Jan. 21, 1930. A. C. FISCHER 1,744,303

COMPOSITION SLAB

Original Filed May 10, 1922

Fig. 1

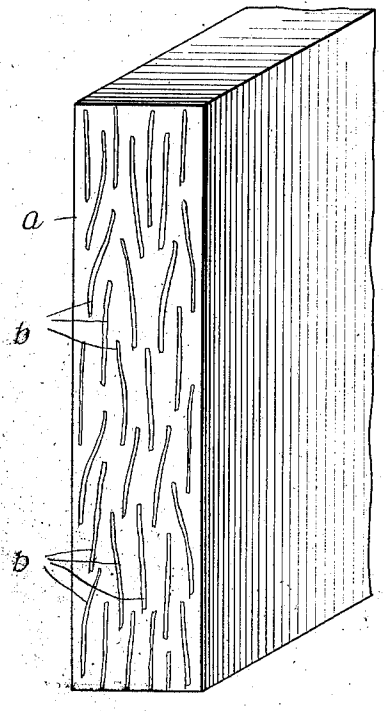
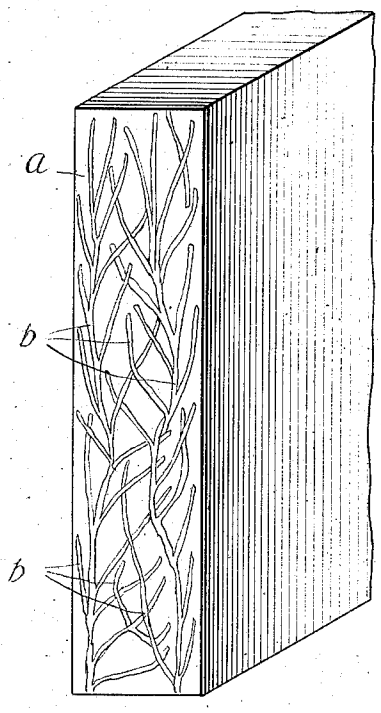


Fig. 2



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UNITED STATES PATENT OFFICE

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COMPOSITION SLAB

Original application filed May 10, 1922, Serial No. 559,908, Patent No. 1,680,144. Divided and this application filed October 19, 1925. Serial No. 63,358.

This application is a division of my application Serial No. 559,908, filed May 10, 1922, and which matured into Patent No. 1,680,144 on August 7, 1928.

The invention relates to improvement in composition slabs and to the method of the construction of same, as more fully described hereinafter and particularly pointed out in the claims, and is typified by an expansion joint strip which is employed between rigid elements in a building or paving structure to provide for expansion and contraction of the rigid elements.

Heretofore it has been the practice in the manufacture of expansion joints to impregnate felt strips and build them into layers, or reinforce asphalt mixtures with saturated felt sides, also the prior art teaches fibrous matter mixed with tar, pitch or bituminous substances.

In all the above the mixtures have been effected with heated liquid or semi-liquid materials, so that the contents are saturated thoroughly and the mass becomes a saturated mixture and consequently contains few if any air cells. On the other hand the rigidity of the fibre for structural purposes is destroyed, and it does not act as a separate structural skeleton for the surrounding mass. Consequently, in warm weather expansion joints made by the old method become limp and flabby, because of their lack of structural framework acting independently of the surrounding mass.

By my method of mixing cellular granules, unsaturated, fibrous matter, and other like substances, such as, excelsior cut in small lengths, stiff, fibrous flax, etc., and incorporating same in the mixture while the bituminous matrix is plastic, and therefore lacking in penetration power, I am able to affect a structural skeleton within the matrix which supports the matrix in warmer temperature.

I am also able to effect cells or pockets in the structure which allow for compressibility, and because of the unsaturated materials or cellular granules the walls of the bituminous matrix cannot adhere together upon compression and will, therefore, respond to expansion upon release of the compression. Certain fibres, such as, mineral wool, which contains calcium carbonate will cause the walls of the matrix to harden immediately where in contact, which also makes for a stronger structure, so that there is a structural strengthening both by chemical action and by preserved rigidity in the fibrous matter which is unsaturated.

I have affected through this method the possibility of effecting several types of structure, namely, a bituminous and fibrous mixture effecting a chemical change, strengthening the structure, a bituminous and fibrous mixture strengthening the structure due to unsaturated fibrous matter; a bituminous, cellular structure containing within the cells granules, such as, cork, which in itself is cellular, screened mineral wool granules, which are also cellular, treated wool granules in a cellular state, and any other like form of cellular or fibrous matted matter, such as, excelsior, digested straw, flax, etc., in an unsaturated state, or at least not solidly saturated, due to penetration of the bituminous matrix.

