

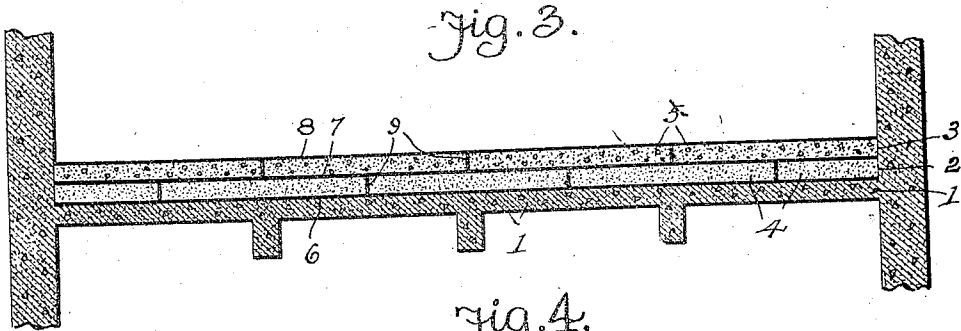
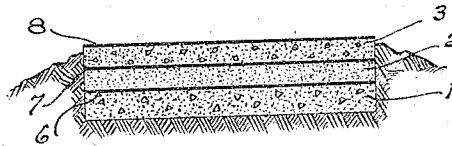
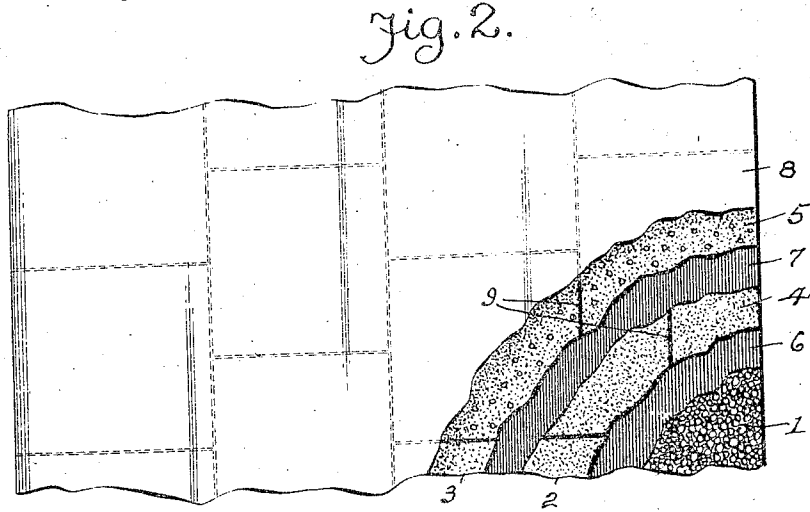
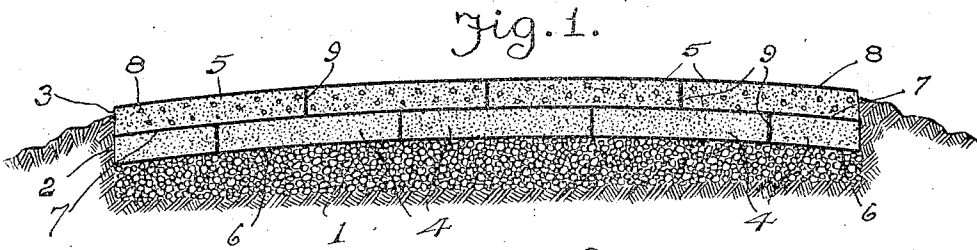
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F. O. RONK

PAVEMENT AND PROCESS OF CONSTRUCTING THE SAME

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PAVEMENT AND PROCESS OF CONSTRUCTING THE SAME.

Application filed December 1, 1931. Serial No. 519,055.

To all whom it may concern:

Be it known that I, FRANK O. BONK, a citizen of the United States of America, residing at Detroit, in the county of Wayne and State of Michigan, have invented certain new and useful Improvements in Pavement and Processes of Constructing the Same, of which the following is a specification, reference being had therein to the accompanying drawings.

