

# UNITED STATES PATENT OFFICE.

FREDERICK J. WARREN, OF NEWTON, MASSACHUSETTS; RALPH L. WARREN AND FRANK G. CUTTER ADMINISTRATORS OF SAID FREDERICK J. WARREN, DECEASED.

## MANUFACTURE OF BITUMINOUS COMPOSITIONS OR PITCHES.

SPECIFICATION forming part of Letters Patent No. 791,960, dated June 6, 1905.

Application filed April 3, 1903. Serial No. 150,919.

*To all whom it may concern:*

Be it known that I, FREDERICK J. WARREN, a citizen of the United States, and a resident of Newton, in the county of Middlesex and Commonwealth of Massachusetts, have invented a new and useful Improvement in the Manufacture of Bituminous Compositions or Pitches, of which the following is a full, clear, and exact description.

I have ascertained that bituminous compositions and pitches are improved for uses requiring stability of known condition at the extreme ranges of atmospheric temperatures by inclusion of an impalpable powder, the powder having the effect of preventing the compositions or pitches from softening to an undesirable extent at the higher temperatures and of hardening sufficiently to become too brittle at the lower temperatures. An impalpable powder which is very useful for this purpose is one obtained by reducing soapstone or similar stone or mineral by grinding or pulverizing to the required fineness, as an impalpable powder made from a stone having the peculiar smoothness or effect of soapstone readily unites or combines with the bituminous composition or pitch and provides a product which is essentially smooth and coherent in disposition and one that serves extremely well for the ordinary commercial uses to which bituminous compositions and pitches are employed. It may be said to serve as a filler and a fixer as well, and that without removing from the bituminous composition or pitch any of its essential properties for which it is considered valuable.

In practicing the invention any bituminous composition or pitch may be employed, whether derived from asphalt or coal-tar or from petroleum-oil, and if the bituminous composition or pitch is of a hard character it is softened sufficiently in any of the desired ways to make it receptive of the impalpable powder, and enough of the powder is combined with the composition or pitch at any temperature to give it the desired consistency for use at all ranges of atmospheric temperature where the composition or cement is to be employed. The quantity of the powder will

vary according to the softness of the composition or pitch. A composition or pitch which is very soft at atmospheric temperature will require a larger percentage of the powder than one which is harder at such temperature. Owing to the difference in bituminous compositions and pitches in this respect and owing to other differences, this range is quite large, and while a percentage of the powder as small as ten per cent. may be sufficient in some cases for some uses a percentage over fifty per cent. will be desirable for some compositions and pitches for the same or other uses.

Soap or other stone having the peculiar smooth and velvety feeling of such stone makes an impalpable powder which is peculiarly smooth in effect and free from grit, and at the same time it has a peculiar affinity for combining with the bituminous composition or pitch and communicating to the pitch some of its inherent qualities, so that the product is not only provided with the relative inflexibility to which I have referred, but is also improved in quality as well. The soapstone or other material suitable for producing a smooth gritless powder is reduced to the form of an impalpable powder in any desired way, and it is combined with the bituminous composition or pitch made fluid by heat or any other desired way and intimately mingled with it by any suitable agitating means.

The product may be used in paving compositions or cements and for roofing and other purposes.

Having thus fully described my invention, I claim and desire to secure by Letters Patent of the United States—

1. A bituminous mixture containing a bituminous cement or pitch having in combination therewith an impalpable and smooth powder free from grit, derived from soapstone or similar earthy matter.

2. A bituminous cement or pitch composed of relatively pure bitumen in combination with a smooth, gritless, stony or earthy impalpable powder in amount according to the intended uses.

3. The process of rendering relatively pure bituminous cements or pitches more efficient

for paving, roofing and other purposes, consisting in treating it with an earthy or mineral ingredient having the characteristics of soapstone reduced to an impalpable, smooth  
5 and gritless powder.

4. The method of decreasing the variations in viscosity of a relatively pure bitumen con-

sisting in treating such bitumen with impalpable soapstone in predetermined and definite quantities.

FREDERICK J. WARREN.

In presence of—

C. T. ROBERSON,

RALPH L. WARREN.