The tree-like skeleton herein described can best be effected by utilizing stiff, fibrous material, which can readily be secured upon the market. Strands of excelsior, flax in an unshredded state, hog bristles, cocoanut fibres, stiff vegetable fibres, such as, broom corn, heavy grasses, twigs, shredded veneer strips, or any like materials may be utilized, as long as they are jacketed with bituminous material in a sufficient quantity to allow a skeleton to be formed therein, such as described, in which the fibrous material remains dry and unpenetrated, in order to maintain their toughness and inherent resiliency, because of the cellular structure of said fibrous material being free from bituminous material.

This skeleton structure is best incorporated in the bituminous material while the latter is in a warm, plastic state, and may be mixed with limited quantities or abundant quantities, depending upon the strength of the structure to be obtained. This may be accomplished by mixing the warm, bituminous material in a suitable mixer and adding the fibrous material, as described, to the bituminous material while it is in a warm, plastic

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state, or the warm, bituminous material may be poured over the fibrous material and pressed together, so that the fibrous material is completely jacketed with bituminous material, or the heavier, stiff, fibres, as described, may be placed upon a warm, plastic mass of bituminous material, and a layer of warm, bituminous material placed thereover and pressed between rolls, as is common in a type usually employed in rolling plastic, bituminous material to plastic thickness for expansion joints. For instance, this skeleton structure may be formed by pulling or shredding out a thin veneer strip and incorporating it in the warm, plastic, bituminous material, which, because of its cooling nature, would not be able to penetrate the fibrous material and would be incorporated in the mass in a forked or branched tree-like structure or skeleton within the bituminous mass, the bituminous matter becoming a matrix or mould formed about the stiff, fibrous material.

Figure 1 represents an expansion joint containing bituminous material (*a*) and mineral wool fibre (*b*) the chemical action of the fibres having streng hened the bituminous wall immediately about them.

Figure 2 represents an expansion joint containing bituminous material—*a*—and a tree-like, relatively stiff fibrous material *b*.

An expansion joint as outlined above will have the following properties:

It will resist heat penetration.

It will contain a skeleton structure to give it strength before installation in the crevice.

It will be subject to considerable compression and will re-expand with much less resistance.

It will compress without elongation.

I claim:

1. A preformed strip of compressible and elastic constructional material comprising a preponderating proportion of bituminous material and a subordinate proportion of relatively tough tenacious fibers, said bituminous material and fibers being intermixed whereby the fibers are interspersed and distributed throughout the bituminous material.

2. A preformed strip of compressible and elastic constructional material comprising a preponderating proportion of bituminous material and a subordinate proportion of relatively long tenacious linear fibers, said bituminous material and fibers being intermixed whereby the fibers are interspersed and distributed in substantially parallel relation throughout the bituminous material.

3. A preformed strip of compressible and elastic constructional material comprising a heterogeneous mass of bituminous material and tough tenacious fibers, said fibers and bituminous material being intermixed into a coherent mass with the fibers interspersed in an unbroken condition.

4. A preformed strip of compressible and elastic constructional material comprising a heterogeneous mass of ductile bituminous material and resilient tenacious fibers, said fibers being intermixed and distributed throughout the mass in an unbroken condition.

5. A preformed expansion joint comprising a predominating proportion of ductile bituminous material and a subordinate proportion of solid tough tenacious fibers, the fibers being unsaturated by the bituminous material and distributed therein in an unbroken state.

6. A preformed expansion joint comprising a predominating proportion of ductile bituminous material and subordinate proportion of solid material distributed throughout the bituminous material to provide a skeleton-like structure in the mass.

7. A preformed strip of compressible and elastic constructional material comprising a preponderating proportion of bituminous material and a subordinate proportion of tough tenacious cocoanut fibers, said bituminous material and cocoanut fibers being intermixed whereby the fibers are interspersed and distributed throughout the bituminous material.

8. A preformed strip of compressible and elastic constructional material comprising a heterogenous mass of bituminous material and tough tenacious cocoanut fibers, said cocoanut fibers and bituminous material being intermixed into a coherent mass with the fibers interspersed in an unbroken condition.

9. A preformed expansion joint comprising a predominating proportion of ductile bituminous material and subordinate proportion of solid bristle-like cocoanut fibers distributed throughout the bituminous material to provide a skeleton-like structure in the mass.

Signed at Chicago, Illinois, this 8th day of October, 1925.

ALBERT C. FISCHER.