

UNITED STATES PATENT OFFICE.

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COMPOSITION FOR ROADWAY-SURFACES.

SPECIFICATION forming part of Letters Patent No. 779,604, dated January 10, 1905.

Application filed October 31, 1904. Serial No. 230,771.

To all whom it may concern:

Be it known that we, JOHN EDWIN JONES and MICHAEL MEEHAN, residing at Boston, in the county of Suffolk and State of Massachusetts, have invented certain Improvements in Compositions for Roadway-Surfaces, of which the following is a specification.

The invention about to be described relates to an improved combination of materials to form a composition for surfacing roadways, streets, and for similar purposes.

Our improved composition consists of asphalt cement, sand, and Portland cement in suitable proportions—say in one hundred parts, ten per cent. of asphalt cement, eighty per cent. of clean sharp sand, and ten per cent. of Portland cement—which components, when the composition is to be laid, are thoroughly mixed and, properly heated, will provide a wearing-surface which will be sufficiently elastic under the pressure of traffic to become slightly compressed thereby, but will not be abraded to any extent.

Heretofore one of the great difficulties to be overcome in laying artificial asphalt-cement pavements or wearing-surfaces has been to prevent the same from crawling upon its foundation or upon the binder between the said surface and the said foundation and also to prevent the said surface from cracking and the formation of seams, which admit moisture and result in subsequent disintegration. These faults are occasioned by the lack of stability or fixedness in the composition of such surfaces ordinarily assembled, and consequently when the weight of traffic or the heat of the sun is applied said surfaces crawl or hump at the sections so affected. The extremes of cold, as well as of heat, also affect the composition in a similar manner. We have found by experiment and have demonstrated by practice that the composition mentioned herein is eminently fitted to obviate the difficulties referred to, and we will now proceed to describe the same in detail and point out our invention in the appended claims.

Our composition may be applied to a roadway having a concrete foundation laid in the usual way or to a roadway provided with a

macadam surface, in which case the surface is loosened up to a uniform depth and evenly prepared and rolled. If applied to the concrete foundation, the composition is spread directly thereon and tamped and rolled evenly, and when applied to the macadam surface after it has been prepared as stated a binder course of one inch in thickness is laid thereon, which may be composed of asphalt cement mixed with broken stone of such size as to pass a screen with three-quarters-inch meshes, the asphalt and stone being heated and spread while hot to an even grade in conformity with the cross-section of the street and rolled down. We prefer to use asphaltum which contains not less than ninety per cent. of pure bitumen in the binder and surfacing compositions.

The composition to be applied may be prepared near the scene of operations, and the sand must be thoroughly dried from all moisture and heated to about the temperature of 350° Fahrenheit. Then the Portland cement is added thereto at the same heat and thoroughly mixed therewith. The asphaltum is placed in a heater and brought to a temperature of about 350° Fahrenheit, and the fluid asphaltum is then added to the mixture of sand and Portland cement, and the parts are thoroughly mixed and incorporated with each other and in this state resemble a moist powder, which if allowed to become cold crumbles into a dry powder.

The composition while hot is loaded into special wagons having tight bodies, well covered to retain the heat, and then conveyed to the point where it is to be used and spread to the required thickness on top of the prepared foundation in conformity to the cross-section of the road.

The composition may be made at a central station and allowed to cool to its powdered state, in which state it may be conveyed to any distance and heated to the proper temperature and used upon a road-bed. The proportions of the mixture will be varied within certain limits, according to the fineness of the sand used and other minor considerations. All of the implements used in the manipula-

tion of the process are heated in order not to cool the composition, such as the rakes and tamping and smoothing irons employed in the spreading and evening of the same, as are also the hand-rollers, which, with the heavy power-rollers, are used to compress the composition to an even thickness and cause the particles to adhere to each other in a solid mass. When the wearing-surface has become hard, it is found that the Portland cement has filled all the spaces between the grains of sand, which are themselves covered with the asphaltum, and has bound them to each other, while the asphaltum still gives the mass an elasticity, so that any pressure put upon its surface by the travel of horses or the rolling of cart and carriage wheels (which upon an ordinary surface would produce a roughening and loosening of the composing particles and result in dust and dirt) will simply cause the substance of the wearing-surface to be elastically compressed—that is, there will be no ruts produced, as when a surface is indented—and as such pressures are rather uniformly applied over the area of the wearing-surface it will be evenly compressed and not be abraded.

It will be understood that this composition may be applied to many places and for many

purposes where a waterproof lining is desired, as for floors in basements and cellars and also as a covering for roofs; but its principal application is for pavements.

We claim as our invention—

1. A composition for roadway-surfaces, composed in about the following proportions: asphaltum, ten parts; sand, eighty parts; and Portland cement, ten parts; the component parts being heated, thoroughly mixed, and incorporated, as set forth.

2. A composition for roadway-surfaces, composed in about the following proportions: asphaltum, ten parts; sand, eighty parts; and Portland cement, ten parts; the component parts having been heated to a temperature of about 350° Fahrenheit, thoroughly mixed, and incorporated, as set forth.

In testimony whereof we have signed our names to this specification, in the presence of two subscribing witnesses, this 27th day of October, 1904.

JOHN EDWIN JONES.
MICHAEL MEEHAN.

Witnesses:

FRANCIS A. PIERCE,
GEO. WILLIS PIERCE.