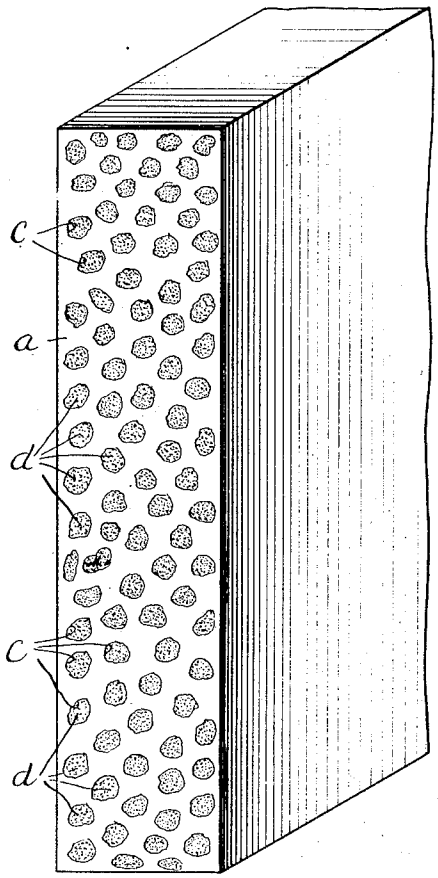
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EXPANSION JOINT

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EXPANSION JOINT.

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This application is a division of my application Serial No. 559,908, filed May 10, 1922.

The invention relates to improvement in expansion joints and to the method of the construction of same, as more fully described hereinafter and particularly pointed out in the claims.

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 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 surrounding the granules cannot adhere together upon compression and will, therefore, respond to expansion upon release of the compression. Certain fibres, such as, mineral wool, 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, 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 case pertains to bituminous material in a warm, plastic state, having incorporated therein cellular granules for the purpose of providing cells throughout the mixture. The granules are unsaturated with the bituminous material so that they may be free of any adhesive material which would allow the separated areas of bituminous material to adhere when compressed, thereby filling the cells and destroying the expansibility of the granules.

This cellular material reacts upon itself, in other words, one granule reacts against another granule, having intermediate the different granules, walls of bituminous material. The usual mixer employed for this purpose may be used, and the warm bituminous material placed therein, and while in this state the cellular material or granules, as described, are incorporated in proportions depending upon the resiliency of the product required.

A series or group of products, which, when under pressure will react upon each other and compress, but upon release of the compression the granules will resume their former shape, by reason of the fact that there can be no adhesion between the walls of the bituminous material, because of the interference of the cells filled with unpenetrated cellular matter.

The usual method of forming the material into sheets and in expansion joint sizes may be employed, as previously known to the art, it being the purpose of this invention to protect merely the prepared materials in the manner outlined, and not to claim any of the machinery which might be utilized, and which is already known to the art in mixing and reducing the material to flat strips and various sizes.

The drawing illustrates an expansion joint consisting of bituminous material (*a*) having incorporated therein relatively large sized granules (*c*) for the purpose of providing cells or areas (*d*) throughout the material, which are at all times free of any adhesive. The walls of bituminous material surrounding the granules are thus separated and prevented from adhering when the material is compressed, thereby leaving the granules freely compressible and expansible.

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 compressible and elastic construction unit consisting of a mass of ductile bituminous material and resilient elements distributed throughout said mass providing mass portions in which the resilient elements are freely contractible and expansible within said ductile material.

2. A preformed compressible and elastic construction unit consisting of a mass of ductile bituminous material and resilient elements distributed through the mass, said elements being unsaturated with the ductile material and arranged in close relation to allow adjacent elements to act resiliently against each other.

3. A preformed compressible and elastic construction unit consisting of a mass of ductile bituminous material and cork granules distributed throughout said mass, said cork granules being freely compressible and expansible within the bituminous material.

4. Construction material consisting of a mass of ductile bituminous material and relative large resilient granules distributed throughout said mass, said adjacent granules being separated by relatively thin layers of bituminous material and highly compressible and expansible.

5. A preformed expansion joint consisting of a mass of ductile bituminous material and cork granules distributed throughout said mass and highly compressible and expansible therein.

6. The method of making compressible and elastic building material consisting in mixing resilient elements with a ductile bituminous material which has been brought to a consistency at which same does not penetrate the resilient elements and forming the mixture into articles having the resilient elements freely compressible and expansible therein.

7. The method of making compressible and elastic building material consisting in mixing resilient elements with a ductile bituminous material which has been brought to a consistency at which same does not penetrate the resilient elements, and compressing the mixture into articles having the resilient elements freely compressible and expansible therein.

8. The method of making compressible and elastic building material consisting in mixing granules of cork with a ductile bituminous material which has been brought to a consistency at which same does not penetrate the cork granules, and forming the mixture into articles of manufacture in which the cork granules are freely compressible and expansible within the bituminous material.

9. The method of making compressible and elastic building material consisting in mixing resilient material with a ductile bituminous material which is of a character that does not destroy the resiliency of the resilient material, and forming the mixture into articles of manufacture having the resilient elements freely compressible and expansible therein.

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

ALBERT C. FISCHER.