This invention relates to a surfacing material for roadways, driveways, walks, floors or the like, and to a method of construction by which a pavement or similar structure may be formed of clay, asphaltum, and crushed rock or pebbles and sand. The resulting surface is dense, yet malleable and waterproof.

A primary object of this invention is the production of a material for surfacing roadways, pavements, walks or floors in a form such that it may be placed in position rapidly, and having a texture such that it will be ready for use almost immediately after being laid.

A further object of the invention is the provision of a paving material which may be used for resurfacing any of the ordinary forms of roadways now in common use.

The invention consists in placing upon any suitable foundation or base, a layer of previously formed resilient slabs consisting of a plastic clay thoroughly mixed with asphaltum, and upon this resilient intermediate layer, securing one or more layers of previously formed slabs to form a wearing surface, the superposed layer consisting of a mixture of clay, stone, and asphaltum, part of the clay being plastic clay of a hard texture, and the rest pulverized fragments of burnt clay, and the stone consisting of crushed rock or of pebbles and sand of a suitable size to be specified later as the description proceeds. The clay content is a material element of the several layers in that it materially assists in the retention of the asphaltic binder.

It further consists in the proportions of the various ingredients used in the wearing layer or layers, and in the resilient layer, and in the asphaltic cement used between the slabs and as a surfacing coat for the base and for the wearing layer that lies uppermost. It also consists in the matter in which the materials are combined and in which they are formed into the slabs and

in the manner in which the various elements are arranged and held in position.

In the drawings forming a portion of this specification,

Figure 1 is a vertical section through a roadway embodying a preferred form of my invention;

Fig. 2 is a plan view of a portion of the same roadway, parts of each layer being indicated as broken away to expose underlying layers;

Fig. 3 is a section through a path or walk showing a modified form of the invention; and

Fig. 4 is a vertical section through a portion of a building, showing the paving material applied in position for use as a floor.

In each instance, there is a base 1, an intermediate layer 2, and a wearing layer 3. In the roadway indicated in Figs. 1 and 2, the base 1 may be a previously existing road in which the ruts and irregularities have been filled or which has been scraped or otherwise brought to a smooth surface, or it may be a newly formed foundation of hydraulic concrete, macadam, telford, gravel, or even a well packed surface of the existing soil. This base will be suitably crowned and should be dry at the time the intermediate layer 2 is applied.

An asphaltic cement is prepared consisting of a mixture of asphaltum with from fifty to eighty per cent of hydro-carbon oils to which is added a finely pulverized plastic clay of hard texture in such proportion that at a temperature of about two hundred to two hundred and fifty degrees Fahrenheit the mixture will flow freely and adhere firmly when it cools in contact with the base or slabs.

A coating 6 of the hot cement is applied to the base 1 and the slabs or blocks 4 constituting the intermediate layer are pressed into firm contact with the sticky coating before the cement becomes cool. The joints between the slabs are filled with the hot cement as indicated at 9, and the upper surface of the slabs are given a coating as indicated at 7.

While the coating 7 is still hot, the top layer of slabs 5 is placed in position, care being used to break joints with the slabs of the intermediate layer. The joints between the slabs 5 are filled with the hot cement as shown at 9 and the top surface is also painted with the same cement. Be-

fore the surface coating cools, it is covered with clean fine sand.

All of the slabs are thus thoroughly cemented in contact with each other and with the base. As soon as the cement has become cold, the roadway is ready for use.

The blocks or slabs will be from three-fourths of an inch to two inches in thickness, usually about an inch, though this thickness may vary to suit different conditions, and they will be of a size suited for easy handling and such that a sufficient number will cover the desired width.

The intermediate resilient layer will consist of a mixture of seventy to ninety per cent, of pulverized plastic clay or pulverized burned clay with thirty to ten per cent of asphaltum containing from fifty to eighty per cent of lighter hydrocarbon oils. The dried and pulverized clay will be heated to a temperature of about three hundred to three hundred and fifty degrees F. and then thoroughly mixed with the asphaltum-oil mixture heated to about the same temperature.

