

## UNITED STATES PATENT OFFICE.

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ASPHALT OR BITUMEN SUBSTITUTE. 106-284

No Drawing. Application filed September 7, 1927, Serial No. 218,110, and in Australia May 12, 1926.

This invention relates to an improved composition which is usable as a substitute for asphalt or bitumen in the manufacture of damp courses for buildings, water-proof road coverings, paving materials and other composite materials, and also as an electrical insulating material.

Trinidad asphalt and other natural asphalts are recognized as being excellent bases for the production of bituminous road coverings, but these natural materials are very costly and in recent years supplies have become very difficult to obtain.

The present invention has been devised to provide a synthetic bituminous material capable of being produced at comparatively low cost and which will have wearing properties equivalent to natural asphalts.

The improved material consists basically of a mixture of oil-bearing shale and tar. The oil shale used may consist of torbanite, tasmanite and petionite (shales obtainable in Australia) or other shale, while the tar may be of the vegetable, mineral or animal variety. It is preferred that the oil shale should be first pulverized in a suitable machine and subsequently incorporated with heated tar.

The quantities of the two materials can vary but the proportion of one part of tar to one and one half parts of oil shale has been found satisfactory. By increasing the relative proportion of tar in the mixture, a softer bituminous material having a relatively low melting point is obtained. By increasing the relative proportion of oil shale, a hard and dense bituminous material having a much higher melting point is produced.

The material obtained by mixing the two materials is used as a basis and is incorporated with selected materials for the production of road coverings, damp courses for buildings and other composite materials. Satisfactory results have been obtained by mixing the basic bituminous material with one or more of the following filling materials, viz, ironstone, haematite, carborundum, coal, lignite, coka, slag, oil shale residues, shale

coke, infusorial earth, magnesite, limestone (either burnt or unburnt), asbestos, cement, pumice stone, firestone, fire clay, metal filings, chopped rubber, residual oil bitumen, ground glass, silicate of soda (water-glass), silicate of lime, potash, sawdust, cork, broken stone, sand, gravel, bauxite and baryta. Other filling materials may also be used.

The proportion of the filling material relative to the basic bituminous material will vary according to the product required, the particular filling material or materials used and the strength or resiliency or other properties desired. In experiments I have produced an excellent road covering containing 80% of ground limestone (unburnt) and 20% of the basic bituminous material. Satisfactory resilient paving materials have also been produced using shredded waste rubber in approximately the same proportion of 80%.

When used for road coverings, the material may be heated to molten condition and laid in situ similarly to "Neuchatel" asphalt and similar bituminous materials, or, alternatively, it can be pre-moulded into blocks or slabs which may be cemented in position.

For the production of electrical insulating materials, the basic bituminous material may be used either alone or in combination with limestone or other di-electric substances. Insulating slabs or blocks suitable for use in mounting switches and electrical apparatus may be formed by moulding the material in suitable apparatus, while insulating tape and sheets may be manufactured by impregnating fabrics in the molten bituminous material.

What I do claim is:—

1. An asphalt or bitumen substitute, having a base which consists exclusively of a mixture of oil-bearing shale and tar.
2. An asphalt or bitumen substitute consisting of a filling material incorporated in a basic material composed exclusively of oil-bearing shale and tar.

In testimony whereof I affix my signature.  
FREDERICK GEORGE RENO.

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