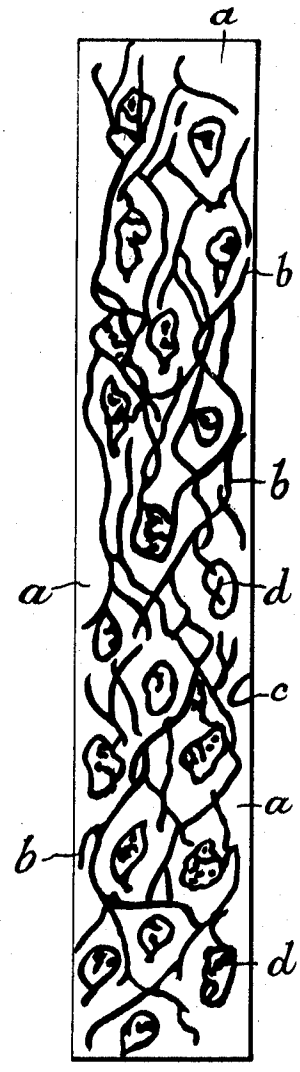
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CONSTRUCTIONAL MATERIAL

Original Filed May 10, 1922



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Inventor:

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UNITED STATES PATENT OFFICE.

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CONSTRUCTIONAL MATERIAL.

Original application filed May 10, 1922, Serial No. 559,908, now Patent No. 1,680,144. Divided and this application filed October 19, 1925. Serial No. 63,359.

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

The invention relates to improvement in constructional material as is more fully described hereinafter and particularly pointed out in the claims.

My invention is typified by an expansion joint which is one preferred embodiment for carrying the invention into effect.

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 effect a structural skeleton within the matrix which supports the matrix in warmer temperatures.

I am also able to effect cells or areas 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 effected through this method the possibility of effecting several types of structure, namely, a bituminous and fibrous mixture effecting a chemical change, and 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.

This invention relates to suitable bituminous material heated to a plastic state, as those to whom the art is known can readily ascertain, and which is previously disclosed in various types of expansion joint, especially those of bituminous material which are suitable for expansion joint purposes.

The fibrous material or cellular material, as contemplated herein, can be mixed with the bituminous material with any suitable mixer adapted for the purpose, and the proportions of fibrous material incorporated will depend upon the rigid structure described.

My invention relates to encasing unsaturated, stiff, fibres in a bituminous matrix while the bituminous material is at a temperature at which it will not saturate the stiff, fibrous material.

My present invention also contemplates the incorporation of granular material, fibrous, granular material, or pellets of mineral matter, or pellets of fibrous material, jacketed with bituminous material, such granules or pellets being readily compressible and united with the bituminous material while at a temperature below that at which it will penetrate the pellets, so that when the mass is cooled they will form cells filled with their substance, and prevent the walls of the cells adhering together under pressure.

My present invention contemplates the mixture of said stiff, fibrous material, such

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as, excelsior, flax, or in fact any suitable stiff material, such as, animal hair, various vegetable substances which are not finely divided, or in fact any suitable material which may be found upon the market, which will form a stiff skeleton within the bituminous material when in an unsaturated state, and incorporated therewith the cellular granules. So that this invention contemplates both a stiffening of the wall structure of the bituminous mass and the introduction of a resiliency by reason of the pockets filled with cellular granules.

The drawing illustrates the combination of bituminous material (*a*) and cells (*c*) or areas in which are contained granules or pellets (*d*) of cellular matter, such as, screened wool pellets, waterproof cellular mineral wool granules, cork granules and the like; and through this structure unsaturated linear fibrous material, such as, excelsior, digested flax, straw, dry wool, in fact any fibrous unsaturated substance which may impart rigidity by reason of its unsaturated nature acting independently of the surrounding mass or cellular structure.

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.

While I have described the granules as unsaturated, it will be understood that I have employed the term "saturated" and "unsaturated" in a generic sense. The binder may contain light oils and the like which may penetrate into the granules and yet not impair their elasticity.

I claim:

1. An expansion joint comprising plastic and ductile bituminous material having incorporated therein stiff, unpenetrated linear fibrous material and cellular granules in an unpenetrated state, said bituminous material greatly predominating.

2. An expansion joint comprising plastic and ductile bituminous material having incorporated therein a supporting skeleton of stiff, unpenetrated linear fibrous material and elastic fibrous pellets in an unpenetrated state, said bituminous material greatly predominating.

3. In combination plastic and ductile bituminous material, dry, stiff, linear fibrous material and cellular elastic pellets, free from penetration, said bituminous material predominating and said fibrous material and pellets being jacketed with bituminous material and formed into preformed expansion joints.

4. An expansion joint comprising plastic and ductile bituminous material in which the bituminous material predominates and acts as a matrix, having incorporated therein a skeleton of linear fibrous material as a supporting structure, and granules interposed to provide resilient areas in the structure.

5. A preformed expansion joint comprising plastic bituminous material having incorporated therein relatively long fibres unpenetrated by the bituminous material and arranged in overlapping relation, the bituminous material also having incorporated therein compressible, cellular matter, likewise unpenetrated.

6. Preformed constructional material, the main body of which comprises a ductile, oil-bearing bituminous binder, reinforced with resilient linear fiber and resilient, cellular pellets, the binder predominating.

7. A preformed expansion joint, the main body of which comprises a boardlike strip of ductile, oil-bearing bituminous binder reinforced with linear fiber and resilient, cellular granules, the binder predominating.

8. Preformed constructional material, the main body of which comprises a ductile, oil-bearing binder having homogeneously incorporated therein linear fiber and cellular pellets, said pellets being compressible and expansible and the individual pellets housed in and surrounded by the binder containing linear fiber.

Signed at Chicago, Illinois, this 9th day of October, 1925.

ALBERT C. FISCHER.

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