After the mixture is completed, it is poured into moulds and subjected to a pressure of two to five hundred pounds to the square inch before it has become thoroughly cool. This produces a slab that is resilient and of a texture almost like that of leather. It is adapted to receive the shocks transmitted through the upper layer and greatly contributes to its wearing qualities. The clay content, due to its porosity quickly absorbs the asphaltic binder, retaining it, and thus greatly increasing the life of the material.

The wearing layer will consist of slabs containing thirty to fifty per cent of pulverized plastic clay of hard texture, fifteen to thirty per cent of the same grade of clay burned nearly to the fusing point and pulverized sufficiently to pass a screen having eight meshes to the inch, fifteen to thirty per cent of crushed rock or hard pebbles and sand of sizes that will pass through a quarter inch screen but will not pass a screen having twenty meshes to the inch, and ten to thirty per cent of asphaltum containing fifty to eighty per cent of lighter hydrocarbon oils. The materials will be heated to a temperature of three hundred to three hundred and fifty degrees F. and after thorough mixture will be subjected to pressure in a mould as described in discussing the production of the blocks of the intermediate layer.

In the walk illustrated in Fig. 3, the slabs may extend the full width and the curvature of the surface necessary in the roadway may be omitted.

In the factory floor shown in section in Fig. 4, the slabs 4 and 5 may be thinner than those used for roadways, but the principle

of construction is the same. Instead of a cement base such as indicated at 1, a wooden or metallic floor could obviously be used, the slabs being cemented in position without removing any existing floor surface.

While I have illustrated certain specific embodiments of my invention, it will be obvious that many changes may be made without departing from the spirit of my invention which I wish to claim in any of its forms and modifications within the legitimate and valid scope of the appended claims.

What I claim is:—

1. A pavement formed of two or more layers containing mineral and bituminous material and secured together by a bituminous elastic cement, the uppermost layer forming the wearing surface and being more rigid than the layer beneath it, and the lower layer being relatively resilient to cushion shocks received by the uppermost layer.

2. A road structure combining with an exposed rigid top wearing layer, an intermediate resilient layer consisting of plastic clay impregnated with asphaltum, and a compact foundation.

3. A pavement and the like formed of two or more layers of separate compact blocks laid edge to edge, each block being secured to the adjacent block by a bonding material, the upper layer being relatively rigid and containing mineral and bituminous material adapted to form a wearing surface, and the lower layer being relatively resilient and containing mineral and bituminous material adapted to cushion shocks received by the wearing surface.

4. A road structure having a firm foundation, an intermediate layer of resilient slabs consisting essentially of plastic clay and asphaltum, and a superposed wearing layer of slabs consisting of plastic clay, burnt clay, asphaltum and stone.

5. A structure as in claim 4, in which the intermediate layer is cemented to the superimposed layer by an elastic bituminous cement.

6. A process of constructing roadways and the like which consists in cementing resilient slabs of a compressed mixture of plastic clay and asphaltum upon a rigid foundation or base and then cementing a layer of slabs of a wearing material upon the resilient slabs.

7. The process of constructing roadways and the like which consists in cementing preformed slabs of a resilient, shock absorbing asphaltic mixture to a rigid base and then cementing preformed slabs of a compressed asphaltic mixture of clay, burnt clay and stone upon the resilient slabs by means of a resilient asphaltic cement.

8. The process of constructing roadways

and the like which consists in pre-forming slabs of resilient material and other slabs having relatively less resiliency and better wearing qualities, laying the slabs of greatest resiliency upon a foundation, cementing these slabs together and covering the same with a hot fluid cementitious material, and laying the slabs of lesser resiliency upon the first layer while said cementitious material is warm.

9. The process of constructing roadways and the like which consists in forming resilient slabs under pressure from a mixture of plastic clay and asphaltum and forming

under pressure slabs to form a wearing surface, from a mixture of burnt clay, asphaltum and rock, laying the resilient slabs in an asphaltic cement upon a foundation, and then laying the slabs to form a bearing surface, upon the resilient slabs and in an asphaltic cement to cement the slabs together and the layers to each other.

In testimony whereof I affix my signature in presence of two witnesses.

FRANK O. RONK.

Witnesses:

ANNA M. DORR,

CHAS. W. STAUFFIGER.