

UNITED STATES PATENT OFFICE.

WILLIAM WESLEY VARNEY, OF BALTIMORE, MARYLAND.

PROCESS OF MAKING ASPHALTIC COMPOSITION POWDER.

SPECIFICATION forming part of Letters Patent No. 657,799, dated September 11, 1900.

Application filed May 2, 1900. Serial No. 15,167. (No specimens.)

To all whom it may concern:

Be it known that I, WILLIAM WESLEY VARNEY, a citizen of the United States, and a resident of the city of Baltimore, in the State of Maryland, have invented certain new and useful Improvements in Producing Asphaltic Composition Powder, of which the following is a specification.

My invention relates to an improved asphaltic composition powder for surfacing roadways, paving streets, and like purposes; and my invention consists in the process whereby an asphaltic carbonate-of-lime-rock composition is produced whose constituents, qualities, and conditions shall, when desired, be substantially identical with those of the asphaltic carbonate-of-lime-rock powder commonly known as "Neufchâtel carbonate-of-lime-rock powder" and at a cost so greatly less than that of this natural-rock-asphalt powder as to admit of its general use for paving and surfacing purposes.

I take pure asphalt, or as near pure as reasonably attainable, preferably in its natural plastic state, such as can be readily drawn by handling at a temperature of 60° Fahrenheit into threads or ribbons, or I may use what is now known to commerce as "asphaltic cement," which is asphalt having incorporated with it heavy-gravity natural petroleum-oil. I take this asphalt or asphaltic cement, which melts at something over 200° Fahrenheit, and add to it a solvent whose boiling-point is above that of the melting-point of the asphalt or asphaltic cement, and when I say "melting-point" I mean the melting-point of the residuum which is coated upon the particles, as mentioned hereinafter. The oil that I have used is what is known in commerce as "300° coal-oil" or ordinary kerosene, which will vaporize under the burning temperature of asphalt and leave no residuum. Enough of the oil is added to enable me to coat with the desired amount of asphalt the desired quantity of carbonate powder or sand or mixture determined upon by the character of work in hand. The method of mixing is as follows: The asphaltic solution is heated above the melting-point of the asphalt, but below the boiling-point of the oil. The carbonate powder or sand is heated to about the same temperature. This is not necessary, but prefer-

able. Then all ingredients are mixed together and the temperature raised above the boiling-point of the oil, when the oil will vaporize, leaving the particles coated with asphalt. As a specific case of mixture I take one part, by weight, of asphalt and add to it fifty per centum of its weight of 300° coal-oil or like solvent, or sufficient to bring it to the proper fluid condition, and then heat the same to 225° Fahrenheit. By this means the asphalt can readily, together with the oil, be reduced to a cream-like fluid. When this is accomplished, add about nine parts, by weight, of carbonate-of-lime-rock powder after the same has been previously heated. This is thoroughly stirred or commingled with the asphaltic fluid. The fineness of the powder may be as follows: Take about fifty per centum of the nine parts, by weight—that is to say, about four and a half parts to five—which shall readily pass through a sieve having a mesh of one hundred to the inch, while the balance of the nine parts shall pass, respectively, in about equal portions through a sixty, forty, and thirty sieve. This large quantity of carbonate-of-lime flour and powder will very readily and quickly mix with the asphalt, each and every particle of the carbonate of lime becoming thoroughly and uniformly coated.

It should be noted that as little of the oil or solvent should be used as may be found practicable in bringing about the perfect and uniform coating of the particles of carbonate, just enough to leave the powder as little moist as possible after the mixing. This is for the reason that the solvent serves no other purpose than to allow the ready, uniform, and proper degree of coating of this large quantity of lime-rock powder with the asphalt, as the solvent must be removed from the asphaltic lime-rock powder before the powder is ready for use, and therefore the less to remove the better. The solvent can be driven off and recovered upon the application of sufficient heat and recovered by means of a still-worm or other condensing device. This product is carbonate-of-lime-asphalt powder, and while yet hot is ready for use, and by sifting it through a sieve or otherwise spreading the powder upon the surface of the roadway or street to the proper thickness and tamping it

with hot tamps or rolling it is brought to a solid surface, and when cold becomes hard and will stand attrition from hard traffic longer than stone.

5 In a word, the operation of using the material is the same as that well known and practiced in the use of Neufchâtel powder.

10 Instead of using the powder at once, as herein stated, it may be allowed to cool and when cool stored in bulk or in bags for future use, transportation, and sale. It improves in quality by age, and to use this stored material it is only necessary to heat the powder to 200° or 250° Fahrenheit in any suitable revolving cylinder. Another quality of this carbonate-of-lime-rock powder as produced by my process is after it has been used on streets for years or elsewhere it, like the Neufchâtel powder, can be taken up and again reduced to powder by heat and again relaid without the addition of material of any kind with equal, if not better, results than when first laid.

25 I do not confine myself by my process to making only an asphaltic carbonate powder of the very high grade of the quality of the Neufchâtel powder, as it is obvious that for many purposes my powder is of a finer and better quality and of greater cost than necessary. Hence by using the carbonate-of-lime-rock powder to be coated of a grade less particularly fine the same quantity of asphalt will coat perfectly and readily a greater quantity of carbonate, ten or even twelve parts to one instead of nine parts to one, as before mentioned, and still give an asphaltic carbonate-of-lime powder not equaled by any roadway or street material on the market except the Neufchâtel, and at a lower cost than that containing nine parts of finer carbonate before mentioned. It will be understood that carbonate-of-lime powder and sand or sand alone or other finely-comminuted stone or like material can be used for being coated with asphalt for making a roadway or paving material by my process, and these come within the scope of my invention; but the lime-pow-

der for coating with asphalt will in the end prove of the greater economy.

A very desirable condition in which to use the carbonate of lime for being coated, as herein set forth, instead of having it of various degrees of coarseness above sixty-mesh sieve is to have the carbonate powder all pass readily a sixty-mesh sieve. This gives a fine powder, running up in fineness to and passing a hundred mesh, and while this gives a splendid asphaltic carbonate powder it is more readily and economically worked than following the conditions of the natural powder as regards the variations of sizes of the particles of carbonate.

In this specification when I use the term "powder" I mean material to be coated by the asphalt, and in size may range from one inch in diameter to the finest particles.

In this specification when I use the term "melting temperature" I mean the temperature at which the asphalt will adhere to bodies in which it comes in contact or the working temperature for laying the powder, and the "boiling" or "vaporizing" temperature the temperature at which the solvent may be got rid of out of the powder.

Having thus described my invention, what I claim, and wish to secure by Letters Patent, is—

The process herein described, of producing asphaltic powder, which consists in mixing asphalt rendered fluid by means of heat and a solvent whose boiling temperature is above the melting-point of said asphalt with a powder the particles of which are to be coated by said fluid asphalt, and removing the solvent by means of heat, thus leaving the particles of powder coated with fluid asphalt, substantially as described.

In testimony whereof I have hereunto signed this specification in the presence of two subscribing witnesses.

WILLIAM WESLEY VARNEY.

Witnesses:

JNO. L. FASSETT,

CHAS. W. WISNER.