactory. In the modification shown in Fig. 2 I have applied to the outside of the body A a strip of saturated felt C which may be on either or both sides of the joint. This felt may be applied either directly to the body A or may be applied to the layer of bituminous or other cement B applied to the body A. If desired the felt could be applied directly to one side of the rubber body and on the opposite side could be applied a layer of asphalt or other bituminous composition, or if desired, a very thin coating of asphalt or other bituminous composition could be applied to one side of the body and a relatively thicker layer of asphalt composition on the opposite side of the body A, it being only necessary to provide sufficient asphalt composition to perform the functions hereafter referred to. If desired the felt may be fixed or cemented to the side of the rubber during the formation of the rubber in process of manufacture. The felt layer C in the modification 2 serves as a reenforcement to strengthen the joint filler, seals its side surfaces, protects the body A and permits ready handling of the joint and ease of installation, and forming a comparatively rigid board like structure. Many other modifications could be made without departing from the spirit of my invention. Fig. 3 illustrates a construction embodying my invention in which DD are adjacent blocks or slabs of concrete forming a pavement or a foundation. Between these slabs is shown my expansion joint. As will be seen in Figure 3 the top of the expansion joint is sealed by any suitable material E such as an asphalt. In this Figure 3 the expansion joint is shown after some expansion of the adjacent block D has taken place, resulting in compressing the core A, which by reason of it being of rubber or like or similar material can be compressed with practically no displacement at the top of the joint except possibly a very slight curvature, while the asphalt composition B being of a character that it will flow under pressure has been forced out at the top and carried over the top of the core A and the side walls C so that it forms a continuous seal from one concrete slab D on one side of the joint filler to the concrete slab D on the opposite side of the joint filler. This seal E serves to form a protection for the rubber core A so as to prevent the entrance into the core A or contact with the core A along the top edge of any foreign substance that would be detrimental or tend to cause deterioration of the core. In some forms of my invention I seal the edges, top, bottom and ends of the body A in any suitable manner by using any satisfactory sealing material. If desired the body A could be sealed by a rubber seal forming a film or skin of any desired thickness.

While I prefer to seal the joint especially the top before it is installed it can, if desired, be sealed after the joint has been installed, by the application to the top edge of a suitable bituminous material or other preferably waterproof material, as for instance by pouring asphalt or other bituminous material, or other sealing material along the top edge of the joint.

While I have shown my expansion and contraction joint filler in a form generally used for

highway construction, it may be made in slabs of any desired width or length for use in bridge work or any other structural work where it is desired to provide expansion joint filler or expansion and contraction joint filler, and these slabs may be cut to any size or configuration desired. In practice if desired in the manufacture of my expansion joint it can be formed into comparatively long and wide sheets which may be cut to any desired size either for highway work or for other work. After the cutting to desired size the top, bottom and end edges can be coated with an asphalt or other suitable material to seal or enclose the rubber or similar body A and thereby protect same from deterioration due to exposure to atmosphere, liquids, acids or other deteriorating materials. This sealing may be either before or after installation. As will be seen by enclosing or encasing the rubber in a protective seal, the life of the rubber and its elasticity is greatly prolonged. If desired a body of rubber could be used which was enclosed on all sides and edges so as to seal it. This sealing when using a body A of rubber only could be either a coating of asphalt or like or similar material or a rubber coating integral with the body formed in formation of the cellular rubber into the desired size or formed by the adjacent structure when used with a sealing coat over any exposed portions as for instance in Fig. 3.

I claim:

1. An expansion-contraction joint filler consisting of a slab-like material having a core of resilient rubber material containing innumerable independent air cells, a layer on opposite surfaces of said core composed of a weather resisting plastic material adapted to be displaced by pressure so that it may be carried over and form a shell on the edge of the core.

2. In a construction an expansion-contraction joint filler arranged between adjacent bodies of material having the characteristics of expanding or contracting under changing temperatures or moisture conditions, said joint filler composed of a body of resilient rubber material having therein innumerable independent air cells and a body of plastic material, said resilient material being capable of being compressed by the expansion of the adjacent construction materials and of expanding to substantially its normal size as such construction materials contract, and the plastic body of said joint filler having the characteristics of being capable of being displaced by the expansion of the adjacent construction materials and to be carried over and form a protective seal for exposed portions of the resilient body.

3. In a construction an expansion-contraction joint filler arranged between adjacent bodies of material having the characteristics of expanding or contracting under changing temperatures or moisture conditions, said joint filler composed of a body of resilient rubber material having therein innumerable independent air cells, a body of plastic material and a body of flexible compressible waterproof material, said resilient material being capable of being compressed by the expansion of the adjacent construction materials and of expanding to substantially its normal size as such construction materials contract, and the plastic body of said joint filler having the characteristics of being capable of being displaced by the expansion of the adjacent construction materials and to be carried over and form a protective seal for exposed portions of the resilient body.

4. In a construction an expansion-contraction joint filler arranged between adjacent bodies of material having the characteristics of expanding or contracting under changing temperatures or moisture conditions, said joint filler composed of a body of resilient rubber material having therein innumerable independent air cells and a body of plastic material, said resilient material being capable of being compressed by the expansion of the adjacent construction materials and of expanding to substantially its normal form as such construction materials contract, and the plastic body of said joint filler having the characteristics of being capable of being displaced by the expansion of the adjacent construction materials.

5. An expansion joint consisting of a slab-like material having an elastic rubber body containing innumerable air cells preformed to desired form and size, reenforcements of waterproofed sheet material arranged on opposite sides of said body, and means sealing an exposable edge thereof.

6. An expansion joint comprising a resilient slab like body of rubber material containing innumerable independent cells and encased at its top and side edges in a plastic protective seal.

7. An expansion joint comprising a resilient slab-like body of rubber and fibrous material containing innumerable independent cells and encased at its top and side edges in a plastic asphaltic protective seal.

8. In a construction an expansion-contraction joint filler arranged between adjacent bodies of material having the characteristics of expanding or contracting under changing temperatures or moisture conditions, said joint filler composed of a body of resilient rubber material having therein innumerable independent cells and a body of plastic material, said resilient material being capable of being compressed by the expansion of the adjacent construction materials and of expanding to substantially its normal size as such construction materials contract, and the plastic body of said joint filler forming a protective seal for exposed portions of the resilient body.

9. In a construction an expansion-contraction joint filler arranged between adjacent bodies of material having the characteristics of expanding or contracting under changing temperatures or moisture conditions, said joint filler composed of a body of resilient rubber and fibrous material having therein innumerable independent cells, a body of plastic material and a body of flexible compressible waterproof material, said resilient material being capable of being compressed by the expansion of the adjacent construction materials and of expanding to substantially its normal size as such construction materials contract, and the plastic body of said joint filler forming a protective seal for exposed portions of the resilient body.

HERBERT C. JUSSEN.