No. 675,694.

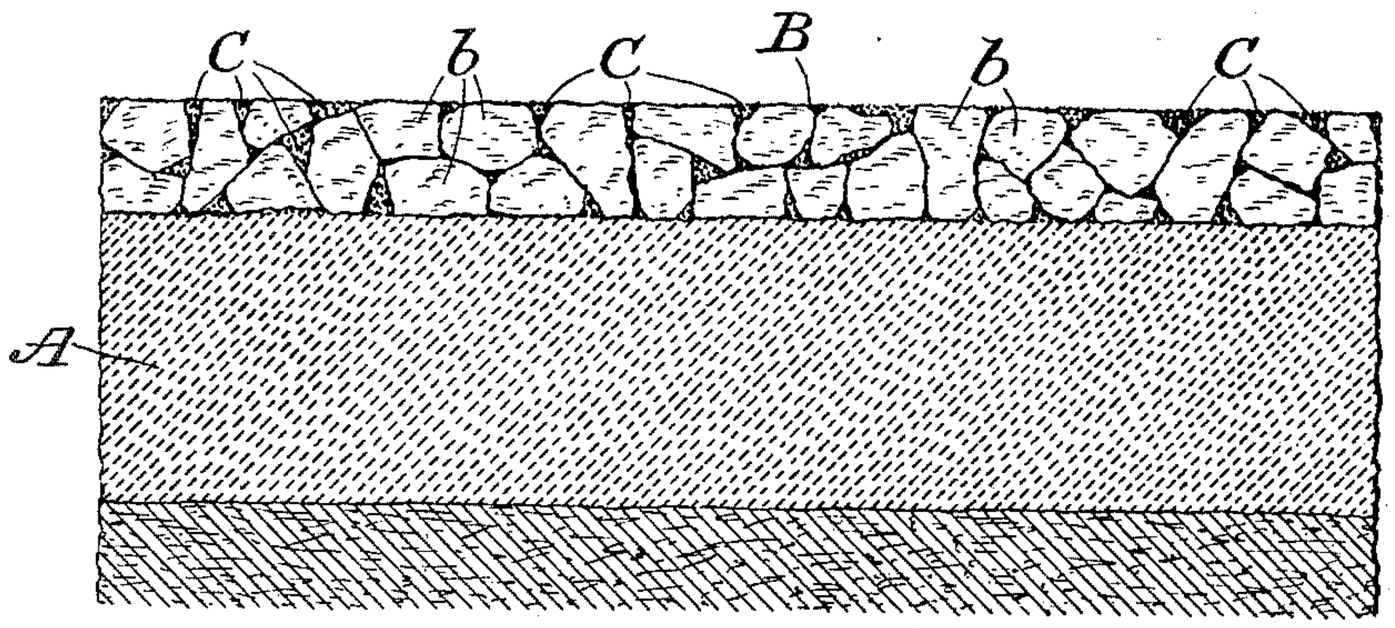
Patented June 4, 1901.

S. WHINERY.

ROADWAY.

(Application filed Dec. 13, 1900.)

(No Model.)



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UNITED STATES PATENT-OFFICE.

SAMUEL WHINERY, OF EAST ORANGE, NEW JERSEY.

ROADWAY.

SPECIFICATION forming part of Letters Patent No. 675,694, dated June 4, 1901.

Application filed December 13, 1900. Serial No. 39,776. (No specimens.)

To all whom it may concern:

Be it known that I, SAMUEL WHINERY, a resident of East Orange, in the State of New Jersey, have invented certain new and useful Improvements in Roadways, of which the following is a specification.

The invention relates to improvements in roadways, and relates particularly to improvements in the wearing-surfaces of roadways that are partly formed of crushed or broken stone. Such a roadway contains a large percentage of voids; and my invention consists in filling these voids in such a way as to form a hard and smooth surface, which will offer slight resistance to the movements of horses and vehicles over same and that can withstand the wear and abrasion of travel, the invention also consisting in the formation of a comparatively water-tight covering that will protect the foundation of the roadway from the softening and the disintegration caused by water which would otherwise reach it from the surface.

The accompanying drawing represents a vertical section of a roadway, in the construction of which the process hereinafter set forth is carried out.

The foundation A may be of any suitable kind that will provide an unyielding support for the wearing-surface. Said foundation may be constructed of broken stone, but preferably is constructed of hydraulic-cement concrete. The foundation varies in thickness according to the amount of travel to which the roadway will be subjected and is finished so that its top will be parallel to the surface of the finished roadway and a distance below same equal to the thickness of the wearing-surface to be used.

The wearing-surface B consists of a layer of broken or crushed stone *b* or like hard material having the voids or interstices between the adjacent fragments filled with a bituminous composition C, preferably prepared in accordance with the methods hereinafter described. The stones may be of any suitable size and should be of a very hard and enduring nature—such as trap-rock, granite, &c. The composition used for filling the voids between the adjacent fragments of rock consists of a mixture of bitumen, sand, and pulverized limestone or hydraulic cement. The consistency of this composition is determined according to the amount and the character of the travel upon the roadway and also by the climate of the locality where the roadway is constructed. Preferably the composition consists of one part of bitumen to four parts of sand or finely-crushed stone and one part of pulverized limestone or its equivalent; but these proportions may be changed as necessary or desired to meet varying conditions. The bitumen may be natural or artificial asphalt, coal-tar, or other pitch, or a mixture of any or all of these. In preparing the composition the bitumen is melted and the other ingredients are then mixed therewith by hand or by special machinery.

The surface of the roadway is preferably applied to the foundation by the following method: The broken stone is heated, either before or after it is laid, to a temperature of 100° or 300° Fahrenheit and is placed on the foundation portion of the roadway, so that the fragments will be contiguous to each other. While the stone is still hot, the bituminous composition, also in a heated condition, is spread over the surface and allowed to settle into and fill the interstices or voids between the adjacent fragments of stone. The roadway is thoroughly rolled or rammed while the bituminous composition is still soft and pliable in order that the roller may assist in forcing the composition into the interstices of the stone, and the rolling or ramming is continued until the composition is cold, or nearly so. A layer of sand or pulverized stone may be applied to the surface before or after the rolling or ramming has commenced to prevent the composition from adhering to the rammers or rollers.

It is obvious that various changes may be made in the above method according to the conditions under which the roadway is laid.

By constructing a roadway as above described the stones forming part of the wearing-surface rest directly upon the foundation. Since the stones are heated when they are placed in position, the composition freely permeates all the interstices between same and firmly binds the stones together, thereby preventing them from becoming displaced and at the same time forming a covering for the foundation impervious to water. The use of

very small stones, such as are required in a Macadam roadway, is unnecessary, and as only enough of the bituminous composition is required to fill the interstices between the stones the cost of this construction is not much more than that of an ordinary Macadam roadway, and the advantages of an asphalt roadway are practically secured.

I claim as my invention—

The herein-described method of laying a roadway, which consists in preparing a suitable foundation, placing heated pieces of stone on said foundation, so that said pieces will be contiguous to each other, and then filling the interstices or voids between same with a bituminous composition, so that the tops of the stones will form a portion of the wearing-surface of the roadway, substantially as described.

In testimony whereof I sign this application in the presence of two witnesses this 6th day of December, 1900.

SAMUEL WHINERY.

Witnesses:

A. N. JESBERA,

J. M. SCOBLE.